ABSTRACTS OF MEMOIRS

RECORDING WORK DONE AT THE PLYMOUTH LABORATORY

BEST, A. C. G. & NICOL, J. A. C., 1967. Reflecting cells of the elasmobranch tapetum lucidum. *Contr. mar. Sci. Univ. Texas*, Vol. 12, pp. 172–201.

The reflecting cells of the tapetum lucidum of selachians are described, their shapes, disposition and contents. They are ellipsoidal dics which, except in the middle of the fundus, are arranged regularly and concentrically about the centre of the eye. The cells contain reflecting crystals; these are elongate flat hexagons whose long axes lie parallel to the inner surface of the eye. Reflecting cells and crystals of *Squalus acanthias* and *Scyliorhinus canicula* have been examined by electron microscopy. The reflecting cells are shown to contain regularly arranged stacks of reflecting platelets (crystals), each being enclosed in a membrane-lined sac. Parameters have been determined for the number of superposed crystals in a cell (12–13), spacing (generally 300–400 nm) and size of crystals including thickness (between 30 and 70 nm). The high reflectivity of the tissue is produced by the summed reflexions at the surfaces of many superposed crystals, and the factors that give rise to white lustre and highly unsaturated spectrum reflectance are discussed.

A.C.G.B.

BONEY, A. D., 1967. The effects of coumarin on the growth and viability of sporelings of red algae. *Planta*, Vol. 76, pp. 114–23.

The growth of sporelings of the red algae *Plumaria elegans*, *Antithamnion plumula* and *Polysiphonia brodiaei* was markedly influenced by coumarin. Growth of *Plumaria* and *Antithamnion* was totally inhibited by immersion for 7 days in media containing 200 mg coumarin/l., and showed 46 and 41 % growth inhibition respectively in 100 mg coumarin/l.; a signifiant reduction in growth was obtained in 50 mg/l. of the phytostatic agent (e.g. 15 % growth inhibition with *Plumaria*; and 10 % with *Antithamnion*). A noticeable stimulation of growth was observed in 10 mg coumarin/l. The viabilities of the sporelings remained high after immersion in the toxic agent. The inhibitory effects were of a similar order both with the young plants treated immediately after commencement of growth, and with sporelings grown normally for 14 days before contact with coumarin. With *Plumaria* sporelings the maximum inhibitory effects were observed after 3 days immersion in 200 mg. coumarin/l., and after 5 days in 100 mg coumarin/l. Immersion for 7 days in 200 mg/l. of the reagent induced irreversible changes in the sporelings; such effects were less marked at 100 mg/l.; and at 50 mg/l. there was a complete recovery from the effects of the compound when the sporelings were transferred to normal culture medium. The significance of the results is discussed in terms of the possible factors involved which may influence sporeling growth.

A.D.B.

COOPER, L. H. N., 1967. The physical oceanography of the Celtic Sea. In *Oceanogr. mar. Biol. Ann. Rev.* (Harold Barnes, ed.), Vol. 5, pp. 99–110. London: George Allen and Unwin.

This review is a somewhat speculative assessment of our knowledge to provide a basis for further research on the physical, chemical and biological oceanograph of the Celtic Sea. Wind stress is considered to dominate the water circulation, especially in winter. Only in summer is there any confidence in current patterns constructed from the distribution of salinity, temperature and mass but, even then the epithalassa, the hypothalassa and the 30 m thick stepped thermocline zone require separate study. Each zone or step is distinctive with its own metabolic history. In consequence, vertical or oblique plankton hauls through the lot present a composite picture.

Tentative calm-weather structures are ascribed to the waters south of Ireland and around Ushant, together with suggestions as to what may happen to the structures during gales or at different seasons. L.H.N.C.

COOPER, L. H. N., 1967. Why do we need chemical methods? In *Chemical Environment in the Aquatic Habitat*, Proceedings of an I.B.P.-symposium, Amsterdam and Nieuwersluis, 10–16 October 1966 (H. L. Golterman and R. S. Clymo, eds), pp. 15–23. Amsterdam: K. ned. Akad. Wet.

The purpose of analytical chemistry applied to limnology and oceanography is discussed in terms of the needs of fishery research, meteorology and petroleum geology. Attention is drawn to the need to identify and analyse the substances commonly lumped together as 'organic phosphorus' and to the need for improved ship-borne chemical instruments. A physico-chemical approach is needed for studying the exchanges of oxygen, carbon dioxide and iodine between the atmosphere and the sea and large lakes.

Administrative problems which arise when powerful but expensive physical instruments are needed for chemical analysis are also outlined. L.H.N.C.

MCLACHLAN, J., 1967. Tetrasporangia in *Asparagopsis armata*. *Br. phycol. Bull.*, Vol. 3, pp. 251–2.

The basic life-history in the Bonnemaisoniaceae is a sequence of haploid sexual, diploid carposporic and tetrapsoric phases with the sexual and tetrasporic plants being morphologically different. In *Asparagopsis armata* Harv. the life-history has been established, and the tetrasporic phase is the plant known previously as *Falkenbergia rufolonosa* (Harv.) Schm. In northern European areas the tetrasporic phase is common and widely distributed, although the occurrence of tetrasporangia has not been recorded previously north of Bordeaux. In mid-October 1966, an abundance of tetrasporangia were observed in *F. rufolonosa* collected on the north coast of Cornwall at Trevone. Many of the sporangia were mature with the tetraspore in tetrads. This is the first report of tetrasporangia-bearing plants collected in the British Isles. J.MCC.

NEWELL, B. S., MORGAN, B. & CUNDY, J., 1967. The determination of urea in sea water. *J. mar. Res.*, Vol. 25, pp. 201–2.

The di-acetyl-monoxime reaction was modified to determine urea in sea water. Optimum colour yield (absorbance maximum 5200 Å) depended on acidity, heating time and temperature, the presence of semicarbazide as a synergistic agent and manganous and nitrate ions as catalysts. Molar absorption coefficient 18000.

B.S.N.