NOTES ON SOME FUNGI FROM SOUTH INDIA—V*

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Synchytrium travancoricum sp. nov.

Galls numerous, isolated or gregarious, on stem, midrib and lamina, sometimes resulting in the curling and deformation of leaves, galls with one or more layers of hypertrophied cells, greenish yellow, bursting open at a later stage, each gall with one or more hypnospores; hypnospores round or elliptical, reddish brown with a coloured wall 2–3 μ thick, 60–105 $\times$ 60–90 μ.

Galle plures, separatæ vel aggregatæ, in culmia, nervo medio atque lamina, producentes torsionem atque deformationem foliorum, una vel pluribus seriebus cellularum hypertrophiatarum constantes, ornatæ una vel pluribus hypnosporis, viridi-luteolæ, effractæ in maturiore statu; hypnosporæ rotundæ vel ellipticæ, rubro-brunneæ, parietibus coloratis, 2–3 μ crassis, 60–105 $\times$ 60–90 μ.

On stem and leaves of *Impatiens chinensis* L., Kottayam (T.C. State), 1–8–1955, T. S. R.

The incidence of infection was prevalent only during the heavy rains of July and August. After the cessation of the rains in September fresh infection did not occur. The galls developed on the main stem and the branches too. The affected leaves were turned prematurely yellow and were shed.

Successful infection was obtained when young leaves were inoculated by placing portions of leaves bearing galls, on them and enclosing them in alkathene bags. It took eleven days for the symptoms to become evident. Inoculations repeated in September were not successful. Only those conducted in July and August were successful.

Parodiella perisporioides (Berk. & Br.) Speg.

Saccardo, P. A., *Syll. Fung.*, **1**, 717.

On living leaves of *Flemingia* sp., Vadakancheri (Malabar), 27–9–1955, T. S. R.

This is a new host for this fungus from India. The ascocarps were studded all over the upper surface of the leaflets as minute black round bodies. Most of them were immature.

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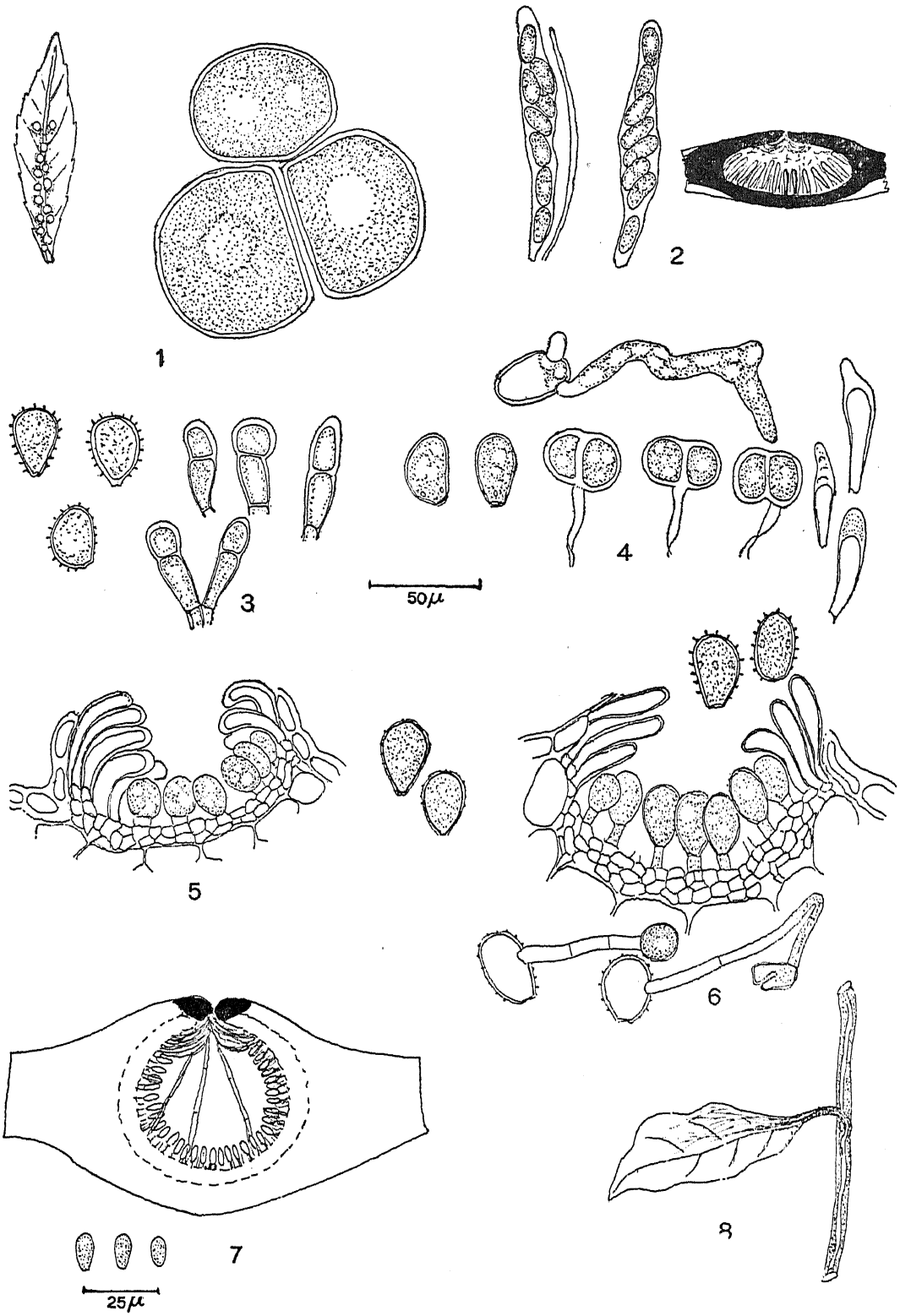

FIGS. 1–8.—1. *Synchytrium travancoricum* ; an infected leaf and hypnospores. 2. *Phyllachora connari* ; asci and section through a stroma (diagrammatic). 3. *Puccinia zingiberis* ; urediospores and teliospores. 4. *Puccinia ottochloæ* ; urediospores, germinating urediospore, teliospores and paraphyses. 5. *Uredo pterocarpi* ; section through an uredium and urediospores. 6. *Phakopsora desmium* ; section through an uredium, urediospores and germinating urediospores. 7. *Macrophoma macarangæ* ; section through a pycnidium (diagrammatic) and spores. 8. *Corticium* sp. ; a leaf and portion of twig showing the fungus strand.

Phyllachora connari Syd.

Sydow, H., *Phillip. J. Sci.*, 1914, **9**, 168.

On living leaves of *Connarus ritchei* Hook., Kottayam (T.C. State), 20–11–1955, T. S. R.

Many black shining round or irregular amphigenous stromata were formed on each leaflet, appearing as black spots. These were raised irregularly above the surface with crateriform depressions. Each stroma was multiloculate, the loculi varying in size and number. The height of the loculi ranged from 120–145 μ and the width from 320–360 μ. The asci were clavate and measured 80–115 $\times$ 11–16 μ. In each ascus were 8, obliquely arranged, oblong, hyaline ascospores measuring 14–18 $\times$ 7 μ.

Two species of *Phyllachora* have been recorded on this host genus. The fungus under study closely resembles *P. connari*, though the ascospores are slightly bigger in the former. There is no record of this fungus from India.

Phakopsora desmium (B. & Br.) Cummins

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

On living leaves of *Thespesia populnea* Corr., Kottayam (T.C. State), 10–8–1955, T. S. R.

Uredia minute, isolated or in groups, sometimes forming irregular dark brown infection spots on the leaves, with one or more sori in each spot, mostly hypophyllous, subepidermal, opening by a conical pore surrounded by closely arranged paraphyses; the urediospores are subglobose, elliptical or obpyriform, echinulate, light brown in colour and measure 25–39 $\times$ 16–25 μ. Telia not found.

This is a new host for this rust. It is prevalent in Kottayam for the major part of the year but is more common from June–November. Heavy infection is observed on middle aged and older leaves and is rare on tender ones. The uredial stage alone was present but from the structure of the uredia and the size and shape of the urediospores the resemblance to the cotton rust could be easily made out.

Puccinia erebia Syd.

Sydow, H., *Phillip. J. Sci.*, 1913, **8**, 475.

Mundkur, B. B., and Thirumalachar, M. J., *Myc. Pap. C. M. I.*, No. 16. 14.

On living leaves of *Clerodendron inerme* Gærtn., Kulasekaram (T.C State), 6–1–1956, T. S. R.

The rust was severe causing considerable damage to a hedge of this host plant. It was very conspicuous on account of the innumerable bright orange coloured sori. Uredia alone were present. The urediospores were elliptic or obpyriform, orange coloured and prominently aculeate.

Puccinia ottochloæ sp. nov.

Uredia minute, amphigenous, sometimes in longitudinal rows paraphysate, paraphyses club-shaped, much thickened at the apex sometimes extending to half the length; urediospores elliptic, oblong or obovate, light reddish brown, more or less smooth-walled with four germpores near the base, 25 × 16 μ (22–29 × 13–18); telia dark, hypophyllous, subepidermal, erumpent, often arranged in lines; teliospores two-celled, the septum being vertical, pedicel attached to the junction of the two cells or slightly moved from it, persistent, up to 65 μ long, light brown, often collapsed and twisted; teliospores subglobose, apex thickened up to 5 μ, wall deeper coloured, reddish brown, 29–33 × 20–23 μ.

Uredia minuta, amphigena, nonnunquam in series longitudinales disposita, paraphysata, paraphysibus clavata, valde dense ad apicem vel ad dimidiam longitudinem; urediosporæ ellipticæ, oblongæ vel obovatæ, pallide, rubro-brunneæ, parietibus *plus* minusive levibus præditæ, 4 germinationis poris ad basim ornatæ, 25 × 16μ (22–29 × 13–18); telia fusca, hypophylla, subepidermalia, erumpentia, sæpe disposita in lineas; teliosporæ bicellulatæ, septo verticali, pediculo adnato ad punctum unionis utriuque cellulæ vel paulisper ad eodem puncto remoto, persistente, ad 65 μ longo, pallide brunneo, sæpe collapso atque torto; teliosporæ subglobosæ, apice denso ad 5 μ, parietibus densius coloratis, rubro-brunneis, 29–33 × 20–23 μ.

On living leaves of *Ottochloa nodosa* Dandy, Kottayam (T.C. State), 20–9–1955, T. S. R.

This rust is common on this grass from July–December. In July the uredia alone are present but from September onwards the telia predominate. The urediospores germinate in 4–5 hours and produce one or more irregularly swollen germ tubes. The vertical septum of the teliospore indicates affinity to *Diorchidium*. But several species of *Puccinia* also possess such teliospores and the retention of the former genus has been questioned by some uredinologists. Therefore the rust has been included in the genus *Puccinia*.

Puccinia zingiberis sp. nov.

Rust spot indefinite, visible as spindle-shaped yellowish discolouration more prominent on the upper surface; uredia mainly hypophyllous, rarely epiphyllous, narrow, linear, 0·5–2 mm. long, subepidermal, erumpent, white

powdery when spores are formed; urediospores obovate or subglobose, hyaline to subhyaline, aculeate, 25–32 × 18–23 μ; telia mixed with uredia, hypophyllous, subepidermal, erumpent, whitish to very light vinaceous on drying, powdery, in lines; teliospores two-celled, with short stalk, lower cell elongated, upper cell rounded or cubical, hyaline to subhyaline, 32–46 × 14–18 μ, apex blunt thickened up to 5 μ.

Maculæ indefinitæ, apparentes ut discolorationes luteolæ et fusiformes, prominentiores in pagina superioræ; uredia ut plurimum hypophylla, raro epiphylla, anguste linearia, 0·5–2 mm. longa, subepidermalia, erumpentia, albo pulverulenta post-formationem sporarum; urediosporæ obovatæ vel subglobosæ, hyaline vel subhyaline, aculeatæ 25–32 × 18–23 μ; telia *cum* uredia mixa, hypophylla, subepidermalia, erumpentia, albiuscula ad pallidissime vinacea sub siccitate, pulverulenta, in lineas disposita; teliosporæ bicellulatæ, pediculo brevi, cellula inferiore elongata, superiore vero rotundata vel cubica hyalinæ vel subhyalinæ, 32–46 × 14–18 μ, apice hebete denso ad 5 μ.

On living leaves of *Zingiber officinale* Roscoe, Thodupuzha (T.C. State) 26–9–1955, T. S. R.

The incidence of the rust was widespread in the locality. Most of the top leaves of the plants were heavily infected exhibiting numerous yellowish spots on the upper surface and whitish powdery sori on the corresponding location in the lower surface. The teliospores had short pedicels and were usually formed in clusters of three or more. As these were thin-walled they collapsed quickly on drying. This rust resembles to some extent *P. curcumæ* (Ramakrishnan and Sundaram, 1953). This is the first record of a rust on ginger.

Uredo pterocarpi sp. nov.

Rust spots indefinite, reddish-brown, uredia isolated or in groups, hypophyllous, minute, subepidermal, opening by a distinct pore-like mouth, paraphysate, paraphyses mostly marginal, incurved, forming a compact rim; urediospores subglobose, elliptic or obovate, light yellowish brown, verruculose, 21–26 × 14–21 μ.

Maculæ indefinitæ, rubro-brunneæ; uredia separata, vel aggregata, hypophylla, minuta, subepidermalia, patentia per ostiolum pori simile, paraphysata, paraphysibus ut plurimum marginalibus, incurva, efformantia labrum compactum; urediosporæ subglobosæ ellipticæ vel obovatæ, pallide luteolo-brunneæ, verruculosæ, 21–26 × 14–21 μ.

On living leaves of *Pterocarpus marsupium* Roxb., Kottayam (T.C. State), 15–10–1955, T. S. R.

The rusted areas are conspicuous by the reddish brown discolouration which is diffuse and patchy. The uredia are on the lower surface appearing as small raised cups with the powdery spores at the mouth. The opening is thickly lined by several rows of incurved thick-walled paraphyses. *Maravalia pterocarpi* Thirum. has been described by Thirumalachar (1949) on this host. But the type specimen when examined was found to be on *Dalbergia* and not *Pterocarpus*. The rust under study is quite different. Since the uredia alone were present the rust is for the present kept in the form genus though the uredia resemble closely those of *Phakopsora*.

Septobasidium sp.

On the spikes of *Piper nigrum* L., Kanjirapalli (T.C. State), 13–11–1955, T. S. R.

The felt-like growth of the fungus covered over a part or the whole length of the spikes. In the initial stages this growth was whitish but soon changed into varying shades of brown. Underneath this growth which was supported by pillar-like formations of hyphal clumps were numerous scale insects. The affected spikes on drying easily crumpled into powder when pressed between the fingers.

Corticium sp.

On twigs and leaves of *Myristica fragrans* Houll., Kanjirapalli (T.C. State), 13–11–1955, T. S. R.

A thread blight of nutmeg was recorded for the first time from this country. Slender white thread-like strands 1–2 mm. in thickness were found to run along the shaded side of the twigs. Branching of the strands occurred here and there and most of the twigs of the affected branch were overrun. Some of the branches of the thread proceeded along the petioles and spread out fan-like on the lower surface of the lamina forming indistinct films. The infected leaves dried up and were suspended from the twigs attached by the hyphal strand. The twigs and sometimes entire branches were affected resulting in their complete drying up. No fructifications were present.

A similar disease has been recorded from Ceylon. The causal fungus was originally described as *Cyphella* by Berkley and Broome but Petch (1925) considers it to be *Marasmius pulchra*. The fungus is reported to have produced small sporophores on the affected leaves. But the fungus under study did not produce any fruit bodies and appeared to be more akin to the thread blight fungus *Corticium* sp. prevalent on tea. However, the identity of the fungus could be definitely decided only when the fruit bodies are formed.

Pellicularia salmonicolor (Berk. & Br.) Dastur

Syn. *Coticium salmonicolor* Berk. & Br.

Dastur, J. F., *Curr. Sci.*, 1946, **15**, 192–93.

Infecting the terminal branches of *Garcinia mangostana* L., Kulasekaram (T.C. State), 6–1–1956, T. S. R.

This fungus has innumerable host plants both wild and cultivated. A small orchard of mangosteens in a rubber estate in S. Travancore exhibited drying of several of the young branches in a number of trees. The cobweb stage and the *necator* stage of the fungus were evident on the affected branches. The infection appears to have originated from the adjacent rubber trees on which the disease was present. The mangosteen has not been recorded as a host for this fungus from India. The parasite is very common in this State. Most of the mango trees in Central and North Travancore are affected by pink disease. It is a common sight to see the drying and dead branches on the mango trees. The same disease is severe on jack trees also. The high humidity of the atmosphere in this region for many months is favourable for the spread of the disease.

Macrophoma macarangæ sp. nov.

Pycnidia immersed in slightly raised thickened tissue, amphigenous, isolated, ostiolate, ostiolar end black, wall of three to four layers of orange coloured cells, sub-globose, 250–280 × 240–280 μ, ostiolar opening lined with hyaline periphyses; conidia pushed out in long, coiled, waxy, spore-horns, obovate, or oblong, smooth, hyaline, 14–19 × 6–7 μ, often surrounded by mucilage.

Pycnidia immersa in textus tenuiter elevatos et densos, amphigena, separata, ostiolata, parte ostioli atra, parietibus constantibus triplici vel quadruplici serie cellularum coloratarum, subglobosa, 250–280 × 240–280 μ, formaine ostiolari vestito paraphysibus hyalinis; conidia extrusa in cornu longum, cereum et tortum sporarum, obovata vel oblonga, semel cellulata, levia, hyalina, 14–19 × 6–7 μ, sæpe muco circumdata.

On living leaves of *Macaranga roxburghii* Wight, Kottayam (T.C. State), 16–12–1955, T. S. R.

Yellowish closely arranged indefinite spots mark the location of the pycnidia. Under the lens, the affected portions appear as mammillate projections tipped with the black ostiolar ends. The spore horn protrudes from the ostiole as a coiled or sometimes sinuous waxy growth. The ostiolar opening is lined with close-set upwardly bent periphyses. The conidia are borne on

fine stalks. Projecting from the base of the pycnidia towards the ostiole are several hyaline tapering long hyphal structures.

Myrothecium roridum Tode ex Fr.

Preston, N. C., *Trans. Brit. Mycol. Soc.*, 1943, **26**, 158.

On leaflets of *Eriodendron anfractuosum* DC., Malankara (T.C. State), 27–10–1955, T. S. R.

Brown water-soaked lesions are formed in the centre or along the margins of the leaflets. The size of the lesion varies considerably. Numerous characteristic concentrically arranged sporodochia are formed hypophyllously, near the margin of the lesion. The affected leaves are shed, the ground beneath the tree being littered with them. The disease is prevalent only during the heavy rains of the monsoons. The sporodochia are scutellate and black in the centre with a whitish fringe. The conidia are oblong, one-celled and subhyaline.

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Thirumalachar, M. J. .. *Bull. Torr. Bot. Club*, 1949, **76**, 339–42.