

AUSTRALIAN FUNGI, NEW OR UNRECORDED.
DECADES V.-VI.

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The following Fungi are all new species with the exception of three, and they belong to 15 different genera.

Schizotrichum, a new genus of Hyphomycete, has been constituted to include a form found on the flowering stems of a native *Lobelia*. Two Rusts are recorded, one on the Marigold and another on *Stipa*. The former was first observed in 1892, but only one stage (*æcidium*) was met with until 1902, and considering the wide range of the Rusts, it is strange that it has not been discovered elsewhere on such a widely distributed cultivated plant.

41. ASCOCHYTA ARIDA, n.sp.

Spots brown, arid, becoming perforated, elliptical to irregular, with slightly raised margins, often confluent and forming irregular patches, with minute, black, punctiform, aggregated pustules. Perithecia golden-brown by transmitted light; depressed globose, erumpent, membranaceous, with round papillate mouth, average $170\ \mu$ diam. Sporules pale green collectively, oblong, 1-septate, not constricted at septum, rounded at both ends, sometimes slightly narrower at one end, 2-guttulate, $17-19 \times 4-4\frac{1}{2}\ \mu$.

Swan Hill, Victoria; on languid leaves and dried-up dead shoots of *Nicotiana glauca*, Graham; Oct., 1899. Very common. The shoots were completely dried up, with bark peeling off, and the erumpent perithecia were aggregated here and there in irregular groups.

Ascochyta nicotianæ, Pass., found on the leaves of *Nicotiana tabacum* in Italy, has ovoid-oblong, hyaline sporules, slightly constricted at septum; whereas in this species the sporules are of a

pale greenish tint, not constricted at septum, oblong in shape and with a guttule in each cell.

42. *CAMAROSPORIUM OLEARIÆ*, n.sp.

Perithecia minute, black, punctiform, ultimately superficial, scattered, depressed globose, olivaceous, but dark brown from contained spores, membranaceous, with round slightly papillate mouth, $140-160\ \mu$ diam. Sporules numerous, dark brown, fusoid to somewhat oval, 3-4-septate, not constricted at septa, with 1-2 obliquely longitudinal median septa, $14-17 \times 7-8\ \mu$.

Port Fairy, Victoria; on branches of *Olearia axillaris*, F.v.M.; May, 1899.

43. *FUSARIUM GRACILE*, n.sp.

Sporodochia minute, sessile, round to elliptical, gregarious or broadly effused, on pale portion at junction of stem and root, also on root. Conidiophores ruddy in mass, hyaline individually, radiating, septate, not constricted at septa, tapering to a fine point, $120 \times 3\frac{1}{2}\ \mu$. Conidia produced at apex, very abundant, hyaline, crescent-shaped, acute at both ends, 3-5 septate, not constricted at septa, guttulate, average $70 \times 2\frac{1}{2}\ \mu$.

Sandringham, Victoria; on flowering stem of *Lobelia gibbosa*, Labill.; Dec., 1902.

It differs from *F. roseum*, Link, in the slender, graceful conidia, and seems to be quite a characteristic species.

44. *HENDERSONIA LOBELIÆ*, n.sp.

Perithecia black, punctiform, somewhat gregarious or solitary, slightly erumpent, olive by transmitted light, depressed globose to oval, membranaceous, of parenchymatous texture, with apical pore, $170-210\ \mu$ diam. Sporidia clear olivaceous, oblong, rounded at both ends, 3-septate, guttulate at first, generally constricted at median septum and occasionally at other septa as well, $13-17 \times 4\frac{1}{2}-6\ \mu$.

Sandringham, Victoria; on stem and leaves of *Lobelia gibbosa*, Labill.; Dec., 1902.

The spore, even when coloured, may be without septa; then the median septum is formed, next a second septum in one half, and finally the third septum in the other half.

It differs from the common *H. sarmentorum*, West., in the sporules being longer and broader, and olivaceous in colour. It was intermixed with *Pestalozzia citrina*, McAlp.

45. MACROPHOMA BRUNNEA, n.sp.

Perithecia semi-gregarious, dark brown, covered by epidermis, depressed globose, bright yellowish-green by transmitted light; membranaceous, of parenchymatous texture; opening at surface by pore, 200-230 μ . Sporules hyaline, elongated-ellipsoid to fusoid, rounded at both ends, with coarsely granular contents, 21-24 \times 5-7 μ ; basidia hyaline, elongated, variable in length and breadth, average 14 \times 2-3 μ .

Sandringham, Victoria; on stems of *Lobelia gibbosa*, Labill.; Dec., 1902, and Jan., 1903 (C. French, Jr.).

It differs from *M. hueffelii* (B. & C.), Berl. & Vogl., found on the living stems of *Lobelia*, in which the perithecia are globose and at length free, and the oblong sporules 16-17 μ long. The perithecia are brown in colour when closely inspected, and the apical pore may enlarge considerably owing to the disruption of the surrounding tissue.

46. MASSARINULA PHYLLODIORUM, n.sp.

Spots on both surfaces, numerous, slightly raised, more or less orbicular, often confluent, pallid or light brown, with distinct darker margin. Perithecia few, black, at first immersed, then erumpent, globose, subcarbonaceous, with apical pore, up to $\frac{1}{4}$ mm. diam. Asci clavate to saccate, subsessile, 8-spored, 120-140 \times 30-50 μ . Sporidia distichous or conglobate, colourless, lanceolate, 1-septate and slightly constricted at septum, straight or slightly curved, 54-64 \times 13-16 μ . Paraphyses very copious, agglutinated, apparently filiform, broken up into small segments.

Mordialloc, Victoria; on phyllodes of *Acacia longifolia*, Willd.; Sept., 1901 (C. French, Jr.).

The species of this genus are mostly found on bark, but occasionally on leaves. The large and beautiful sporidia are very characteristic.

47. *PESTALLOZZIA CITRINA*, n.sp.

Pustules punctiform, black, convex, covered by epidermis, finally naked, globose or elongated, scattered, $\frac{1}{3}$ - $\frac{1}{4}$ mm. Conidia fusoid, straight or sometimes curved, 3-4- and occasionally 5-septate, slightly constricted at septa, two or three (or four) median cells lemon-yellow, terminal cells hyaline, conoid, and apical one surmounted by one, two or three diverging slender setæ, straight or curved, reaching a length of $21\ \mu$, and sometimes one at right angles to the other, $24-28 \times 7-8\frac{1}{2}\ \mu$; basidia slender, hyaline, up to $28 \times 2\ \mu$.

Sandringham, Victoria; on stem of *Lobelia gibbosa*, Labill.; Dec., 1902 (C. French, Jr.).

In *P. funerea*, Desm., which varies considerably on different hosts, the conidia are dark brown to dark olive, and the basidia are short.

48. *PHOMA LOBELIÆ*, B. & Br.

Perithecia minute, black, semi-gregarious, at first covered by epidermis then erumpent, lenticular, yellowish-green by transmitted light, membranaceous, fragile, with large papillate mouth, $120-140 \times 70-80\ \mu$; mouth $28\ \mu$ diam., mycelium giving rise to perithecia composed of pale olivaceous, elongated, septate hyphæ $6-7\ \mu$ broad. Sporules hyaline, elliptical, biguttulate, $3\frac{1}{2}-4\frac{1}{2} \times 1\frac{1}{2}-2\ \mu$.

Sandringham, Victoria; on stems of flowering *Lobelia gibbosa*, Labill.; Dec., 1902 (C. French, Jr.).

This species was first found on *Lobelia nicotianæfolia*, Heyne, in Ceylon. The original description is very brief, but the sporules agree in both the Ceylon and Victorian specimens.

49. *PHYLLOSTICTA CORREÆ*, n.sp.

Epiphyllous. Spots marginal, elongated, brown, with distinct dark-coloured border. Perithecia black, slightly erumpent, scattered, dark brown by transmitted light, depressed globose,

membranaceous, with papillate pore, 180-210 μ diam. Sporules numerous, hyaline, guttulate, cylindrical or tapering towards attached end; $7.9 \times 2.3 \mu$; basidia arising from olivaceous base, hyaline, filiform, 9-10 μ long.

Sandringham, Victoria; on languishing leaves of *Correa speciosa*, Ait.; Jan., 1903.

50. *PHYLLOSTICTA PASSIFLORÆ*, n.sp.

Perithecia on large fawn irregular patches which ultimately become perforated; black, punctiform, scattered or subgregarious, immersed, depressed globose, membranaceous, with papillate apical pore, 200-220 μ diam. Sporules numerous, greenish in mass, hyaline individually, minute, bacilliform, 3 μ long.

Malvern, Victoria; on leaves of *Passiflora edulis*, Sims; March, 1903.

The fawn patches are very conspicuous, and the immersed, black, dot-like perithecia are easily seen upon the pale background. It differs from *Phoma tersa*, Sacc., found on dry fruits, in which the sporules are $6 \times 2\frac{1}{2} \mu$; and from *Phoma passifloræ*, Penz. & Sacc., on dry flower-stalks, in which the sporules are $7.8 \times 3.3\frac{1}{2} \mu$.

51. *PROSTHEMIUM KENTIÆ*, n.sp.

Spots numerous, dark brown to black, on both surfaces of leaf, orbicular to oblong, definitely circumscribed, up to $\frac{1}{2}$ cm. diam. Perithecia scattered or several together, minute, olivaceous, globose, immersed, membranaceous, ultimately raising and rupturing epidermis, 100-140 μ diam. Sporules pale olivaceous in mass, hyaline individually, 3-5-radiate and springing from short basal stalk, usually elongated-obclavate, septate (4-5), variable in length, $25.45 \times 3 \mu$.

Brighton, Victoria; on leaves of *Kentia Forsteriana*, F.v.M.; Feb., 1903.

Only four species of this genus have been recorded—three in Europe and one in America—and these have all coloured spores. In this case the stellately-arranged sporules are hyaline individually, but it is still retained in that genus.

52. PUCCINIA CALENDULÆ, n.sp.

i. Aecidia orange-yellow, in clusters, crowded, sometimes circinate, 320-360 μ diam.; pseudoperidia with margin torn and reflexed; peridial cells quadrate or polygonal, striated at margin, 21-24 μ long. Aecidiospores very irregular, subglobose to polygonal, very finely echinulate, pale orange, 14-17 \times 11-12 μ .

iii. Teleutosori intermixed with aecidia, black, erumpent, soon naked, girt by the ruptured epidermis, circular to elliptical, compact, often confluent. Teleutospores yellowish-brown, clavate, constricted at septum, thickened at apex, rounded or acute, epispore smooth, 36-52 \times 19-23 μ ; upper cell darker in colour and broader than lower, 21-31 μ long, and sometimes thickened to a depth of 12 μ ; lower cell slightly or not at all tapering towards pedicel, and averaging same length as upper; pedicel hyaline, persistent, 28-37 \times 7-8 μ , may attain a breadth of 10 μ at junction with spore.

x. Mesospores not uncommon, similarly coloured to teleutospores, elliptical to pear-shaped, thickened at apex, 30-42 \times 21-23 μ .

Armadale, Victoria; 1892, 1902 and 1903 (Robinson) on upper and under surface of leaves and all green parts, including fruits, of *Calendula officinalis*, L.; Killara, Oct., 1902.

Aecidium-stage all the year round, but less common in mid-summer. Teleuto-stage from March to June. The aecidium-stage was the only one found at first, and was described in the Agricultural Gazette of New South Wales, 1896, p. 152. Then in March, 1902, the teleuto-stage was found by Mr. G. H. Robinson, and was very plentiful this season. It causes swelling, distortion, and discoloration of the flower-stems and leaves, and the bright orange colour of the aecidia on the leaves readily attracts attention from its harmonising with the flower-head.

53. PUCCINIA FLAVESCENS, n.sp.

ii. Uredosori on upper surface of leaf, minute, linear, often confluent, soon naked, pulverulent, rusty brown, arranged along furrows of leaf. Uredospores globose to shortly elliptical, finely

echinulate, golden-brown, with at least 5 germ-pores irregularly distributed, $21-24\ \mu$ diam., or $25-28 \times 21-24\ \mu$.

iii. Teleutosori minute, elliptical, numerous, black, often confluent lengthwise, soon naked. Teleutospores intermixed with uredospores, dark chestnut-brown, oblong, constricted at septum, with rounded and thickened apex, smooth, $33-48 \times 18-24\ \mu$; upper cell generally hemispherical, and about equal in length to lower; lower cell generally rounded at base, sometimes narrow and elongated like upper portion of pedicel; pedicel persistent, tinted, elongated, up to $72\ \mu$ long.

Hampton, Victoria; on *Stipa flavescens*, Labill.; Jan., 1903.

The pulverulent uredosori, and the numerous minute, black teleutosori are characteristic of this species. The uredospores form a rusty powder over entire upper surface of leaf. The pedicel of the teleutospore is sometimes lateral and the septum erect as in *Diorchidium*. It differs from *P. stipæ*, Arthur, in the uredosori being soon naked and decidedly ruddy-brown, not yellowish, while the uredospores are broader.

In specimens of *P. stipæ*, (Op.) Hora, taken from Syd. Ured. Exs. No. 28, on *Stipa capillata*, L., the teleutospores are decidedly different. The apex is generally bluntly pointed, and the size $48-54 \times 18-21\ \mu$. In specimens of *P. stipæ*, Arth., from Arthur and Holway's Ured. Exs. No. 27, on *Stipa spartea*, Trin., the teleutospores are more pointed at the apex and rather thicker.

I have submitted specimens to Prof. J. C. Arthur, and he remarks that it is clearly distinct from his species, although there is very much similarity between the two, as one might expect, from the hosts being essentially alike.

54. RHABDOSPORA LOBELIÆ, n.sp.

Perithecia black, punctiform, gregarious, erumpent, on greyish epidermis, globose, dark brown by transmitted light; membranaceous, rather firm, with papillate mouth, $160-200\ \mu$ diam. Sporules numerous, hyaline, filiform, straight or slightly curved, rounded at both ends, or rather acute, 1- or more guttulate, with granular

contents, $24-31 \times 3-3\frac{1}{2} \mu$, average $28 \times 3 \mu$; basidia very slender, curved, 7-10 μ long.

Sandringham, Victoria; on stems of *Lobelia gibbosa*, Labill.; Jan., 1903.

It differs from *Septoria lobeliae*, Peck, in the absence of spots, and the sporules there are 17-25 μ long. Also from *R. campanulae*, Fautr., in which the sporules are $40-60 \times 2 \mu$.

55. SEPTORIA AUSTRALIÆ, n.sp.

Spots on both surfaces, orbicular to irregular, at first ruddy-brown and indefinite, then definite with milk-white centre and dark brown margin. Perithecia black, crowded, punctiform, slightly erumpent, lenticular, membranaceous, with round papillate apical pore, $80-100 \times 120-140 \mu$. Sporules hyaline, straight, curved or flexuous, very slender, generally 3-septate, $30-45 \times 0.75-1 \mu$, average 35-40 μ in length.

Kiewa Valley, Victoria; on *Viola betonicifolia*, Sm.; Nov., 1902 (Robinson).

This is a very distinct species, and differs from the others found on *Viola* as follows:—In *S. violæ*, West., the perithecia are epiphyllous, and the spores are $20-30 \times 1 \mu$. In *S. violicola*, Sacc., the perithecia are also epiphyllous, and the spores are comparatively stout, being $24 \times 7-8 \mu$. In *S. hyalina*, Ell. & Ev., the white spots have a purple margin, and the non-septate spores are $20-40 \times 1 \mu$.

56. SEPTORIA CONFLUENS, n.sp.

Spots greyish-white to grey, and occupying large portions of leaf, or without distinct spots. Perithecia black, crowded, and often confluent, globose to lenticular, dark brown by transmitted light, membranaceous, fragile, with apical pore, 140-175 μ . Sporules hyaline, straight, sinuous or curved, 2-3 septate, generally 2-septate, not constricted at septa, rounded at both ends, or somewhat pointed at one or both ends, with granular contents, average $52-56 \times 3\frac{1}{2}-4 \mu$, but may vary in length from 42 to 63 μ .

Sandringham, Victoria; on fading and faded leaves of *Mesembryanthemum aequilaterale*, Haw.; Oct., 1902.

57. SEPTORIA LAGENOPHORÆ, n.sp.

Spots more or less orbicular, on both surfaces of leaf, dirty fawn to dirty brown, distinct, and from 3.8 mm. in diam. Perithecia minute, innate, subgregarious, black, olivaceous by transmitted light, depressed globose, delicately membranaceous, with distinct round papillate mouth, 80-100 μ diam. Sporules hyaline, filiform, straight, curved or flexuous, apparently 1-2 septate, very slender, 19-24 μ long, average 21 μ .

Kiewa Valley, Victoria; on living leaves of *Lagenophora billardieri*, Cass.; Nov., 1902 (Robinson).

It differs from *S. sonchi*, Sacc., in the distinct spots, and the slightly smaller perithecia, as well as in the sporules being much more slender. The apparent clear septa may be guttules which occupy the entire breadth of the narrow sporules. *Puccinia lagenophoræ*, Cooke, both in its aecidial and teleuto-form may occur on both surfaces of the spot, which, however, is primarily caused by the *Septoria*.

58. SEPTORIA VARIA, n.sp.

Spots dry, brown or grey, rather indefinite, sometimes defined by a black line. Perithecia minute, black, immersed, membranaceous, globose to lenticular, with protruding papillate mouth, 80-130 μ . Sporules hyaline, filiform, straight or curved, at first continuous, then at maturity distinctly 3-septate, issuing in tendrils when moist, 35-45 \times 1-1½ μ .

Myrniong, Victoria; on leaves of *Plantago varia*, R.Br., Aug., 1900; Jackson Creek, Oct., 1900 (C. French, Jr.); Kiewa Valley, Nov., 1902 (Robinson).

There are various species of this genus found on *Plantago*, but they differ from the above. *S. heterochroa*, Desm., has spores 25 μ long. *S. inconspicua*, B.C., has spores 55 \times 2½ μ . *S. plantaginis*, Sacc., has filiform-clavate spores, and those of *S. plantaginea*, Pass., are pluri-septate and 55 \times 2½ μ . In *S. vanhoeffenii*, Henn., the spores are only 15-21 \times 2-2½ μ .

SCHIZOTRICHUM, n.g.

Sporodochia globose or subglobose, erumpent, ultimately superficial, black; setæ septate, thick-walled, erect, straight or slightly curved, few or numerous. Conidiophores obsolete or represented by a minute colourless base. Conidia hyaline, filiform, straight or curved, 3- or more septate.

This genus has a dark-coloured sporodochium, but the conidia are hyaline, hence it belongs to the Series *Tuberculariæ mucedineæ*, Sacc. Further, on account of the septate spores, it will occupy a place beside *Leptotrichum*, Corda, in which the conidia are only 1-septate and the setæ continuous.

59. SCHIZOTRICHUM LOBELIÆ, n.sp.

Sporodochia on sooty elongated patches, densely crowded, globose or discoid, erumpent, finally superficial, black, with greyish bloom due to conidia, 130-160 μ diam., composed of compact dark olivaceous, closely septate and copiously branched hyphæ 7-9 μ broad; with similarly coloured, projecting, thick-walled setæ, simple, septate, not constricted at septa, with usually rounded and almost colourless apex, 70-95 \times 4½-5 μ . Conidiophores obsolete. Conidia hyaline, filiform, straight or curved, 3-6-septate, not constricted at septa, guttulate, very variable in length, average 28-35 \times 1-2 μ , but may reach a length of 50-60 μ .

Sandringham, Victoria; on flowering and fruiting stems as well as leaves of *Lobelia gibbosa*, Labill.; Dec., 1902; Jan., 1903.

The black elongated patches are very conspicuous and often very numerous. The sooty appearance is due to a perfect network of dense olivaceous hyphæ which connect the various sporodochia. The conidia arise direct from the olive-coloured cells of the sporodochium, or there may be a minute, basal, hyaline cell from which the conidia are detached. The radiating setæ may be few or numerous, sometimes none or apparently covering the entire sporodochium, and very occasionally the apex gives rise to a colourless filament, resembling a conidium originating from the basal cells.

60. SEYNESIA BANKSIÆ, Henn.

Spots epiphyllous, brownish, roundish to indefinite, often confluent, particularly along midrib. Perithecia gregarious, scutiform, radiate-cellular, black, with central irregular pore, 160-220 μ diam. Asci ovoid to clavate or cylindric-clavate, rounded at apex, ending abruptly at base or with very short pedicel, 8-spored, variable in size, 40-65 \times 16-25 μ . Sporidia distichous or conglobate, subellipsoid to ovoid, brown, 1-septate, constricted at septum, upper cell stouter, 15-19 \times 7-9 μ . Paraphyses crowded, filiform, hyaline, much branched.

Dimboola Desert, Vic.; on leaves of *Banksia ornata*, F.v.M., Aug., 1896 (Reader): Gosford, N.S.W.; on leaves of *Banksia* sp., April, 1902 (Pritzel): Eumundi, Q., May, 1902 (Pritzel).

This species had just been described and named as above when I received 'Hedwigia' (xlii., Part 2) for March, 1903, in which Prof. P. Hennings had described this one along with other Australian Fungi. The descriptions are substantially the same, only the paraphyses were overlooked by Prof. Hennings.



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