

ADDITIONS TO THE FUNGI OF MADRAS—XVIII

BY T. S. RAMAKRISHNAN, F.A.SC. AND N. V. SUNDARAM

Received July 12, 1955

Phakopsora grewiae (Pat. and Har.) Cummins

Cummins, G. B., *Bull. Torrey Bot. Club.*, 1945, 72, 206.

On living leaves of *Grewia aspera* Roxb. (Tiliaceæ), Walayar (Malabar), 15-1-1955, T. S. Ramakrishnan.

Uredia minute, hypophyllous, erumpent, bounded by marginal incurved paraphyses, occurring in groups; urediospores light brown, subglobose, oblong or elliptic, germ pores indistinct, $22 \times 19 \mu$ ($16-31 \times 16-22$), verrucose; paraphyses mostly marginal, incurved, swollen towards the upper half, thickened very much on the outer side; telia mixed with the uredia, scattered or in groups, blackish, subepidermal, later erumpent; teliospores in several irregular layers, chestnut brown or reddish brown, one-celled, smooth, apex thickened or not, sometimes obtuse, $24 \times 11 \mu$ ($16-28 \times 9-12$).

Cummins has described *Phakopsora grewiae* (revising *Uredo grewiae* Pat. and Har.) on *Grewia* sp. from Senegal. The rust under study closely resembles this rust though the teliospores exhibit slightly higher measurements. It has not been recorded from India.

Phakopsora zizyphi-vulgaris (P. Henn.) Diet

Syn. *Uredo zizyphi-vulgaris* P. Henn.

Dietel, Von P., *Ann. Myc.*, 1910, 8, 469.

Uredia hypophyllous, scattered, reddish brown, subepidermal, erumpent, paraphysate, paraphyses invariably marginal incurved, thickened, more on the outer side, $24-50 \times 6-12 \mu$; urediospores borne on long stalks, obovate or elliptic, narrowed towards the base, $25 \times 16 \mu$ ($19-31 \times 12-19$), echinulate above, the lower one-third smooth, germ pores 2-3, cinnamon brown.

On living leaves of *Zizyphus trinervia* Roxb. (Rhamnaceæ), Kallar (Coimbatore), 10-1-1955, T. S. Ramakrishnan and N. V. Sundaram.

The uredia alone were present. Three rusts have been recorded on this host genus. Comparison with the uredia of *Crossopsora zizyphi* (Syd. and Butl.) Syd. and *Catenulopsora zizyphi* Ramak. and Sub. revealed that this rust is different. But it exhibited resemblance to *Phakopsora zizyphi-vulgaris*. This is a new host for the rust.

Macrophoma bærhaaviæ sp. nov.

Leafspots not evident; pycnidia mostly epiphyllous, isolated but occurring in groups, black, intra-epidermal, ostiolate, $50-93 \times 62-100 \mu$; pycnidiospores unicellular, subglobose elliptical or oblong, hyaline, $12 \times 7 \mu$ (9-19 \times 6-9), with mucilaginous sheath.

Maculæ foliorum haud evidentes; pycnidia ud plurimum epiphylia isolata sed aggregata, nigra, intraepidermalia, ostiolata, $50-93 \times 62-100 \mu$; pycnosporæ, unicellulares, subglobosæ, ellipticæ vel oblongæ, hyalinæ, $12 \times 7 \mu$ (9-19 \times 6-9), vagina mucosa.

On living leaves of *Bærhaavia diffusa* L. (Nyctagineæ), Kallar (Coimbatore), 10-1-1955, T. S. Ramakrishnan and N. V. Sundaram.

The incidence of infection is visible as pin-head-like minute black dots invariably confined to the upper surface of the leaves. These are often formed close to one another to form groups. Definite lesions are not evident. As a matter of fact there is no discolouration even of the tissues. The pycnidia are confined to the epidermal cells.

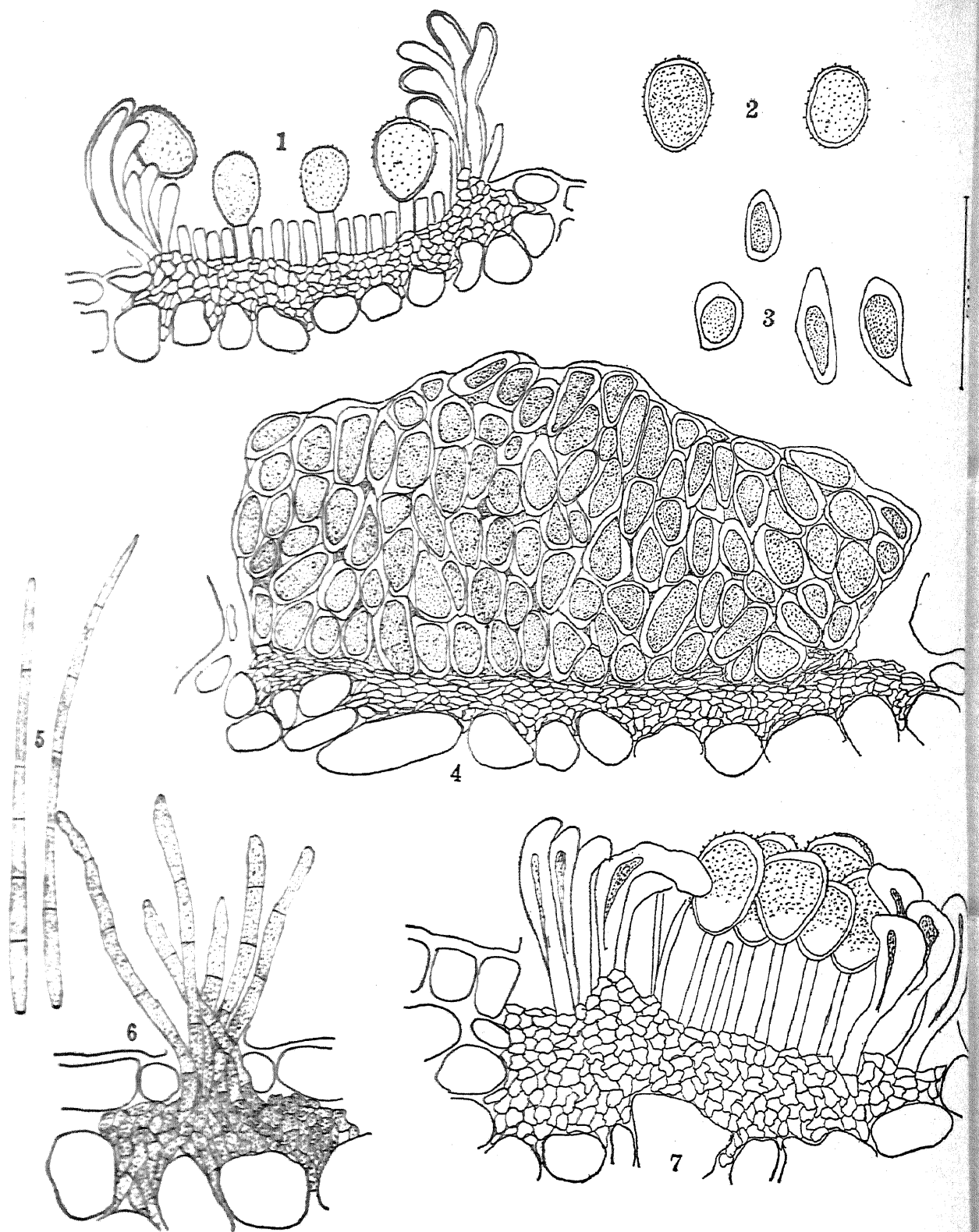
Macrophoma glycosmidis sp. nov.

Spots amphigenous, circular, 2-4 mm. in diameter, upper surface greyish white in the centre with dark brown raised margin, lower surface light brown in the centre with dark raised margin; pycnidia epiphyllous in the middle of the spot appearing as black dots, subepidermal, ostiolate, $78-124 \times 78-132 \mu$; pycnidiospores hyaline, oblong, one-celled, exhibiting wide variation in size, $12 \times 7 \mu$ (9-19 \times 6-9).

Maculæ amphigenæ, circulares, 2-4 mm. diameter in superiore pagina griseo-albæ in medio, circumdatæ margine fusco brunneo, in inferiore vero pallide brunneæ in medio, circumdatæ margine fusco paululum elevato; pycnidia epiphylia in medio macularum apparentia ut puncta nigra, subepidermalia, ostiolata, $78-124 \times 78-132 \mu$; pycnosporæ hyalinæ, oblongæ unicellulatæ, magnitudinis valde variabilis, $12 \times 7 \mu$ (9-19 \times 6-9).

On living leaves of *Glycosmis cochinchinensis* Pierre (Rutaceæ), Kallar (Coimbatore), 10-1-1955, T. S. Ramakrishnan and N. V. Sundaram.

The spots are quite prominent and exhibit differences in colour between the upper and the lower surfaces. *Phyllosticta glycosmidis* Syd. and Butl. has been recorded on this host. But the fungus under study has much bigger spores and has to be included under *Macrophoma*.



Figs. 1-7

Macrophoma gordoniae sp. nov.

Leafspot non-existent, pycnidia epiphyllous, scattered or in groups, subepidermal, ostiolate, black at the tip; pycnidiospores oblong, hyaline, sometimes upper half broader than the lower, rounded at the ends, $19 \times 7.5 \mu$ ($16-25 \times 6-9$), one-celled.

Foliorum maculæ nullæ; pycnidia epiphylla, dispersa vel aggregata, subepidermalia, ostiolata, nigra ad apicem; pycnosporæ oblongæ, hyalinæ, non-numquam superiore parte quam inferiore latiore, rotundatæ ad apices, $19 \times 7.5 \mu$ ($16-25 \times 6-9$), unicellulatæ.

On living leaves of *Gordonia obtusa* Wall. (Ternstroemiaceæ), Coonoor (Nilgiris), 16-3-1955, T. S. Ramakrishnan.

The pycnidia appear as raised hemispherical projections on the upper surface of the leaves. The centre of the projection is black and denotes the location of the ostiole. No leaf spot is evident. The pycnidia are isolated though several of them may be seen near one another forming distinct groups.

Macrophoma sapindi sp. nov.

Spots amphigenous, greyish brown surrounded by a deeper coloured ring, more or less circular, 2-4 mm. in diameter; pycnidia amphigenous, in an irregular ring, black, subepidermal, ostiolate, $93-152 \times 114-160 \mu$; pycnidiospores numerous, hyaline, one-celled, oblong to elliptical, $16 \times 10 \mu$ ($12-20 \times 9-12$).

Maculæ amphigenæ, griseole brunneæ, circumdatæ annulo coloris fuscioris, plus minus circulares, 2-4 mm. diameter; pycnidia amphigena in annulum irregularem disposita, nigra, subepidermalia, ostiolata, $93-152 \times 114-160 \mu$; pycnosporæ plures, hyalinæ, unicellulatæ, oblongæ vel ellipticæ, $16 \times 10 \mu$ ($12-20 \times 9-12$).

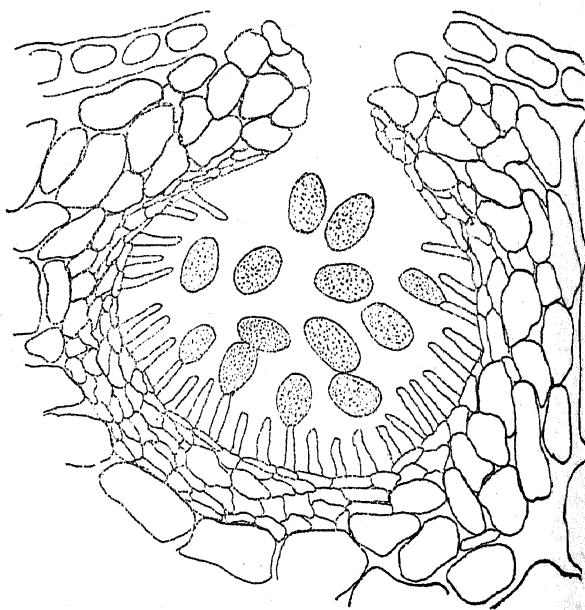
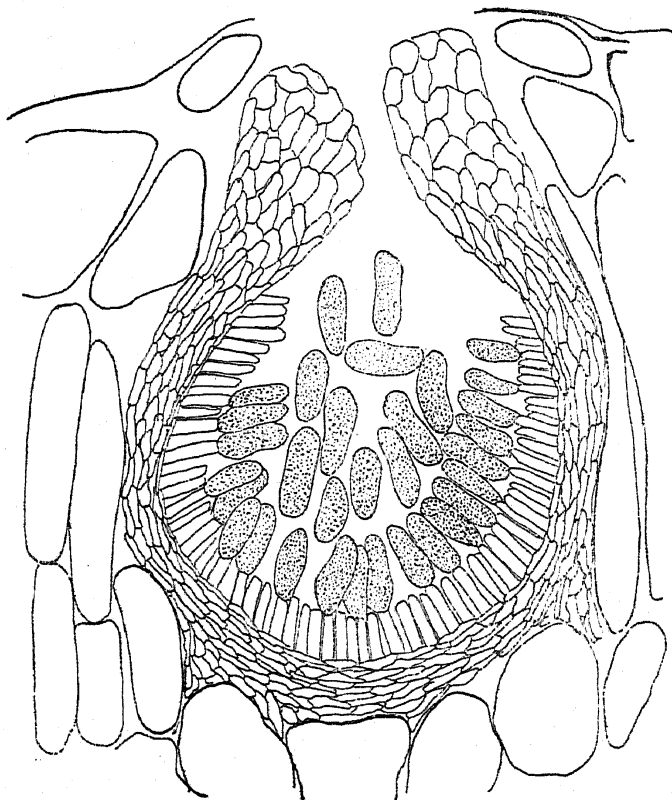
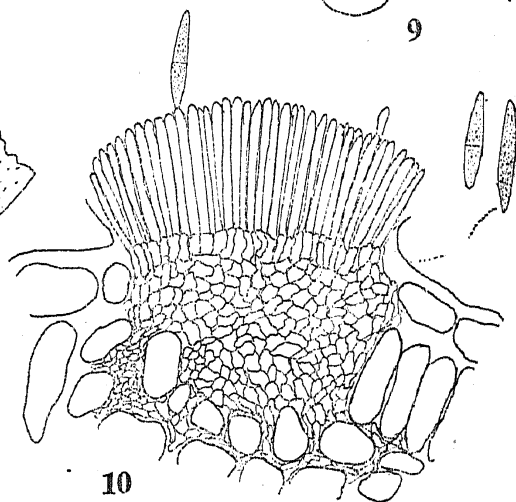
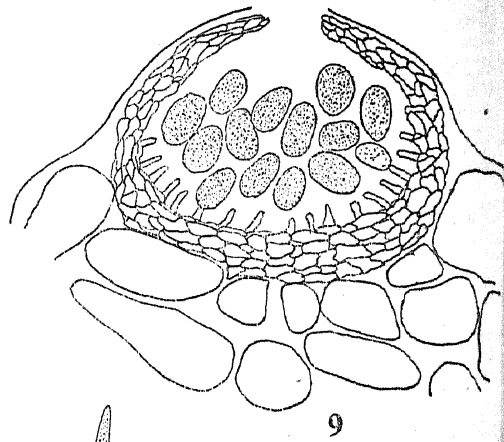
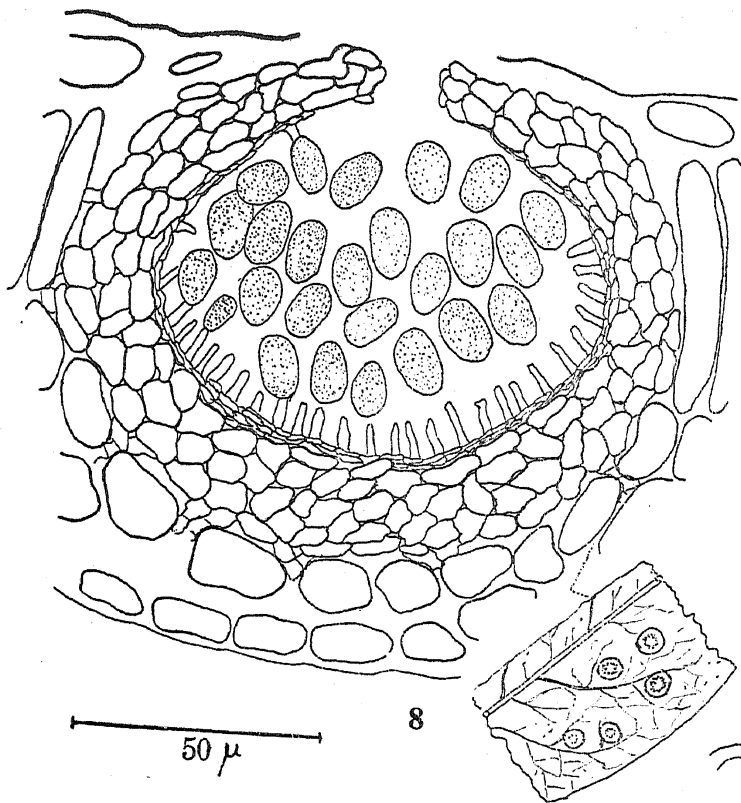
On living leaves of *Sapindus emarginatus* Vahl. (Sapindaceæ), Kallar (Coimbatore), 16-2-1955, N. V. Sundaram.

The spots are prominent but sometimes the pycnidia develop on the leaves even outside the spots. The pycnidia are conspicuous. The peridium consists of three or more layers of dark brown pseudo-parenchymatous cells.

Phyllosticta hederæ Sacc. and Roume.

Saccardo, P. A., *Syll. Fung.*, 1884, 3, 20.

On living leaves of *Hedera helix* L. (Araliaceæ), Ootacamund, 18-6-1954, T. S. Ramakrishnan.



50 μ

8

9

10

11

12

FIGS. 8-12

Leaf spot amphigenous, large, circular, zonate, upper surface with a greyish centre surrounded by dark brown margin, lower surface greenish brown; pycnidia epiphyllous, arranged in concentric zones. The spots are conspicuous on account of their size and colour.

Cercospora effusa (Berk. and Curtis) Ellis

Ellis, J. B., *J. Mycol.*, 1885, 1, 53.

Chupp, C., *Monogr. of the Fungus Genus Cercospora, Ithaca*, 1954, 356–57.

On living leaves of *Lobelia excelsa* Lesch. (Campanulaceæ), Coonoor and Ootacamund, 15–5–1955, N. V. Sundaram.

Leaf spot amphigenous, distinct or not, more often angular, with a reddish tinge, spores produced on the lower surface in effuse layers, which are light coloured; conidiophores in clusters emerging through stomata, stomata not prominent, length of conidia and conidiophores much affected by the humidity of the weather, conidiophores sometimes branched and bending over, conidia sub-hyaline.

The sporiferous regions on the lower surface have a light ferruginous woolly appearance.

Cercospora insulana Sacc.

Saccardo, P. A., *Nuov. Giorn. Bot. Ital.*, 1915, n.s. 22, 74.

Chupp, C., *Monogr. of the Fungus Genus Cercospora, Ithaca*, 1954.

Spots on stem, leaves and flower-bearing stalks, amphigenous, more prominent on the upper surface of the leaves, elliptic or circular, brownish white with olive-grey centre and bordered by a purplish zone, the affected portions thinner and giving way early; internal hyphæ hyaline to light smoky brown; fruiting mostly confined to the upper surface, conidiophore clusters dark olive brown, stomata dark, conidiophores straight or sometimes flexuous, 2–3 septate, light brown but paler towards the apex; conidia hyaline, straight or slightly curved, acicular sometimes obclavate, with many indistinct septa.

On living leaves, stem and flowering shoots of *Statice* sp. (Compositæ), Ootacamund and Coonoor, 15–6–1954, T. S. Ramakrishnan.

This disease is common on the Nilgiris where this plant is grown as an ornamental plant. The infection increases on the receipt of rains in May.

Highest infection occurs in June–July when many of the leaves turn brown and wither.

Titæospora pterolobii sp. nov.

Spots circular, amphigenous, depressed, upper surface grey surrounded by a dark brown raised marginal ring, lower surface with brown centre and dark brown raised margin, 0.5–1 mm. in diameter; stromata sclerotoid, amphigenous, subepidermal, globose, dark brown, 45–61 μ in diameter; conidiophores in dense culsters, hyaline to subhyaline, flexuous, septate, septa few, 16–22 \times 3–6 μ ; conidia hyaline, spindle-shaped, with 0–2 septa, 19 \times 3 μ (12–25 \times 2–4.5).

Maculæ circulares, amphigenæ, depressæ, in superiore pagina griseæ circumdatæ annulo marginali elevato fusce brunneo, in inferiore vero brunneæ in medio, marginibus elevatis fusce brunneis, 0.5–1 mm. diameter; stromata sclerotioidea, amphigena, subepidermalia, globosa, fusce brunnea, 45–61 μ diameter; conidiophori dense aggregati, hyalini vel subhyalini, flexuosi, septati, septis paucis, 16–22 \times 3–6 μ ; conidia hyalina, fusiformia, septis 0–2 ornata, 19 \times 3 μ (12–25 \times 2–4.5).

On living leaflets of *Pterolobium indicum* A. Rich. (Cæsalpiniaceæ), Kallar (Coimbatore), 16–3–1955, T. S. Ramakrishnan.

The fructifications appear as whitish dots on both sides of the spots. The black rounded sclerotoid stromata are quite characteristic. The conidiophores when formed appear as a compact cluster breaking through the epidermis.

We wish to express our grateful thanks to Rev. Dr. H. Santapau for the Latin translations.

EXPLANATION OF TEXT-FIGURES

TEXT-FIGS. 1–7. *Phakopsora grewiæ*. Fig. 1. Section through an uredium. Fig. 2. Urediospores. Fig. 3. Teliospores. Fig. 4. Section through a telium. Figs. 5–6. *Cercospora insulana*. Fig. 5. Conidia. Fig. 6. Section showing a cluster of conidiophores. Fig. 7. *Phakopsora zigynhi-vulgaris*; section through an uredium.

TEXT-FIGS. 8–12. Fig. 8. *Macrophoma sapindi*: diagrammatic sketch of leaf-spot and section of a pycnidium. Fig. 9. *M. bærhaaviæ*; section of pycnidium. Fig. 10. *Titæospora pterolobii*; section through a fructification. Fig. 11. *M. gordonix*; section of a pycnidium; Fig. 12. *M. glycosmidis*; section of a young pycnidium.