

FUNGI IMPERFECTI FROM MADRAS—IV

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15. *Cephalophora irregularis* Thaxter, in *Bot. Gaz.*, 1903, 35, 158, Plate V, figs. 17–20.

A collection of this fungus was recently made by me at Madras. Thaxter's (1903) diagnosis of his fungus is very brief and omits many details which would help in the identification of this species. A detailed description would not therefore be out of place and is given below, based on a study of the material collected by me.

The fungus appeared as somewhat pinkish masses on dead and moist wood in a cool, shady habitat. Under a hand lens numerous pinhead-like pinkish aggregations could be seen on the substratum. Microscopic examination revealed that these pinhead-like aggregations were heads of conidia. The vegetative hyphæ are thin-walled, hyaline, septate, branched, $4.8\text{--}9.6\ \mu$ broad. The conidiophores arise as lateral branches from cells of the hyphæ, or may be terminal at the tips of hyphæ, and are simple, unbranched, more or less clavate with gradually or abruptly swollen, rounded apices on which the conidia are borne in heads (Fig. 1: A, B, C, D, E). The conidiophores are hyaline, smooth, non-septate or up to 5-septate, $50\text{--}120\ \mu$ long, $6.4\text{--}9.6\ \mu$ broad at the base, the swollen apical cell being $30\text{--}58\ \mu$ long, and $17\text{--}35\ \mu$ broad where it is widest. The conidia are produced all over on the swollen apex of the conidiophore. The conidia (Fig. 1: L) are of various shapes (pyriform, napiform or turbinate), smooth-walled, with 1–2 transverse septa, with a short pedicellate base and a somewhat triangular, hyaline, relatively thin-walled basal cell and thicker walled, pale pinkish coloured upper cell or cells, $20\text{--}44 \times 14\text{--}26\ \mu$. Normally, the terminal cell of the conidium is broadly rounded, but is sometimes broadened and may be bilobed (Fig. 1: M). Abnormal conidia of other shapes are also found (Fig. 1: M).

The development of the conidiophore appears to be as follows. The conidiophore arises as a lateral outgrowth from a cell of the vegetative hypha (Fig. 1: F), elongates, and also swells to some extent (Fig. 1: G, H),

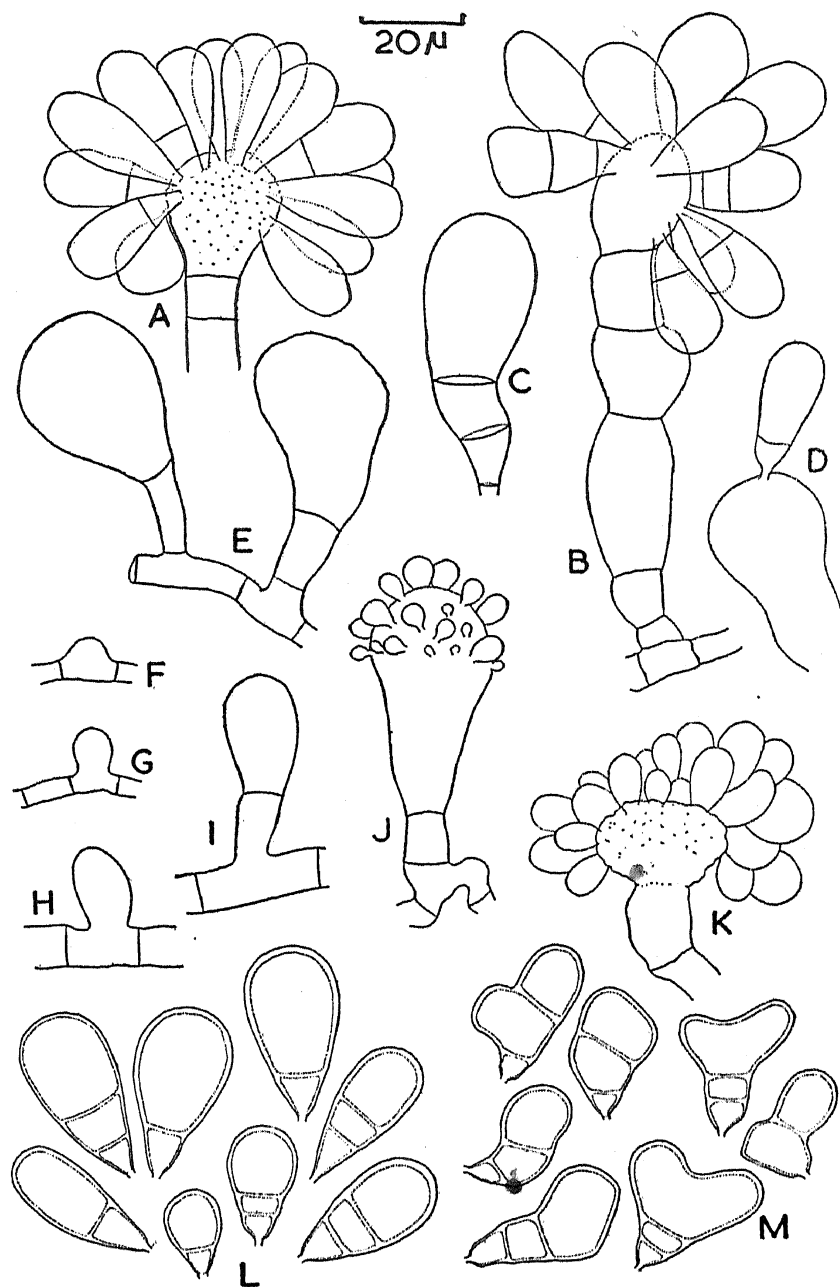


FIG. 1. *Cephalophora irregularis*, from Herb. M.U.B.L., No. 837, showing A, a head of conidia; B-E, conidiophores with conidia attached, and without conidia; F-K, stages in the development of the conidiophore and conidia; L, normal mature conidia; M, abnormal conidia.

more so towards the apex so as to become clavate. A cross wall is then formed about the middle of the conidiophore (Fig. 1: I), followed later by the formation of another cross wall nearer the base of the conidiophore (Fig. 1: J). Subsequent elongation of the conidiophore and formation of

more cross walls may take place. The development of the conidiophore terminally from a cell of the hypha is similar. The conidia are produced from the broadly rounded tip of the conidiophore (Fig. 1: J, K) and are at first thin-walled throughout and more or less globose to oval, later increasing in size and assuming the characteristic shape. Conidial septation then takes place and the conidia also develop thick walls, though this is seldom marked in the case of the basal cell.

The fungus is doubtless a *Cephalophora*. However, the description of the fungus given above does not agree entirely with the diagnoses of the two species of this genus so far described, viz., *C. tropica* Thaxter and *C. irregularis* Thaxter (Thaxter, 1903, p. 158). My fungus comes nearest to *C. irregularis* and agrees with it in having conidia which are variable in shape and size, and which are normally 1-, but often, 2-septate. Thaxter gives the *average* spore measurements of this species as " $25-30 \times 18 \mu$, maximum about $36 \times 30 \mu$ ". My fungus shows a greater range in the size of its conidia. No mention is made by Thaxter about the conidiophore characteristics of this species although the diagnosis starts with the words "similar to the last", i.e., *C. tropica*, the type species of the genus. The average diameter of the head of the conidiophore in *C. tropica* is given as $28-35 \mu$, which is the same as that of my fungus. However, the average length of the conidiophore in *C. tropica* is $60-75 \mu$, whereas the conidiophore length in my fungus ranges from $52-120 \mu$. These differences are not perhaps important, since Thaxter's descriptions probably do not give the entire range in size of the conidiophores, conidia, etc., mention being made only of *average* measurements. Moreover, my fungus agrees largely with all the other characteristics mentioned for *C. irregularis* and with the figures given by Thaxter (Thaxter, 1903, Plate V, figs. 17-20).

So far as I am aware, *C. irregularis* is known only from Porto Rico, the type locality. Thaxter described *C. tropica* and *C. irregularis* from dung of various animals, and Clements and Shear (1931, p. 207), in their key, mention that the genus is "fimicole". Only one collection has been made by me: on dead and decaying moist wood, University Botany Laboratory campus, Madras, 8-12-1952, coll. C. V. Subramanian, Herb. M.U.B.L., No. 837. This is just another instance indicating that a species may not always be confined to one kind of substratum !

16. *Dendryphon laxum* Berk. and Br., in *Ann. Mag. nat. Hist.*, Ser. 2, 1851, 7, 176; Plate VI, fig. 10.

The fungus forms dark brown to black, effuse colonies on the substratum. The repent hyphae are subhyaline to brownish, and septate. The conidiophores are distinct and arise laterally from cells of the repent hyphae (Fig. 2:

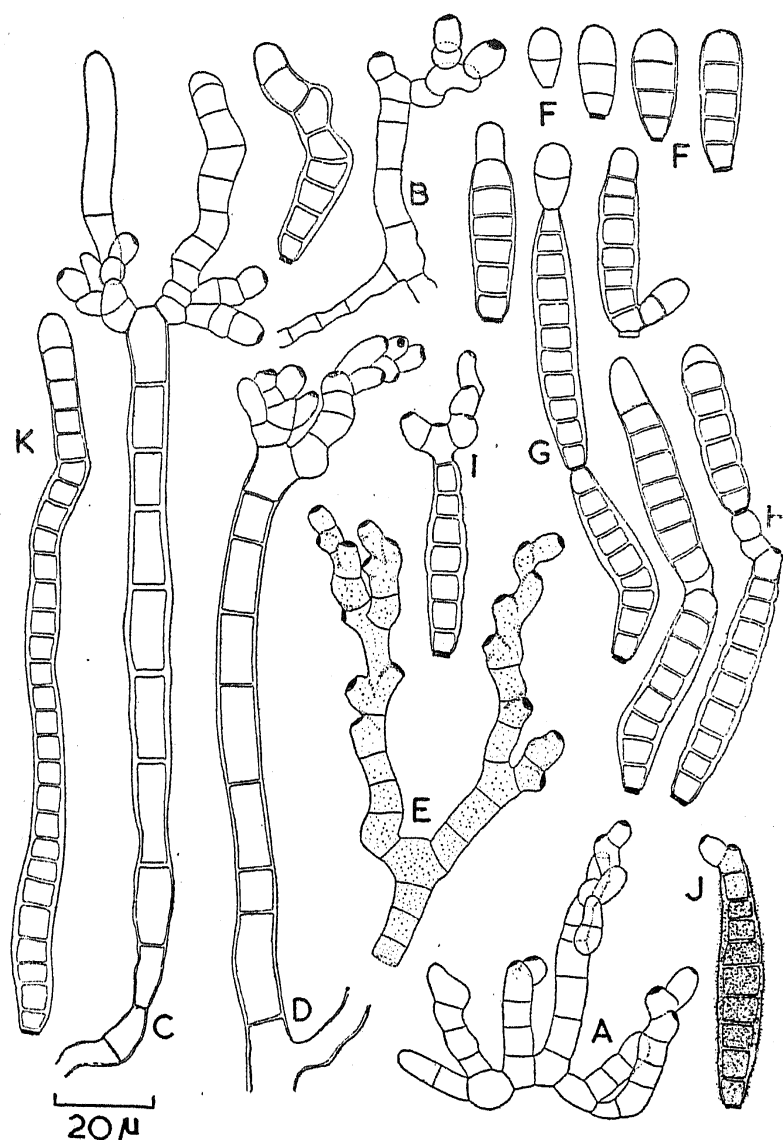


FIG. 2. *Dendryphion laxum*, from Herb. M.U.B.L. No. 814, showing A, young conidiophores in various stages of development; B-E, older and mature conidiophores; F, early stages in the development of conidia; G, conidial chain; H-J, mature conidia with branches on which further conidia are produced; K, a long, mature conidium.

A, B). They are usually erect, stout, thick-walled, long, up to 16-septate, unbranched except at the apices where they are variously branched, up to 200 μ long, 6-10 μ broad at the base, and 6-8 μ broad near the apex where the branches arise (Fig. 2: C, D, E). The spore-bearing cells of the conidiophore bear scars indicating the points of attachment of the fallen conidia. The conidia (Fig. 2: E, G, K) are acropleurogenous, catenate, elongate, somewhat sub-cylindrical and broadest towards the middle or nearer the base, thick-walled, pale to dark brown in colour except towards the tip and

basal cells where they are golden yellow, many- (up to 27-) septate, constricted at some of the septa or not at all, straight, bent or curved variously, minutely verrucose, with a broad, flat, prominent scar at the base showing the location of attachment to the conidiophore. The measurements of the conidia are $30-167 \times 8-12 \mu$. The conidial chains are short, and more than two or three conidia have not been observed attached to each other. The conidial chains appear to be produced acropetally. The mature conidia may give rise to short, simple, one-celled or septate branches producing normal conidia (Fig. 2: H, I, J). Sometimes these branches arising from mature conidia may resemble the dendroid branches usually found at the tip of the normal conidiophore, and more than one conidium may be produced from these branches.

Only one collection has been seen: on dead stem, Dodabetta, 8,000 ft. (Nilgiris District, Madras State), 10-10-1952, coll. C. V. Subramanian, Herb. M.U.B.L. No. 814.

17. *Dictyosporium prolificum* Damon, in *Lloydia*, 1952, **15**, 119, Fig. 2: J.

The fungus forms blackish, irregular colonies on the substratum. The hyphæ are subhyaline to pale in colour, and are septate. The conidiophores are compacted into a sporodochium-like cluster, are concolorous with the hyphæ, and of variable length, $4.8-9.6 \times 4.8-6.4 \mu$. Each conidiophore bears apically one conidium. The conidia are pale olivaceous to pale brown in colour, cylindrical in shape except for a slight narrowing towards the base and the tip, with 3-7 more or less parallel branches arising from a single basal cell. The branches are multiseptate with 5-8 septa, not constricted at the septa. The mature conidia are $33-42 \times 16-20 \times 16-21 \mu$ (Fig. 3).

Only one collection has been made: on dead stem of *Lantana* sp., Oothu, on road to Kodaikanal Hills, 4,000 ft. (Madura District, Madras State), 9-6-1952, coll. C. V. Subramanian, Herb. M.U.B.L. No. 788. This collection agrees with the diagnosis given by Damon (1952) in all essential details, although in shape the conidia of my fungus more closely resemble those of *D. hepatosporum* Damon (cf. Fig. 2: F in Damon, 1952). *D. prolificum* is known so far only from Vineland, New Jersey (the type locality) in the United States.

18. *Lacellinopsis sacchari* Subramanian sp. nov.

The fungus grows as a saprophyte on dead leaves of sugarcane and forms a somewhat yellowish brown to brownish growth on the substratum. The hyphæ are septate and pale brown to brown in colour. The colonies consist of groups of conidiophores and sterile setæ interspersed and crowded

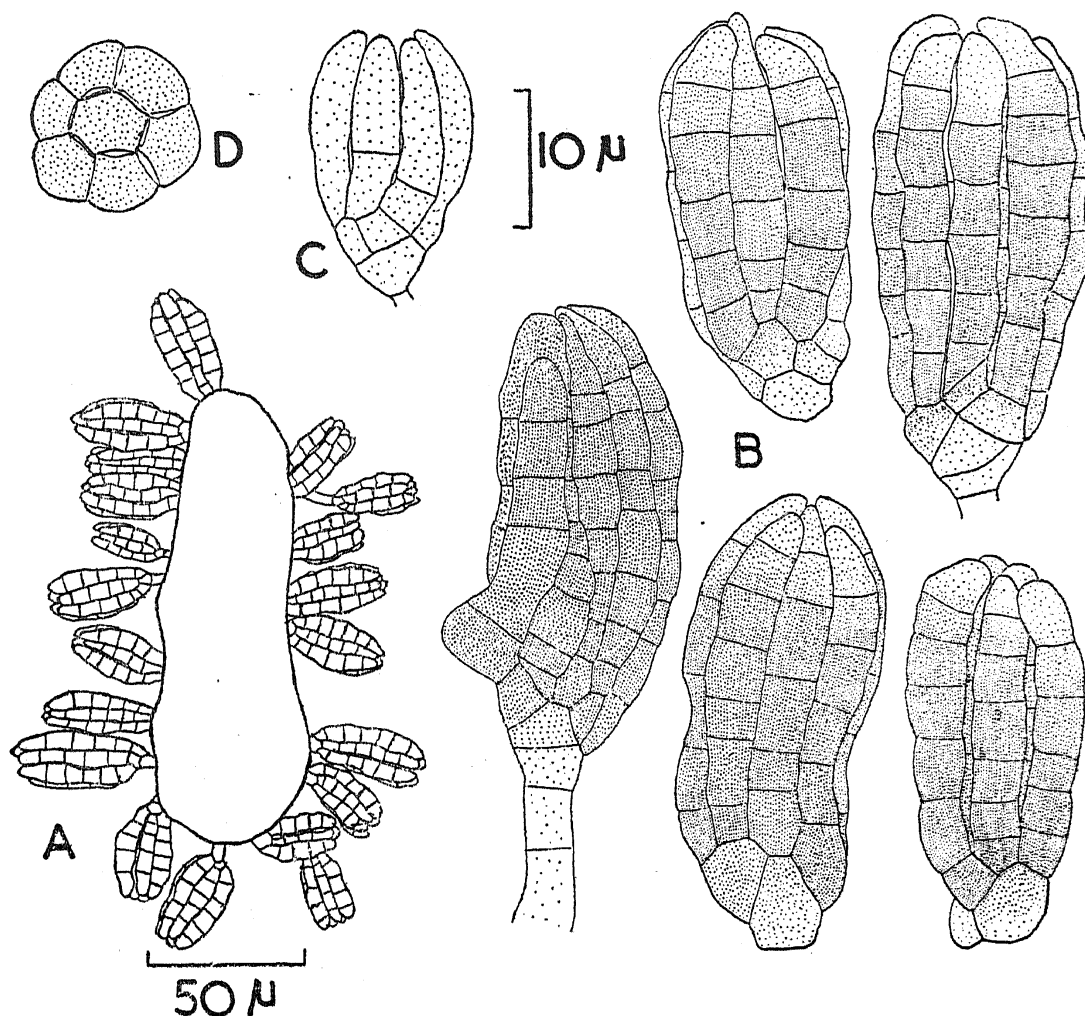


FIG. 3. *Dictyosporium prolificum*, from Herb. M.U.B.L. No. 788, showing A, a cluster of conidia; B, mature conidia; C, a young conidium; D, top view of a conidium.

together (Fig. 4: J). The setæ (Fig. 4: J-L) are simple, unbranched, thick-walled, long, subulate, dark brown in colour and thicker walled towards the base, becoming progressively paler towards the apex, up to 16-septate, $190-700 \times 4.8-8.0 \mu$. The conidiophores (Fig. 4: J) are simple, unbranched, smooth, short, 1-2-septate, subhyaline to pale yellow in colour, with a dark brown globose tip on which the conidia are borne, $17-48 \times 3.2-4.0 \mu$, the globose portion $8-16 \mu$ in diameter. Rarely, the entire conidiophore may be dark in colour. The conidia (Fig. 4: E, M) are catenate, one-celled, mostly globose, finely verrucose, pale brown to dark brown in colour, hyaline to subhyaline when young, $6.4-9.6 \mu$ in diameter.

The development of the conidiophore is as follows. The conidiophore starts as a papillate outgrowth laterally from a cell of the repent hypha and

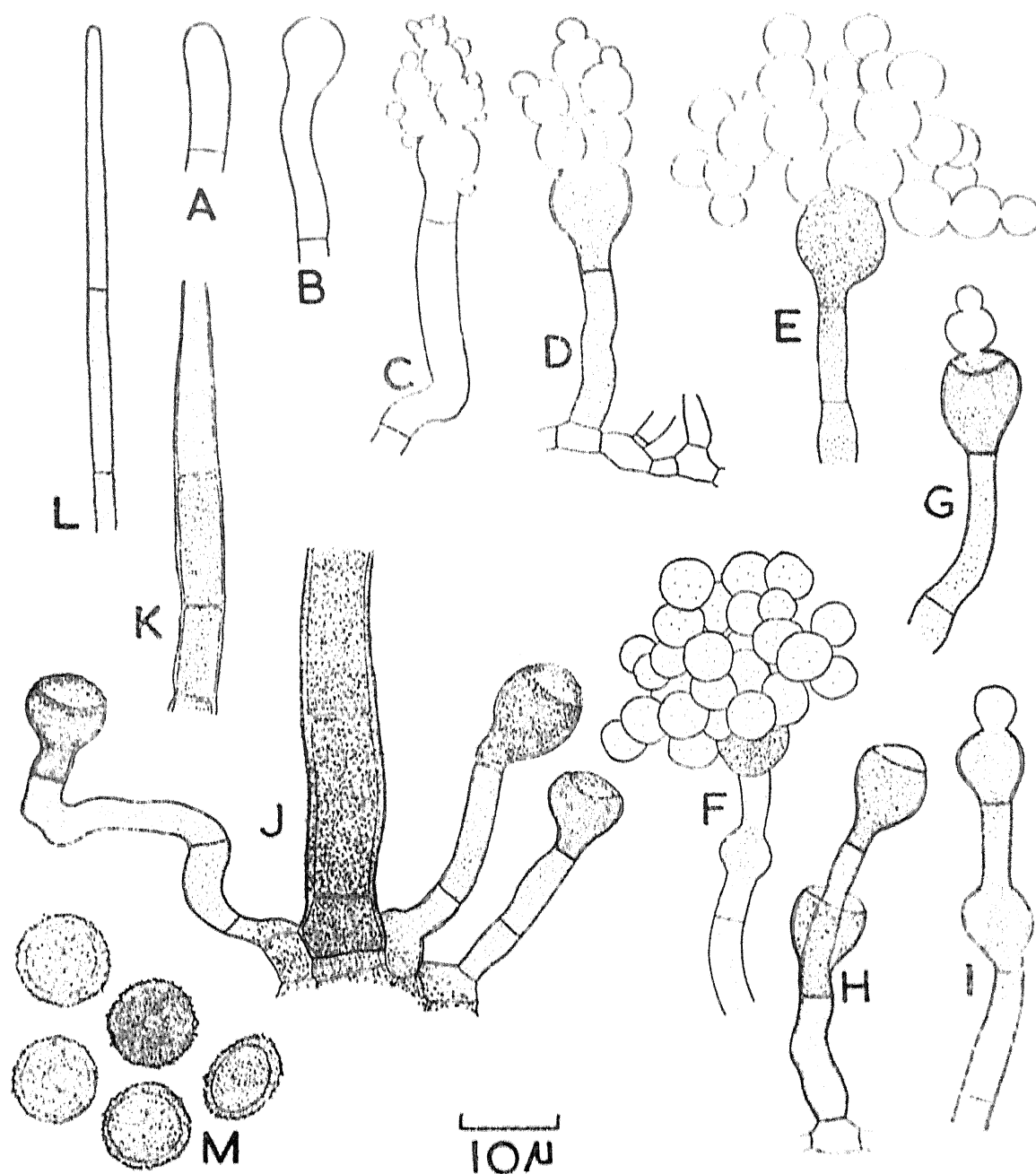


FIG. 4. *Lacellinopsis sacchari*, from type specimen, Herb. M.U.B.I. No. 641, showing A-F, stages in the development of the conidiophore and conidia; G-I, proliferation of the conidiophore; J-L, mature setae and conidiophores; M, mature conidia

elongates (Fig. 4: A). The tip of the papilla then swells (Fig. 4: B) and the swollen tip is later cut off from the rest of the conidiophore by a cross wall (Fig. 4: C). Conidia are then abstricted acropetally in short branched or unbranched chains from the swollen apex of the conidiophore (Fig. 4: C). In the meantime the swollen tip of the conidiophore develops a thick wall

and becomes dark brown in colour (Fig. 4: D). When the conidial chains have broken away from the conidiophore, the tip of the conidiophore is usually ruptured and the apical cell of the conidiophore assumes a cupulate shape (Fig. 4: J), the size of the cupulate tip being $8-16 \times 8.0-9.6 \mu$. The conidiophore may then proliferate through the ruptured apex and produce further conidia in the same way (Fig. 4: G, H).

The fungus was originally disposed by me in the Herbarium in the genus *Lacellina* Sacc., since my fungus resembled species of *Lacellina* in having sterile setæ among the conidiophores and producing amerospores in chains. However, the conidiophore in my fungus is strikingly different from that of *Lacellina*. The type of *Lacellina* is *L. libyca* Sacc. and Trott. (Saccardo, 1931, p. 781). I have not seen a specimen, but the fungus is stated to produce conidia acropleurogenously on the conidiophore which is minutely verrucose throughout. On the other hand, in my fungus the one-celled conidia are produced acropetally in chains from the globular apex of the conidiophore. The conidiophore is conspicuously short, smooth, with the globose-tipped apical fertile cell distinctly marked from the other sterile cells of the conidiophore by its being dark-coloured and by its assuming a cupulate shape after the conidia are detached. A further noteworthy feature of my fungus is the ability of the mature conidiophore to proliferate through the ruptured cupulate tips and produce further conidia. Judging from the descriptions, these characteristics are not shared by any of the three species of *Lacellina* so far known, viz., *L. libyca* Sacc. and Trott. (Saccardo, 1931), *L. graminicola* (Berk. and Br.) Petch (Petch, 1924) and *L. sacchari* Batista (Batista, 1949). Indeed, Saccardo's (Saccardo, 1931, p. 791) generic diagnosis of *Lacellina* does not indicate any such peculiarities for his genus. The possibility of placing my fungus in *Lacellina* has been considered, but I believe that neither Saccardo's diagnosis nor the descriptions of the type and other species would warrant this. It has not been possible to examine the type specimen of *L. lybica* and until such time this is done, it would be necessary to rely on Saccardo and Trotter's diagnosis of their species. No other genus of the Dematiaceæ is known to me which could possibly accommodate my fungus. I therefore propose a new genus for it. The name *Lacellinopsis* is chosen to indicate that amongst existing genera it comes closest to *Lacellina* Sacc., but is nevertheless sufficiently distinct from it to warrant separation.

***Lacellinopsis* Subramanian gen. nov.**

Pertinet ad Fungos Imperfectos, Hyphomycetas, Dematiaceas, Amerosporas,

Hyphæ repentes brunneæ colore, septatæ. Conidiophori setis intermixti. Setæ simplices, haud ramosæ, septatæ, apice globose fertili qui cupulatus evadit post resolutionem conidiorum. Conidia producta acropetale in catenis simplicibus vel ramosis ex apice globoso conidiophori, pallide brunnea vel fusce brunnea, semel cellulata.

Species typica sequens:

Lacellinopsis sacchari Subramanian spec. nov.

Coloniæ amphigenæ, effusæ, luteole-brunneæ vel brunneolæ, magnitudine varia. Hyphæ septatæ, pallide brunneæ vel brunneæ. Setæ steriles atque conidiophori surgentes lateraliter ex cellulis hypharum repentium, interspersi atque simul aggregati. Setæ simplices, non ramosæ, parietibus crassis præditæ, longæ, subulatæ, fusce brunneæ atque crassioribus parietibus ornatae ad basim, progressive pallidiores ad apicem, usque sexdecies septatæ, $190-700 \times 4.8-8.0 \mu$. Conidiophori simplices, non ramosi, relative breves, ut plurimum semel vel bis septati, subhyalini vel pallide vel auree lutei, singuli apice fusce brunneo, globoso, fertili ornati, $17-48 \times 3.2-4.0 \mu$, apice globoso $8-16 \mu$. Conidia capitata, acropetale producta in catenis simplicibus vel ramosis ex apice globoso conidiophori, semel cellulata, ut plurimum globosa, minute verrucosa, pallide vel fusce brunnea, $6.4-9.6 \mu$ diam. Capitulum fertile, globosum conidiophorum evadit cupulatum post resolutione, conidiorum; conidiophori proliferantes per cupulatum apicem atque producentes conidia ulteriora.

Habitat in foliis emortuis *Sacchari officinarum* Linn., typus lectus in Agricultural Farm, Athur, Chingleput District, in Statu Madras, die 2 mensis decembris anni 1951 a K. Ramakrishnan et C. V. Subramanian, et positus in Herbario M.U.B.L. sub numero 641.

Lacellinopsis Subramanian gen. nov.

Fungus Imperfectus, Hyphomycete, Dematiaceæ, Amerosporæ.

Repent hyphæ brown in colour, septate. Conidiophores intermixed with setæ. Setæ simple, unbranched, septate, with globose fertile apex becoming cupulate after detachment of conidia. Conidia produced acropetally in branched or unbranched chains from globose tip of conidiophore, pale brown to dark brown, one-celled.

Type species:

Lacellinopsis sacchari Subramanian sp. nov.

Colonies amphigenous, effuse, yellowish brown to brownish, of variable size. Hyphæ septate, pale brown to brown. Sterile setæ and conidiophores

arising laterally from cells of repent hyphæ, interspersed and crowded together. Setæ simple, unbranched, thick-walled, long, subulate, dark brown and thicker walled towards the base, becoming progressively paler towards the tip, up to 16-septate, $190-700 \times 4.8-8.0 \mu$. Conidiophores simple, unbranched, relatively short, usually 1-2-septate, subhyaline to pale or golden yellow, each with a dark brown, globose, fertile tip, $17-48 \times 3.2-4.0 \mu$, diameter of globose apex $8-16 \mu$. Conidia capitate, produced acropetally in branched or unbranched chains from globose tip of conidiophore, one-celled, mostly globose, finely verrucose, pale brown to dark brown, $6.4-9.6 \mu$ in diameter. Fertile globose head of conidiophore assuming cupulate shape after conidia are shed; conidiophore proliferating through broken cupulate apex and producing further conidia.

Habit: on dead leaves of *Saccharum officinarum* Linn., Agricultural Farm, Athur (Chingleput District, Madras State), 2-12-1951, coll. K. Ramakrishnan and C. V. Subramanian, Herb. M.U.B.L. No. 641-Type.

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