

Table 2 Mean sum of squares for resistant and susceptible varieties

Source	Df	No of tannin sacs	Diameter of tannin sacs
Treatments	19	234.18*	20.39 NS
Resistant varieties	13	89.24 NS	18.22 NS
Popular varieties	5	116.67*	18.22 NS
Resistant vs. popular varieties	1	2706.13*	0.74 NS

* Significant at 1% level

between rust resistance and the number of tannin sacs. Anti-fungal properties of tannins are known since the time to Cook *et al*⁶, and varietal resistance has been related on numerous occasions to polyphenol content⁷.

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OCCURRENCE OF *LEPTOMONAS PYRRHOCORIS* L. & D. IN THE HAEMOLYMPH OF *ODONTOPUS NIGRICORNIS* STAL. (INSECTA—HETEROPTERA—PYRRHOCORIDAE)

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NUMEROUS species of *Leptomonas* Kent have been described in literature. Of these 40 species are found in the intestinal tract of Hemiptera, Diptera and Siphonoptera. *Leptomonas pyrrhocoris* is the only one species reported to occur in the gut and the haemolymph of *Pyrrhocoris apterus*¹. However information

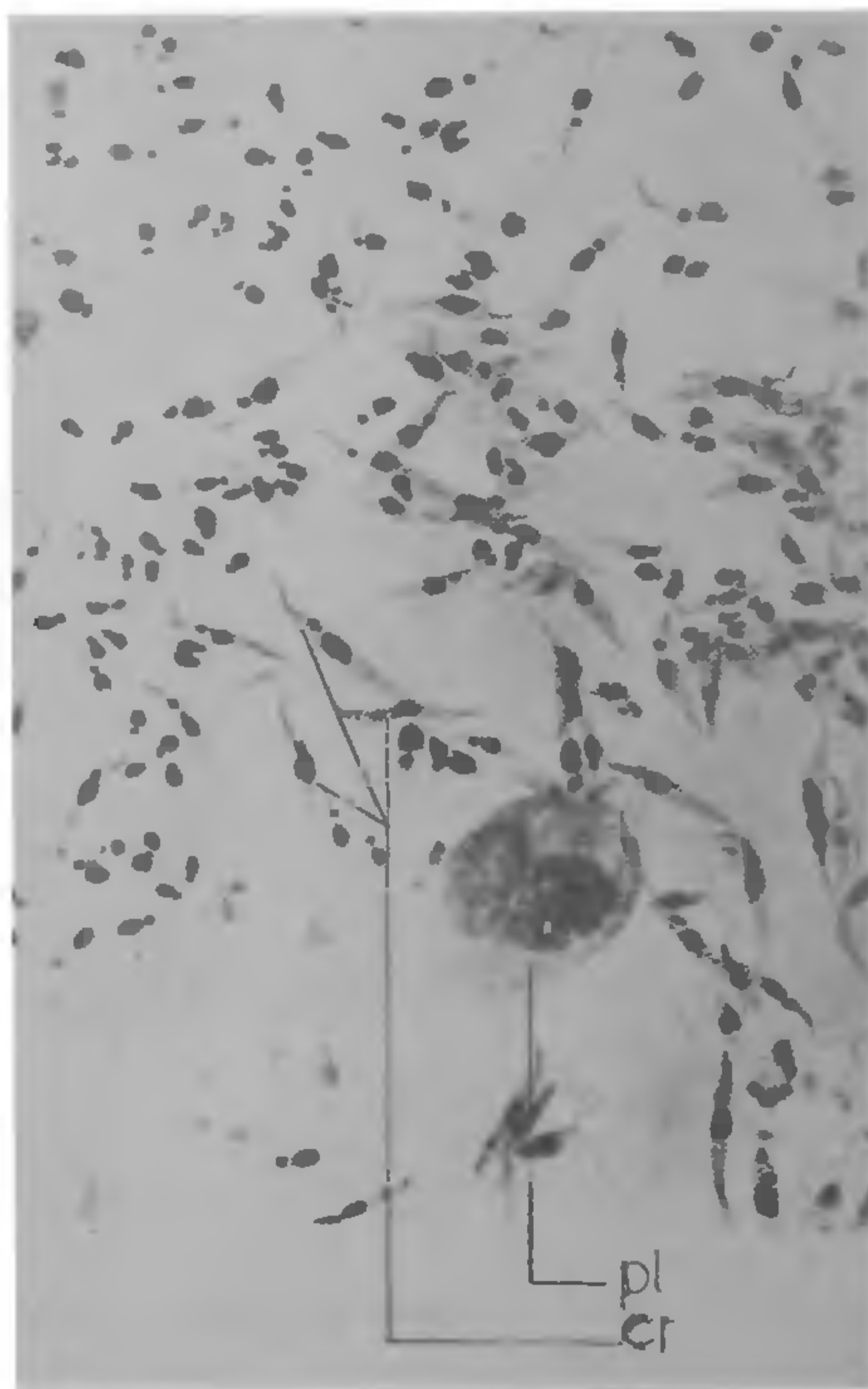


Figure 1. Ethanol fixed and Giemsa stained haemolymph of infected insect *Odontopus nigricornis* showing parasites mostly crithidial form (cr) and a binucleate plasmatocyte (pl) $\times 900$.

about the pathogenic influence of leptomonad on the insect host is very scanty since most papers contain only taxonomic data about the species involved. In a normal *Odontopus nigricornis*, five types of haemocytes are present. These are Prohaemocyte, Plasmacyte, Granulocyte, Adephocyte and Oenocytoid.

In the haemolymph of an infected *O. nigricornis* are present leptomonad, crithidial and leishmanial forms, but the most prevalent are crithidial forms 22 to 24 μm long by 3 to 4 μm wide and having a flagellum about 18 to 22 μm in length (figure 1).

The pathological influence of *L. pyrrocoris* on *O. nigricornis* is indicated by the sluggish movement of the animal. The haemolymph containing millions of flagellates becomes thicker and whitish in colour instead of the normal brownish or colourless. Similar observation has been reported in *P. apterus*¹.

In an infected *O. nigricornis* it has been observed that out of five different types of haemocytes, the plasmacyte is increased from 65 to 94%. The cell size and the nuclear size of the plasmacyte is increased from 20 to 26 μm and 10 to 14 μm respectively. The nuclear size of some plasmacytes increases which later on divides forming a binucleate cell (figure 1). However, it has been reported that there is three times increase in the number of prohaemocytes of *Galleria mellonella* due to the influence of *L. pyrrocoris*².

These changes in the haemocyte picture of *O. nigricornis* indicate the possible reaction and the defence mechanism to combat the parasitic infection.

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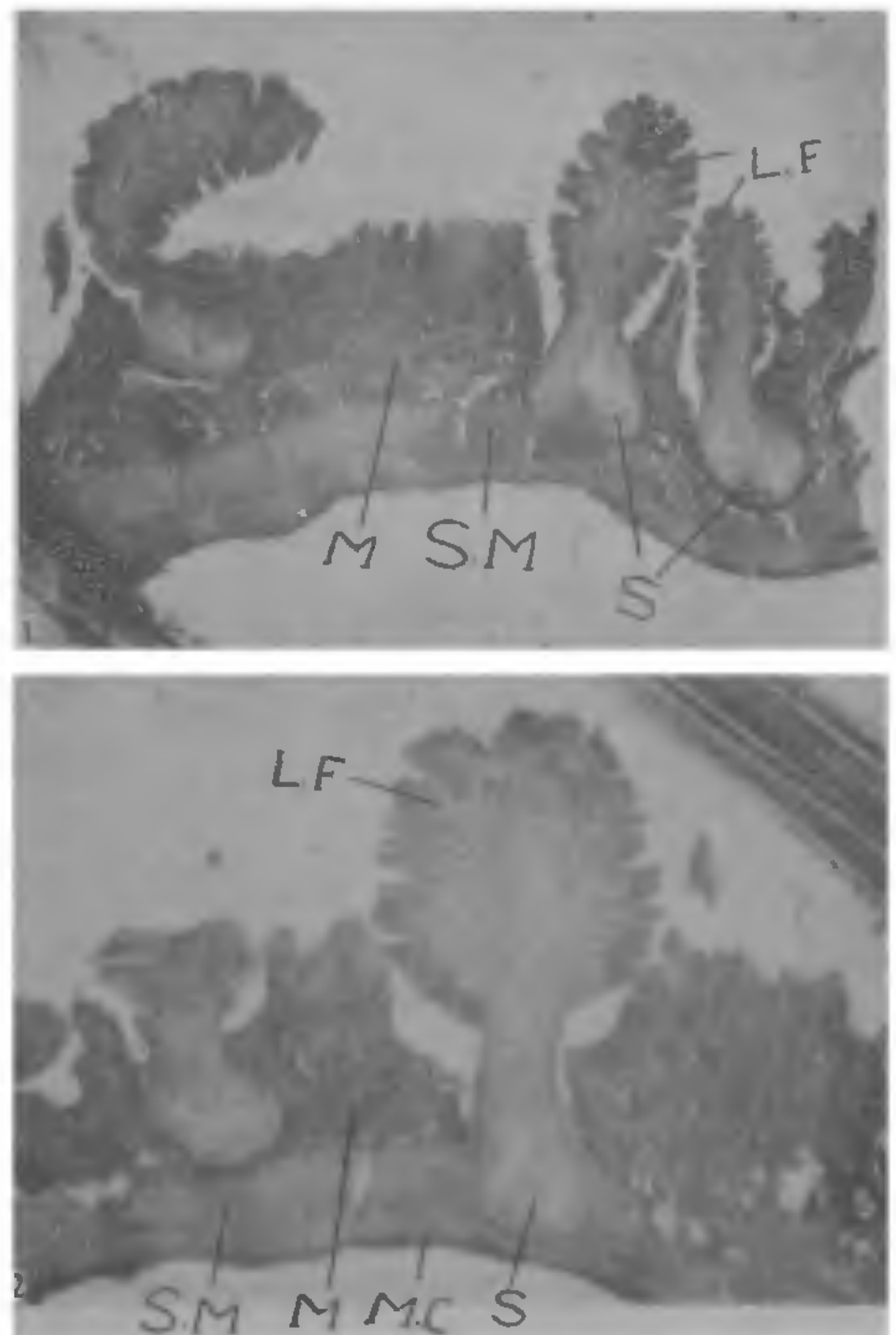
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HOST-PARASITE RELATIONS IN MONOZOIC TAPEWORM, *LYTOCESTOIDES FOSSILIS* INFECTION OF FRESHWATER FISH, *HETEROPNEUSTES FOSSILIS* (BLOCH).

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THE nature of helminthic infections in vertebrates has been studied extensively but information on the pathogenic effects of Caryophyllid tapeworm remains comparatively meagre, although valuable contributions in this field have been made¹⁻⁴. The present work deals



Figures 1 and 2. Sections of small intestine of *Heteropneustes fossilis* showing *Lytocestoides fossilis* buried upto 1. submucosa and tissue reaction 2. muscular coat, crypt and vacuolation of submucosal cell. ($\times 100$). L.F: *Lytocestoides fossilis*, M. mucosa, M.C: muscular coat, S: scolex, S.M: submucosa.