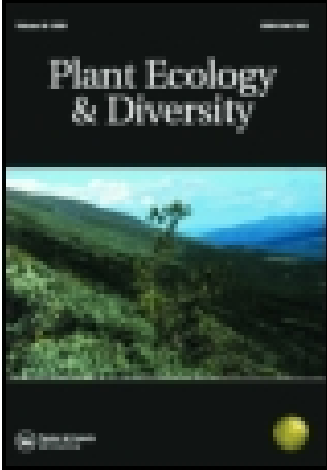


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I. On the Genus *Lophiostoma* of British Fungi

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9th April 1868.—Professor BALFOUR in the Chair.

The following Gentleman was duly elected a Resident Fellow—

GEORGE W. DAVIDSON, M.D., Ph.D.

The following Donations to the Library were announced:—

Journal of the Linnean Society (Botany), Nos. 42–44.—From the Society.

Transactions of the Pharmaceutical Society for March 1868.—From the Society.

Proceedings of the Royal Physical Society, Edinburgh, Session 1864–65.—From the Society.

Proceedings of the Royal Society of Edinburgh, Session 1866–67.—From the Society.

Journal of the Quekett Microscopical Club, Nos. 1 and 2.—From the Club.

Bulletin de l'Académie Royale des Sciences, des Lettres, et des Beaux Arts de Belgique, No. 12, 1867, No. 1, 1868.—From the Academy.

Zoologiskh Botaniske Observationer fra Hvaløerne, af Robert Collett, Christiania, 1866.—From the Author.

Beretning om en botanisk Reise i Omegnen af Fæmundsoen og i Frysil, af H. L. Sorensen, Christiania, 1867.—From the Author.

Report on the Vegetation of the Andaman Islands, by Mr S. Kurz, Curator of the Herbarium of the Botanic Garden, Calcutta.—From Dr Thomas Anderson.

The following Communications were read:—

I. *On the Genus Lophiostoma of British Fungi.* By
M. C. COOKE, Esq. (Plate VI.)

The revision of our lists of British Fungi, especially of the more minute forms for which microscopical examination is essential, is a daily increasing want. Unfortunately those who are most capable of performing this task are otherwise fully employed, and the study is one which, from its unpopular character, attracts but a few new investigators. In the hope that a small contribution towards this

object would prove acceptable I am induced to present to this Society a monograph of one group of the Sphæriaceæ, which I think is entitled to the rank of a genus, and as such to be separated from that of *Sphæria*, with which it has hitherto been generally associated.

The illustrious Fries, in his "Summa Vegetabilium Scandinaviæ," recognised as a sub-group of the series "Erumpentes" an association of species, under the name of *Lophiostomæ*, almost identical with the tribe *Platystomæ* of his "Systema Mycologicum" (vol. ii. p. 467), of which the *Sphæria macrostoma* of Todè was the type. This, the *Sphæriæ erumpentes Lophiostomæ* of Berkeley's Outlines, De Notaris, in his "Schema di classificazione degli Sferiacei Italici," accepts as the foundation of the Genus "*Lophiostoma*;" a genus which has been very generally accepted, although many others of the genera there proposed have not been adopted.

The characters of this genus, as given by De Notaris, are thus briefly enumerated in the Appendix to the second edition of my "British Fungi."

LOPHIOSTOMA.—Perithecia carbonaceous, erumpent, Ostiolum large, compressed. Sporidia two- or many-celled, coloured or hyaline.

It may be objected, as it has been heretofore, that in some of the species included in this genus, the *ostiolum* is *occasionally* not compressed, and to all appearances is the same as in the section *Pertusæ*; but the same objection would apply to placing them in Fries' section *Platystomæ*; or, if classed with the *Pertusæ*, it might fairly be urged against them that such species as *S. excipuliformis*, for instance, are, in the normal state of their perithecia, entirely different from the rest of the *Pertusæ*. Notwithstanding the remark under this species in the British Flora—where it is the only species of the section *Platystomæ*—that "in this, as in other species, the true form is frequently accompanied by individuals in other respects altogether the same, but with a merely obtuse ostiolum, having completely the appearance of some species of the division *Pertusæ*." This objection, if valid, against the establishment of a separate genus, under the name of *Lophiostoma*, would be equally valid against a sub-genus, of which *S. excipuliformis* and

S. macrostoma are the types. The question of the generic or sub-generic value of the ostiolum being left open.

Recently, some mycologists have thought fit to propose most extensive alterations in the classification of the *Sphaeriaceae*, based almost entirely on the fructification. It is not clear, however, that such a classification will be generally accepted, or that its basis is sufficiently sound for its permanent maintenance, if accepted. Yet, there are undoubtedly groups of species heretofore included in the large and widely constituted genus *Sphaeria*, which might with advantage be separated, and would in themselves constitute very natural and well characterised genera. Of such groups it is assumed that the one selected as the subject of the present communication may be accepted as an example.

If the fruit of the twelve species now associated be examined, no charge can be maintained of a similarity in the form of the sporidia being the bond of union, for this partakes of three separate types, or two at least—the coloured and hyaline; the latter, however, seem to indicate two groups, of which *L. angustilabra* and *L. sex-nucleata* form one, and *L. Jerdoni*, *caulium*, *arundinis*, *semilibera*, and *excipuliiformis* the other. The outer investing membrane of the sporidia in *L. viridaria* is less developed—except at the extremities of the sporidia—in *L. angustilabra* and *L. bicuspidata*, and exhibits itself only in the small hyaline tips in *L. macrostoma*.

In pursuing the investigation of this group, so far as British species are concerned, much valuable aid has been afforded by Dr E. Capron of Shere, through whose perseverance all the species now described for the first time have been obtained.

1. *LOPHIOSTOMA MACROSTOMA*, Fr. De Not. Schema di Class. p. 45.

Sphaeria macrostoma, Todè, Fungi Meckl. f. 76, 77.

Fr. Sys. Myc. vol. ii. p. 469. Scler. Succ. No. 345.

Berk. and Br. Ann. Nat. Hist. (No. 881).

Desmaz. Pl. Crypt. No. 772.

Currey, Linn. Trans. xxii. p. 321, pl. lviii. fig. 65?

Berk. Outl. Fung. pl. 397.

Fuckel Fung. Rhen. No. 923.

Perithecia scattered, at first immersed, at length emergent, black. Ostiolum compressed, labiate. Sporidia uniseriate, yellow,

then brown, 7-septate, the last joint at each extremity small and colourless ($\cdot 0014$ in.) $\cdot 035$ m. m. long.

On bark of Sycamore. (Dr Capron.) On Holly twigs (C. E. Broome, Esq.).

Mr Currey describes the fruit of *S. macrostoma* thus:—"Sporidia biseriata (? sometimes uniseriate) yellow at first, eventually brown, 5-septate, rarely with six or more septa, frequently with longitudinal divisions rendering the sporidia multicellular; $\cdot 0010$ to $\cdot 0012$ in. long." This does not agree with my specimens, or any which I have examined, but approaches more closely to my *L. bicuspidata*. The sporidia figured by Mr Currey (fig. 65) appear to belong to the present species.

Desmazieres' and Fuckel's published specimens accord with my figure and description. (Pl. VI. fig. 1, and sporidia.)

2. LOPHIOSTOMA BICUSPIDATA, n. s.

Sphæria macrostoma. Currey, Linn. Trans. xxii. p. 321.
pl. lviii. f. 64?

Perithecia scattered, black, immersed, elevating and pushing through the matrix with their narrow elongated ostiola. Asci clavate. Sporidia biseriata, 5-septate, with occasional transverse septa, constricted, brown, each extremity at first furnished with a hyaline beak bent at both ends in the same direction, so as to give a curved appearance to the sporidia; $\cdot 0228$ m. m. long, ($\cdot 0009$ in.)

On decorticated twigs. Shere, Surrey, Oct. 1866. (Dr E. Capron.) (Pl. VI. fig. 4, with sporidia.)

Var. β . Sporidia larger ($\cdot 0012$ in.) $\cdot 03$ m. m. long, with no transverse septa; otherwise identical.

On dead *Clematis vitalba*. Shere, April 1867. (Dr Capron.)

This species is very distinct from *Sphæria macrostoma*, Todè. It is possible that Mr Currey's fig. 64 may belong to it. Externally there is considerable resemblance, except that the perithecia are smaller.

3. LOPHIOSTOMA VIRIDARIA, n. s.

Perithecia scattered over conspicuous green spots an inch or more in length, semi-immersed, black. Ostiolum linear. Asci cylindrical. Sporidia uniseriate, tri-septate, attenuated towards each extremity, constricted at the septa, brown, with a large nucleus in each cell. When free the sporidia exhibit a distinct outer transparent membrane which invests them. Length $\cdot 035$ m. m. ($\cdot 0014$ in.)

On decorticated twigs of Maple. Shere, Surrey, Jan. 1866. (Dr E. Capron.)

The conspicuous green patches on which the perithecia are usually found resemble those caused by the mycelium of *Helotium*

æruiginosum, indeed, it is not improbable that the latter originates the patches upon which the *Sphaeria* locates itself. Hitherto the green patches and the perithecia have always been found associated. The perithecia are larger and more prominent than in *Lophiostoma bicuspidata*, and both are very distinct from *S. macrostoma*, Todè, in their fructification, although somewhat resembling small forms of it in external appearance. The fruit much resembles that of some species of *Massaria*. (Pl. VI. fig. 2, with sporidia).

4. *LOPHIOSTOMA NUCULA*, Fr. De Notaris, Schema di Class. p. 46.

Sphaeria nucula, Fr. Syst. Myc. vol. ii. p. 466. Scler. Suec. No. 230.

Berk. Eng. Fl. vol. v. p. 2, p. 266.

Fuckel Fungi Rhen. No. 929.

Berk. Outl. Fung. p. 396.

Sub-gregarious, black. Perithecia minute, innate, superficial, ovate, even at first papillary, then pierced. Sporidia uniseriate ellipsoid, brown, 7-septate, constricted at the centre ($\cdot 001$ in.), $\cdot 025$ m. m. long.

“The ostiolum is sometimes of exactly the same nature as in the *Platystoma*.” (*Berkeley*.)

On Oak Bark.

The figures of the fruit, and the description and measurements, are taken from specimens published by Fuckel.

It is uncertain whether De Notaris is quite correct in placing this species in his Genus *Lophiostoma*. The examination of a good series of specimens is necessary, and this I have not at present secured. The species, therefore, is inserted doubtfully, and upon the authority of Professor de Notaris. (Pl. VI. fig. 7, with free sporidia.)

5. *LOPHIOSTOMA FIBRITECTA*, Berk. De Notaris, Schema di Class. p. 46.

Sphaeria fibricta. Berk. in Hook. Journ., 1853, p. 43.

Berk. and Br. Ann. Nat. Hist. (No. 777).

Berk. Outl. Fung. p. 397.

Scattered, minute, black, often slightly elongated, depressed. Ostiolum sometimes quite obsolete, but frequently present, and varying from punctiform to linear. Asci clavate, varying greatly in length, paraphyses slender. Sporidia curved, sub-fusiform, yellow-brown, quinque-septate (about $\frac{1}{6} \frac{1}{5} \frac{1}{6}$ in.), $\cdot 04$ m. m. long.

“The perithecia are rather larger than those of the other fungi commonly present in similar situations. The contents are white. Nothing can be more variable than the ostiola of this species. Even in extreme cases it is entitled only to a place amongst the

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Platystomæ from affinity rather than from well defined characters." (*Berkeley*).

On bleached larch planks. King's Cliffe, Dec. 1851.

6. LOPHIOSTOMA ANGUSTILABRA, B. and Br.

Sphæria angustilabra, Berk. and Br. Ann. Nat Hist. (No. 881),
t. xi. f. 27.

Berk. Outl. Fung. p. 397.

Perithecia half-immersed, rugulose, somewhat elongated. Ostiolum compressed, narrow. Asci clavate. Sporidia biseriate, (.0015–0016 in.) .04–043 m. m. long, fusiform, curved, uniseptate, constricted at the septum, each articulation containing from two to three nuclei, and terminating in a hyaline point.

"Differing from *S. excipuliformis* in the structure of the spores, which are possibly at length multiseptate; but if so, they are at first composed of two very elongated cones opposed to each other at their bases, and strongly constricted at the commissure." (*Berk. and Br.*)

On gorse. Leicestershire (Rev. A. Bloxam). Common, at Shere. (Dr E. Capron.) (Pl. VI. fig. 3, with free sporidia.)

7. LOPHIOSTOMA SEX-NUCLEATA, n. s.

Scattered. Perithecia elongated, black, slightly rugose; at first immersed, then emergent. Ostiolum compressed. Sporidia biseriate, fusiform, hyaline, slightly curved, five-septate, constricted at the centre, and but little at the other septa, each articulation containing a single nucleus (.0014 in.) .035 m. m. long.

On nettle stems. March 1868. (Dr E. Capron.) Shere, near Guildford.

This can hardly be considered as a form of *S. angustilabra*, since that species, even when the septa can be discerned still remains quadri-nucleate. The length is slightly less, and the hyaline membrane absent. It appears to succeed *Sphæria coniformis* on old nettle stems, and has been overlooked from its casual resemblance to the remains of the dispersing perithecia of *S. coniformis*. (Pl. VI. fig. 8, with sporidia.)

8. LOPHIOSTOMA EXCIPULIFORMIS, Fr. De Notaris, Schema di
Class. p. 45.

Sphæria excipuliformis, Fr. Obs. t. 4, f. 5.

Fr. Scler. Succ. No. 88.

Fr. Syst. Myc. vol. ii. p. 469.

Berkeley Eng. Fl. vol. v. pt. ii. p. 266.

Berk. Outl. Fung. p. 397.

Berk. and Br. Ann. Nat. Hist. (880.)

Scattered. Perithecia emergent, ovate, black, rugulose; lips of the ostiolum longer than the short neck. Sporidia uniseriate, fusiform, curved, with about six septa ($\cdot 0012$ in.) $\cdot 03$ m. m. long; commissures not constricted.

On bark, dead wood, and furze. King's Cliffe, &c. (Rev. M. J. Berkeley.)

The Rev. M. J. Berkeley says that the typical form published by Fries in *Scleromyces Suecia* has sporidia of precisely the same shape, but twice as long, and that he finds them sometimes $\cdot 0028$ in. long. "It is distinguished from the other wide-mouthed species by its short cylindric neck." (Pl. VI. fig. 10, with free sporidia.)

9. *LOPHIOSTOMA JERDONI*, B. & Br.

Sphæria Jerdoni, Berk. & Br. An. Nat. Hist. (No. 975),
t. xvii. f. 28.

Perithecia scattered or slightly crowded, sub-globose, with narrow linear astiola. Asci clavate. Sporidia biseriate ($\cdot 0012$ – $\cdot 00125$ in.) $\cdot 03$ to $\cdot 033$ m. m. long, strongly constricted in the centre, as also each of the two bi-tri-nucleate joints.

On *Rubus idæus* (Mossburnford). A. Jerdon, Esq., on Elm (?) East Bergholt (perithecia more scattered). Rev. C. Badham.

From the figures and description of the fruit of this *Sphæria* it would appear to approximate very closely to *Lophiostoma caulium*, except in the constrictions at the septa, and the colour of the sporidia. (Pl. VI. fig. 5, with free sporidia.)

10. *LOPHIOSTOMA CAULIUM*, De Not. Sphæriacei italici (No. 70),
Micromy. Ital. viii. cum icone.

Lophiostoma herbarum, Fr. V. A. H. 1818, p. 114.

Sphæria caulium, Fr. Sys. Myc. vol. ii. p. 510. Scler. Suec.
No. 465.

Desm. Ann. and Sc. Nat. xv. t. 14, f. 2, a.

Berk. and Br. Ann. Nat. Hist. No. 982.

Fuekel Fungi Rhen. No. 927.

Perithecia immersed, globoso-elliptic, black. Ostiolum naked, elliptic or linear. Asci clavate. Sporidia crowded, or bisenate fusiform, attenuated, straight or curved, 7-septate, with a greenish tint ($\cdot 0015$ in.) $\cdot 04$ m. m. long.

On dead stems of *Epilobium hirsutum*, &c.

"Sporidia fusioidea, uno latere convexiore, sublunulata, 4–6 locularia, ad polos obtusiuscula loculis mediis sub-inde non-nihil tumescentibus, pallide olivacea, diaphana, 1·100 millim long vix excedentia." (*De Notaris.*) (Pl. VI. fig. 6, with free sporidia.)

11. LOPHIOSTOMA ARUNDINIS, De Not. Schema di Class. p. 46.

Sphaeria arundinis, Fr. Sys. Myc. vol. ii. p. 510.

Berk. and Br. Ann. Nat. Hist. (No. 639.)

Kunze. Exs. No. 55. Currey, Linn. Trans. xxii. p. 330,
pl. lix. f. 124.

Rabh. Herb. Myc. ii. No. 641.

Berk. Outl. Fung. p. 397.

Fuckel Fungi Rhen. No. 926.

Sporidia biseriate, yellowish, 3-5 septate, slightly curved, pointed at each extremity ($\cdot 0010$ - $\cdot 8016$ in.) $\cdot 03$ - $\cdot 04$ m. m. long.

"The spores are at first uniseptate, and the contents of the two portions are then divided into two or three endochromes, in which respect there is an essential difference between this species and all forms of *Sphaeria culmifraga*." (Berkeley.)

"Sporidia fusioidea 4-6 locularia, sæpe curvula fuliginea." (De Notaris). (Pl. VI. fig. 9, with free sporidia.)

12. LOPHIOSTOMA SEMILIBERA, De Not. Schema di Class. p. 46.

Sphaeria semilibera, Desm. Pl. Crypt. No. 1787.

Ann. Sc. Nat. ser. iii. vol. vi. p. 78, 1846.

Berk. and Br. Ann. Nat. Hist. (No. 641).

Berk. Outl. Fung. p. 400.

Fuckel Fungi Rhen. No. 1705.

Scattered. Perithecia minute, ovate-elliptical, semi-immersed, black, shining. Ostiolum compressed, cristate. Asci clavate. Sporidia fusiform, straight or curved, acute at each extremity, quinque-septate $\cdot 033$ - $\cdot 03$ m. m. long.

On the culms of grasses.

"Sporidia elongata fusioidea 4-locularia, cum Leptosphaeriis fere confluit." (De Notaris.)

II. On the British Species of *Delphinium*. By W. R.

M'NAB, M.D.

In the last edition (6th) of Professor Babington's "Manual of British Botany," two species of *Delphinium* are described. One of them is from Jersey, the other from the south of England, and is therefore the only proper British species. While examining the *Delphiniums* in my private herbarium, and consulting authorities, some confusion regarding the British species was found to exist. Through the kindness of Professor Balfour, a large series of British and European specimens were sent to me for examination; and I now



Lophiostoma.

Mould & Tod. Lith. Edinr.