exhibited weak to moderate reactions for esterase activity in contrast to the intense reaction reported by Becejac *et al.*[12] and Krvavica *et al.*[8]. However, esterase activity hitherto observed was associated with the outer lining of the acetabulum thereby indicated the attachmentary function as suggested in other trematodes[4-6]. Both cuticle and subcuticle exhibited moderate reaction for esterase activity which would indicate the secretion of the enzyme by the subcuticular cells and its further accumulation in the overlying cuticle. This process supports the suggestion made by Bogitsh[2] that the subtegumentary cells help to maintain the intimate contact with the host tissue by secretory functions.

The activity was more pronounced along the length of the caeca with slightly more intense reaction in the caecal contents (Fig. 1). Similar

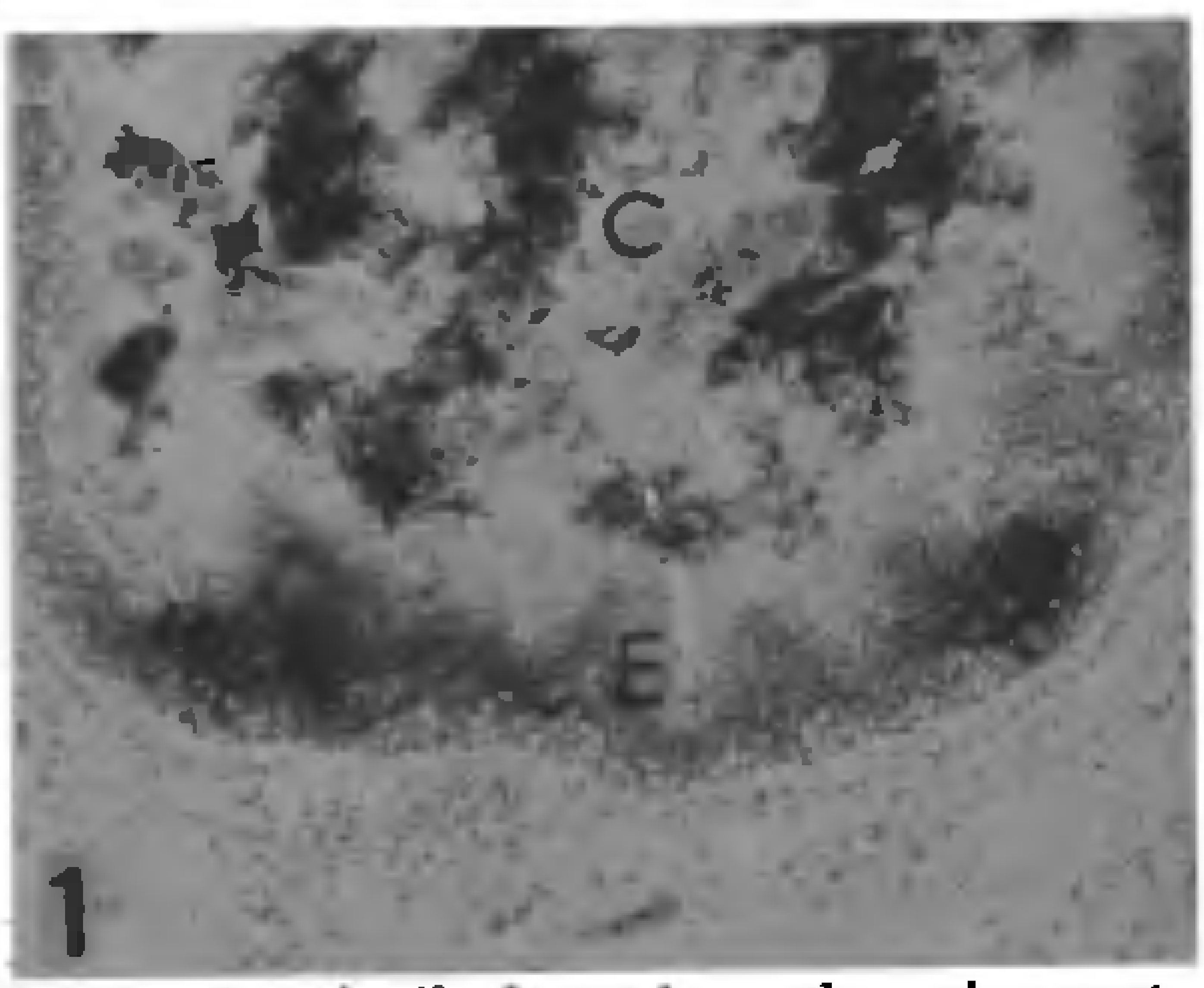

FIG. 1. Longitudinal section through part of the caecum showing intense esterase activity in the epithelial layer (E) and caecal contents (C), × 300.

observations were made in other trematodes[7-13] but Ohman[13] reported the variations of esterase activity in the caecal cells of three different trematodes. The present observations clearly indicated that the caecum was more active for esterase activity than the cuticle which suggests that the caecum is more involved in the absorption and transfer of metabolites into the worm as reported in *Fasciola hepatica*[10]. The esterase activity in the parenchyma appears to be deposited in the form of small granules which were uniformly distributed throughout the tissue with slightly more granules accumulated in the cells surrounding the caeca. The parenchyma cells probably help in the supply of nutrients to the neighbouring tissues.

The epithelial layer of testis and the cells of the ovary exhibited moderate reactions, while Allen and Reinard[6] and Halton[7] observed intense reaction in the epithelial layer of testis. Fully developed eggs within the uterus showed moderate activity. The vitellaria was found to be negative for this enzyme activity.

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THE CEREBRAL GLAND OF *GONOPLECTUS MALAYUS* (CARL.) (MYRIAPODA, DIPLOPODA)

THE neurosecretory system of invertebrates has been worked out in detail but very little work has been done in Myriapods. Very few workers have attempted to study the neurosecretory system of Chilopodes[1,2,4] and Diplopodes[3,5-8]. The present investigation on the neurosecretory system of millipede *G. malayus* has revealed the detailed structure of the cerebral gland.

The cerebral glands of the millipede under study are two in number, located in the lateral side of the brain as in *Jonespeltis*[6]. The glands are in close contact with the wall of a blood sinus and it is likely that the product of neurosecretion is discharged into this sinus. In living condition, the glands are bluish in colour. Each cerebral gland is connected to the brain by two nerves, the anterior and the posterior. The anterior nerve is 420 μ long and at the base its breadth is 140 μ while near the gland it is only 28 μ. The posterior nerve is longer and thinner in comparison to the anterior nerve. Its length is 700 μ and breadth only 28 μ (Fig. 1).

The shape and size of the cerebral gland vary according to the accumulation of neurosecretory product. Normally it measures about 490 μ in length but its breadth ranges from 160 μ to 170 μ whereas at the ends, its breadth is only 98 μ (Fig. 2). Unlike *Jonespeltis* (Prabhu, 1959) the

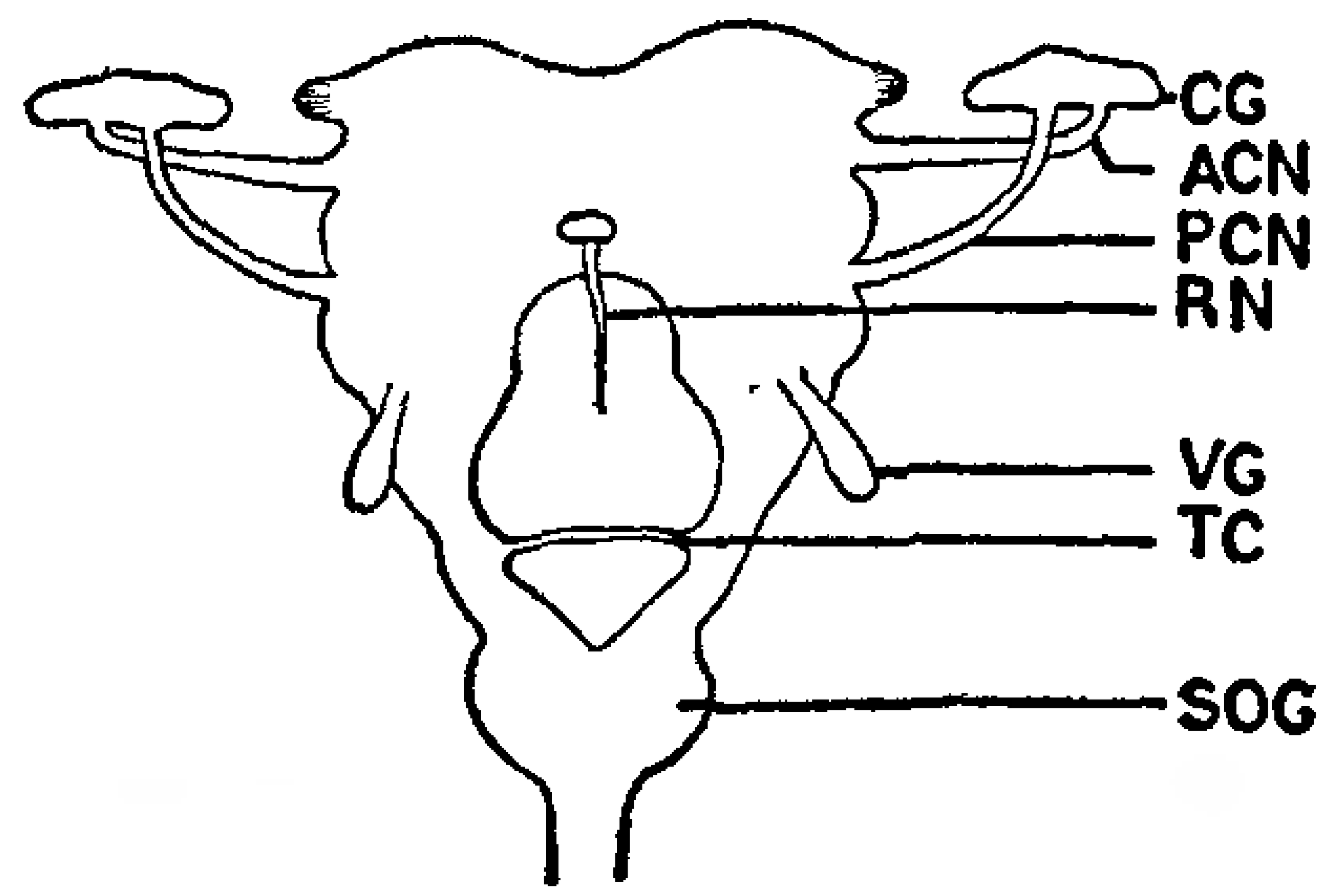

FIG. 1. Neurosecretory system of *Gonoplectus malayus* (Carl.).

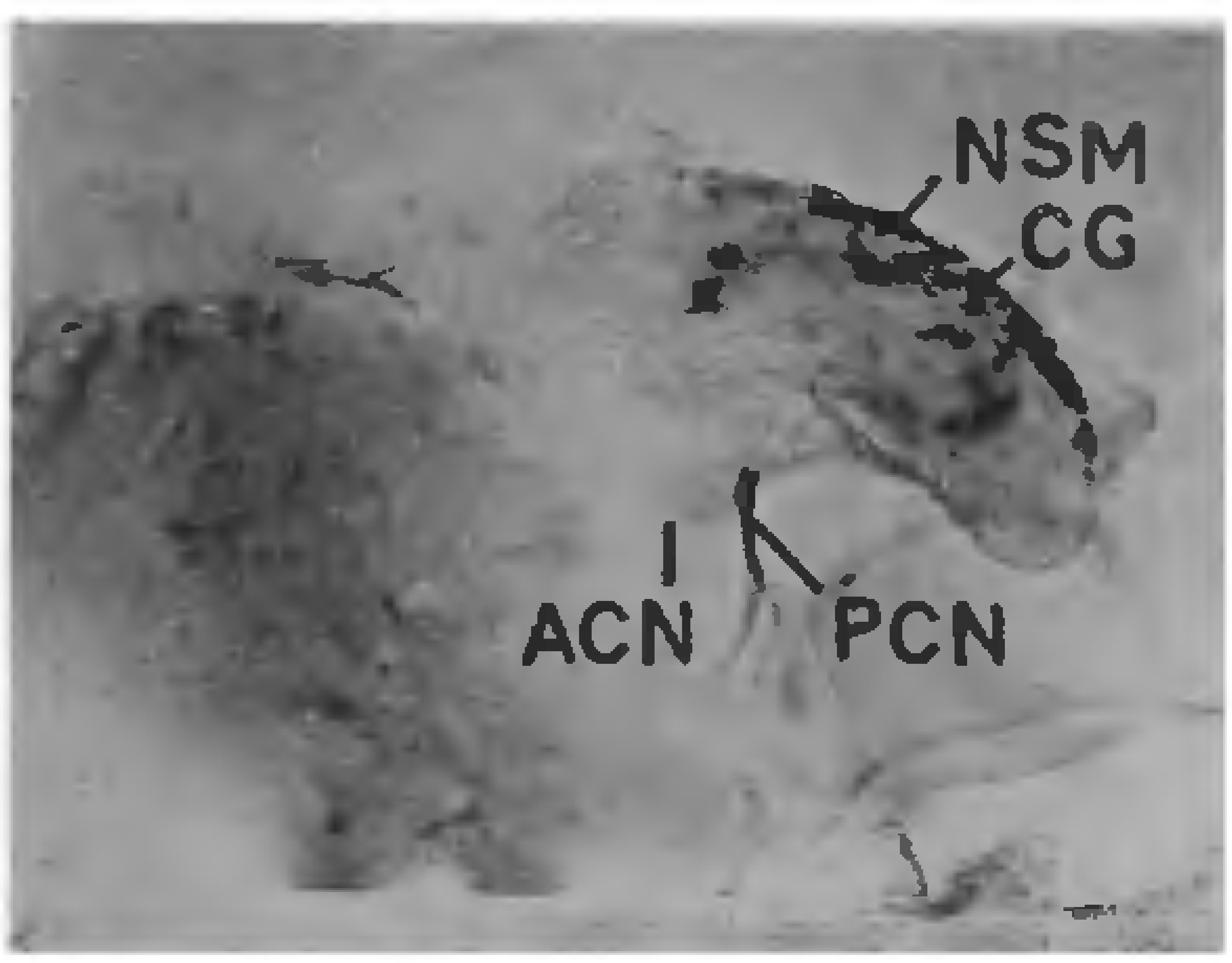

FIG. 2. Whole mount of cerebral gland associated with cerebral nerves and the part of the brain. P.F. *in situ*.

ACN, Anterior cerebral nerve; CG, Cerebral gland; NSM, Neurosecretory material; PCN, Posterior cerebral nerve; RN. Recurrent nerve; SOG, Suboesophagial ganglion; TC, Transverse; connective; VG, Visceral ganglion.

boundary of the gland is smooth. Gabe[1,2] is of the opinion that the cerebral gland discharges its own secretion but in *G. malayus* it could not be confirmed. It appears to be a storage and releaser organ, and seems to resemble the sinus gland of crustacea.

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ON THE OCCURRENCE OF *BACILLIDIUM* SP. A MICROSPORIDIAN PARASITE INFECTING SOME THRIPS LARVAE

IN the course of investigations on the population dynamics of two Terebrantian thrips species—*Thrips flavus* (Schrank) and *Scirtothrips oligochaetus* (Karny), noted as pests of cotton, causing deformation and early drying of the leaves and resulting in the stunted growth of the plants, a dramatic decline in the population was observed during September 1975. An examination of available larvae and adults revealed the occurrence of the microsporidian parasite *Bacillidium* sp. and the infection was so intense, that in some larvae, all available space in the haemocoele was occupied by microsporidian spores. To our knowledge, this is the first record of any endoparasitic protozoan in a species of thrips.

The average number of thrips, adults and larvae on an infected plant, was about 110 larvae and 25 adults/10 cotton leaves. Later in the middle of October 1975, it was noted that the rate dropped approximately to 2 larvae and one single adult/10 cotton leaves. At the peak of infestation by the microsporidian, the infestation rate was nearly 100%, *i.e.*, almost all the adults and larvae suffered from the infection. Later thrips population almost completely disappeared at the end of October. The revival of the population was again observed at the end of December 1975. However, there was a slow rise in the population of thrips. The mild infection of *Bacillidium* sp. has been observed in the new population of thrips and the incidence of infection is on the increase. Detailed experimental studies on the mode of infection by the microsporidian and its life history are in progress.

The damage caused by *Thrips flavus* (Schrank) and *Scirtothrips oligochaetus* (Karny) is well known. *Thrips flavus* (Schrank) is a cosmopolitan polyphagous species, found on a great variety of plants. Morison (1957) collected it from 245 species of plants. Several records of the damage done by this species are by Van Eeke (1922), Priesner (1923), Bailey (1935), Speyer (1936), Morison (1943) and Ananthakrishnan (1969).