

The new form differs from all these known species of the genus *Physaloptera* except *P. crosi* in having equal spicules instead of subequal or unequal. The new form differs from *P. crosi* in the number and arrangement of caudal papillae and in the relative size of various organs. Accordingly it is regarded as a new species with the specific name, *Physaloptera accipiteri* sp. nov.

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Lucknow (India), February 3, 1977.

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ON A NEW AVIAN NEMATODE, *PORROCAECUM*  
(*P.*) *ACCIPITERI* SP. NOV. (FAMILY: HETERO-  
CHEILIDAE RAILLIET ET HENRY, 1915)  
FROM A SHIKRA, *ACCIPITER BADIUS*  
(GMELIN) FROM LUCKNOW

SPECIMENS were collected from the intestine of a bird, *Accipiter badius* (Gmelin). These specimens represent a new species and are designated, *Porrocaecum* (*P.*) *accipiteri* sp. nov. The nematodes were fixed in alcohol-formaline, acetic acid and cleared in lactophenol. For the end-on view, the worms were cut with a sharp blade and rolled into the desired position under the cover glass.

*Porrocaecum* (*P.*) *accipiteri* sp. nov. (Figs. 1-5).

**Description.**—Body large, stout and elongated (Fig. 1). In end-on view, (Fig. 3) mouth surrounded by three lips and two sub-ventral each bearing two papillae. Pulp of dorsal lip with two flattened expanded process. Interlabia triangular with broad bases. Dentigerous ridges extremely fine. Lateral alae present throughout body. Oesophagus more or less uniformly thick with a short ventriculus. Intestinal caecum lying along side of oesophagus anteriorly. Oesophageal appendix absent. Cuticle transversely striated.

**Male:** Tail conical (Fig. 4). Twenty-nine pairs of sessile caudal papillae with twenty-three pairs preanal, one pair adanal and five pairs postanal. First postanal papillae double, lying immediately behind cloaca, other near tip of tail arranged in

tandem by pairs. Spicules equal, similar and alate. Gubernaculum absent.

**Female:** Tail conical (Fig. 5). Vulva pre-equatorial.

**Discussion:** Skrjabin, Shikobalova and Mozyovoi (1951) divided the genus *Porrocaecum* Railliet et Henry, 1912 into two subgenera *Porrocaecum* and *Laymanicaecum*. The subgenus *Porrocaecum* is characterised by the absence of a gubernaculum, the subgenus *Laymanicaecum* by the presence of one. Due to the absence of a gubernaculum the new form comes under the subgenus *Porrocaecum*.



FIGS. 1-5. *Porrocaecum* (*P.*) *accipiteri* sp. nov. Fig. 1. Anterior end of male. Lateral view; Fig. 2. Anterior end of male. (Magnified) Lateral view; Fig. 3. End-on view; Fig. 4. Posterior end of male. Ventral view; Fig. 5. Female tail. Lateral view.

Seven species viz., *Porrocaecum* (*P.*) *crassum* (Deslong-champs, 1824); *P.* (*P.*) *depressum* (Zedler, 1880); *P.* (*P.*) *ardcae* (Froelich, 1802) Baylis, 1936; *P.* (*P.*) *wui* (Hsu, 1933); *P.* (*P.*) *cheni* (Hsu, 1933); *P.* (*P.*) *haliasturi* Gupta, 1960 and *P.* (*P.*) *indica* Subramanian, 1969 have been described from Asiatic birds. The new form differs from *P.* (*P.*) *cheni* and *P.* (*P.*) *wui* from China in having large, well-developed intestinal caeca, in the number and arrangement of caudal papillae.

The new form differs from *P. (P.) ardeae* in having alate spicules, *P. (P.) crassum* in having vulva anterior to mid of body, *P. (P.) depressum* and *P. (P.) indica* in the character of the anterior lobes of the lips in a pulp and in the number of caudal papillae. The new form has a close resemblance with *P. (P.) haliasturi* in having 5 pairs of postanal papillae, but however differs from it in having lateral alae, in having equal, alate spicules instead of subequal, non-alate spicules, in having 29 pairs of caudal papillae instead of 27 pairs and in having specimens of smaller size. Accordingly it is regarded as a new species with the specific name, *Porrocaccum (P.) accipiteri* sp. nov.

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Lucknow (India), February 3, 1977.

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#### QUANTITATIVE DISTRIBUTION OF THE CARDIO-ACCELERATORY SUBSTANCE IN THE CENTRAL NERVOUS SYSTEM OF *HETEROMETRUS FULVIPES* C. KOCH, A SCORPION

AQUEOUS extracts of eserine treated portions of the Central Nervous System (CNS) of scorpion were tested for their acceleratory effect on isolated heart preparations of scorpion. Comparison of the effects with those of standard Acetylcholine (ACh) solutions, indicated that ACh-type substance was more abundant in the sub-oesophageal ganglion than in other portions of the CNS of scorpion.

Extracts from a variety of arthropod tissues<sup>1-6</sup> containing different substances have been observed to affect the heart rate. Acetylcholine (ACh)-like substance has been detected in the CNS of the scorpion and implicated in the regulation of heart rate<sup>7</sup>, diurnal rhythmicity<sup>8</sup>, locomotor activity<sup>9</sup> and electrical activity of the ventral nerve cord<sup>8</sup>. In the present investigation a study has been made of the distribution of ACh in various parts of the CNS of the scorpion and the effects

of ACh and of extracts of CNS on heart activity are compared.

TABLE I  
*Distribution of ACh-like substance in the extracts of various parts of the CNS of the scorpion and effect of extracts expressed as per cent acceleration over isolated heart of the scorpion*  
(Values are mean and  $\pm$  SD of 8 observations)

Nature of the extract	ACh content ( $\mu$ g/g wet wt)	% Heart acceleration
Supra-oesophageal ganglion	23.10 $\pm 2.86$	20
Sub-oesophageal ganglion	41.26 $\pm 5.12$	44
Meso-somatic Nerve cord	14.24 $\pm 5.66$	14
Meta-somatic Nerve cord	20.26 $\pm 2.05$	17

The CNS of the scorpion *Heterometrus fulvipes* C. Koch, was isolated around 12.00 hrs of the day (as maximum ACh content was observed at this time<sup>10</sup>) in the cold room (10–15° C). For each observation, the CNS collected from at least 6 animals was divided into 4 extraction parts: the supra-oesophageal ganglion, the sub-oesophageal ganglion, the nerve cord with 3 meso-somatic ganglia and the nerve cord with the last 4 meta-somatic ganglia. ACh content was determined in different parts of the CNS by the Colorimetric method of Hestrin as given by Augustinsson<sup>11</sup>. Isolated parts of the CNS were treated with  $1 \times 10^{-5}$  M eserine for 5 min. in order to inactivate the enzyme AChE, responsible for the hydrolysis of ACh. One per cent (Wt/Vol) extracts were prepared in scorpion Ringer<sup>12</sup> and the homogenates were boiled and centrifuged. The supernatants were kept in the refrigerator (–5° C) overnight and their effect on the heart of the scorpion isolated at 08.00 hrs next day (as minimum heart activity was observed during the period<sup>13</sup>) studied. The per cent change in heart rate over the control was calculated at the end of 5 min after the application of the individual extract or of standard solutions of ACh (E. Merck, Germany) of different concentrations. The amount of ACh present in the extracts of different parts of the CNS was calculated from the graph prepared with the standard amounts of ACh. Average of 8 readings was taken to represent the ACh content in each portion of CNS of the scorpion.