

Abstracts of Memoirs

RECORDING WORK DONE AT THE PLYMOUTH LABORATORY.

Hermaphroditism in the Portuguese Oyster.

By **Ikusaku Amemiya.**

Nature, No. 2921, Vol. 116, 1925, p. 608

The Portuguese oyster (*Ostrea (Gryphæa) angulata*) has been studied by many investigators, but no one has ever recorded the occurrence of hermaphroditism in this species, so that it was believed that the sexes were strictly separate. However, the writer found two hermaphrodite specimens in a batch of seventy-five individuals at the Plymouth Laboratory, where they had been kept alive in a sea-water tank in the open air for some time before their hermaphroditism was noticed. Eggs and sperm which were found in the same tubule exhibited no differences in their nature as compared with those taken from normal dioecious specimens. The writer is inclined to suggest that possibly there exists some relation between nutritive conditions and hermaphroditism in the oysters whose sexes are normally separate.

I. A.

The Ocean regarded as a Pasture.

By **W. R. G. Atkins.**

Marine Observer Vol. II, October, 1925, pp. 162-164.

This is a semi-popular account of work on the estimation of the phytoplankton crop by the measurement of the changes in alkalinity and in phosphate content experienced by sea-water each year.

W. R. G. A.

The Variation with Depths of Certain Salts utilised in Plant Growth in the Sea.

By **W. R. G. Atkins and H. W. Harvey.**

Nature, 1925, Vol. 116, p. 784.

Samples received from the R.R.S. *Discovery* were analysed for hydrogen ion concentration, phosphate, nitrate and silicate from surface to 3000 metres. All the constituents mentioned were found to increase with depth. The first 50 metres from the surface contained no phosphate and but little nitrate.

W. R. G. A. AND H. W. H.

The Comparative Morphology of the Caecal Gland (Rectal Gland) of Selachian Fishes, with some reference to the Morphology and Physiology of the Similar Intestinal Appendage throughout Ichthyopsida and Sauropsida.

By **Doris R. Crofts, M.Sc., F.Z.S.**

Proc. Zool. Soc., 1925, Part 1, pp. 101-188.

Macroscopic Features, Histology and Embryology.

The gland is present in the twenty-seven genera of Selachian fishes examined. *Chimæra* probably has the original form—longitudinal glands, opening by separate orifices, situated in the wall of the commencement of the post-valvular intestine.

Shape and Size.—Vary much, but are similar in related genera. The size bears no relation to the length of duct or to the feeding habits. Slight seasonal and sexual variation may occur.

Ducts.—Short and simple in primitive Euselachians and in Batoids, but greatly specialised in Galeoidei and Squaloidei, where the duct orifice progresses nearer the spiral valve during ontogenesis.

Mesentery.—There are two types of gland suspension.

(a) by the gonad mesentery with lymphoid tissue packed near the gland.

(b) by independent mesentery.

Suggestions concerning Physiology.

A double significance is probable :

(a) The viscid liquid discharged from the gland lumen has some doubtful effect on the intestinal lumen and seems most important in Galeoidei and Squaloidei, where arrangements convey the liquid towards the spiral valve.

(b) Some blood function is suggested by :

(i) The marked vascularity and importance of the blood vessels of the gland.

(ii) The intimate relation of the glandular tubule cells with the blood and the frequent migration of leucocytes with these cells.

(A delicate lymphatic plexus follows the main blood vessels and the tubules are well supplied with nerve endings.)

(iii) Simple lymphoid tissue varies in quantity in the glands in different genera. *Heptanchus* and *Mitsukurina* have definite lymphoid follicles.

The endodermal origin of the gland and the forward direction of its fluid in many genera make a urinary function unlikely.

The presence of lymphoid tissue supports the view that the gland is the homologue of the cæcal appendage of other vertebrates.

D. R. C.

The Development and Relationships of the Myxosporidia.

By J. S. Dunkerly.

Quart. Journ. Micr. Sci., Vol. L X I X, 1925, pp. 185-216.

1. The structure and development of a new quadricapsulate species of Myxosporidian (*Agarella gracilis*) belonging to the family Chloromyxidæ and found in the testis of the Dipnoan fish *Lepidosiren paradoxa* is described.

2. Attention is drawn to the interrelationships of parasitic Chloromyxidæ correlated with interrelationships between their hosts in the groups Dipnoi, Elasmobranchii, and Amphibia.

3. The life-cycle in Myxosporidia is discussed, especially the origin and relationships of the spore-forming nuclei and cells in the pansporoblast, and it is suggested that physiologically the spore of a Myxosporidian is a multicellular unit analogous with the infusoriform embryo of the Mesozoan Dicyema, although the Myxosporidia exhibit Rhizopodan relationships and Mesozoa are probably derived from ciliated ancestors.

4. Although it is not suggested that Myxosporidia represent a direct link between Protozoa and Metazoa, they may indicate a physiological reason for the origin of a soma, i.e. as a protective accessory to germ-cells. The Mesozoa show a similar process occurring in a non-related line of organisms.

J. S. D.

Land Mollusca on the Mewstone.

By A. E. Ellis.

Journ. Conchology, XVII, 1924, pp. 187-8.

In March, 1924, a comparison of the land mollusca on the Mewstone with those on the adjacent mainland was made. Thirteen species were recorded on the island, and twenty-one on the coast near Wembury. *Lauria cylindracea* and *Clausilia rugosa* were more abundant on the Mewstone than on the mainland, while *Helix aspersa*, *Arion hortensis*, *A. ater*, *Agriolimax agrestis*, *Cochlicopa lubrica*, and *Trichia hispida* were frequent on the mainland, but absent from the Mewstone. The Mewstone specimens of *Helicella caperata* were much larger and more variable than those on the coast, most of the *Oxychilus alliarius* were var. *viridula*, which was absent from the mainland, and nearly all the *Gomiodiscus rotundatus* were var. *subrufula*. The differences are chiefly attributed to isolation, environmental factors being much the same on the Mewstone and mainland.

A. E. E.

The Larval development of some British Prawns (Palaemonidae). II. Leander longirostris and Leander squilla.

By Robert Gurney, M.A., F.Z.S.

Proc. Zool. Soc., 1924, pp. 961-982.

In the Palæmonidæ there are normally five larval stages only. Four of these stages are described for *L. longirostris* and three of them for *L. squilla*. The occurrence of a larva of *L. longirostris* at Plymouth is particularly remarkable, as the parent form only occurs in England in the Norfolk rivers—so far as is known.

Some account is given of early post-larval growth and the changes in the proportional length of the joints in the second legs.

A comparison of the larvæ of British Palæmonidæ is made with the object of affording means for their identification in plankton.

Attention may be drawn to an error on p. 977 where text figure 11 represents the 1st post-larval stage of *L. squilla* and not stage 5.

R. G.

Report on Examination of Raft and Test Pieces at Plymouth, November, 1923.

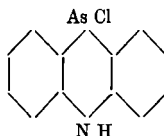
By C. R. Harington, Ph.D.

Remarks on Dr. Harington's Report.

By G. Barger, M.A., D.Sc., F.R.S.

Fifth Interim Report of Sea Action Committee of Institution of Civil Engineers, 1925, pp. 13-17.

Examination of the raft and test pieces of wood put out at Plymouth in September, 1920, revealed a considerable degree of destruction by *Teredo* and *Limnoria*; many of the test pieces had disappeared completely, and those which remained were all more or less severely attacked. The only surviving test pieces were those which had been treated with creosote to which had been added (a) 2.2 % carbazole, (b) 2.2 % dinitronaphthalene, (c) 2.2 % chlorodinitrobenzene, and detailed examination of individual pieces indicated that the relative efficiency of these substances is in the order in which they are named. The protective effect of chlorodinitrobenzene was also observed in parallel tests at Lowestoft, although in the latter place carbazole, in lower concentration, was not found to be effective. The Lowestoft experiments indicate that the

arsenic compound "D.M."  is the most efficient sub-

stance yet tried, and the similarity in chemical constitution between the latter substance and carbazole is of interest.

C. R. H.

Hydrography of the English Channel.By **H. W. Harvey, M.A.***Rapport Atlantique, 1924. Copenhagen, 1925.*

A summary of the results and the interpretations based upon them, which have been obtained by various workers who have studied the Hydrography of the English Channel. Observations made in the area upon the effect of water movements, temperature, salinity distributions and estuarine conditions upon the fauna and flora have been collected together, and a bibliography giving references to sixty-four original papers is appended.

H. W. H.

Notes on *Hoplitophrya* (*Anoplophrya*) *brasili* (Léger and Duboscq), an Intestinal Ciliate of the Polychaete Worm *Cirratulus*.By **C. C. Hentschel, B.Sc.***Parasitology, Vol. XVII, No. 3, pp. 217-220, May, 1925.*

This paper records a few points of interest concerning the astomatous ciliate found in the intestine of the Polychaete Worm *Cirratulus* (*Audouinia*) *tentaculatus*. This form was described by Léger and Duboscq in 1904 under the name of *Anoplophrya brasili*. These authors apparently did not observe the true nature of a small papilla at the anterior end of the ciliate, the possession of which precludes the inclusion of this form in the genus *Anoplophrya*. It is therefore provisionally placed in the genus *Hoplitophrya*. The paper also includes some remarks on the function of this papilla as a thrusting organ, by means of which the ciliate pushes its way through the intestinal débris. The geographical distribution is wide, it being recorded from France, Plymouth, the Shetland Islands, and also (from *C. grandis*) from Woods Hole, U.S.A.

C. C. H.

Studies on the Comparative Physiology of Contractile Tissues. I. The Action of Electrolytes on Invertebrate Muscle.By **Lancelot T. Hogben.***Quart. Journ. Exp. Physiol., XV., 1925, pp. 263-312.*

The influence of electrolytes on the rhythm and tone of muscular tissues of various crustacean and molluscan organs is recorded.

(a) The Crustacean heart: In this section the effects of removal and of excess of calcium in presence of varying amounts of potassium are analysed: the influence of Ca, Sr, and Mg compared and contrasted with

that of Ba, and the behaviour of the crustacean heart with reference to potassium, rubidium, caesium and hydrogen ions is also discussed.

(b) The Molluscan heart: The relation of potassium and magnesium to the cardiac rhythm of *Pecten* and *Helix* is dealt with especially.

(c) Musculature of the Molluscan gut. The crop muscle of *Aplysia* is treated fully from the same standpoint as in § (a).

L. T. H.

The Dinoflagellates of Northern Seas.

By Marie V. Lebour, D.Sc., F.Z.S.

Published by the Marine Biological Association, 1925.

The purpose of this monograph is to offer an up-to-date survey of northern marine dinoflagellates with, as far as possible, a figure or figures of each species, for the most part original, but, in the absence of available specimen copies from various authors, using Paulsen's "Peridinales" in "Nordische Plankton," 1908, as a basis for literature. Most of the synonymy is referred to this work, an up-to-date bibliography being added. Each species is described, figured, and brief notes given as to its distribution. A short introduction deals with general morphology, nutrition, and habits, further details being given with the descriptions of species. An appendix at the end of the book offers suggestions for collecting, examining, and preserving Dinoflagellates, and it is hoped that the work will be useful for the amateur microscopist as well as the trained naturalist.

M. V. L.

The Action of Adrenaline on the Perfused Fish Heart.

By A. D. Macdonald.

Quart. Journ Exp. Physiol., XV, pp. 69-80.

The action of ions on the perfused elasmobranch heart as investigated by Mines is confirmed and extended. Adrenaline produces, in such dilutions as 1/100,000.

1. An initial and often striking inhibition of the normal rhythmical contractions.
2. A subsequent increase in amplitude which may be, but is not invariably, associated with appreciable acceleration.
3. An increased tolerance to hydrogen ions.

This reponse and that to related drugs is discussed in terms of permeability to and variations in the concentration of ions in the perfusing solution.

A. D. M.

The Early Development of *Astropecten irregularis*, with Remarks on Duplicity in Echinoderm Larvæ.

By **H. G. Newth, A.R.C.Sc., D.I.C.**

Quart. Journ. Micr. Sci., Vol. *LXIX*, 1925, pp. 519-554.

A small culture of *Astropecten* larvæ was reared to the age of three weeks. Metamorphosis had not then begun. Two larvæ were found which showed duplication of internal and external characters. A consideration of these, and a critical review of previous work on double monsters among larval Echinoderms, lead to the provisional conclusion that the various kinds of larval duplicity (among which is to be included enantiomorphy or *situs inversus*) do not imply, and are not dependent for their appearance upon a latent bilateral symmetry in the normal larva. They are due either to interference with the metabolism of the egg, or to inhibition of growth during or immediately after gastrulation.

H. G. N.

An Amphoteric Substance in the Radula of the Whelk (*Buccinum undatum*).

By **C. F. A. Pantin and T. H. Rogers.**

Nature, Vol. *CXV*, 1925, pp. 639-640.

Gives an account of differentiating amphoteric from other substances in the chitin of the radula of *Buccinum*. The method consists of forming metallic salts with the proteins present: the presence of the metal is subsequently detected by its common colour reactions. The method is essentially based on the work of J. Loeb upon proteins.

C. F. A. P. AND T. H. R.

Depth Recording with Plankton Nets.

By **F. S. Russell.**

Nature, Vol. *CXV*, pp. 603 and 604, April 25th, 1925.

A brief account is given of the use with the stramin ring-trawl of a graphic depth-recording instrument, kindly loaned by the Admiralty. The factors controlling the depth at which the net will fish are discussed, and illustrations of the tracings of the path of the net through the water as recorded by the instrument are reproduced.

In order that collections made from day to day may be the more comparable the speed of towing should be kept as nearly as possible the same: attempts can be made to do this by adjusting the angle of entry of the warp into the water in order to keep it constant: this can be effected

by varying the number of revolutions of the ship's screw. Under the varying weather conditions, however, it is on occasion extremely difficult to keep the net fishing at one level throughout the duration of the haul: records show that at such times the path followed by the net through the water is very wavy, the upper and lower limits often being several fathoms apart.

Results point to the necessity of the employment of a graphic depth-recording instrument when studying the vertical distribution of plankton organisms (or even their horizontal distribution) with large tow-nets such as the ring-trawl.

F. S. R.

Haemocyanin, Part I. The Dissociation Curves of the Oxyhaemocyanin contained in the Blood of some Decapod Crustacea.

By Ellen Stedman and Edgar Stedman.

Journal of Biological Chemistry, XIX, p. 544 (1925).

Using the Van Slyke manometric method for the estimation of blood gases, it has been shown that the hæmocyanin contained in the blood of *Maia*, *Palinurus*, *Cancer*, and *Homarus* combines reversibly with oxygen, and hence is capable of exercising respiratory functions in a manner analogous to hæmoglobin. The oxyhæmocyanin dissociation curves as determined on the serum of the above four species were found to be identical. The hæmocyanin is about 85 per cent saturated at an oxygen tension of 20 mm. and a temperature of 15°. The dissociation curve resembles that of oxyhæmoglobin in showing a point of inflexion.

E. S. AND E. S.