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XLIV.—*On Gloionema paradoxum.* By the Rev. M. J.
BERKELEY, M.A., F.L.S.

[With a Plate.]

THE genus *Gloionema* has been long considered as consisting of productions of a very doubtful nature. Some of its species indeed have been rejected as the ova of insects; but notwithstanding the communication of Roberge* to the Linnæan Society of Paris, who is stated to have proved by repeated experiments that *Gloionema paradoxum* is not a vegetable, the species is still retained by Agardh†. Kützing‡ also, who rejects the other species as ova, though he refers to Agardh's treatise, and therefore must have known of Roberge's experiments, still retains this, and has published it as an alga in his 'Decades.' Kützing, indeed, informs us that he kept his specimens in water for many weeks or even months without obtaining any positive result; and Prof. Nitzsch, to whom he communicated the production, was not more successful.

No detail of M. Roberge's experiments, as far as I am aware, has as yet been published; I have therefore no hesitation in offering to public notice my own observations, made at the end of last May, which completely confirm the report of Roberge, and which must be considered as quite decisive.

I have not indeed had an opportunity of comparing my individuals with authentic foreign specimens, but they agree so completely with Kützing's description, that I have not the least doubt of their identity.

So early as 1825 I found a small patch at Cherry Hinton, near Cambridge, and communicated a sketch to Dr. Greville. The production was however considered of so doubtful a nature that it was not published in my 'Gleanings of British Algæ,' nor is it included in the English Flora. I did not meet with it again till May 25, 1841, when I found a large mass at King's Cliffe, forming a loosely reticulated mass of tortuous, very elastic, yellow-green threads, several inches in extent,

* Linn. Soc. Par. 1827, p. 47.

† Conspectus Criticus Diatomacearum, p. 30.

‡ Bot. Zeit. 1833, vol. ii. p. 513.

suspended near the surface of the water on grasses and aquatic plants. The threads were of considerable length, sometimes invested with a transparent gelatinous sheath, sometimes naked. They contained one or two rows of boat-shaped bodies, $\frac{8}{1000}$ ths of an inch long, $\frac{3}{1000}$ ths broad, with one extremity a little broader. The broad extremities all pointed the same way, except by accidental circumstances a few had become transverse. The threads, with their gelatinous sheath, measured $\frac{1\frac{2}{3}}{1000}$ ths of an inch in diameter, without the coat about $\frac{6}{1000}$ ths.

The grains contained a grumous mass, of a yellow-green colour, surrounded by a rather broad pellucid border. The external surface was perfectly smooth, but the border marked with little flexuous lines perpendicular to it, which are in fact seated on a membrane which intimately lines the outer coat of the grain. A portion of the mass was placed in a glass of water, and on the following morning a sensible change had taken place. At one or both ends the contents had contracted, leaving the outer shell at those points perfectly smooth and colourless, while the pellucid border still surrounding the central mass was marked with the above-mentioned lines, which, if I am not mistaken, are composed of very minute longitudinally-arranged granules. Meanwhile the grumous mass appeared more cellular*, with its margin light. In the afternoon of the same day the larger globules were confined to the broader or anterior end, while towards the other end the mass had become paler. Sometimes there were a few large globules, possibly air-bubbles, between the two membranes at the anterior end. On the following morning a dark patch appeared in the centre of the mass, and in some individuals seen laterally this patch was applied to the chord of the granule, while the upper margin was crenulated. In the evening of the same day the crenulations had extended to the dark mass, and the large globules were less visible, while in some individuals the contents were in motion and the parts greatly confused. The membrane was soon burst, and a larva disclosed, most probably belonging to the *Tipulidæ*. The larvæ were about twice as long as the eggs, and the posterior part, when *in situ*, wrapped in a somewhat spiral way, to allow of its being packed in so small a compass. On careful examination of other eggs, I could distinguish the red spots which mark the place of the eyes, but the whole too confused to admit of my making an intelligible figure.

The larva consists of thirteen articulations, including the head, decreasing slightly towards the hinder extremity. The

* This accords with the observations of Dumortier, Pouchet, &c., on the cellular formation of the vitellus.

last articulation, however, is not so strongly marked as the rest. The head is large, ovate, with two red eyes in front, and two short, conical, obscurely-articulated antennæ; the mouth is furnished with two strong maxillæ, which, when the animal is at rest, are completely retracted and out of sight. The first articulation of the body is furnished with two short feet, crowned at their extremities with a few short bristles. Down the centre of this and the following articulations is a dark line, marking the situation of the intestines. The last joint is also furnished with two short conical feet, or appendages crowned with short bristles, and a conical projection in the centre, crowned with about eleven pellucid cilia, which are undoubtedly the temporary lungs. I have frequently seen the animal comb them out with his large maxillæ. On each side of the branchial tubercle is a short conical appendage.

I must leave entomologists to decide the affinities of the little larva, and must beg them to pardon any errors in my description of it. I did not witness any further change, as the larvæ soon died, and the mass became clothed with mucedinous filaments.

EXPLANATION OF THE FIGURES IN PLATE XIII.

a. Portions of filaments, with eggs magnified.

1. Appearance of an egg, highly magnified, soon after the specimens were brought home.

2. } Ditto on the following morning.

3. }
4. Ditto at six o'clock P.M.

5. } Ditto the next morning at twelve.

6. }
7. Ditto with the articulations strongly marked, and the dark mass (= *vittellus*) which furnishes the intestines.

8. Larva just burst from its shell.

XLV.—*Supplement to descriptions of Exotic Fungi in 'Annals of Nat. Hist.,' vol. iii. pp. 322 and 375. By the Rev. M. J. BERKELEY, M.A., F.L.S.*

SINCE the publication of the two memoirs cited above on the Exotic Fungi in the collection of Sir W. J. Hooker, the discovery of a packet of Dr. Richardson's Arctic Fungi which had been mislaid, and the publication of Fries's 'Epicrisis,' who had received many of the species from Klotzsch, makes it necessary to give a short supplement. I have also to thank Dr. Montagne for one or two suggestions, of which I have availed myself in the following notes:—

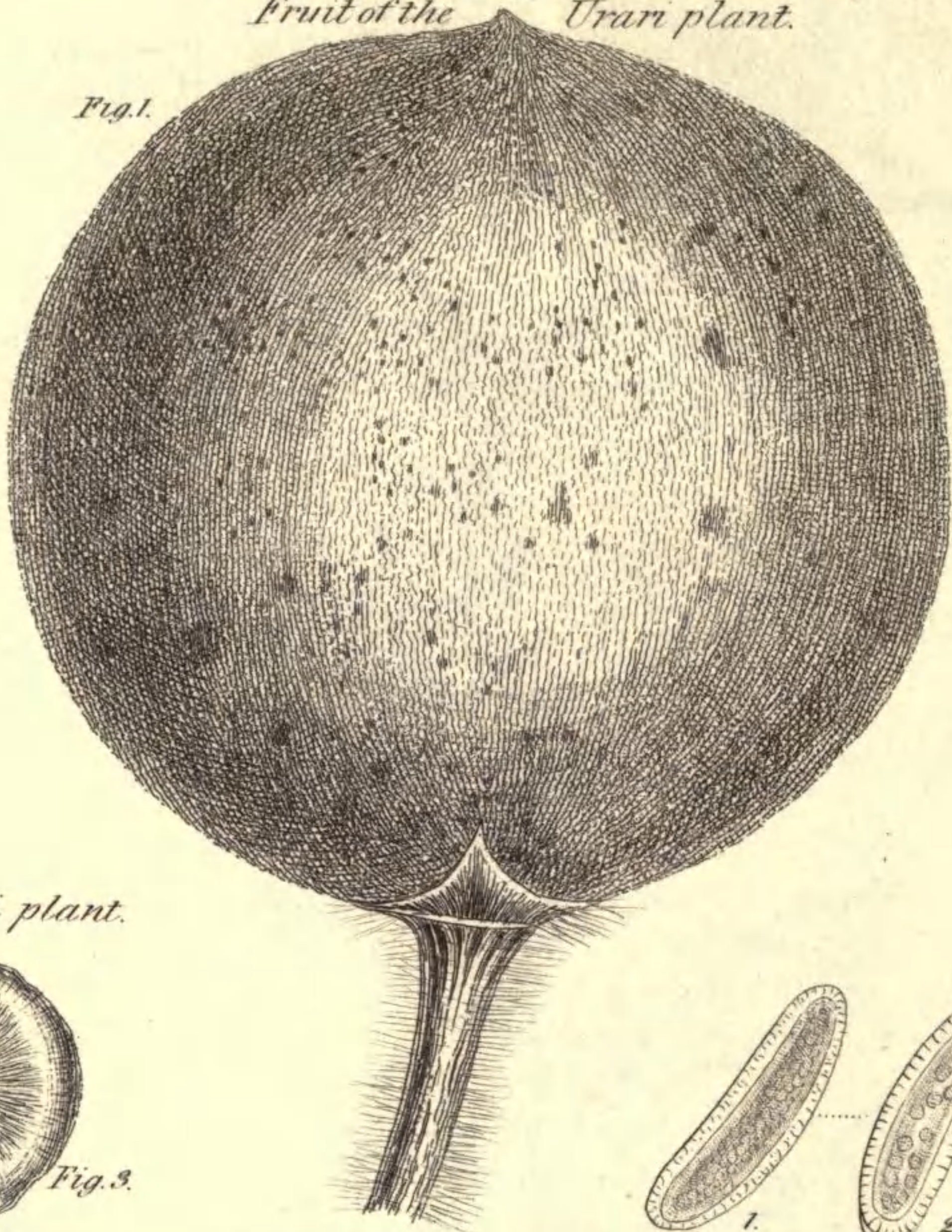
1. *Lentinus villosus*, l. c. p. 322 = *L. fasciatus*, Berk., Hook. Journ. of Bot. v. ii. p. 146. t. 5.

2. *Polyporus vesparius*, l. c. p. 323. The specific name, as Dr. Montagne very properly remarks, is too near that of *Pol.*



Fruit of the Urari plant.

Fig. 1.



Seed of Urari plant.



Fig. 3.

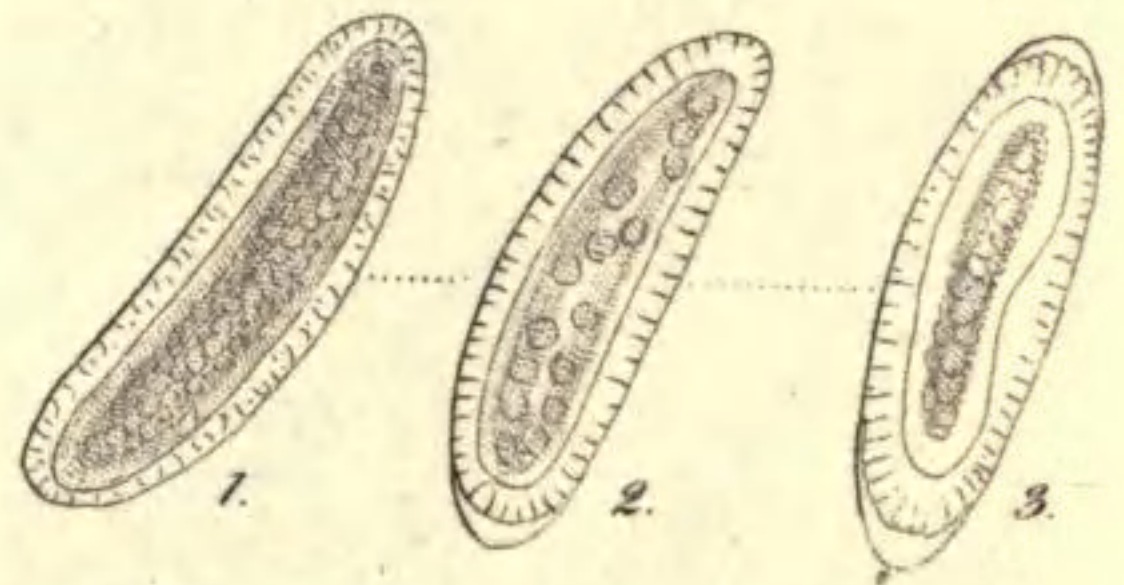
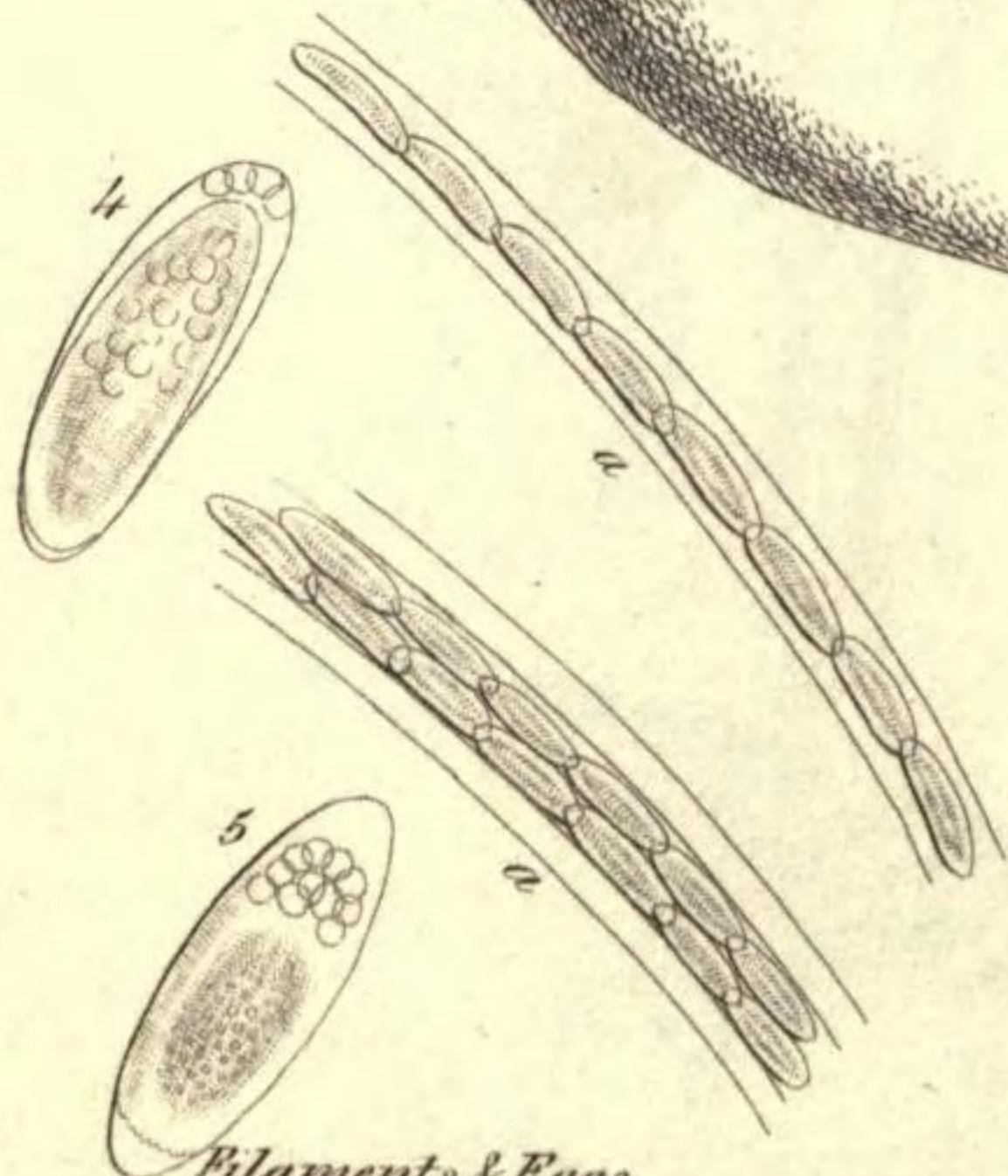
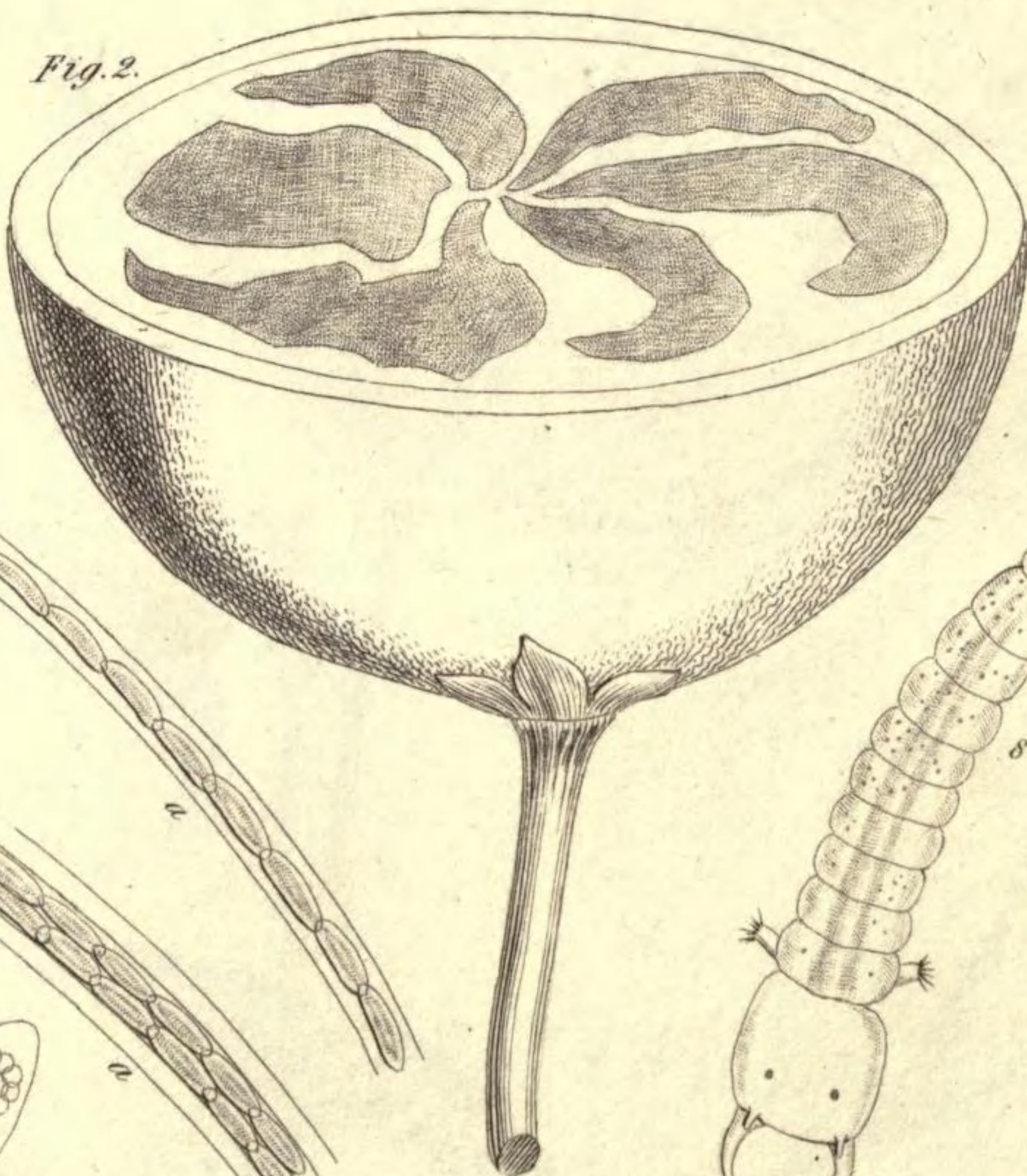
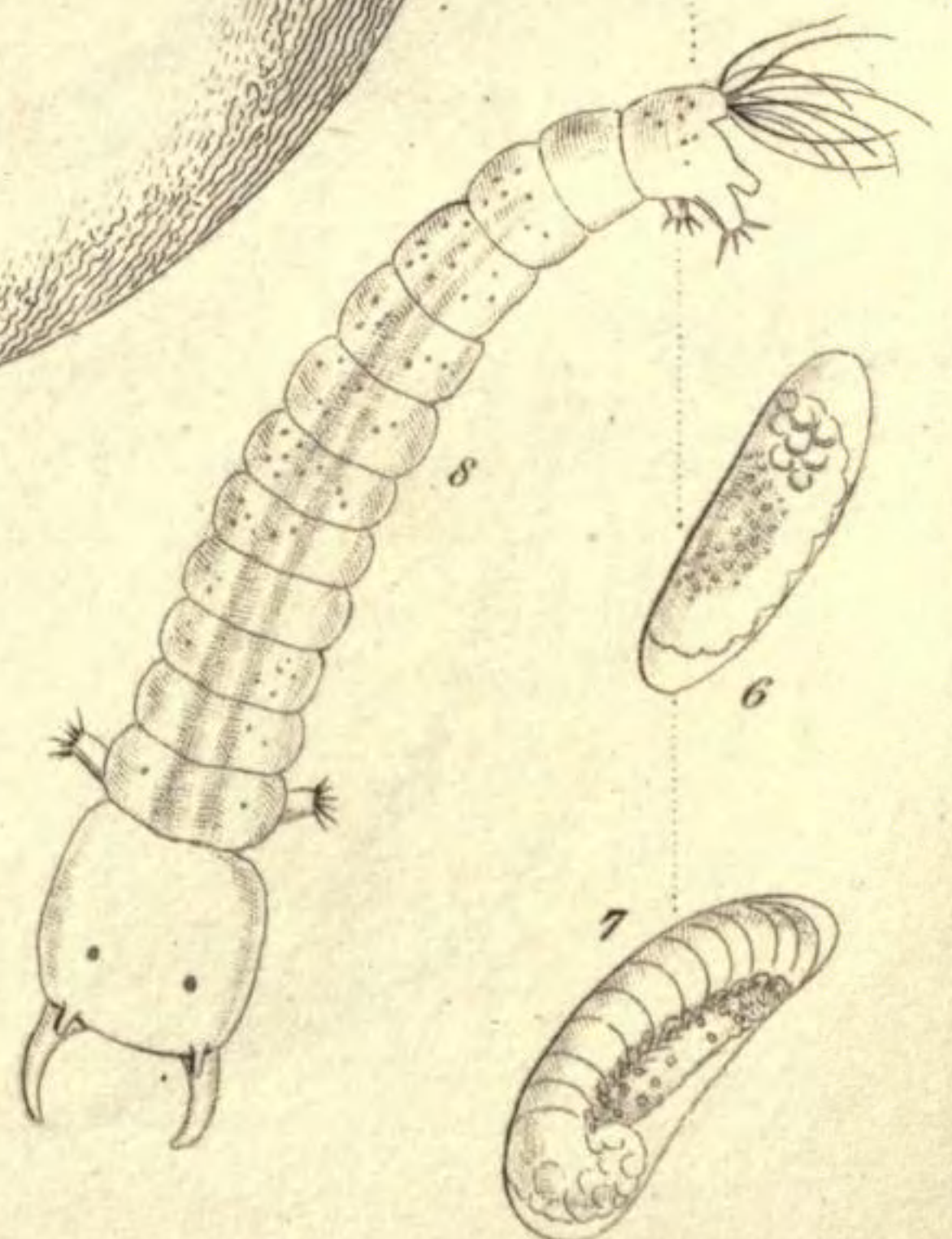


Fig. 2.



Filaments & Eggs
of *Gloionema paradoxum*.



Gloionema paradoxum.