Annals and Magazine of Natural History: Series 4

Publication details, including instructions for authors and subscription information:
<http://www.tandfonline.com/loi/tnah10>

On an apparatus of dissemination of the Gregarinæ and the Stylorhynchi; and on a remarkable phase of sporulation in the latter genus

M.A. Schneider

Published online: 13 Oct 2009.

To cite this article: M.A. Schneider (1875) On an apparatus of dissemination of the Gregarinæ and the Stylorhynchi; and on a remarkable phase of sporulation in the latter genus , *Annals and Magazine of Natural History: Series 4*, 15:89, 368-370, DOI: [10.1080/00222937508681098](https://doi.org/10.1080/00222937508681098)

To link to this article: <http://dx.doi.org/10.1080/00222937508681098>

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>

MISCELLANEOUS.

Ceratodus Forsteri and *C. miolepis*. By Dr. A. B. MEYER.

DR. GÜNTHER separates, in his valuable memoir on *Ceratodus* (Phil. Trans. 1871, part ii. p. 516), *Ceratodus Forsteri*, Krefft, and *C. miolepis*, Gthr., as two species, chiefly because the former has 18 series of scales, 5 above and 11 below the lateral lines, the latter 21, 6 above and 13 below. The Royal Natural-History Museum of Dresden possesses a specimen of *Ceratodus* from Gayndah, Burnett River, Wide-Bay district, Queensland (procured through the Museum Godeffroy of Hamburg), which has 19 series of scales, 5 above and 12 below the lateral lines. It stands in this respect between the supposed two species *Ceratodus Forsteri*, Krefft, and *C. miolepis*, Gthr.; and I therefore presume that this character is in such a way variable that a specific difference cannot be founded on it, and that *C. miolepis*, Gthr., must be united with *C. Forsteri*, Krefft. The specimen in the Dresden Museum is about 93 centims. in length.

On an Apparatus of Dissemination of the Gregarinæ and the Stylo-rhynchi; and on a Remarkable Phase of Sporulation in the latter Genus. By M. A. SCHNEIDER.

In the course of a revision of the group of the *Gregarinæ*, which I undertook by the advice and under the auspices of M. de Lacaze-Duthiers, besides numerous facts of detail rectifying or completing the ideas already acquired, I have met with some entirely new peculiarities, of which I will give a brief *résumé*.

These observations are taken from the first part of a memoir on the group of the *Gregarinæ*, in which I give the history and description of the species which inhabit the Invertebrata of the environs of Paris and the marine Invertebrata of the beach of Roscoff.

It is well known that the Gregarinida, on attaining the termination of their individual growth, encyst themselves, and that at the expense of their contents there are formed a considerable number of reproductive bodies, designated under the names of "pseudonavicellæ" and "psorospermeæ," which I propose to call simply "spores," by an application of general nomenclature, wishing to express by this term that the bodies in question do not require the concurrence of a male element in order to commence their evolution.

From the existing data, the mature cyst opens by the rupture of the integument and liberates the spores. A very remarkable exception to the general law is presented by the two genera *Gregarina* and *Stylorhynchus*. But the mode of formation of this apparatus had escaped me; and its ascertainment was nevertheless exceedingly important, both for the legitimation of the discovery and for the sound interpretation of the organic arrangements which had been proved. I have since been able to trace carefully the formation of this apparatus of dissemination; and the following is the way in which it is accomplished:—The cyst early shows, in its clear marginal zone, the appearance of a variable number of tubes, each directed in accordance with a radius of the cyst. At first without

connexion with the wall, they at last attach themselves to it by virtue of centrifugal development, and finally unite with it by their peripheral extremity, while by the opposite extremity they converge towards the centre of the cyst. They are formed by a structureless membrane, and originate in the midst, and doubtless also at the expense of an accumulation of granules which surround them for some time even after their complete formation, representing a sort of muff round each of them.

Each of these tubes, which I have called *sporoducts*, presents, in a state of complete individualization, a short, broad basal joint, by which it is inserted upon the internal surface of the wall of the cyst, and a slender terminal longer or shorter joint, of which the extremity corresponds to the centre of the cyst.

At maturity the sporoducts may be seen to disengage themselves with extreme rapidity, and to erect themselves outwards to their full length. In case any obstacle obstructs the phenomena of their erection, we may easily trace its mechanism. We may then see the sporoduct free itself gradually by a true evagination, the basal joint appearing first of all, and the extremity of the tube last, after having traversed all the portion already emitted. This mechanism can only be the effect of an augmentation of pressure of the contents of the cyst, doubtless correlative to a change of its mean density under the influence of the remarkable modifications that these contents undergo in the course of sporulation; and the same cause would also direct the expulsion of the spores through the sporoducts.

The genus *Stylorhynchus* (*S. oblongatus*, Hamm., from *Opatrum sabulosum*) presents perhaps yet more interesting phenomena. The cyst, which is produced by solitary encystment, presents at first uniform contents, which are afterwards divided into two equal masses by an equatorial plane. At the same time that the traces of this first division are effaced and the granular portion of the contents becomes condensed, a great number of very shallow secondary furrows appear, which subdivide the outer coat of the granular contents into lobes and lobules. From the surface of these lobes and lobules one now sees the nascent spores bud. At first they are completely homogeneous and transparent, but afterwards acquire some granules before their complete individualization and separation from the lobules.

When free from all adherence to these, the sporigenous masses are situated on the surface of a voluminous central mass formed by the remains of the not utilized portion of the original contents. Then, quitting the regularly spherical form, each sporigenous mass elongates in the direction of a radius of the cyst, and all together, in the form of little fusiform bacilli, tapering at the ends and relatively very much swollen in the middle, execute, during from fifteen to eighteen hours, an interrupted series of rapid and energetic movements, by which their peripheral extremity inflects itself first in one direction and then in another, at the same time that the corpuscle shortens and lengthens itself, and the granules which it encloses are agitated in its interior in all directions. The movement of each corpuscle is independent of that of its neighbour; and those which

are completely isolated in the liquid interposed between the solid contents of the cyst and its wall move like the others.

After the lapse of time indicated, this movement of all the sporigenous masses ceases suddenly; each corpuscle returns to a spherical, or nearly spherical, form, and becomes converted into a definitive spore by the production of a thick wall on its surface. In its turn, the voluminous central mass of granules on which the spores rest becomes surrounded also with a proper coat, and converted into a vesicle enclosed in the cyst and free at all parts. This *pseudocyst*, as I call it, is in my eyes an agent in a new mode of spore-dissemination. By its subsequent growth it presses on the spores compressed between the opposite surfaces of the two spheres, causes the rupture of the exterior tegument, and consequently the liberation of the reproductive bodies.

Out of thirty genera that I have examined, the existence of an apparatus of dissemination is only met with in the two genera just cited. Genera very nearly allied to *Gregarina* or *Stylorhynchus* do not offer any trace of the peculiarities which characterize these latter; as, on the other hand, the sporoducts and the pseudocyst cannot be brought to a common organic expression, it is difficult to decide what value it is necessary to attribute, in the characterization of the *Gregarina*-type, to this new element. But it appears certain that this new element does not create any homology between the Gregarinidæ and the lower plants. The chemical characters of the walls of the sporoducts and of the pseudocyst, as well as the mode of their formation, do not confirm in the least the external analogy that the sporoducts of the *Gregarinæ* especially seem to bear at first sight to the emissory tubes of the spores of some Chytridiæ.—*Comptes Rendus*, February 15, 1875, p. 432.

Researches into the History of the Rhizopods.

To the Editors of the Annals and Magazine of Natural History.

GENTLEMEN,—It has been brought to my notice, but only within the present month, that towards the close of last year Professor Leidy published, in some of the American scientific journals, an account of researches he had made into the history of the freshwater Rhizopods, more especially the *Amœbæ* and *Diffugiæ*.

I am delighted to find that observations, nearly all of which (even to the supposed discovery by Professor Leidy of the very remarkable form for which he has suggested the name *Ouramœba*) were embodied by me in a series of papers, accompanied by illustrative figures, which appeared in the 'Annals and Magazine of Natural History' in April, May, June, August, November, December 1863, and March 1864, should have been so fully confirmed by such a distinguished writer. It is to be regretted, however, that Professor Leidy should have failed to make any reference whatever to my papers, although I feel satisfied the failure has been a purely unintentional one on his part.

I remain, Gentlemen,

Your most obedient Servant,
G. C. WALLICH, M.D.