

***Marshallagia marshalli* (Ransom, 1907) Orloff, 1933 and a New Species of this Genus from Sheep in South Africa.**

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In 1907 Ransom described a nematode parasite from the abomasum of sheep and named it *Ostertagia marshalli*. The same species was described in 1910 by Marotel as *O. tricuspis*. The parasite, although having many points in common with other species of *Ostertagia*, differs from them in a few important features and was therefore placed in a separate new genus *Marshallagia*, created for the purpose, by Orloff in 1933. Meanwhile, in 1932, Bhalerao described *Ostertagia orientalis* from goats in India and this species was transferred to the genus *Marshallagia* by Travassos in 1937.

M. marshalli has been recorded from several countries and from sheep, goat, *Rupicapra rupicapra* and *Camelus bactrianus*. It is here recorded for the first time from sheep in the Union of South Africa.

In the course of a survey of the Union, made in order to determine the distribution of *Gaigeria pachyscelis*, the eggs of *Marshallagia* were seen in a number of specimens. These eggs (Fig. 7) are conspicuous on account of their large size, in which they resemble the eggs of *Nematodirus* spp. They are, however, narrower and the ends are less pointed, while the embryo consists of a morula and not of a few cells as in the case of *Nematodirus*, when passed in the faeces of the host. For the purpose of this survey some 2,000 specimens of fresh sheep faeces were collected on farms all over the Union, placed immediately in 10 per cent. formalin and forwarded to Onderstepoort for examination. The method was quite satisfactory and such a survey is of great value. The *Marshallagia* eggs were found only in specimens from the central area of the so-called South African desert, the Karroo, that is in the Calvinia - De Aar - Beaufort West area, which has a very low rainfall. Incidentally it may be noted that *Nematodirus* eggs were similarly seen only in specimens from the Karroo, although its distribution is wider and covers the whole of this region.

Marshallagia eggs were subsequently found at Onderstepoort in the faeces of sheep introduced from the infected area and the worms were found at post-mortem examination. *Ostertagia* is usually found in the posterior, fundus portion of the abomasum, while the *Marshallagia* worms were always found, in the cases so far examined, to inhabit mainly the anterior portion of the abomasum, close to the entrance of the oesophageal groove.

MARSHALLAGIA MARSHALLI (Ransom, 1907).

All the worms collected so far, with the exception of one male, belong to this species.

The worms are brown in colour and lie in the mucus covering the mucous membrane. They could be mistaken for males of *Haemonchus contortus*, although these are stouter. The head is inconspicuous and its cuticle is not inflated. The body cuticle is marked by longitudinal ridges which vary in number in different regions; at the middle of the body there are about 28 ridges in the female and 34 in the male. The oesophagus is simple, club-shaped. The cervical papillae are small, triangular.

The females are 16·5-18·5 mm. long (12-20 mm., Ransom) and 0·143-0·208 mm. wide just behind the vulvar region. The head is 0·022 mm. wide. The nerve ring is situated 0·3-0·31 mm. from the anterior extremity, the excretory pore 0·342-0·39 mm. and the cervical papillae 0·385-0·422 mm. The oesophagus is 0·858-0·897 mm. long.

The vulva is in most cases covered by a cuticular flap and is situated 3·705-4·186 mm. from the posterior end of the body (2·5-5 mm., Ransom). There is a short vagina which opens into two ovejectors, arranged according to the amphidelph type. The muscular ovejectors are 0·364-0·429 mm. long. The eggs are longate-oval, with rounded ends, containing a well-developed morula stage and measure 130-200 × 55-89 μ . The tail of the female measures 0·26-0·3 mm. and tapers out to end in a slight knob-like swelling; the posterior quarter shows transverse striation of the cuticle.

The *males* are 11·5-12·5 mm. long (10-13 mm., Ransom) and 0·17-0·175 mm. wide across the region of the heads of the spicules. The head of the male is 0·021 mm. wide. The nerve-ring is situated 0·3-0·35 mm. from the anterior extremity, the excretory pore 0·34-0·35 mm. and the cervical papillae 0·377-0·43 mm. The oesophagus is 0·82-0·85 mm. long.

The bursa has two large lateral and a small dorsal lobe. The latero-ventral ray is larger than the ventro-ventral and initially diverges from the latter, but distally it again bends forward so that the tips come close together. The antero-lateral stands apart from the other two lateral rays and ends in a blunt tip. The medio-lateral, postero-lateral and the externo-dorsal rays are close together and end in slender tips; the externo-dorsal ends some distance from the margin of the bursa. The postero-lateral is a slender ray throughout and is attached to the medio-lateral in a characteristic way. The dorsal

ray gives off the externo-dorsal at its base; the dorsal stem is slender, 0·286-0·272 mm. long and bifurcates in less than the posterior quarter of its length; each bifurcation bears a small lateral branch behind its middle and ends in a bifurcate tip near the margin of the bursa.

As in *Ostertagia* there is a large accessory bursal membrane supported by two slender rays. Prebursal papillae are present.

The spicules are brown in colour, 0·255-0·286 mm. long. Their structure is not clearly seen unless they are dissected out, as each spicule ends in three slender tips which bear large cuticular membranes. One of these tips is slender and ends in a point, another is stouter and longer and ends in a bifid tip, the third is still stouter and ends squarely.

MARSHALLAGIA BREVISPICULUM n.sp.

A single male was found, together with *M. marshalli*, and no females could be seen in this material, which might belong to this new species, although they would probably be very similar to those of *M. marshalli*.

The worm is brown in colour and 12 mm. long, by 0·169 mm. broad across the heads of the spicules. The head is not conspicuous and 0·021 mm. wide. The nerve-ring lies 0·325 mm. from the anterior extremity, the excretory pore 0·351 mm. and the cervical papillae 0·385 mm. The body cuticle is marked by 42 longitudinal ridges at its middle. The bursa is very similar to that of *M. marshalli*, also as regards the attachment of the postero-lateral ray. The dorsal ray is 0·25 mm. long. Prebursal papillae are present. The spicules are stout and short, 0·15 mm. long. The single specimen could not be dissected and the spicules therefore not clearly seen, but their appearance is shown in the accompanying figures (Nos. 5 and 6). There are two acute, curved tips distally and apparently also a rather blunt continuation of the main body of the spicule which is not as long as the two tips.

Host: *Ovis aries*.

Location: Abomasum.

Locality: De Aar.

Type in Onderstepoort Helminthological Collection.

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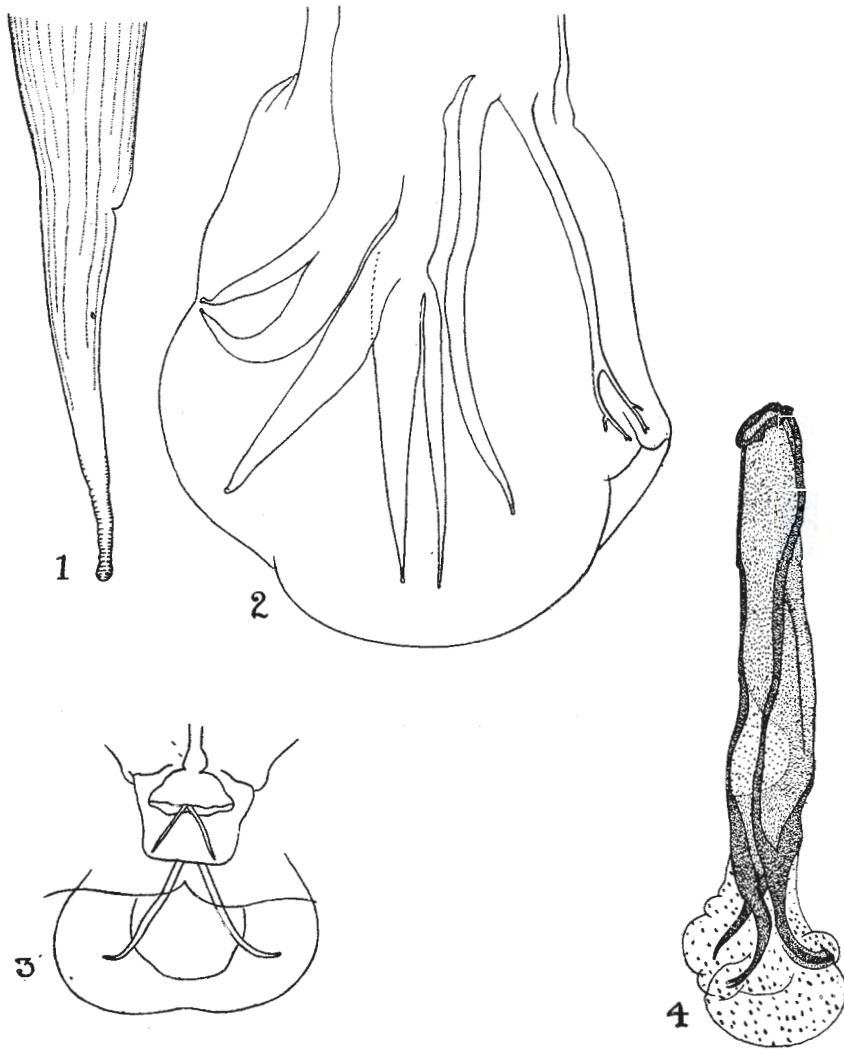


Fig. 1.—*M. marshalli*, tail of female.

Fig. 2.—*M. marshalli*, male bursa.

Fig. 3.—*M. marshalli*, male, accessory bursal membrane.

Fig. 4.—*M. marshalli*, male, spicule.

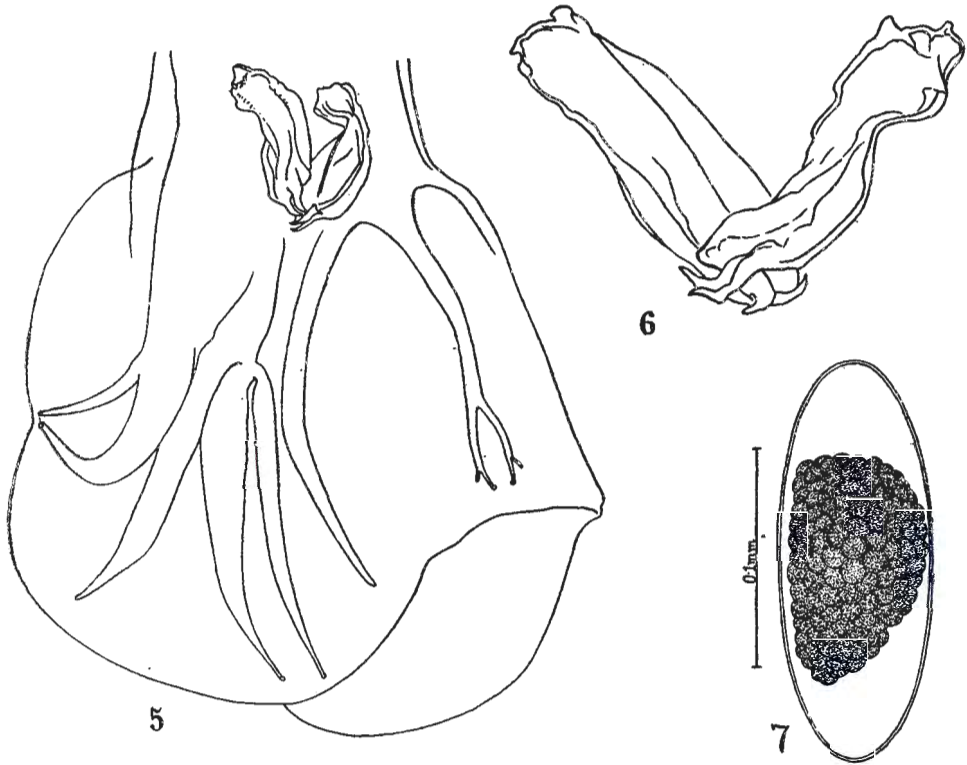


Fig. 5.—*M. brevispiculum*, male bursa and spicules.

Fig. 6.—*M. brevispiculum*, male, spicules.

Fig. 7.—*M. marshalli*, egg, as passed in faeces of host.