

ABSTRACTS OF MEMOIRS

RECORDING WORK DONE AT THE PLYMOUTH LABORATORY

ARMSTRONG, F. A. J., STEARNS, C. R. & STRICKLAND, J. D. H., 1967. The measurement of upwelling and subsequent biological processes by means of the Technicon Autoanalyzer and associated equipment. *Deep-Sea Res.*, Vol. 14, pp. 381-9.

A brief outline is given of the use of the Technicon Autoanalyzer for the determination of phosphate, silicate and nitrate and the use of this equipment, together with continuous measurements of temperature and chlorophyll, to record the properties of surface water from a ship underway. The continuous recording of surface properties gives promise of a valuable new method for studying nutrient enrichment and biological production in space and time over large areas of the sea surface in eutrophic waters.

F.A.J.A

BODEN, B. P. & KAMPA, E. M., 1967. The influence of natural light on the vertical migrations of an animal community in the sea. In *Aspects of Marine Zoology, Symp. zool Soc., Lond.*, No. 19, pp. 15-26.

Observations of the descent and ascent of a constant level of light in the sea during two successive dawns and two successive dusks are compared with simultaneous observations of the descents and ascents of a community of animals, detected by an echo sounder. The results lead to the conclusion that the diurnal vertical migrations of the animals comprising this sonic-scattering layer are controlled primarily by changes in the photoenvironment. Incoming radiation at the sea surface was monitored throughout the experiments, and the merit of such monitoring is discussed.

B.P.B.

BRYAN, G. W., 1967. Zinc regulation in the freshwater crayfish, including some comparative copper analyses. *J. exp. Biol.*, Vol. 46, pp. 281-96.

The ability of the freshwater crayfish *Austropotamobius pallipes pallipes* to regulate its body-zinc level in waters containing non-toxic concentrations of zinc has been studied with the aid of ^{65}Zn . The principal organ of zinc regulation is the hepatopancreas which can absorb and store excess zinc from the blood or from the stomach fluid. However, the removal of this zinc can be accomplished only when the animal feeds and faeces are produced to which the zinc or ^{65}Zn can bind. Methods of zinc regulation in the freshwater crayfish have been compared with those of the marine lobster *Homarus vulgaris*.

G.W.B.

SOUTHWARD, A. J. & SOUTHWARD, E. C., 1967. On the biology of an intertidal chthamalid (Crustacea, Cirripedia) from the Chukchi Sea. *Arctic*, Vol. 20, pp. 8-20.

The Pacific-Boreal species *Chthamalus dalli* occurs intertidally near Cape Thompson, Alaska. Other organisms, apart from ephemeral algae, are absent from the intertidal zone, and the barnacle apparently survives the winter frozen in the ice-foot. From

annual rings on the shell growth appears to be less than in southern localities, but continues for five years or more: maturity is reached in two years and breeding can occur at a sea-temperature of 6 °C. Curves of cirral activity plotted against temperature show only slight lateral shift (cold-adaptation) compared with the same species from southeast Alaska and southern California.

The absence of the Boreo-arctic species *Balanus balanoides* is discussed, and it is concluded that the longer summer breeding period of *C. dalli* may have given it an advantage over *B. balanoides* in colonizing the Eastern Chukchi Sea under existing hydrographic conditions.

A.J.S. and E.C.S.

SOUTHWARD, E. C., 1966. New records of Pogonophora from Central American seas. *Bull. mar. Sci.*, Vol. 16, pp. 643-7.

Six new records of the occurrence of Pogonophora are reported from the Gulf of Mexico, Cayman Basin, Colombia Basin and Gulf of Tehuantepec. Depths range from about 300 to 1140 m. These and other published records from the same area are discussed from the point of view of depth and temperature. The pogonophore fauna of the Gulf and Caribbean appears to include some North Atlantic species, at present undescribed.

E.C.S.

SOUTHWARD, E. C. & SOUTHWARD, A. J., 1967. The distribution of Pogonophora in the Atlantic Ocean. In *Aspects of Marine Zoology, Symp. zool. Soc., Lond.*, No. 19, pp. 145-58.

Pogonophora are now known from many parts of the North Atlantic and from a few places in the South Atlantic. Sixty-one new records confirm previous deductions that the group is found mainly on the continental slope and rise. So far, at least two species are known from both sides of the North Atlantic; further species may be found to be widespread. Quantitative observations from the western side of the ocean suggest that pogonophores are present only where other benthic animals are fairly common. Pogonophores are not apparently handicapped by their lack of an internal digestive system, and seem perfectly capable of competing with other invertebrates.

E.C.S. and A.J.S.