Résumé. La migration des neuroblastes et la croissance des aires dendritiques de base des neurones pyramidaux font ici l'objet d'une étude portant sur les régions IV et Vb du néocortex cérébral isolé de rats de souche Wistar. La migration des neuroblastes s'éffectuait normalement et aboutissait au dispositif habituel ordonné en 6 régions. Aucun changement qualitatif ne fut observé dans la méthode de croissance dendritique des cortex cérébraux isolés, mais la densité des aires dendritiques était diminuée dans chaque cas, bien que les effets sur les neurones de la région Vb fussent rendus complexes par l'effet de Gudden.

M. Berry and T. Hollingworth

Department of Anatomy, and Department of Pathology, The Medical School, University of Birmingham, Birmingham B15 2TJ, (England),
28 July 1972.

Neurosecretory Flow in the Perioesophageal Tract of *Jonespeltis splendidus* (Diplopoda, Myriapoda)

In the millipede, *Jonespeltis splendidus*, dense neurosecretory material is present in the brain, arranged in the form of a perioesophageal arc. The C_1 cells distributed along the ventral and mesial side of the brain elaborate this material, the connective bodies being the neurohaemal organs of this tract[1,2]. A similar neurosecretory tract extending into the suboesophageal ganglion has been described in some other diplopods[3,4], in which migration of the neurosecretory material from the suboesophageal ganglion to the brain via the lateral oesophageal connectives is thought possible[4]. The present investigation experimentally verifies the course of the neurosecretory material in this tract.

Materials and methods. Adult males and females of the millipede *Jonespeltis splendidus*, of body length 25–30 mm, collected from field were kept in the laboratory on decaying leaves and vegetables with plenty of humus on which they fed. Severance of the connective of one side was effected either above or below the level of the connective body by dorsal approach[5], that of the other side being kept as control. Of the 100 animals operated upon, about 50% survived. Animals were sacrificed at 5 day intervals up to 1 month. The circumoesophageal ring was dissected out and processed as a whole[6]. Some 5 µm sections of the nerve ring fixed in Bouin's fluid were also stained for neurosecretion[7,8].

Results and discussion. These studies revealed the perioesophageal tract of neurosecretory material ending mostly in the connective bodies and partly extending into the suboesophageal ganglion (Figures 1 and 2) as observed in other diplopods[3,4]. Unoxidized preparations which were processed as controls did not reveal the stainable material. In addition, C_1 and C_2 neurosecretory cells[1] revealed cystine/cysteine-rich material. None of the other neurosecretory cells or tracts of the cerebral glands[2] were stainable with these techniques, obviously because they contained no cystine/cysteine-rich material. In those animals where the lateral oesophageal connective was severed above the level of the connective body, the stump of the connective closer to the brain showed gradual accummulation of stainable material in the neurosecretory axons, but not in other fibres. Since in this case the connective body of the severed side was depleted of almost all the stainable material whereas that

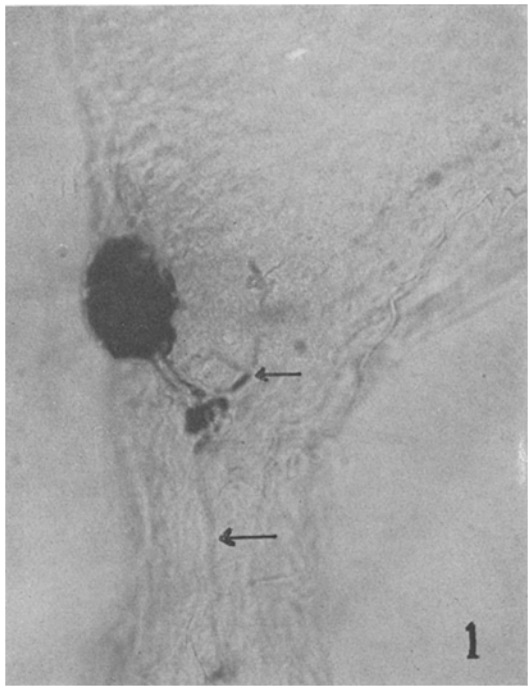

Fig. 1. Whole mount of the brain of *Jonespeltis* showing the neurosecretory tracts from the brain (upper arrow) and from the suboesophageal ganglion (lower arrow) entering the connective body (CB). Performic acid/Victoria blue staining. ×250.

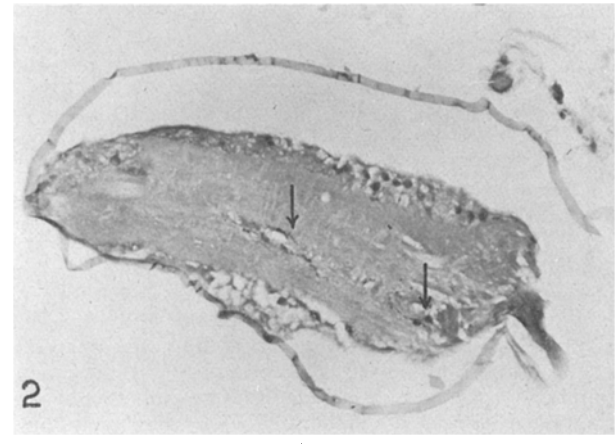

Fig. 2. Neurosecretory tract (arrows) of the suboesophageal ganglion in parasagittal section, fixed in Bouin and stained in chromealum haematoxylin phloxin.

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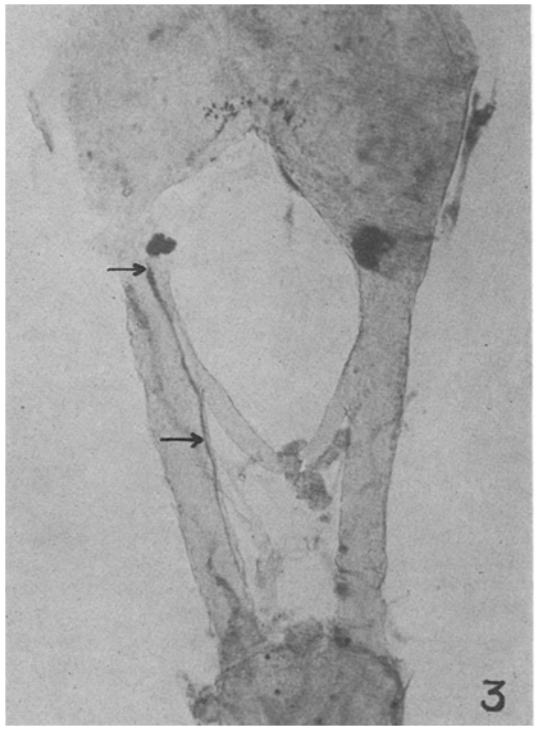

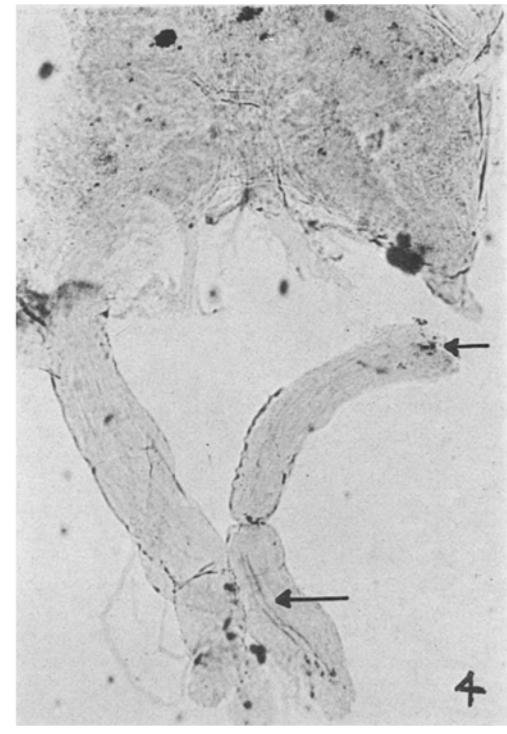

Fig. 3 and 4. Nerve ring respectively 15 days and 1 month after unilateral severance of the connective below the level of the connective body. Arrows indicate accumulation of neurosecretory material in the distal stump, indicating its flow towards connective body. Performic acid/Victoria blue staining. ×100.

of the control side was full, it may be concluded that the stainable materials came to the connective body from the brain. When transection was made below the level of the connective body, the connective body and the attached stump of the severed side were similar to that of the control side, being filled with stainable material. But on the severed side there was some accumulation of the stainable material at the cut end of the distal stump also in some but not in the majority of the nerve fibres (Figures 3 and 4). On the other hand, the corresponding fibres of the connective of the control side are poorly stainable. The fact that material stainable by the methods employed was found only in certain fibres whereas none of the other nerve fibres were stainable with these techniques, suggests the neurosecretory nature of the accumulated material in the transected axons, rather than an accumulation of cell organelles as a result of tissue reaction[9,10]. Though in the present study it is not possible strictly to correlate the stainable material accumulating after nerve transection with its hormonal content[11,12], it may be concluded that the suboesophageal ganglion in *Jonespeltis* elaborates a secretion of its own which migrate in the direction of the brain along the lateral connectives, ultimately joining the connective body. The possiblity of such a course for the secretory material in the perioesophageal tract of diplopods has already been suggested. A neurosecretory tract of similar course originating from the thoracic ganglion and going along the oesophageal connectives and entering the brain has been described also in decapode crustaceans[13] and in the opilionide *Trogulus napaeformis*[14]. The present study on the perioesophageal neurosecretory tract shows a component in which the course of neurosecretory material runs from the suboesophageal ganglion to the connective body. However, the major component of the perioesophageal neurosecretory tract arises from the brain and travels in the opposite direction, ultimately terminating in the connective body.

Zusammenfassung. Unterbrechung eines Schlundkonnektivs oberhalb des Konnektivkörpers des Diplopoden *Jonespeltis splendidus* führt auf der operierten Seite zur Akkumulation von neurosekretorischem Material in hirnnahen Axonen und zu einer Entleerung des Konnektivkörpers. Eine entsprechende Durchtrennung des Konnektivs unterhalb des Konnektivkörpers hat keinen Einfluss auf den Füllungszustand des letzteren, führt aber im unterhalb der Operationsstelle gelegenen Konnektiv zu einer gewissen Akkumulation von Neurosekreten. Das neurosekretorische Material wandert offenbar hauptsächlich vom Gehirn her, aber auch aus dem Unterschlundganglion zu den Konnektivkörpern, die als Neurohämalorgane zu dienen scheinen.

V. S. KRISHNAN NAIR[15]

Department of Zoology, University of Kerala, Kariyavattom, Trivandrum (India), 23 March 1972.

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