The manner in which this control is exerted is extremely obscure; it is not known, for example, whether the rate of beat is controlled, or whether the control is simply of an on–off type. In amphioxus, unlike the other early chordate-like groups in which nervous control of cilia has been suggested, the peripheral nervous system is fairly well known; Dogiel[5] and Kutchin[6] have shown that there are many multipolar nerve cells lying upon the gill bars, and under the endostyle; I have shown that it is probable that these cells are connected with the central nervous system by their own axons[7]. That metachrony is not resumed at the same parts of the gill bars where it was first inhibited, when an animal that has been in a carmine suspension is placed in anæsthesia, does not suggest that the inhibition can be a local effect, related to the dendrite fields of particular neurons.

A detailed account of these observations will be published elsewhere with other observations upon the muscular patterns in the feeding process of amphioxus.

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Neurosecretory Cells in some Cirripedes

The occurrence of neurosecretory cells or their products has not hitherto been demonstrated in the Cirripedia. By analogy with the situation in many other crustaceans the neurosecretory organs of which have recently been the object of much investigation, control of many of the metabolic processes in the Cirripedes might be expected to be under hormonal control originating in neurosecretory activities[1].

We have recently shown the presence of typical neurosecretory cells containing abundant granules (Fig. 1) that stain deeply with the paraldehyde–fuchsin of Gabe's modification[2] of Gomori's technique. In *Pollicipes polymerus* J. B. Sowerby, the cells are large (about 30–40μ largest diameter) and prolific in the sub- and supra-œsophageal ganglia where they appear to be localized in discrete areas. Release of the granules appears to take place both through the cell membrane and by axon transport. It has been possible to follow the development of these cells and the formation and discharge of the granules. Further, cross-sections of the sub-œsophageal, but no other ganglion, show discrete paired areas where the deeply staining granules are concentrated and nuclei are absent.

The following operculate barnacles have also been examined, *Balanus glandula* Darwin, *B. hesperius lævidomus* Pilsbry, *B. nubilis* Darwin, *B. rostratus* Hoek and *Chthamalus dalli* Pilsbry. In all these, deeply staining granules are found in the major ganglia but the neurosecretory cells are much smaller and less well defined than in *Pollicipes polymerus*; this could be related to the season when collected.

The investigation of neurosecretion in the Cirripedia would seem to offer a new and profitable approach to many problems of their physiology and ecology. Further, since most of the species, unlike almost all other crustacean groups, are hermaphrodite and yet normally cross-fertilizing, the relation of their neurosecretory activities to their reproductive activities presents problems of unusual interest, as does its relation to the uncommon moulting behaviour.

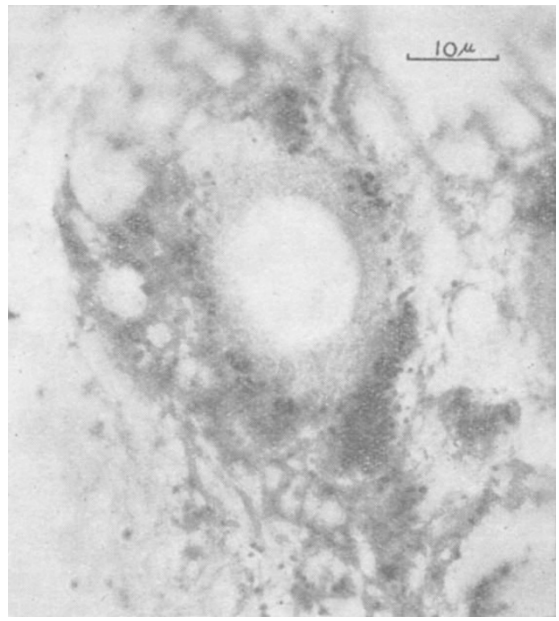

Fig. 1. *Pollicipes polymerus* J. B. Sowerby. Photomicrograph (green light) taken from transverse section of ganglion showing large neurosecretory cell. Paraldehyde–fuchsin stained; note large unstained nucleus and numbers of deeply staining granules around periphery, in blood spaces and in the axon hillock

A detailed account of this work and the results of further related observations will be published elsewhere.

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Connective-Tissue Pigment of the Centipede, *Lithobius forficatus* (L.)

The connective-tissue pigment of the centipede *Lithobius forficatus* is violet in colour and occurs in abundant granules in the connective tissue cells[1]. Little is known of its nature and properties. On dissecting the animal[2] it was noticed that the intensity of colour increased, implying that *in vivo* some of the pigment is in a colourless, reduced form. Interest in the pigment was renewed by the demonstration of a tissue-pigment with a redox colour change in the isopod Crustacea[3]. The pigment cells of the latter are of mesodermal origin, like those of *Lithobius*.

The pigment has been extracted by mild treatment and further purified by precipitation and chromatographic procedures. The absorption spectrum of the oxidized form, in neutral aqueous medium, shows a peak around 580 mμ and a trough around 495 mμ.