# ABSTRACTS OF MEMOIRS

## RECORDING WORK DONE AT THE PLYMOUTH LABORATORY

### Über die Seewasserresistenz von Meerstrandpflanzen [The Resistance of Sea-shore Plants to Sea Water]

By **Richard Biebl**

*Photogr. u. Forsch.*, Bd. 5, 1953, pp. 174–80

Some observations are described on the cell physiology of land halophytes from the rocky shore of Wembury, South Devon. Photographs of some of these plants are given. The observations on the osmotic value, permeability, and resistance to salt were carried out in different concentrations of sea water. Sea water is the best naturally balanced salt solution. Shore plants have a higher osmotic value and a greater resistance to sea water than glycophytes like plants of meadows and gardens. Also the permeability to sea water is different. R.B.

### Further Work on Pagurids and their Commensals

By **L. R. Brightwell**

*Proc. zool. Soc. Lond.*, Vol. 123, 1953, pp. 61–4

In September 1951 efforts were made at the laboratory to investigate reports from London Zoo Aquarium that *Nereis fucata* would eject the Vestlet Anemone from its tube, and even *Eupagurus bernhardus* from its borrowed shell. Anemones were not available, but by means of glass Buccinum shells it was established that two worms may force entry to the same shell, rendering it untenable for the crustacean. It was further noted that the Lesser Spotted Dog-fish and *Nereis fucata* between them may do much to provide homes for the common hermit. The fish bites off the whelk's head and foot, whilst the worm disposes of the visceral mass. The worm will also eat the abdominal portion of a dead hermit after the cephalothorax and legs have been eaten by almost any bottom-feeding fish.

Observations were made on the largely planktonic diet of *Eupagurus bernhardus*. When a *Calliactis* emitted a stream of ova, for over 2 hr. without pause, a hermit sat beside the anemone, and by its inhalatory respiratory current, very deliberately diverted large numbers of ova to its own interior.

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It was found that quite frequently *Eupagurus bernhardus* will accept almost any refuge, even a straight glass tube, rather than leave its abdomen open to attack. This lends colour to Sinel's suggestion that the pagurids may have evolved from one of the so-called burrowing prawns, such as *Callianasa*.

L.R.B.

## The Larva and Adult of *Polycitor crystallinus* Renier (Ascidiacea, Polycitoridae)

By **D. B. Carlisle**

*Proc. zool. Soc. Lond.*, Vol. 123, 1953, pp. 259–65.

The anatomy of the adult and larva of this species are described and the differences from *Polycitor vitreus* (Sars) discussed in detail. A synonymy of the species is given, together with a summary of its known distribution, which is confined to the Mediterranean area. Its relationships with the Polyclinidae are discussed, and the suggestion is made that the Polycitorinae should be raised to full familial rank and separated from the Clavelinidae. D.B.C.

## The X-organ of Crustacea

By **D. B. Carlisle** and **L. M. Passano**

*Nature, Lond.*, Vol. 171, 1953, pp. 1070–1.

The X-organ consists of three types of cells at least. In Brachyura, where the sensory pore is poorly developed or wanting these three different types are commonly found together, usually at the proximal ventral corner of the medulla terminalis, but in Stomatopoda, Anomura, Natantia and *Dromia* the X-organ may be separated into two parts connected by a nerve. The three-cell types are large neurosecretory cells, smaller isodiametric cells, often containing each a single large inclusion, and oval or irregular 'concretions of concentric structure' which show no nucleus and may be products of secretion rather than cells. In most Brachyura all three types are associated into one localized organ, while in the other groups examined the first cell type forms a single group in the medulla terminalis, whereas the other two types of cells are located in a separate organ near the sensory pore. This organ is named the *pars distalis X-organi*, and that in the medulla terminalis is named the *pars ganglionaris X-organi*; the nerve connecting the two parts is the X-organ connective. These findings may serve to explain why X-organ extirpation has different results in different groups of Crustacea. D.B.C.

## ON A SPOROZOON IN THE COELOMIC CORPUSCLES OF *PHASCOLOSOMA MINUTUM* KEFERSTEIN (SIPUNCULOIDEA)

By D. Etherington

*Parasitology*, Vol. 43, 1953, pp. 160–9.

A description is given of a sporozoon infecting the coelomic corpuscles of *Phascolosoma minutum*. The parasite undergoes schizogony in the haematids of the coelomic fluid; the schizonts are enclosed in tough envelopes. Two types of merozoites are produced; micromerozoites repeat the schizogonic cycle, while macromerozoites invade haematids, but develop into encysted bodies when the haematids are ingested by amoebocytes. In the discussion of the affinities of the parasite, it is suggested that the encysted bodies are gamonts, and that the parasite is related to the Haemogregarinidea. D.E.

## NEW FORMS OF VISUAL PURPLE FROM THE RETINAS OF CERTAIN MARINE FISHES: A RE-EXAMINATION

By E. M. Kampa

*J. Physiol.*, Vol. 119, 1953, pp. 400–9.

Dark adapted retinas of three marine fishes (plaice, *Pleuronectes platessa*; pollack, *Gadus pollachius*; and gurnard, *Trigla hirundo*), previously reported to possess unique photopigments (Bayliss, Lythgoe & Tansley, *Proc. Roy. Soc.* B, Vol. 120, 1936, pp. 95–113), have been shown to contain pigments with absorption spectra indistinguishable from that of frog rhodopsin.

The dark-adapted retina of the freshwater tench, *Tinca vulgaris*, has been shown to contain a pigment with an absorption spectrum characteristic of porphyropsin. The absorption spectrum of an extract of dark-adapted trout (*Salmo trutta*) retinas indicates that this anadromous teleost may utilize a mixture of rhodopsin and porphyropsin.

Differences between the methods used in the present work and those employed by Bayliss *et al.* are discussed. None of these seems sufficient to explain the differences between the two sets of results. E.M.K.

## THE EFFECT OF ENUCLEATION ON THE DEVELOPMENT OF SEA-URCHIN EGGS. I. ENUCLEATION OF ONE CELL AT THE 2-, 4- OR 8-CELL STAGE

By I. J. Lorch, J. F. Danielli and S. Hörstadius

*Exp. Cell Res.*, Vol. 4, 1953, pp. 253–62.

Enucleated blastomeres left in contact with one, three or seven normal blastomeres did not play any part in the development of the larva, except in so far as purely mechanical distortion was produced.

After an initial delay, during which asters and incomplete division furrows appeared and disappeared again, the enucleated cells divided rapidly into a number of spheroidal cells of various sizes. The final diameter of these cells ranged from 3 to 50 $\mu$. The cells remained optically similar to nucleated cells of the same size and retained their semi-permeability for 3 days or more.

Enucleated cells were never seen to differentiate or participate in the formation of tissues or organs. The presence or absence of asters in the early stages made no difference to the final fate of the enucleated cells.

Thus it seems that the nucleus is essential for differentiation, though not for cell-division. The proximity of normally differentiating cells does not induce similar changes in the enucleated cells. I.J.L.

## Further Studies on Ionic Regulation in Marine Invertebrates

By James D. Robertson

*J. exp. Biol.*, Vol. 30, 1953, pp. 277–96.

In a study of ionic regulation in the blood or coelomic fluid of sixteen marine invertebrates, differences from a passive equilibrium with the external medium were found in all. This active regulation is most pronounced in *Sepia* and members of the decapod Crustacea, all of which have excretory organs capable of selective ionic excretion. Little regulation is shown by holothuroids or lamellibranchs. In a group of sixteen crustaceans, it was found that the magnesium of the plasma varied between 14 and 101% of the value in the surrounding sea water. Those with high levels (e.g. *Maia*, *Dromia*, *Lithodes*) are slow-moving and inactive, those with low levels (e.g. *Squilla*, *Homarus*, *Pachygrapsus*) are capable of swift movement and are generally more active.

J.D.R.

## New Turbellaria Parasites in Echinoderms

By Einar Westblad

*Ark. Zool.*, Ser. 2, Bd. 5, 1953, pp. 269–88.

Three turbellarian parasites are described, found in intestines of echinoderms at Plymouth. In all six turbellarian parasites were found in echinoderms:

ACOELA:

Gen. *Avagina* Leiper (1902, 1904).

*A. incola* Leiper: in *Spatangus purpureus* (common).

*A. glandulifera* Westblad, 1953: in *Spatangus purpureus*.

RHABDOCOELA:

Gen. *Umagilla* Wahl, 1910.

*U. forskalensis* Wahl: in *Holothuria forskali* (common)

Gen. *Anoplodium* Ant. Schneider, 1858.

*A. tubiferum* Westblad, 1953; in *Holothuria forskali.*

Gen. *Marcusella* Westblad, 1953.

*M. atriovillosa* Westblad, 1953: in *Spatangus purpureus.*

Gen. *Syndesmis* W. Silliman, 1881.

*S. echinorum* François: in *Echinus esculentus* (common).

In addition, *Fecampia erythrocephala* Giard 1886 was found in small specimens of *Carcinus maenes* from Rum Bay.

## *BOREOHYDRA SIMPLEX* WESTBLAD, A 'BIPOLAR' HYDROID

By Einar Westblad

*Ark. Zool.*, Ser. 2, Bd. 4, 1953, pp. 351–4.

## MARINE MACROSTOMIDA (TURBELLARIA) FROM SCANDINAVIA AND ENGLAND

By Einar Westblad

*Ark. Zool.*, Ser. 2, Bd. 4, 1953, pp. 391–401.

In these papers the following species have been recorded in the Plymouth area:

*Boreohydra*: at Plymouth (Hamoaze at a depth of *c.* 16 m., 26 July 1949).

Gen. *Macrostomum* O. Schmidt, 1848.

*M. appendiculatum* (O. Fabr, 1826) Graff, 1905: Salcombe estuary, in July 1949.

*M. pusillum* Ax, 1951: Yealm estuary, common in mud, in July 1949.

Gen. *Microstomum* O. Schmidt, 1848.

*M. hamatum* Westblad, 1953: Plymouth, the harbour in black mud at *c.* 40 m. depth, in July 1949

*M. rubromaculatum* Graff, 1882: Wembury, in tide pools, in July 1949