RESEARCH NOTES

Exsheathment in *Longidorus africanus* (Nematoda: Dorylaimoidea)

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Molting was observed on 15 mixed juveniles of a population of *Longidorus africanus* Merny (Nematoda: Dorylaimoidea) collected from Southern California. Handpicked larvae were incubated either on 1.5% water agar or in a drop of egg white hanging from a coverslip into a cavity slide. The first observable indications of molting was the complete cessation of any movement and a dark granular appearance of the body contents. Then space appeared between the old cuticle and the membrane surrounding the nematode at the head and tail regions. The onchiostyle, perhaps released from its muscles, was extruded through the oral aperture of the old cuticle. The spare (new) onchiostyle migrated anteriorly and the new cuticle and the stomatal linings of the new larva became evident. At about the same time, a slit appeared in the old cuticle at a level corresponding to the position of the old nerve ring. The slit was 150–200 μ long and was always located in the same position (Fig. 1a). When these processes were completed the head of the new stage was retracted to the level of the slit and slowly began to slip out of the old cuticle (Fig. 1b). Of the nematodes observed only one was able to become completely free of the old cuticular membrane. This was probably due to the liquid nature of the medium.

The mechanism of the slit formation remains obscure. Hooper (3) suggests that the cuticle could be ruptured by piercing with the new onchiostyle. Rapid movements of the nematode or of the new onchiostyle which would be necessary for piercing the wall of the old cuticle were never observed in these specimens.

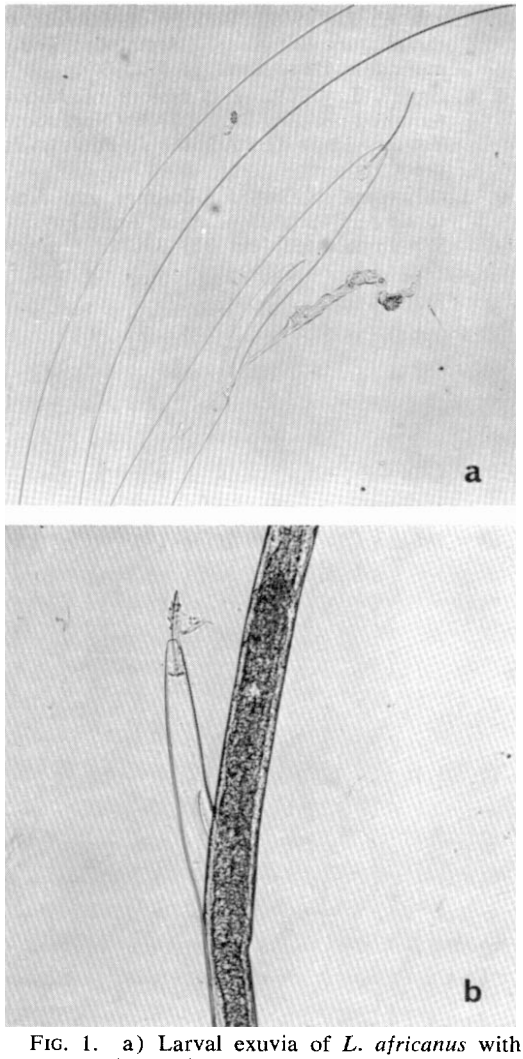

FIG. 1. a) Larval exuvia of *L. africanus* with slit at the level of the old nerve ring; b) juvenile of *L. africanus* slipping out of the old cuticle.

Received for publication 10 July 1968.

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Exsheathment in *L. africanus* differs from that observed in other groups of the phylum Nematoda. In members of Trichostrongylidae the head cap is removed after the nematode is induced to produce an exsheathing fluid by the host (6). A cap-like tip is also lost in juveniles of *Caenorhabditis briggsae* (Rhabditidae) where the larva emerges from the rest of the old cuticle by swimming (4). In *Seinura* spp. (Aphelenchoididae) the old cuticle is broken just behind the lip region by the pressure of the lip region of the new stage larva, following probably, a flow of softening fluid from the glandular esophagus (2). No precise observations are available on the exsheathing of Tylenchidae. It has been suggested that simple abrasion against soil particles is responsible for removing the cuticle of *Tylenchulus semipenetrans* (7). In others such as *Hemicycliophora* spp., *Meloidogyne* spp., and *Heterodera* spp. the cuticles are retained for relatively long periods of time. Fisher (1) was unable to demonstrate a refractile ring and cap formation in *Paratylenchus nanus*.

The author has observed the escape of several species of *Xiphinema* and *Longidorus* through a slit in the cuticle. Radewald (5) has made a similar observation in the molting of *Xiphinema index*. Therefore, it seems likely that this mechanism of exsheathment is common to all members of the subfamily Longidorinae.

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