

AUSTRALIAN FUNGI, NEW OR UNRECORDED.

DECADES III.-IV.

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Of the Fungi here recorded 15 are new species and 14 genera are represented. The Orchids, which are generally comparatively free from fungi, contribute two, one of the genera (*Amerosporium*) being new to Australia. The imported Capeweed, although so common and widespread, is usually particularly clean, but two new species have been found upon it. The Kangaroo Grass has likewise yielded two which are new. It is interesting to find parasitic fungi upon such native parasitic flowering plants as *Cassytha* and *Loranthus*.

The Leaf-curl of the Peach is only too well known in Australia, but the Pear-leaf Blister due to *Exoascus bullacus* is now recorded for the first time, and care should be taken to prevent its spread.

21. AMEROSPORIUM RHODOSPERMUM, n.sp.

On large discoloured pale patches of still green leaves. Perithecia densely gregarious, black, erumpent, ultimately superficial, disciform or sometimes elongated, ruddy brown by transmitted light, membranaceous and composed of polygonal cells, astomatous, at first bald, soon surrounded at the margin and scattered all over with stiff hairs, 120-160 μ diam.; bristles dark brown, paler at apex and blunt, cylindrical, slightly swollen at base, curved inwardly at margin, thick-walled, continuous or 1-septate, 30-35 \times 5-7 μ . Sporules very pale pink, crescent-shaped, acute at both ends or occasionally blunt at one end, continuous, 18-21 \times 4-4 $\frac{1}{2}$ μ .

Killara, Vic.; on living leaves of a flowering specimen of *Diuris pedunculata*, R.Br.; Oct., 1902.

Although this orchid is rather a common one, only a single diseased specimen was found. The lower linear leaves and one of the three upper bract-like leaves were affected. The lower leaves were densely crowded on both surfaces with the black soot-like fungus in patches, while the upper leaf was mainly attacked on the outer surface. The basal leaves ultimately shrivelled up and withered, but the plant otherwise looked as healthy and vigorous as the numerous unaffected specimens growing near.

22. ASCOCHYTA ANTHISTIRIÆ, n.sp.

Perithecia black, erumpent, scattered, elongated, lenticular, depressed, dark brown by transmitted light, membranaceous, with central round pore, $150-175 \times 105-115 \mu$. Sporules numerous, bright olive in mass, pale individually, elliptical, 1-septate, not constricted at septum, rounded at both ends but slightly tapering towards one end, $10-11 \times 4-4\frac{1}{2} \mu$.

Leongatha, Vic.; on dry, discoloured, shrivelled portions of living leaves of *Anthistiria australis*, associated with *Spharella anthistiricæ*, n.sp., of which it is probably the pyrenidial stage; Nov., 1902.

This species differs from *A. graminicola*, Sacc., in the larger perithecia and the elliptical, olivaceous spores.

23. ASCOCHYTA CRYPTOSTEMMÆ, n.sp.

Spots irregular, indefinite, dark-coloured, on upper surface of leaves. Perithecia black, punctiform, erumpent, scattered or loosely gregarious, golden-yellow by transmitted light, depressed-globose, membranaceous, fragile, with apical pore, $140-170 \mu$ diam. Sporules hyaline, cylindrical, rounded at both ends, straight, 1-septate, not constricted at septum, $7-10 \times 2\frac{1}{2}-3 \mu$.

Doncaster, Vic.; on brown withered leaves of *Cryptostemma calendulaceum*, R.Br.; Oct., 1902.

It differs from *A. microspora*, Trail, in the much larger perithecia which are not densely gregarious, and the slightly longer



sporules which are always straight and never curved. This species occurred on leaves with *Septoria perforans*, McAlp., which had evidently caused their withering.

24. ASCOCHYTA HYACINTHI, Tassi.

Killara, Vic.; on languishing leaves of *Agapanthus umbellatus*, L'Hérit.; Oct., 1902.

This species evidently agrees with that described and figured by Tassi (Rev. Myc. p. 169, 1896) on *Hyacinthus orientalis*, in Italy, but the brown perithecia are crowded and very erumpent, not embedded as figured.

25. CERCOSPORA LORANTHI, n.sp.

Tufts minute, black, gregarious, seated upon definite, orbicular, raised dark brown spots, which may be confluent, 1-2 mm. in diam., on both surfaces of leaf. Hyphæ straight or slightly flexuous, simple, dark olivaceous, 1- or few septate, $35-40 \times 4\frac{1}{2}-5 \mu$. Conidia straight or curved, pale olivaceous, rounded at both ends, generally with bulbous or slightly swollen base, 5-8-septate, here and there constricted at septa, variable in length, $60-105 \times 4-4\frac{1}{2} \mu$, average $60-80 \mu$ long.

Dandenong Creek, Vic.; on living leaves of *Loranthus pendulus*, Sieber; Nov., 1902 (C. French, Jr.).

The swollen, often confluent, dark brown, raised spots, like pimples on the leaf, are very striking and are crowded with the dark minute tufts, often seemingly merged into one mass.

26. CORYNEUM ACACLE, n.sp.

Pustules minute, elevating and rupturing epidermis, on greyish centre of dark brown, orbicular, definitely circumscribed spots, with greenish margin, on both surfaces of phyllode, 1-2 mm. diam. Conidia bright olive, cylindrical, rounded at both ends and sometimes slightly tapering, often towards attached end, usually 5-6-septate, not constricted at septum, straight, or slightly flexuous and curved, generally $49-52 \times 5-6 \mu$, but may only reach a length of 35μ , on short, hyaline basidia, $3\frac{1}{2}-4 \mu$ long.

Australian Alps, Vic. (Walter); on phyllodes of *Acacia penninervis*, Sieber. : Werribee, Vic. (Robinson); on phyllodes of *Acacia pycnantha*, Benth.

The characteristic spots with the raised and bursting pustules, the cylindrical septate conidia which may be bent or flexuous, and the very short basidia distinguish this species.

27. CYLINDROSPORIUM EUCALYPTI, n.sp.

Spots definite, grey, generally with distinct raised ruddy brown margin, usually roundish but may be angular or irregular, isolated or confluent, on both surfaces of leaf, ultimately thin, brittle and cracking, very variable in size, from 2-3 mm. to 1 inch in diam. Pustules amphigenous, but more numerous and crowded on upper surface, at first covered by epidermis, then erumpent, globose, dark-coloured. Conidia golden-yellowish in mass, hyaline individually, straight or flexuous, but generally crescent-shaped, acute and tapering at both ends, more gradual at outer end, 3-septate, not constricted at septum, guttulate, $50-56 \times 3\frac{1}{2}-4 \mu$; basidia very short, hyaline, slender, 8-10 μ long.

Dandenong Creek, Vic.; on young green leaves of *Eucalyptus melliodora*, A. Cunn.; Nov., 1902 (C. French, Jr.).

This is a very distinct species, with its large and definite grey spots dotted with the numerous dark pustules, and the conidia very constantly 3-septate. When the leaf is moistened the conidia have a tendency to ooze out in dirty yellow masses.

28. DIMERIUM ORBICULATUM, n.sp.

Spots numerous, orbicular, sooty black, on upper surface of green leaves, sometimes confluent, 2-3 mm. diam. Mycelium of spots crustaceous, forming a pavement of pale olivaceous, closely adherent and appressed, thin-walled septate filaments, varying in breadth but averaging about 7 μ , surmounted by dark brown, flexuous, labyrinthine, thick-coated septate filaments, about the same thickness but often swollen. Conidia lateral on branches of the brown mycelium, similarly coloured, Puccinia-like and lower

cell somewhat tapering towards point of attachment, slightly constricted at septum, $15-17 \times 8-9 \mu$, but varying in size.

Asci clavate, sessile, rounded at free end, 8-spored, $95-105 \times 24-28 \mu$; paraphyses hyaline, slender, branching towards apex, about length of ascus. Sporidia distichous and monostichous towards base, olive, slipper-shaped, 1-septate, unequally celled, upper smaller, rounded at apex, of equal thickness throughout, lower larger, slightly bulging at centre and tapering towards free end, $30-35 \times 10-11 \mu$.

Australian Alps, Vic. (Walter); on living leaves of *Grevillea victoriae*, F.v.M.

D. orbiculare (B. & C.), Ell. & Ev., on leaves of *Ilex*, has orbicular crustaceous patches, but they are up to 1 cm. diam.; the perithecia are much smaller and amphigenous; and the sporidia are considerably broader.

In Saccardo's 'Sylloge Fungorum' (Vol. xvi.) the genus *Dimerosporium* is divided into two subgenera, according as the sporidia are hyaline or coloured. There is a general convenience in thus distinguishing genera, and while *Dimerosporium*, Fekl., will be reserved for those species with colourless sporidia, *Dimerium*, Sacc. & Syd., will include those with coloured sporidia.

Adopting this classification the seven known Australian species will be arranged as follows:—*Dimerosporium ludwigianum*, Sacc.; *D. parvulum*, Cooke; *Dimerium secedens*, Sacc.; *D. synapheæ*, Henn.; *D. tasmanicum*, Mass.; *D. tarrietia*, Cooke & Mass.; *D. orbiculatum*, McAlp.

29. EXOASCUS BULLATUS, Fekl.

Killara, Vic.; on living leaves of Pear-tree; Oct., 1902.

30. GLÆOSPORIUM WALTERI, n.sp.

Pustules gregarious, minute, slightly elevated, becoming black, at first covered by epidermis, finally ruptured, up to 200μ diam., on both surfaces of leaf but mostly on under, discoloured portion with distinct black margin edged with brown. Conidia hyaline, cylindrical, rounded at both ends or somewhat acute, $21-23 \times 4 \mu$; basidia slender, usually shorter than conidia, about $14-17 \mu$ long.

Buffalo Mountains, Vic. (Walter); on living leaves of *Drimys aromatica*, F.v.M.

The diseased portion of the leaf is a light grey on the upper surface and a pale fawn on the under, so that it is distinctly marked off from the ordinary green portion. The conidia are guttulate in the early stages, and there is a tendency to segregation of the protoplasm as if there was spurious septation. On treatment with Schulze's solution they are stained yellowish and sometimes a deep brown, with marked separation of the protoplasmic contents.

This species differs from *G. magnolie*, Passer., in which the conidia are from 8-12 μ long; also from *G. haynaldianum*, Sacc. & Roum., in which they are 12-15 μ long.

I have named this species after Mr. C. Walter, of Melbourne, who found it, and who has contributed a number of other species to the fungus-flora of Australia in the course of his extensive botanical collecting trips.

31. HELMINTHOSPORIUM GRAMINEUM, Rabh.

Killara, Vic.; on leaves and leaf-sheaths of Barley; Sept., 1902.

This fungus has only hitherto been observed in Germany and Sweden. It attacks the lower leaves, causing them to wither and become yellow, although it does not seem to produce great injury otherwise. It does not attack cereals other than Barley.

32. HENDERSONIA GRANDISPORA, n.sp.

Perithecia densely gregarious, immersed, black, dark brown by transmitted light, globose, membranaceous, 120-140 μ diam., forming black expanded indeterminate patches, more particularly on upper surface of leaves. Sporules numerous, smoky-brown, cylindrical, rounded at both ends, straight but generally slightly curved, 3-5-septate, not constricted at septum, with finely granular contents, 50-60 \times 5-6 μ .

Wangaratta, Vic.; on leaves of young sapling of *Eucalyptus* sp.; Sept., 1899.

It differs from *H. eucalypti*, Cooke & Hark., in which the perithecia are collected in orbicular spots, and the 3-septate sporules are only 20 μ long.

33. PHOMA ROMULEÆ, n.sp.

Perithecia minute, black, punctiform, gregarious, erumpent, globose, dark brown by transmitted light, membranaceous, firm, of parenchymatous texture, with distinct mouth, 100-112 μ diam. Sporules hyaline, minute, ellipsoid, $4\frac{1}{2} \times 2-3 \mu$.

Armadale, Vic.; on leaves of *Romulea bulbocodium*, Sebast.; Aug., 1902.

It differs from *P. iridis*, Cooke, in the perithecia being erumpent, and the sporules much shorter.

This fungus seemed to kill the plant, since the leaves were quite withered except for a small green portion sometimes towards the base, and the plants badly affected had generally lost their hold of the soil. This introduced plant is widely spread around Melbourne, but so far only occasional diseased plants have been met with.

34. PHOMA VITTADINÆ, n.sp.

Perithecia minute, black, punctiform, erumpent, slightly gregarious, globose, membranaceous, tough, with apical pore, 100-130 μ diam. Spores hyaline, elliptical to oval, minute, 1-guttulate, stained yellowish-green by Schulze's solution, $4-4\frac{1}{2} \mu$ long; basidia slender, hyaline, about same length as spore.

Malvern, near Melbourne, Vic.; on dead or dying branches of *Vittadinia australis*, Rich.; Sept., 1902.

It differs from *P. herbarum*, West., in the smaller and shorter spores, and in being only 1-guttulate.

35. SEPTORIA BETÆ, West.

Port Fairy, Vic.; on leaves of *Beta vulgaris*, L.; Aug., 1900.

36. SEPTORIA PERFORANS, n.sp.

Spots on upper surface, dull greyish-brown, orbicular, sometimes confluent, slightly raised, definitely circumscribed, ultimately

becoming holes, 5-10 mm. in diam. Perithecia minute, black, punctiform, gregarious, slightly erumpent, globose, membranaceous, of parenchymatous texture, with papillate mouth (24μ), $80-90 \mu$ diam. Sporules generally slightly curved, sometimes straight, hyaline (stained yellowish by Schulze's solution), 3-septate, acute at both ends, slender, average $28-31 \times 2-2\frac{1}{2} \mu$.

Doncaster, Vic.; on living leaves of *Cryptostemma calendulaceum*, R.Br. (Capeweed); Oct., 1902.

This species differs from *S. martinii*, Cooke, found in Victoria on *Bedfordia salicina*, DC. (= *Senecio Bedfordii*, F.v.M.), in the decided greyish-brown spots, and in the 3-septate sporules which are very regularly 28μ long. The Capeweed known also as "Cape Dandelion," is a native of South Africa, and coming from a climate somewhat similar to our own, has spread rapidly and extensively. But hitherto no fungus has been recorded on it, either here or in its native home, and now this one has been found associated with *Ascochyta cryptostemmae*, McAlp. The specific name has been given on account of the spots affected by the fungus often becoming perforated.

37. SEPTORIA THELYMITRE, n.sp.

Spots whitish, surrounded by dark margin, roughly oval, on upper surface of leaf, 2-3 mm. long. Perithecia minute, black, punctiform, erumpent, dark brown by transmitted light, depressed-globose, membranaceous, with minute pore, up to 105μ diam. Sporules hyaline, rod-like, continuous, straight, very occasionally slightly curved, 2-5-guttulate, $14-16 \times 1-2 \mu$.

Ringwood, Vic.; on languishing, partially brown leaves of *Thelymitra aristata*, Lindl.; Oct., 1902 (C. French, Jr.).

The perithecia and sporules generally agree with those of *S. posekensis*, Sacc., which was found in Siberia on the languishing leaves of an undetermined orchid; but the spots are olive-green and on both surfaces, while in *S. orchidearum*, West., the sporules are $18-22 \mu$ long and 6-8-guttulate.

38. SPHÆRELLA ANTHISTIRIÆ, n.sp.

Perithecia minute, black, punctiform, erumpent, gregarious, generally running lengthwise in lines, globose, membranaceous, with apical pore, on both surfaces of withered portion of leaf but mainly on upper, 100-120 μ diam. Asci oblong to oblong-cylindrical, slightly swollen, then narrowing at base, sessile, without paraphyses, 35-45 \times 17-21 μ . Sporidia distichous or conglomerate, hyaline, elongate-elliptical, and tapering slightly towards lower end, 1-septate, not constricted at septum, 14-15 \times 4-4½ μ (stained yellowish-green by Schulze's solution).

Brighton (Sept., 1902), Leongatha, Vic. (Nov., 1902); on living leaves of *Anthistiria australis*, R.Br.

This species differs from *S. graminicola*, Fekl., in which the asci are larger (75 \times 12 μ) and the sporidia are longer (15-20 \times 3½-4½ μ). Also from *S. crus-galli*, E. & K., in which the perithecia are differently arranged; the asci are considerably longer and the sporidia, although about the same size, are constricted at the septum.

39. SPHÆRELLA CASSYTHÆ, n.sp.

Perithecia minute, punctiform, scattered, black, dark olivaceous by transmitted light, erumpent, membranaceous, depressed-globose, 70-90 μ diam. Asci clavate to elongate-clavate, often tapering into a more or less slender stalk, 8-spored, 32-37 \times 9-12 μ . Sporidia biseriate, hyaline, cylindrical, slightly tapering towards one end, 1-septate, not constricted at septum, guttulate, 9 \times 3 μ .

On filiform stems and branches of *Cassytha glabella*, R.Br.

This fungus causes blackening and shrivelling of the parts attacked, and is comparatively rare.

40. UROCYSTIS COLCHICI (Schlecht.), Rabenh.

Near Melbourne, Vic.; on living leaves of *Wurmbea dioica*, F.v.M.; Sept., 1902.

The plant was in flower when the fungus was obtained and it affected the lower leaves badly, while the upper leaves only showed indications of it.

NOTE.—In my previous paper (these Proceedings, 1902, p.377), *Phoma passifloræ* was recorded as a new species on the fruit of *Passiflora edulis*. I find that the name is preoccupied; but *P. passifloræ*, Penz. & Sacc., occurring on the dry flower-stalks of *P. hybrida*, is quite distinct, the sporules only being $7-8 \times 3-3\frac{1}{2} \mu$. Owing to the size of the spores I, therefore, propose the name of *Macrophoma passifloræ* for this species.

In my "Descriptions of New Australian Fungi" (these Proceedings, 1896, p. 105), *Phoma stenospora* was recorded on *Notelaea longifolia*, but being on spots on the leaf, as shown in the drawing, it ought, strictly speaking, to be a *Phyllosticta*, and therefore it may be named *Phyllosticta stenospora*.