Scourfieldia cordiformis, a New Chlamydomonad.

BY

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With five Figures in the Text.

A MINUTE unicellular Alga was recently discovered by the writer among some material of another Alga, kindly handed to him by Professor F. E. Fritsch, who had collected it last May in a *Sphagnum* marsh at Keston, Kent, and since then had kept it in the laboratory culture. The organism has proved to be a new species of *Scourfieldia*,¹ a very interesting genus of Chlamydomonadeae. The new Alga is very similar in many respects to the described species *S. complanata*, G. S. West,² but differs chiefly by the peculiar type of compression shown by an individual when viewed from the side. *S. complanata* is narrowly oblong in the side view, having both sides practically parallel to each other, while the side view of *S. cordiformis* is obovate (*s* in Figs. 1-3). In the front view the new

FIGS. 1-5. *Scourfieldia cordiformis*, Tak., sp. nov. Figs. 1-3, three individuals in front (*f*) and side (*s*) views. $\times 1,500$. Fig. 4, diagrammatic representation of anterior end view, showing nature of chloroplast. Fig. 5, ditto of posterior end view.

organism is heart-shaped (*f* in Figs. 1-3), hence the specific name *cordiformis* has been given. The chloroplast is constructed exactly in the same way as in *S. complanata*,³ being compressed bell-shaped with a comparatively large amount of colourless protoplasm within its central hollow. Another important character to be mentioned here is that the chloroplast, when viewed from the front, shows a median longitudinal slit reaching about half-way

¹ G. S. West, in Journ. Bot., 1912, p. 326, Fig. 3.

² l. c.

³ Cf. West, l. c., Fig. 1, F.

from apex towards the base (*f* in Figs. 1-3). The diagrammatic representations of the end views (Figs. 4, 5) may elucidate this peculiar feature more clearly. The chloroplast is, as in the case of *S. complanata*, absolutely homogeneous, and contains neither stigma nor pyrenoid. There are, however, apparently imbedded in the colourless protoplasm and in the proximity of the nucleus, two, or sometimes three, minute, highly refractive bodies of unknown nature. These bodies can readily be seen also in the side view of the organism (*s* in Figs. 1-3). The writer has not succeeded in detecting any contractile vacuoles.

Two flagella of equal length are attached at the anterior notch of the organism. They are very delicate, and reach a length of nearly four times that of the body of the organism.

As to the movements of this Alga, the writer has not been so fortunate as to obtain any satisfactory observations. The individuals examined were either too sluggish or too active to enable him to study their mode of locomotion properly.

As a unique character of *S. complanata*, this organism is known to move normally backwards, i. e. with its flagella behind.¹ This is a very unusual type of movement among the *Chlamydomonads*. Two or three other examples, however, observed by the writer may be mentioned here. A species of *Carteria*,² which occurred in the same material, often swims backwards for a considerable distance, whereas its normal method of locomotion is towards the anterior end of the organism. *Chlorogonium euchlorum*, Ehrb., usually swims forwards, but it sometimes moves backwards for a short distance (equal to about half or the whole length of the body), just as in the case of many *Cryptomonads*. Amongst the *Engleninae*, a variety (new) of *Trachelomonas hexangulata*, Swirenko,³ moves sometimes forwards and sometimes backwards. Under the description of *Tr. ampullula*, Mr. G. I. Playfair states⁴ that the organism 'swims backwards, with the orifice and flagellum behind'.

Unfortunately, so far no stage of reproduction of this new Alga has been observed.

DIAGNOSIS.

Scourfieldia cordiformis, Tak., sp. nov. (Figs. 1-5). Cellulae vegetativae minutissimae, valde compressae, a fronte visae cordiformes, polo apicali leviter emarginato et flagellis binis aequalibus, quam cellula quad-

¹ West, l. c., p. 327.

² Species indeterminata; *C. multifli* (Fresen.) Dill similis, sed cellula minus rotundata, membrana exteriore firma pro genere crassa, membrana interiore (= pars membranae gelatinosa) saepe valde evoluta differt.

³ In Archiv für Hydrobiol. u. Planktonk., ix, p. 646, Taf. xx, Figs. 23-5 (1914) = *Tr. ampullula*, Playfair, in Proc. Linn. Soc., N.S.W., xl, pt. 1, no. 157, p. 16, Tab. ii, fig. 6 (1915).

⁴ l. c., p. 17.

ruplo longioribus praedito, a latere visae obovatae vel anguste obovatae, in polum posterius obtusatum sensim attenuatae. Chromatophora singula, viridis, homogenea, subcampanulata, sed compressa, apice ad medium fissa, sine pyrenoide; stigma et forsan vacuolae contractiles carentes; nucleus minutus, centralis. Long. cell. $4-4.5\mu$; lat. cell. $3.5-4\mu$, crass. $2.3-2.6\mu$; long. flagellorum usque ad 20μ .

A *S. complanata*, G. S. West, specie unica adhuc cognita, praesertim cellula a latere visa obovata nec anguste oblonga dignoscitur.

Hab. in Sphagnis, Keston, Kent (F. E. Fritsch., 1915).

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