ABSTRACTS OF MEMOIRS

RECORDING WORK AT THE PLYMOUTH LABORATORY

CARTER, N., AUTON, J. & DANDO, P., 1976. Red cell carbonic anhydrase levels in flounders, *Platichthys flesus* L., from salt water and fresh water. *Comparative Biochemistry and Physiology*, **55**B, 399–401.

Carbonic anhydrase levels in flounder red cells were unchanged by adaptation to salt or fresh water.

Two major red cell isoenzymes were found in flounder red cells after electrophoresis. These patterns were identical in all fish studied, whether from salt or fresh water environments. Thus no inherited or adaptive changes were observed.

Both flounder red cell carbonic anhydrase isoenzymes split a range of ester substrates. Activity was abolished with acetazolamide.

CLOSSET, J. I., 1976. Parvalbumins of white muscles of Gadidae. I. Extraction and purification of the parvalbumins of the whiting (*Gadus merlangus* L.), of the coalfish (*G. virens* L.) and of the haddock (*G. aeglefinus* L.), *Comparative Biochemistry and Physiology*, **55**B, 531–535.

Sarcoplasmic extracts of white muscles of 7 *Gadus*, 2 *Molva* and 2 *Onos* (Gadidae) show an apparent homogeneity within each genus with regard to their electrophoresis patterns on starch gel.

The isolation of 6 parvalbumins of 3 species of *Gadus* has been reported with special attention to the chromatography on DEAE cellulose.

Two components in varying relative amounts are found in each species of the 4 *Gadus* so far studied.

CLOSSET, J. I., & GERDAY, C., 1976. Parvalbumins of white muscles of Gadidae. II. Properties and existence of two evolutionary lineages. *Comparative Biochemistry and Physiology* **55**B, 537–542.

Various physical and chemical properties of 8 parvalbumins of *Gadus* have been compared: whiting III_a–III_b; coalfish III–IV; haddock III–II and cod II–III (Bhushana Rao *et al.* 1969). This comparison has confirmed the homogeneity of the genus *Gadus*.

Based on their amino acid and peptide compositions, the components fall into two distinct classes containing each respectively the parvalbumins III-III_b and the parvalbumins II–IV–III_a. They correspond to two distinct evolutionary lineages resulting from a gene duplication which appeared prior to species differentiation.

MCVEAN, A. & FINDLAY, I., 1976. Autotomy in *Carcinus maenas*: the role of the basi-ischiopodite posterior levator muscles. *Journal of Comparative Physiology* (A), **110**, 367–381.

The anatomy of the muscles attaching to the dorsal rim of the basi-ischiopodite and the associated cuticular structures of *Carcinus maenas*, *Maia squinado* and *Pagurus bernhardus* was examined.

There are four such muscles in brachyuran walking limbs (Figs. 1A and 5B), each of which has a specific function as outlined in Table 1. There is a further subdivision of muscle function in the cheliped (Fig. 1B).

Myograms obtained from the posterior levator muscles (PPLM and RPLM) of the walking limbs reveal that in brachyura the muscles are physiologically distinguishable both during limb levation and autotomy (Fig. 2).

The antagonistic action of these muscles upon autotomy enables the anterior levator muscle force to be rapidly switched from a cuticular projection onto the cuticular plug which forms the link across the limb breakage plane (Figs. 4 and 7).

The reflex control of autotomy by the cuticular stress detector (CSD_1) was analysed.

WITKOVSKY, P. & ROBERTS, B. L., 1976. Electron microscopic observations of the mesencephalic nucleus of the fifth nerve in the Selachian brain. *Journal of Neurocytology*, **5**, 643–660.

The mesencephalic nucleus of the trigeminal nerve (mes V) in the brain of the skate (*Raja oscellata*) was studied by electron microscopy. Mes V neurons are large (40–80 μm diameter) and are located in the periventricular grey matter. Their perikaryal cytoplasm is rich in Golgi apparatus, small mitochondria, rough endoplasmic reticulum, polysomes and bundles of neurofilaments. A striking feature is the presence of masses of glycogen granules, at times surrounded by membrane wrappings and lysosomal bodies.

Two types of conventional synaptic contacts were made onto mes V perikarya and dendrites. One had round, agranular vesicles and usually also contained dense-cored vesicles, the other had flattened, pleomorphic, agranular vesicles and usually lacked dense-cored vesicles. Additional membrane complexes consisting of a region of gap junction flanked by sites of desmosomal attachment were observed to link neighbouring mes V neurons. Somato-somatic, dendro-somatic, axo-somatic, and dendro-dendritic junctions were noted. Except for the somato-somatic union, one or more chemical synapses were located close to the sites of gap junctions.