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HELMINTH PARASITES OF THE BLACK PARTRIDGE *FRANCOLINUS FRANCOLINUS ARABISTANICUS* IN BAGHDAD AREA, IRAQ.

Mohammad K. Mohammad

Natural History Museum, University of Baghdad, Baghdad, Iraq

ABSTRACT

This paper deals with a preliminary survey helminth parasites of the black partridge. *Francolinus francolinus arabistanicus* in Baghdad area, middle of Iraq. It was found that the bird was infected with the cestodes *Cotugnia digonopora* and *Raillietina tetragona* with infection rates of 61.9% and 4.8% respectively, and the nematodes *Heterakis gallinarum* and *Paronocerca rouss-lotti* with infection rates of 4.8% and 19% respectively. Some important measurements, distribution and occurrence according to host-sex of each parasite were provided along with some remarks on parasites biology.

INTRODUCTION

Francolinus francolinus arabistanicus is one of two subspecies of black partridge found in Iraq. It is widely distributed throughout middle (including Baghdad area) and south of the country (Allouse, 1960—62). As a game bird it is the most familiar and popular one.

Few investigations were made abroad about helminths of the black partridge (Bump and Bump, 1964; Deshmukh, 1969; Karyakarte, 1970). In Iraq, no work had been carried out on this subject. This work is dealing with surveying and reporting the helminth fauna from the black partridge for the first time in Iraq along with their infection rates, intensity and distribution.

MATERIALS AND METHODS

A total of 21 birds were collected from farms and rural areas around Baghdad city through shooting during the period may 28—October 15, 1988. Blood smears were made in the field immediately, air dried, fixed with absolute methanol and then stained with Giemsa's stain. Birds transferred to the labo-

ratory as soon as possible (Maximum within 4 hrs) and dissected. All organs were searched for the parasites. The recovered holminths were put in warm saline, then kept in 70% alcohol. Nematodes cleared in lactophenol while cestoesd stained with acetocarmine, dehydrated in a seris of 70,80,90 and 100% alcohol, cleared in xylene and then mounted in Canada balsam. Photomicrographs were taken with Olympus research microscope (Vanox). All measurements used here are in mm unless otherwise stated.

RESULTS

Thirteen birds were found infected with either one or more species of parasites. Table 1 summerized the results on occurrence, infection rates, and number of parasites, male, female and immature stages of nematodes. The costode *Cotugnia digonopora* appeared in all infected birds both in single and double infections. Table 2 shows the occurrence of parasites among male and female hosts. This would show that females acquire 4.7% more parasitemia than males. Preliminary examination of crops and gizzards of dissected birds showed that the ants were the most common animal food.

Heterakis galinarum (Schrank 1788) (Nematoda, Heterakidae) (Figs. 1—3)

Infection site : caecum

Measurements : male, total length 10.1, maximum width 0.39, esophagus 0.68. ventriculus 0.22 0. 18, distance of cloace from posterrior end 0.43, left spicule 1.45, right spicule 055; female, total length 13.4—17.05, maximum width 0.49, esouphagus 0.93, ventriculus 0.23 0.22, distance of anus from posterior end 0.66, distance of vulva from anterior end 5.59, Eggs 73 X 42 um.

Paroncocerca rouselotti Chabaud and Biocca 1951 (Nematoda, Dipetalonmatidae) (Figs : 4—7).

Infection site : microfilaria : peripherel blood; immatures : trachea;
adults : aorta and heart

Measurements : male, total length 27. maximum width 0.26, distance of cloaca from posterior end 0.12, length of spicule 0.32; female : total length 53, maximum width 0.46, distance of vulva from anterior end 3.2, distance of anus from posterior end 0.54.

Cotugnia digonopora (Pasquale 1890) (Cestade, Davaineidae) (Figs 8—10)

Infection site : small intestine

Measurements : total length 53—75, maximum width 5.4, scolex diameter 0.85—1.1, rostellar hooks 14.5um in one circle, sucker diameter 0.25X0.36, number of testes 108—120, two sets of reproductive organs, genital pore in the middle of lateral edge of proglottid, eggs 60X80 um.

Ratilletina tetragona (Molin 1858) (Cestoda, Davaineidae) (Figs 11—13)

Infection site : small intestine

Measurements: total length 120—170, maximum width 1.3—3.3, scolex diameter 0.2X0.3, sucker diameter 0.093, rostellar hooks 0.11 um in two circles, number of testes 28, genital pores unilateral situated in the middle of lateral edge of proglottid, egg capsule 0.10—0.18.

DISCUSSION

Since there is no previous investigation on helminths of black partridge in Iraq, these findings constitute the first record of these parasites for black partridge in Iraq.

As shown in the results, the most dominant animal food is ants. This may be correlated to high intensity of cestodes which comprise 65.3% of total parasitemia. Ants perhaps serve as intermediate hosts of these parasites.

The infection rates in regard to host sex show that females acquires slightly more infection than males. It is not clear wether this due to feeding habits of hosts or to the small number of birds examined.

The nematode *Heterakis gallinarum*, is of a cosmopolitan distribution and lives usually in the caeca of Galliformes and infects wild birds more frequently than domesticated ones (Baylis, 1936; Kotlan, 1960). It is the only representative of its genus reported from *Francolinus* spp. (Yamaguti, 1961). It was reported from *Francolinus gularis* in Calcutta, India (Baylis, 1936). Present specimens almost fit with description and measurements provided by Baylis (1936), but they are slightly larger than that reported by Al-Hubaity and Al-Habib (1979) from domestic fowl in Mosul area, Iraq. They reported 45.84% infection rate while it is 4.8% in the present study.

The other nematode *Paroncocerca rousselotti* is known from *Francolinus coqui, F. finschi F. francolinus*, and *Pternistes leucoscepus* in Conga, Somoin Azerbaidjan, and India (Sonin, 1968). Specimens from traehea are immatures and a little difficult to identify, but those from aorta and heart fit very well

Table 1. Occurrence, infection rates and number of parasites obtained from *F. francolinus arabistanicus.*

Parasite species	total no.	no. host infected	%host infection	relative % parasite	no. parasite/host
Heterakis gallinarum	5	1	4.8	3.40	5
Paroaceria tousselotil	46	4	19	31.29	11.5
Cotugnia digonopora	93	13	61.9	63.26	7.2
Raklielina tetragona	3	1	4.8	2.04	3

Table 2. Occurrence of parasites among males and females of *F. francolinus arabistenlcus.*

no. & sex of hosts	*Heterrekis gallinarum*				*Paro-cosetca rousselottl,*				*Cougnia dignoopora*			
12	1	8.3	2	3	2	16.7	4	6	12	7	58	44
9	—	—	—	—	2	22.2	5	4	15	6	66	49

the original description of Chabaud and Biocca (1951). This finding seems interesting because it shows that, apparently, the development in the bird begins in the neck and is completed in the aorta.

The cestode *Cotugnia digonopora* was reported from domestic fow. Somett's jungle fowl, ducks and **Columba** spp. in Egypt, India, Burma, Indonesia, Philippines and Iraq (Southwell, 1930; Johri, 1934; Yamaguti, 1959; Meggitt, 1961; Al—Aloosi, 1985). It varies considerably among different hosts and localities especially in the number of testes (Southwell, 1930; Johri, 1934; Meggitt, 1961). Present specimens slightly differ from those reported by Al-Aloosi (1985) from wood pigeon in Iraq in having one circle of rostellar hooks instead of two and 108—120 instead of 100 testes. Otherwise, they fit well in other characters. Infection rate of this species in wood pigeon was 28.12% (Al-Aloosi, 1985) while it is 4.8% in this study.

The cestode *Raillietina tetragona* has a cosmopolitan distribution and was frequently reported from a variety of avian species in Iraq. Present spedimens fit with the measurements provided by Al-Alosi (1985). The infection rates recorded for this cestode were 18.46%. 0.22% and 7% in domestic fowl, domestic pigeon, and wood pigeon respectively (Al-Hubaity and Al-Hubib, 1989; Zengana, 1982 Al-Aloosi, 1985), while it is 4.8% in this study.

The considerable differences in infection rates in this study with those reported by (Al-Hubaitl and Al-Habib ,1979; Zangana, 1982; Al—Aloosi, 1985) are perhaps related to either the different feeding patterns of hosts which are allied to two different avian orders, or to the smaller sample size used here.

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الديدان الطفيلية في طير الدراج من منطقة بغداد ، العراق

محمد كاظم محمد

متحف التاريخ الطبيعي ـ جامعة بغداد ـ بغداد

الخلاصة

يمثل هذا البحث مسحاً أوليا للديدان الطفيلية في طير الدراج من منطقة بغداد ، لقد وجد بان الدراج مصاب باثنين من الديدان الشريطية هما **Raillietina tetragona** **Cotugnia digonopora**

وبنسب اصابة ٩ر٦١٪ و٨ر٤٪ على التوالي ، واثنين من الديدان الخيطية **Paroncocerca rousselotti** و **Heterakis gallinarum**

وبنسب اصابة ٨ر٤٪ و١٩٪ على التوالي . وقد ادرجت بعض القياسات المهمة والتوزيع وحدوث الاصابة للطفيليات تبعا لجنس المضيف مع بعض الملاحظات عن حياتية الطفيليات .

Fig. 1 *Heterakis gallinarum* anterior extremity of female

Fig. 2 *Heterakis gallinarum* Posterior extremity of male

Fig. 3 *Heterakis gallinarum* Posterior extremity of female

Fig. 4 *Paroncocerca rousselotti* microfilaria in periphery blood

Fig. 5 *Paroncocerca rousselotti* anterior extremity of female

Fig. 6 *Paroncocerca rousselotti* posterior extremity of male

Fig. 7 *Paroncocerca rousselotti* posterior extremity of female

Fig. 8 *Cotugnia digonopora* scolex

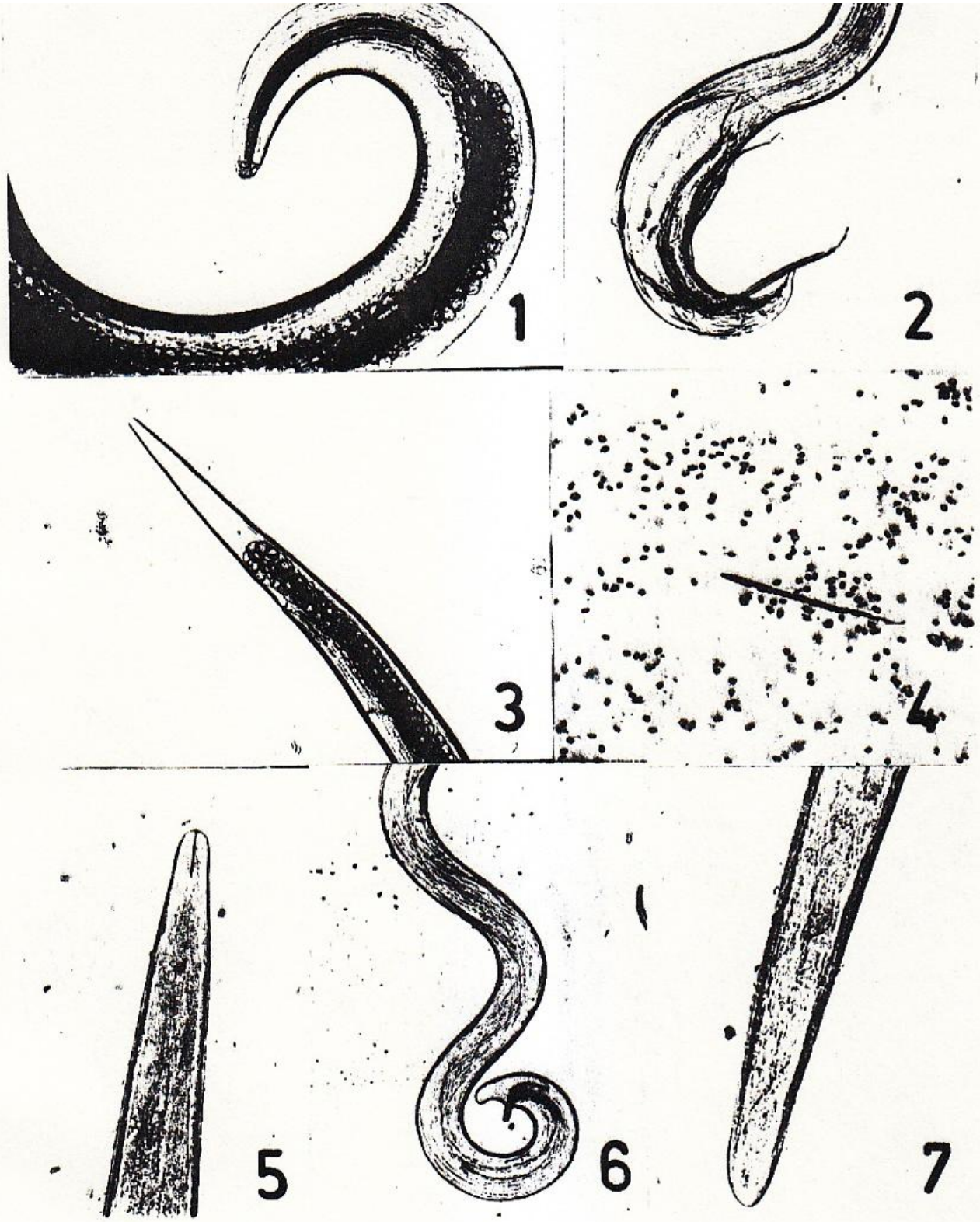
Fig. 9 *Cotugnia digonopora* mature segment

Fig. 10 *Cotugnia digonopera* gravid segment

Fig. 11 *Raillietina tetragona* scolex

Fig. 12 *Raillietina tetragona* mature segment

Fig. 13 *Raillietina tetragona* gravid segment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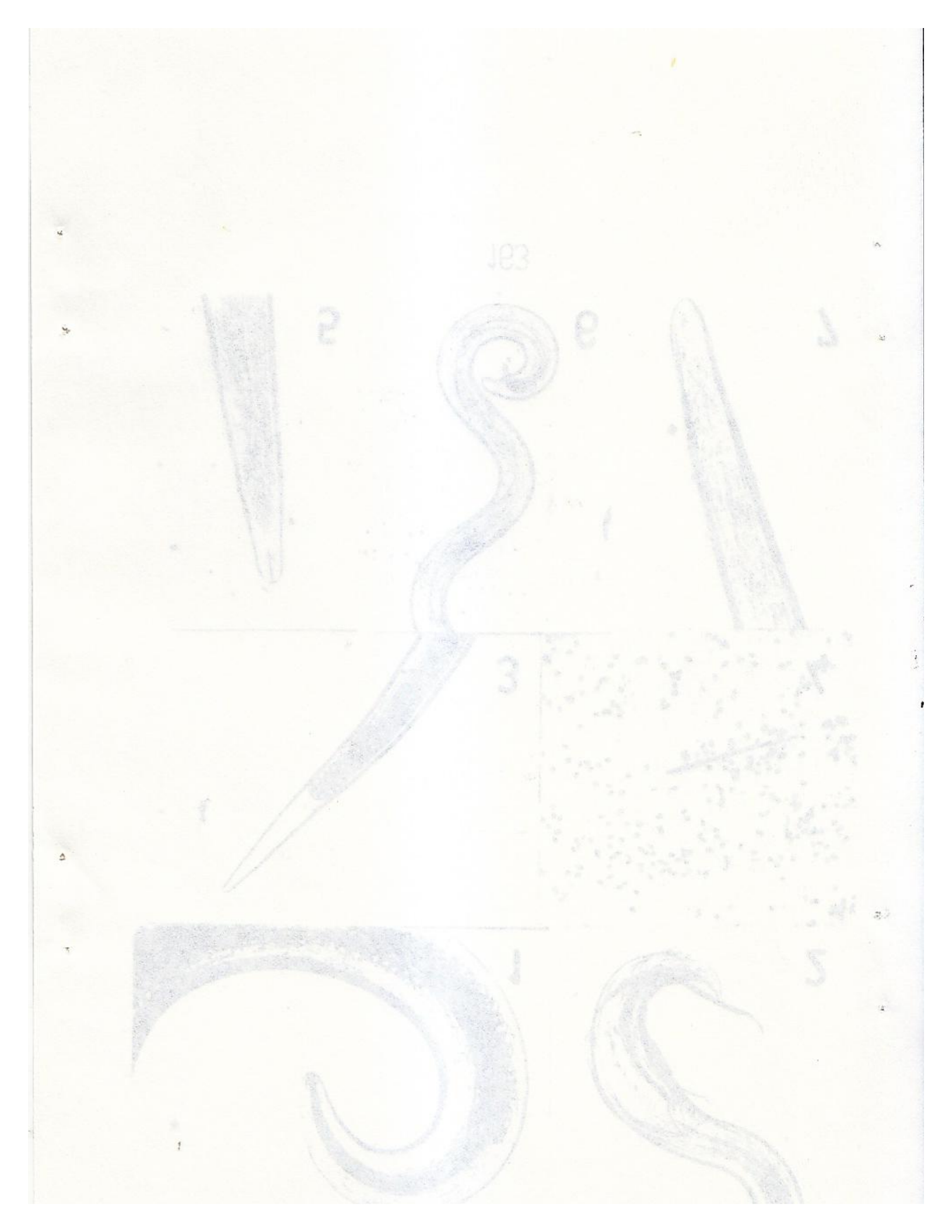

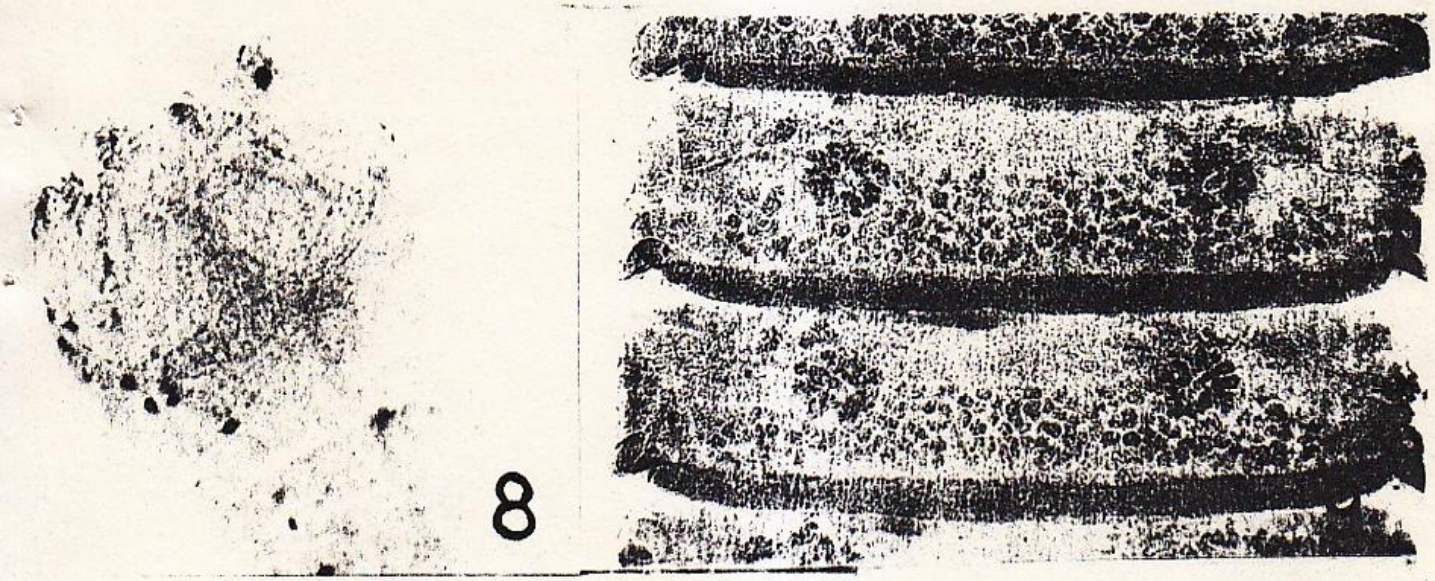

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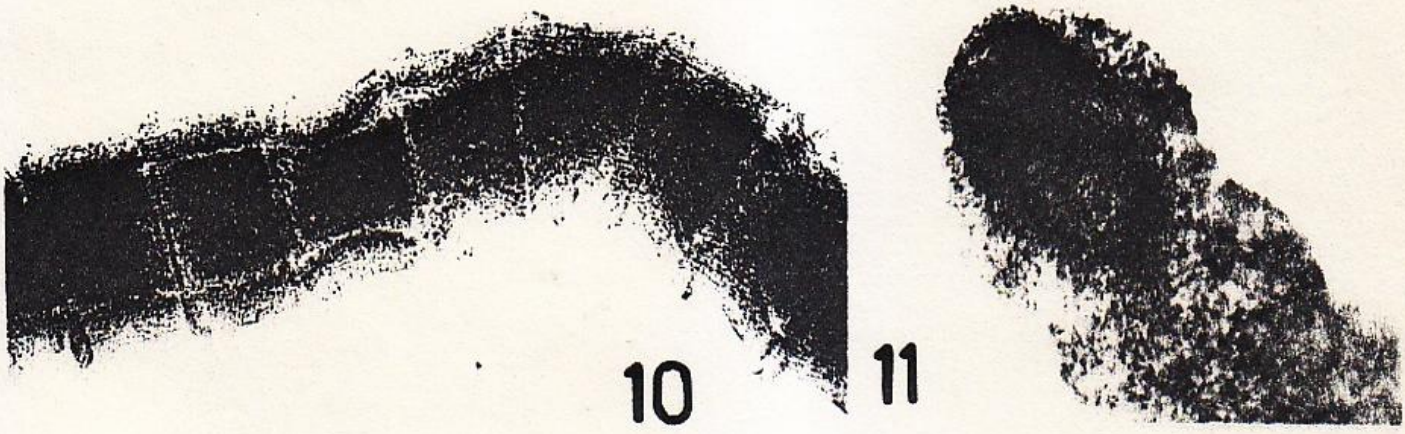

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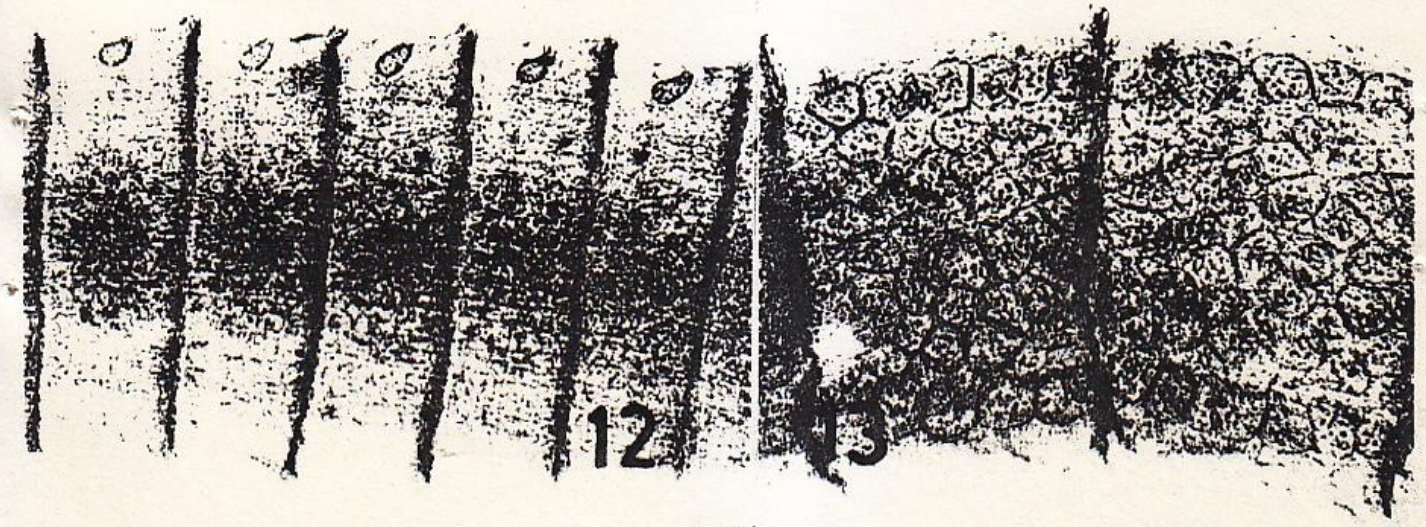

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