

2. Notes on Entozoa. Part II. By T. SPENCER COBBOLD, M.D., F.R.S., F.L.S., Lecturer on Parasites at the Middlesex Hospital Medical College.

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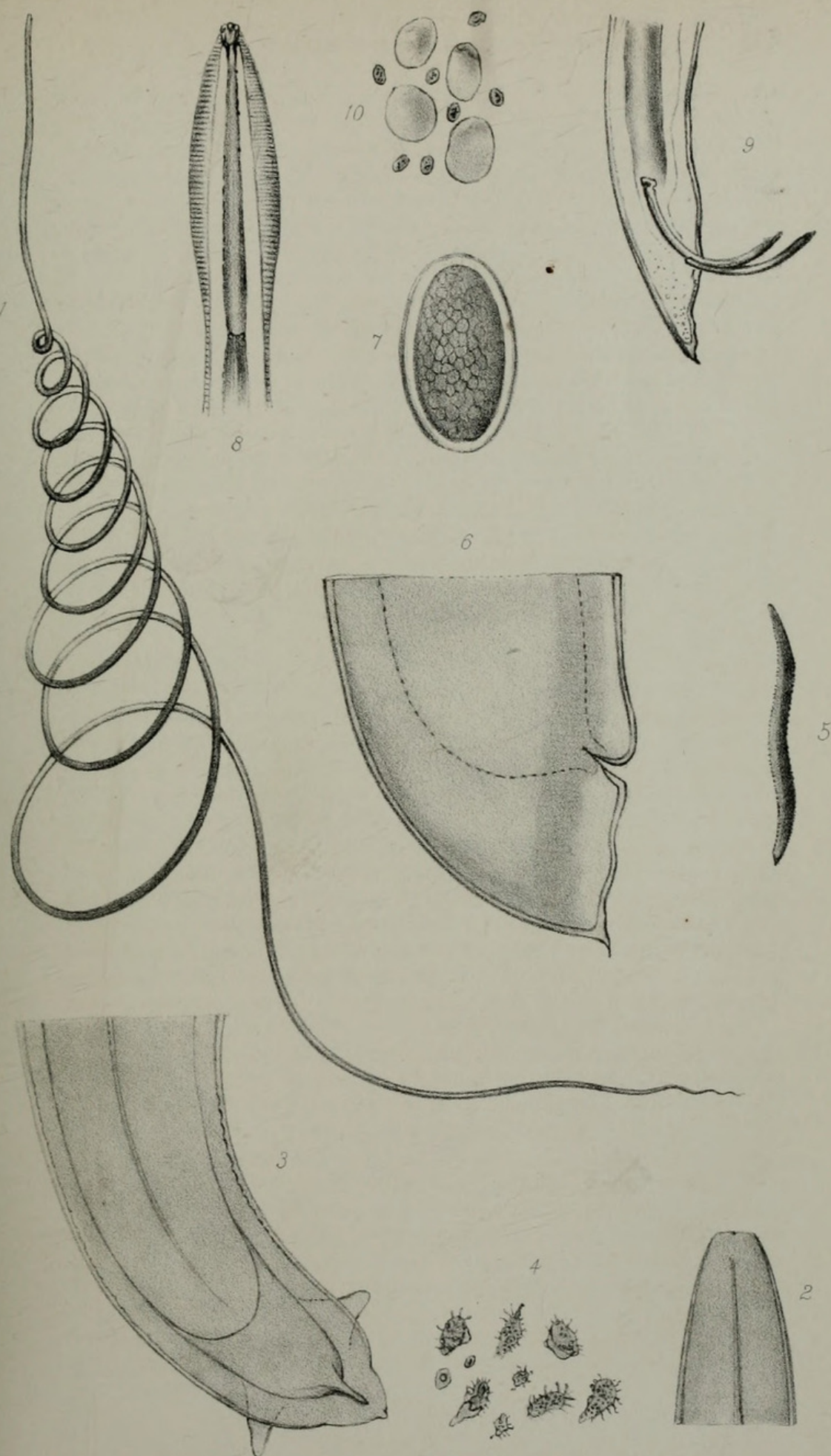
(Plate XVIII.)

Whilst engaged in writing the concluding portion of my first set of "notes," I received for examination a nematode parasite, some brief account of which will appropriately commence the present series.

4. *FILARIA GRACILIS*, Rud. (Plate XVIII. figs. 1-4.)

On the 20th of August, 1873, Mr. Samuel Smith, M.R.C.S., of Clifton, transmitted an example of this entozoon, with a request that I would identify it. Finding that the specimen was a male, and unaware that the males of this species ever attained a length of 20 inches, I at first supposed that we had to deal with a new form. However, on subsequently analyzing its characters, I became satisfied that the worm was really only an unusually fine male *F. gracilis*. The frequency of the occurrence of this nematode in the abdominal cavity and other parts of the trunk of Monkeys is a matter of common observation. I remounted no less than four preparations, representing numerous examples of this Worm, for the Museum of the Royal College of Surgeons. Some of the Hunterian specimens were originally obtained by Professor Owen from the cavity of the pleura of a Capuchin Monkey, others having been removed by him from the thorax of an Orang-outang. From Mr. Smith I have learnt that the present example formed one of a group of five Worms, all of which were found lying between the folds of the omentum of a Spider Monkey (*Ateles*). My informant also remarks that one of the Worms was enclosed in a "false sac, formed by a twisting of that portion of the serous membrane which is immediately connected with the inferior curvature of the stomach." It further appears that the example in question was the smallest of the five, although I found it to measure upwards of twenty inches without any stretching. Whilst the Vienna helminthologist, Diesing, only allowed an extreme length of four inches for the male worm, the French authority, Dujardin, stated that specimens had been reported up to a length of $12\frac{1}{2}$ inches. Females have been recorded as reaching a length of 5 feet.

Not being acquainted with any satisfactory representation of this Entozoon, I have thrown the parasite into a series of folds so as to enable me to display its full length and general appearance (Plate XVIII. fig. 1). I have also added an enlarged and accurate outline representation of the head and neck (fig. 2). The description of the Worm by Dujardin leaves little or nothing to be desired. Speaking of the tail, he observes that the extremity is furnished with two or three papillæ, serially disposed in front of or above the point. I examined



TSC del: JSmit. lith.

M & N Hanhart imp.



these minute prominences carefully (fig. 3). There were two short conical papillæ placed within about the $\frac{1}{800}$ of an inch from the actual extremity, the point itself being furnished with an excessively minute prominence, whose base scarcely exceeded the $\frac{1}{10000}$ of an inch in diameter. There was a very distinct appearance of a centrally placed duct (which I regarded as the tubular extension of a large caudal gland), the end of which had apparently become detached from the interior of the minute terminal papilla. As already remarked by Dujardin, the lateral lines of the body are brown-coloured and very conspicuous. I was particularly struck with the remarkable distinctness of the contents of the seminal tubes, whose separate particles could readily be seen through the thick integuments. Unwilling to injure the specimen, which I afterwards returned to Mr. Smith, I merely inserted the point of a fine needle into the main channel, and thus obtained a large quantity of the spermatozoa. These small particles, notwithstanding their long immersion in strong spirit, presented a tolerably characteristic appearance—the larger and fully formed corpuscles giving a long diameter of $\frac{1}{1400}$ of an inch (fig. 4). I may add that several of the corpuscles displayed, more or less perfectly, the well-known flask-shaped envelopes so often described in connexion with this group of parasites.

5. SPIROPTERA TURGIDA, Duj. (Plate XVIII. fig. 5.)

On the 15th of April, 1873, I examined the contents of a small phial in which were two Worms that I had long previously received from Dr. Murie. They were sent to me during the time of his official connexion with the Society's Menagerie. The smaller parasite, as was stated on a label, came from the stomach of an Opossum (*Didelphys azaræ*). The worm was evidently a female, but, unfortunately, not in a satisfactory state of preservation. It measured more than an inch in length by $\frac{1}{10}$ " in breadth. The accompanying figure may be useful (fig. 5); but the minute characters were mostly either lost or obscured. The mouth was round, and certainly furnished with several minute teeth, the number of which could not be accurately ascertained.

6. ASCARIS CUSPIDATA, T. S. C. (Plate XVIII. fig. 6.)

The larger of the two Worms above mentioned appears to be new to science. Dr. Murie labels it as having been obtained from the stomach of a Green Monkey. I have little doubt that his record refers to one of the Monas (*Cercopithecus*). The Worm is a true Ascaris, and, although a male, measures fully $3\frac{1}{4}$ inches from head to tail. Owing to imperfect preservation, the spicules have been lost. The three oral lobes are particularly prominent. The caudal extremity is furnished with a very fine spine, or cusp, formed by an extension of the epidermis (fig. 6). This minute cusp curves backwards, and measures only $\frac{1}{1000}$ inch in length by the $\frac{1}{3000}$ inch in breadth at the narrowest part. The anal aperture is placed at a distance of $\frac{1}{50}$ inch from the extremity of the tail. The eggs have a long diameter of about the $\frac{1}{800}$ of an inch.

7. *ASCARIS MACULOSA* (Rud.). (Plate XVIII. figs. 7-10.)

On the 9th of October, 1873, I received a letter from Dr. J. Alexander Macdonald, of Woburn, Bedfordshire, stating that he had forwarded to me a pigeon which had been found dead on the previous morning. It seems that the owner of the bird had erected a large pigeon-house, and had imported a number of Antwerp Smerles, these birds all continuing in a perfect state of health until about a week before the above-mentioned date, when, to use Dr. Macdonald's words, "first one and then another was attacked, and so on, until four or five of the pigeons had died after a few hours' illness." The suddenness of these attacks not unnaturally suggested poisoning; and, accordingly, says my informant, the owner "had the curiosity to open one of the birds, when, to his astonishment, he found the intestines stuffed with worms."

Under these circumstances I was invited to make an accurate inspection of the pigeon forwarded to me, likewise to report the results of my examination, and to suggest any remedial or prophylactic measures which might be likely to prove useful.

Two days later I received a letter from Dr. Macdonald stating that several others of the flock had died, and it further appeared to him probable that the daily list of sick and dying would continue to increase. On the 14th of the month my informant reported that three more of the birds were dead; but this mortality still left twenty-five birds in the owner's possession, some of which were affected. Under these circumstances I lost no time in forwarding a full report of the facts observed, together with the recommendation that a few grains of santonine should be mixed with the food. Speaking of the birds seen on the 14th October, Dr. Macdonald says that "one which appeared in a hopeless state was at once treated (by the owner) to two grains of santonine;" and when my informant saw the bird in the afternoon of the same day "it had so far recovered as to be hopping about and picking up food." On the 4th of the following November the same correspondent obligingly informed me that the epidemic had been "at last mastered." It seems that altogether twelve birds had perished, the remainder now appearing perfectly healthy.

It is not stated whether the final and satisfactory result appeared to be due to the administration of the remedies I had recommended; but, in any case, the cessation of the disorder following so close upon the employment of santonine is worthy of being noticed. I had almost hoped that my report, in the interests of science, would be published; but, so far as I am aware, such has not been the case. In regard, however, to the dissection (upon which that report was mainly based), I have felt sure that the scientific and practical data it supplied were of sufficient interest to be placed on permanent record. The necessary dissections and microscopic examinations were made on the 9th and 10th of October, whilst the bird was perfectly fresh. The blood, muscles, and cellular tissues, and every organ of the body, apart from the digestive apparatus, were found to be thoroughly healthy; and it was only when the alimentary canal



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