

This article was downloaded by: [University of Calgary]
On: 01 February 2015, At: 08:01
Publisher: Taylor & Francis
Informa Ltd Registered in England and Wales Registered Number:
1072954 Registered office: Mortimer House, 37-41 Mortimer Street,
London W1T 3JH, UK



Transactions of the Botanical Society of Edinburgh

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/tped18>

XX. On the Genera Spirulina and Coleochæte

John Ralfs M.R.C.S.

Published online: 01 Dec 2010.

To cite this article: John Ralfs M.R.C.S. (1846) XX. On the Genera Spirulina and Coleochæte, Transactions of the Botanical Society of Edinburgh, 2:1-4, 185-187, DOI: [10.1080/03746604609467549](https://doi.org/10.1080/03746604609467549)

To link to this article: <http://dx.doi.org/10.1080/03746604609467549>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

XX. *On the Genera Spirulina and Coleochæte.*
By JOHN RALFS, M.R.C.S.

READ 12TH DECEMBER 1844, AND 9TH JANUARY 1845.

SPIRULINA, *Turpin, Kütz.*

Filaments collected into a mucous film-like stratum, simple, spiral, oscillating, "inarticulate."—*Kütz. Phycologia Generalis*, p. 182.

Spirulina has its filaments interwoven into a thin stratum of no determinate form, and by the naked eye cannot be distinguished from *Oscillatoria*, to which indeed it is nearly allied, as its filaments are in like manner simple, oscillating and radiating. Kützing describes them as inarticulate, and I have failed to detect any joints or striæ; but as I have also been unable to perceive any granular matter, the apparent absence of striæ may probably depend upon the extreme fineness of the filaments.

The close and regular spires formed by the filament are very remarkable, and constitute, I believe, the only certain distinctive mark between *Spirulina* and *Oscillatoria*.

1. *S. tenuissima*, Kütz. "Stratum very lubricous, ærugineous, sub-radiant; filaments densely spiral, very slender, parallel, flexuose." Kütz. Alg. xiv. no. 131!; Phycol. Gener. p. 183.

On decaying algæ in a brackish pool near the Menai Bridge, Anglesea. On sticks in brackish pools at Penman Pool near Dodelley.

It forms at first a thin pellicle of a rich green colour, but in an advanced state becomes somewhat skin-like and tinged with brown; filaments shortly radiate.

Under the microscope the filaments are extremely slender, of a pale bluish green colour, elongated, straight when free, equal, not attenuated at the extremities, vividly oscillating. Spires very close, like the volutions of some shells, broader than long. There is no appearance of granular matter, and the filaments are so fine that I cannot ascertain whether they are jointed.

The oscillations of this plant are more vivid than those of any species of *Oscillatoria* I have examined.

When I first gathered this plant in 1841, I suspected, notwithstanding its different colour, that it might be the *Oscillatoria*

spiralis of Capt. Carmichael; but having communicated a specimen to the Rev. M. J. Berkeley, he informed me of its real name, and sent me a specimen of Carmichael's plant, which is a true *Oscillatoria*, and cannot belong to this genus, as the filaments, in the dried state at least, though somewhat distorted, are not regularly spiral.

Through the kindness of Mr. Borrer I have been able to compare our plant with the specimen in Kützing's 'Alg. Aq. Dul.,' and am satisfied of their identity, although his specimens were gathered in fresh water, and I have always found mine in brackish pools.

PLATE XX. fig. 1. *Spirulina tenuissima*.

COLEOCHÆTE, Bréb.

Fronds minute, parasitic, green, disciform, appressed, composed of series of cells radiating from a centre and connected together by a hyaline substance; spores imbedded in the frond*.

1. *C. scutata*, Bréb. Cells having on their upper surface a cylindrical truncate sheath, from which a bristle at length protrudes. Bréb. Ann. d. Sc. Nat. série 3. vol. i. p. 29. tab. 2.

In ponds, parasitic on aquatic plants, especially on the under surface of the leaves of *Potamogeton natans* and *Nymphaea alba* when verging to decay. Victoria Park, Manchester, and in Windermere, Mr. Sidebotham; Aberdeen, Dr. Dickie; Henfield and near Tunbridge Wells, Sussex, Mr. Jenner; near Fleetwood, Mr. J. S. Ashworth; near Bristol, Mr. Thwaites; ponds at Singleton and Sketty near Swansea, Mr. Moggridge; also abundant in Cromlyn Bogs near the same town. In several stations near Penzance and Dolgelley.

This parasite, I suspect, is not uncommon, but from its minuteness it is difficult to detect, especially when growing on leaves which still remain slightly green. It was first gathered in this country by Mr. Sidebotham, who kindly sent me specimens exceedingly well-mounted.

The very minute fronds, which to the naked eye seem mere specks, are under the microscope found to consist of many series of cells radiating from a centre and connected together by a colourless substance, which is best seen at the margin. Each series of cells is repeatedly dichotomous; the cells are longer than broad and truncate, the four or five central ones somewhat irregular, the others of equal length, forming concentric circles. These circles vary from five to twenty in number. Endochrome green, and usually contracted into a central spot in each cell.

* "Frons disciformis, adpressa filamentis e centro radiantibus sæpius coadunatis; formata filamenta articulata dichotomo-ramosa e dorso articulorum vaginas cylindricas, truncatas longe setigeras passim prodeunt. Endochromas viride."—Bréb. Ann. d. Sc. Nat. série 3. vol. i. p. 29.

After some time a cylindrical, colourless process appears on the upper surface of each cell; it is directed outwards and is truncate at the extremity; within it a bristle becomes visible, gradually protrudes, and finally becomes much elongated. The bristle sometimes contains pale granular matter, when it may be traced even before it issues from the tube. Before the protrusion of the bristle the sheath is always truncate, as if open at the end, but afterwards it is sometimes conical, as if a membrane was pushed out and then perforated.

Although the fronds are closely appressed, if care be used they may generally be separated by a penknife from the leaf on which they grow. The margin of the frond is well-defined; in young plants it is usually circular, but in the larger specimens often slightly lobed.

The spores, which are imbedded in the frond, are suborbicular and at first green, but finally brown; they are large compared with the size of the plant, and are arranged in a circle near the margin.

I am indebted to Dr. Dickie for determining the name of this plant, which I had supposed was one hitherto undescribed, and also for a specimen gathered at Falaise which he had received from M. Lenormand.

Having sent a British specimen to Professor Kützinger, he informed me, that as far as he could determine from the dried specimen, it is his *Phylactidium pulchellum*; but although he considers it distinct from *Coleochæte scutata*, which he has also gathered in Prussia, I believe that he has only described its young state as *Phylactidium pulchellum*, for his figure well represents our plant before the appearance of bristles; and as it is undoubtedly Brébisson's plant, I have retained the present name*.

PLATE XX. fig. 2. *Coleochæte scutata*; b, portion of a frond in fructification; c, portion magnified to show the processes.

* "*Phylactidium*, Kütz. *Phylloma minutum*, monostromaticum, orbiculare, s. flabellatim conjuncta constituentibus compositum. Spermatia ignota."
—Kütz. *Phycologia Generalis*, p. 294.

"1. *P. pulchellum*, Kütz. Orbiculare, amœne viride; cellulis cælogonimicis, demum transverse zonatis, centro globulo gonimico majori notatis."
—Kütz. *l. c.* p. 295. t. 16. f. 11.

