ADDITIONS TO FUNGI OF MADRAS—XI

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Plasmopara wildemaniana, P. Henn.


On living leaves of Peristrophe bicalyculata Nees (Acanthaceae), Coimbatore, 20–1–49, N. V. Sundaram.

This fungus was observed to be widespread in November in Coimbatore on Peristrophe bicalyculata. The imperfect state alone was present. Oospores were not seen.

Helotium malloti Ramakrishnan and Srinivasan, sp. nov.

Apothecia hypophyllous; on veins and along margins of straw-coloured spots, subsessile, powdery, cup-shaped, margin involute, up to 1·0 mm. in diam., dark brown, isolated or in groups; asci cylindric-clavate, 8-spored, hyaline, 150–190×17–22 μ, paraphysate, paraphyses filiform, swollen and lobed at the apex, forming a dark brown epithecium; ascospores oblong to elliptical, uniseriate, subhyaline, one-celled, 17–22×13–15 μ.

Apothecia hypophylla, subsessilia, exteriora pulverulenta, cupulata, margine involuta, usque 1·0 mm. diam., atrobrunnea, sparsa vel gregaria; asci cylindraceo-clavati, octospori, hyalini, 150–190×17–22 μ, paraphysti, paraphysibus filiformibus, ad apicem incrassatis et lobulatis, epithecium fusce brunneum formantibus; ascosporidia oblonga vel elliptica, uniseriata, subhyalina, unicellulata, 17–22×13–15 μ.


The spots are irregular and straw-coloured in the initial stages but the central portions drop off soon, leaving holes in the leaves. The apothecia develop on the margins of these holes and along the neighbouring veins either singly or in small groups of 3–4. A brown stromatic mass is embedded in the tissues of the leaf sometimes extending throughout the thickness. The stroma bursts through the lower surface and the apothecium is borne on this. It is almost sessile, deep saucer-shaped or sometimes obconical with incurved margin and presents a brown powdery surface. The asci are closely
packed interspersed with paraphyses which are longer than the asci. The apices of the paraphyses are enlarged and provided with numerous digitate lobes. These are closely packed forming a brown epithecium. On moistening, the epithecium becomes gelatinous and sticky. The interlocking apices of paraphyses do not easily separate.

*Pseudophacidium photinia* Ramakrishnan and Srinivasan, sp. nov.

Spots amphigenous, stroma-like, dark violet, circular or irregular; apothecia hypophyllous in the middle of the spot, erumpent, discoid, sessile, black, umbonate, upto 1.5 mm. across; asci clavate or cylindric, hyaline, 8-spored, 90–150×9–14 μ, paraphysate, paraphyses filiform, sometimes branched, swollen at the tip; ascospores hyaline, oblong, uniseriate or irregularly biseriate, one celled, 10–14×5–7 μ.

Maculæ amphigenæ, stromatoideæ, atroviolaceæ, orbiculares vel irregulares; apothecia hypophylla, in maculæ centro disposita, erumpentia, discoidae, sessilia, atra, umbonata, usque 1.5 mm. lat.; asci clavati vel cylindracei, hyalini, octospori, 90–150×9–14 μ, paraphysati, paraphysibus filiformibus interdum ramosis, ad apicem incrassatis; ascosporidæ hyalina, oblonga, monosticha vel irregulariter disticha, unicellata, 10–14×5–7 μ.


Round or irregular dark violet isolated spots are formed on both sides of the leaf. The spots are raised due to the development of a subepidermal stroma. In the centre of each spot, hypophyllously is a black erumpent discoid apothecium with an umbonate projection in some. Apothecium is formed on the veins also. It is sessile with a fairly thick hypothecium, opening out after bursting through the epidermis into an effuse structure. Sometimes an air cavity is formed in the hypothecium. A definite epithecium is absent. The asci are clavate and rounded at the apex. Numerous paraphyses are present; these are sometimes branched at the base. The apices are slightly swollen and enveloped in muclilage. Very old apothecia may bear subhyaline spores.

*Eudarluca indica*, sp. nov.

Perithecia in clusters, erumpent, black, 120–180 μ in diam., ostiolate, immersed in a stroma of sooty coloured closely packed pseudoparenchymatic context; asci cylindrical, hyaline, 8-spored, 65–75×6–7 μ, paraphysate; ascospore fusiform, uniseriate, hyaline, with one prominent septum, 16–22×4–5 μ.
Perithecia gregaria, erumpentia, nigra, 120-180μ diam., ostiolata, immersa in stromatæ textureæ dense, pseudoparenchymaticæ; asci cylindrici, hyalini, octospori, 65-75×6-7μ, paraphysati; ascosporidia fusiformia, uniseriata, hyalina, prominenter uniseptata, 16-22×4-5μ.

Infecting uredosori of Uredo amomi Petch or Amomum, sp., Anamalais, 22-11-50, T. S. Ramakrishnan.

The perithecia are amphigenous, black and occur in groups of five to ten, infecting the uredia. A thick stroma of small pseudoparenchymatous cells occupies the thickness of the leaf. The perithecia are sunk in this stroma and protrude slightly above the surface as black globose bodies. The ostiole is recognisable in some of the perithecia. The asci are basal and are mixed with filiform paraphyses. The ascospores are broad in the middle and tapering towards the ends. Only one septum is clearly visible in the centre. E. australis Speg. has been recorded on Uredo cannae Wint. from Brazil. Hansford (1946) describes E. australis as occurring singly or close clusters in the sori of many Uredineæ and being ap paraphysate. Doidge (1941) states that the basal stroma grows into the mesophyll of the leaf and that the paraphysoids are sparse. In the specimens under study the stroma occupies the thickness of the leaf and paraphyses are seen. The fungus comes close to E. australis.

Mycospherella melothriæ sp. nov.

Spots amphigenous, prominent hypophyllously, circular to irregular, dull green; perithecia minute, crowded, subepidermal, ostiolate, black, ap paraphysate; asci cylindrical to clavate, hyaline, 8-spored, 52×13μ (36-72×9-15); ascospores irregularly biseriate, 2-celled, fusiform, hyaline, 19×6μ (15-24×5-7).

Maculæ amphigenæ, prominenter hypophyllæ, orbiculares vel irregulares, dilute virides; perithecia minuta, gregaria, subepidermalia, ostiolata, atra, ap paraphysata; asci cylindrici vel clavatis hyalini, octospori, 52×13μ (36-72×9-15); ascosporidia irregulariter biseriata, uniseptata, fusiformia, hyalina, 19×6μ (15-24×5-7).

On living leaves of Melothria mucronata Cogn. (Cucurbitaceæ), Ootacamund, 10-10-49, T. S. Ramakrishnan.

Indefinite roundish dull green spots are formed on the leaves. These are more prominent on the lower surface and are studded with numerous minute black perithecia. Associated with the perithecia are pycnidia of a Septoria. These are subepidermal with elongated, cylindrical, hyaline, pycnidiospores measuring 70×3μ (51-105×3).
Figs. 1-8. Fig. 1 (a) Portion of a leaf with apothecia of Helotium malloti; (b) Section through an apothecium (semidiagrammatic); (c) asci and paraphyses, × 250. Fig. 2 (a)
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Section of the apothecium of *Pseudophacidiun photiniae* (diagrammatic); (b) asci, poraphyses and ascospores, \( \times 250 \). Fig. 3 (a) Section of stroma of *Eudarluca indica* (diagrammatic); (b) asci and paraphyses. Fig. 4 (a) Section of perithecium of *Mycospharella melothria*; (b) ascus and ascospores, \( \times 375 \). Fig. 5. Asci and paraphyses of *Physalospora achyranthis*, \( \times 250 \). Fig. 6 (a) Bit of a leaf showing stromata of *Sphaerodothis coimbatorica*; (b) asci, paraphyses and a spore, \( \times 250 \). Fig. 7. Section of a pycnidium of *Ascochyta infortunata* and spores, \( \times 250 \). Fig. 8. Section of leaf showing *Cercospora pulchella*, \( \times 250 \).


Indefinite light green spots are formed on the leaflets. These are uniformly studded with the red spermagonia and black perithecia of the fungus. This is a new host for this fungus.

*Physalospora achyranthis* sp. nov.

Spots indefinite; perithecia amphigenous, innate erumpent, black, up to 200 \( \mu \) broad, isolated, ostiolate; asci hyaline, clavate, with a small foot, 80–95 \( \times \) 21–26 \( \mu \), paraphysate, paraphyses septate, branched; ascospores 8, irregularly biseriate, oblong to obovate, hyaline, one celled, 17–22 \( \times \) 6–10 \( \mu \).

Maculæ indefinitæ; perithecia amphigena, innata, erumpentia, atra, usque 200 \( \mu \) lat., isolata, ostiolata; asci hyalini, clavati, brevi pediculo insidentes, 80–95 \( \times \) 21–26 \( \mu \), paraphysati, paraphysibus septatis, ramosis; ascosporidia 8, irregulariter biseriata, oblonga vel obovata, hyalina, unicellata, 17–22 \( \times \) 6–10 \( \mu \).

On living leaves of *Achyranthes aspera* L. (Amarantaceæ), Kodaikanal, 26–12–49, T. S. Ramakrishnan.

Indefinite yellowish green areas mark the affected regions of the leaves. Studded in these patches and visible on both sides are numerous black round dot-like perithecia. The asci are short and stout with the apical portion thicker than the sides. Paraphyses are limited in groups and branched in the upper portions. The ascospores are arranged in two irregular rows. Associated with the perithecia are spermagonia producing minute hyaline, bacillar spores.

*Sphaerodothis coimbatorica*, sp. nov.

Stromata foliicolous, epiphyllous, upto 40 mm. long and 5 mm. broad, black, with many loculi, subepidermal; perithecia ostiolate; asci many clavate, thin-walled, hyaline, 100–145 \( \times \) 27–40 \( \mu \), paraphysate, paraphyses
septate; ascospores 8, distichous, oblong or reniform, rounded at ends, 32-43 × 13-20 μ, golden brown in colour, one-celled.

Stromata foliicola, epiphylla, usque 40 mm. longa et 5 mm. lata, atra, subepidermalia, loculis numerosis; perithecia ostiolata; ascii plures, clavati, membrana tenui ornati, hyalini 100-145 × 27-40 μ, paraphysati, paraphysibus septatis; ascosporidia 8, biseriata, oblonga vel reniformia, apice rotundata, 32-43 × 13-20 μ, aureobrunnea colore, unicellata.


The stromata form elongated raised black formations on the leaflets. Bursting through the stroma and arranged in one or two lines are several black mammiform perithecia. Each perithecium is deeply sunk in the stroma which is composed of vertically arranged cells. The paraphyses and the ascus wall become gelatinised as the perithecia mature. In old loculi groups of ascospores are found to be surrounded by a gelatinous mass without any ascus wall. Young spores are hyaline but they become golden brown when old. Theissen and Sydow (1915) and H. and P. Sydow (1917) have recorded Phaeochaora calamigena (B. et Br) Theiss. and Syd. on C. rudentum from Ceylon and C. sp. from the Philippines respectively. The measurements of the asci and ascospores in the two are almost equal. But the fungus under study is not Phaeochaora as well developed paraphyses are present. Therefore it is different and is included under Sphaerodothis which differs from Phaeochaora in the possession of paraphyses.

Entyloma irregularare Johans.


On living leaves of Poa annua L. (Gramineæ), Ootacamund, 3-10-49, N. V. Sundaram.

Two leaf smuts E. crastophilum Sacc. and E. irregularare have been recorded on Poa. In the smut under study the sori are circular and the spores are often irregular being occasionally elongated. Though the two species are considered to be probably synonymous by some, Clinton is in favour of keeping them apart. Conidia were not observed in the specimen collected.

Uromyces sojae (P. Henn.) Syd.


On living leaves of Glycine max (Linn.) Merr. (Soyabean) (Papilionaceæ) grown at the Agricultural Research Station, Palur (South Arcot), 15-1-50, M. A. Sankara Iyer.
Butler and Bisby (1931) state that no rust on Glycine soja has in reality been found in India. There is no doubt about the host plant now collected. 

*Ascochyta infortunata* sp. nov. 

Spots indefinite; pycnidia minute, amphigenous, globose, black, erumpent, ostiolate, 97×88 μ (78-120×59-99); spores hyaline or subhyaline, linear oblong, one septate, 9×5 μ (5-13×5-6).

Maculæ indeterminatæ; pycnidia minuta, amphigena, globosa, atræ, erumpentia, ostiolata, 97×88 μ (78-120×59-99); sporæ hyalīnæ vel sub-hyalīnæ, linearī-oblongæ, 1-septatæ, 9×5 μ (5-13×5-6).


The diseased leaf exhibits slight distortion with revolute margin. Definite spots are wanting but the infected portions are paler in colour. Pycnidia are present on both sides of the leaves but more numerous on the under side. They are innate in origin but burst through and appear as black dots on the surface. In some of the pycnidia the ostiole is surrounded by a layer of vertically elongated cells. At the base, varying numbers (3-5) of setose structures are formed on the surface in some of the pycnidia. These are septate and unbranched. The spores are produced on short unbranched stalks. They are mainly linear oblong but in some become variously swollen to give different shapes. The septum is clear but constriction at the septum is not common. Normally the spores are hyaline but sometimes a light tinge of olive is evident. The wall of the pycnidium is membranous.

*Cercospora ferruginea* Fuckel.


On living leaves of Artemesia vulgaris L. (Compositae), Anamalais, 15-2-50, T. S. Ramakrishnan.

Infection was widespread on the plants which were being grown in hedges. The characteristic yellowish green spots appear on the upper surface. Corresponding to these, soot-coloured growths of fungus are present on the lower surface. 

*Cercospora pulchella* sp. nov.

Spots amphigenous, minute, angular, brown; conidiophores hypophyllous, unbranched, non-septate, in dense clusters, light brown, apex geniculate, 96×8 μ (50-167×5-11); conidia obclavate, light brown, 2-3 celled, 49×11 μ (31-78×8-13).
Maculae amphigenæ, minutæ, angulatæ, brunneæ; conidiophori nec ramosi, nec septati, dense-fasciculati, leviter-brunnei, apice geniculati, 96×8 μ (50–167×5–11); conidia obclavata, leviter brunnea, 2–3 cellata, 49–11 μ (31–78×8–13).


Many spots develop on the leaflets followed by defoliation. The conidiophore tufts are on the lower surface. The stromata are substomatal in origin but the epidermal cells are pushed apart very soon and the conidiophores project out. Septa are not present in the conidiophores. The tips are geniculate and three or more scars of spore attachment are seen on each.

Tuberculina persicina (Ditm.) Sacc.


Infecting the æcia of Aecidium pavette Berk. and Aecidium sp. on Strobilanthes cuspidatus T. And., Burliar (Nilgiris), 15–10–49, T. S. Ramakrishnan and K. V. Srinivasan.

Violet coloured rounded powdery growths developed in the æcia completely obliterating the rust. The sporodochia were made up of closely arranged conidiophores measuring 44×5 μ (30–51×4–6). The conidia were unicellular, light tinted, globose and measured 8·0 μ in diameter. Almost all the æcia were infected.

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REFERENCES

5. Theissen, F. and Sydow, H. . . Ibid., 1915, 18, 403.