

THE OBAN PENNATULIDA<sup>1</sup>

THIS report is a very thorough piece of work. It consists of a detailed and finished description of specimens dredged during an excursion of the Birmingham Natural History Society in July, 1881. The specimens all belonged to the three species *Funiculina quadrangularis*, *Pennatula phosphorea*, and *Virgularia mirabilis*. The language in which they are described is very distinct and lucid, though perhaps some criticism may be allowed as to the scale of measurement used and as to a certain point in the nomenclature. Measurements are given in the decimal divisions of an inch, instead of the metrical system, which is so much more satisfactory. The axial portion of a Pennatulid is described as consisting of two parts—the stalk and the rachis, the latter being the polyp-bearing portion; and the word “stem” is used for the calcareous rod running through the axis of both rachis and stalk. “Stem” would naturally mean both the stalk and rachis together as opposed to the polyp-leaves. “Core” might be suggested as a better term for the axial skeleton. The example of Kölliker has been followed in the use of the terms “polyps” and “zooids” for the two kinds of individuals. In describing the “stomach,” its inner lining membrane is called ectoderm, but no reference is made to the fact that the evidence for its being ectodermic is embryological.

The description and figures given of *Funiculina* are the first published in English which deal with the internal structure; and they are in some respects more complete and perfect than those of Kölliker in his monograph on the Pennatulida. The examination of the largest of the specimens, which was thirty-nine inches long, has finally disproved the validity of the distinction maintained by Verrill and Gray to exist between the Scotch *Funiculina*, and that of the Mediterranean and Scandinavia. The supposed species, *F. Forbesii*, is simply the younger form, the largest of the Oban specimens being in all respects a typical *F. quadrangularis*.

A very interesting part of the work is that which refers to the reproductive organs of *Pennatula phosphorea*; the male and female elements are here fully described and figured for the first time. The fact of the sexes being distinct was ascertained by Lacaze Duthiers, but neither he nor Kölliker give figures or satisfactory descriptions of the sexual organs. The male elements are shown here to be produced in spherical capsules, which at first sight resemble ova.

In the account of *Virgularia* the process of the origin of new polyps is described. The stomachs arise as invaginations of the surface of the rachis into the cavity of large canals lined by endoderm.

An ingenious discussion of the reason why specimens of *Virgularia* when dredged are almost always truncated at the upper end leads to the conclusion that the loss is due to the attacks of fish.

The descriptions are followed by a complete critical list of the literature, and an account of the geographical distribution both in the sea and in museums. The figures are very clear, and at the same time artistic. It is much to be regretted that the condition of the specimens did not allow the histology to be completely made out. No doubt the Birmingham Society will pay greater attention to the preservation of material for this purpose on future occasions.

J. T. CUNNINGHAM

## NOTES FROM THE OTAGO UNIVERSITY MUSEUM

III.—On some Embryos of “*Callorhynchus antarcticus*”

SOME weeks since I obtained from a fisherman a number of eggs of *Callorhynchus antarcticus* from Wickliffe Bay, Otago Peninsula. As I believe this is the first time any observations have been made on the development of the *Holocephali*, the following report of remarks made at a meeting of the Otago Institute on May 7 may be of some interest to morphologists:—

“The eggs were found buried in the sand a little below low-water mark, a position which would seem to cast some doubt on the generally accepted theory which accounts for the peculiar form of the egg-shell by supposing it to have acquired a protective resemblance to kelp. The cavity for the embryo has an elongated pyriform shape, the broad end being anterior, and the narrower or posterior end produced into a long canal. On what

<sup>1</sup> Report by Prof. A. Milnes Marshall, M.D., D.Sc., and William P. Marshall. Birmingham, 1882.

may be described as the ‘hairy’ in contradistinction to the smooth side of the egg-shell, there is on each side of the middle line at the anterior end a longitudinal slit in the wall of the cavity, which serves to allow of currents to and from the latter for respiratory purposes. The anterior ends of these slits are united by a weak place in the wall of the egg-shell; very slight pressure from within causes rupture along this line and produces a valve, the lateral boundaries of which are formed by the respiratory slits, its anterior boundary by the line of rupture. This valve readily opens outwards by pressure on its inner face, and serves for the exit of the foetus; pressure upon its outer face only forces it against the opposite wall of the cavity.

“The advanced embryo lies in the cavity in such a position that its head lies at about the level of the base or hinge of the valve, and therefore some distance from the anterior end of the cavity, its tail lies in the narrow posterior prolongation of the cavity, which fits it accurately; its right side lies almost invariably against the smooth, its left against the hairy side of the egg-shell.

“Unfortunately the embryos in all the four dozen eggs examined were in a tolerably advanced stage of development, so that there will be little chance of getting younger stages until next autumn. The youngest obtained are about four inches long; they have large yolk-sacs (1.75 inch in length), and very long external gills projecting from the opercular aperture; the snout has acquired the characteristic form, but the tail shows as yet no trace of heterocercality, nor the skin of the silvery character it has in the adult, being in the fresh state translucent and highly vascular. The yolk-sac is remarkable; it is longitudinally elongated, and produced into numerous blunt paired projections, which are tolerably constant in position; one pair of these always lies to the anterior end of the dorsal surface of the yolk-sac, and between them the snout of the embryo is invariably situated. The umbilical or somatic stalk is practically obsolete, the foetus being sessile upon the yolk-sac.

“As in Elasmobranchs the yolk-sac is gradually drawn into the coelome, and so consists in advanced stages of an internal and an external portion, the former continually increasing at the expense of the latter. As the external portion diminishes in size, it loses its blood-vessels, and its projections gradually disappear. In the latest stage obtained, the external portion is not more than 0.5 inch long, the internal portion being fully 1.25 inch in length, and causing a great distension of the abdominal walls. In this stage also, the external gills are absorbed, and the adult characters of the integument attained.”

The foregoing description appeared in the *New Zealand Journal of Science* for this month. T. JEFFERY PARKER  
Dunedin, N.Z., July 13

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE

OXFORD.—The delegates of the Common University Fund have agreed to appoint a Reader in Anthropology, so as to utilise the presence of Dr. Tylor for University instruction. In a Convocation to be held on November 15, a decree will be submitted to the House, fixing the Reader's stipend at 200*l.* a year, on condition that he lecture at least once a week in each of the three terms, and receive students for informal instruction and assistance.

A Scholarship in Natural Science is offered this term by Wadham College. Candidates may offer either Animal Morphology, Botanical Morphology, or Physiology. They will also be examined in Elementary Chemistry and Physics. Weight will also be given to a knowledge of French or German. Candidates must send in their names to the Warden on or before November 15.

CAMBRIDGE.—Dr. H. Sidgwick has been elected Knightbridge Professor of Moral Philosophy. Prof. Bonney, F.R.S., has been approved for the degree of Sc.D. Dr. Routh has been elected Hon. Fellow of Peterhouse; and Professors Dewar and M. J. M. Hill have been elected Ordinary Fellows. Messrs. A. G. Greenhill and R. R. Webb will be the Examiners in the Mathematical Tripos of 1874. The honorary degree of M.A. has been conferred on Prof. Macalister, F.R.S. Messrs. J. A. Fleming and S. L. Hart, both distinguished Natural Science graduates, have been elected Fellows of St. John's.

Dr. Gaskell, F.R.S., is to be approved as a Teacher of Physiology, Dr. F. Darwin as a Teacher of Biology, and Mr. G. B.

Atkinson as a Teacher of Physics, for the purposes of medical education.

The honorary degree of M.A. is proposed to be conferred on Mr. A. Graham, First Assistant at the Observatory, in recognition of his astronomical services.

Mr. M. C. Potter of Peterhouse has been appointed Assistant Curator of the Herbarium.

Mr. W. H. Caldwell, Fellow of Caius College, has been appointed the first Balfour student.

At St. John's College, in December, there will be open for competition among students who have not commenced residence in the University.—The Foundation Scholarships then vacant, two of which may, after residence is commenced, be increased in value to 100*l.* a year on condition of regular residence, satisfactory progress, and good conduct; four Minor Scholarships, two being of the value of 75*l.* a year and two of 50*l.* a year; three Exhibitions of 50*l.* a year for two years; one Exhibition of 40*l.* a year for four years; one Exhibition of 32*l.* a year for four years; together with two Exhibitions of 30*l.* a year for four years; one Exhibition of 33*l.* 6*s.* 8*d.* a year for three years. The number of Exhibitions may be increased if candidates of sufficient merit present themselves. The Foundation Scholarships and Minor Scholarships are open to candidates under nineteen years of age. The Minor Scholarships are tenable for two years, or until the Minor Scholar is elected to a Foundation Scholarship. The Exhibitions are open to all candidates irrespective of age, and are not vacated by the election of the Exhibitioner to a Foundation Scholarship. The number of Foundation Scholarships is sixty. Candidates may present themselves for examination in any of the following subjects, namely, Classics, Mathematics, Natural Science, Hebrew, and Sanskrit. A candidate may be elected on the ground of proficiency in any one of these taken singly. The Examination in Natural Science will include papers and practical work in Physics, Chemistry, General Biology, Botany, Zoology and Comparative Anatomy, Human Anatomy, Physiology, and Geology. Every candidate must show a competent knowledge of two at least of the following subjects, namely: (1) Elementary Physics, (2) Elementary Chemistry, (3) Elementary Biology [the range of the examination in Elementary Biology may be taken as defined by the contents of Huxley and Martin's "Course of Practical Instruction in Elementary Biology" (Macmillan)]. A candidate may be elected on the ground of special proficiency in any one of the foregoing sciences. Each candidate's name should be sent not later than November 27, 1883, to the tutor under whom it is proposed to place him.

### SCIENTIFIC SERIALS

THE *Journal of Physiology*, vol. iv. Nos. 2 and 3, August, 1883, contains: W. H. Gaskell, on the innervation of the heart, with special reference to the heart of the tortoise (plates 2 to 5).—J. Th. Cash, description of a double cardiograph for the frog's heart.—Wesley T. Mills, an examination of some controverted points of the physiology of the voice, especially the registers of the singing voice and the falsetto.—F. Warner, a method and apparatus for obtaining graphic records of various kinds of movements of the hand and its parts, and of enumerating such movements and their combinations (plate 6).—H. H. Donaldson and L. T. Stevens, the influence of digitaline on the work of the heart and on the flow through the blood-vessels.—G. F. Yeo and Th. Cash, on the relation between the active phases of contraction and the latent period of skeletal muscle.—S. Ringer, a third contribution regarding the influence of the inorganic constituents of the blood on the ventricular contraction.—L. C. Woodriddle, further observations on the coagulation of the blood.—Also Supplement Part to vol. iv. Physiological papers of 1882.

THE *Journal of the Royal Microscopical Society*, October, 1883, contains: On *Asplanchna ebsboronii*, nov. sp., by E. T. Hudson, LL.D. (plates 9 and 10), with the usual bimonthly summary of current researches relating to zoology and botany (principally I. vertebrata and Cryptogamia), microscopy, &c.

THE *American Naturalist* for October, 1883, contains: Man's place in nature, by W. N. Lockington.—The Naturalist Brazilian Expedition (No. 2, continued), the Lower Jacuhy and São Jeronymo, by H. H. Smith.—On the shells of the Colorado

desert and the region further east, by R. E. Stearns (woodcuts).—Review of Report C<sub>4</sub> second geological survey of Pennsylvania, by Dr. P. Frazer.—Means of plant dispersion, by E. J. Hill.—Is the group Arthropoda a valid one? by J. S. Kingsley.—On the Serpentine of Staten Island, New York, and on a classification of the natural sciences, by T. Sterry Hunt.

*Proceedings of the Linnean Society of New South Wales*, vol. vii. part 4, 1883, contains:—E. P. Ramsay, on new species of Solea; contributions to Australian Oology, part 2; notes on birds from Solomon Islands.—E. Meyrick, Australian Microlepidoptera, Oecophoridae.—Prof. Stephens, geology of the Western coalfields, parts 1 and 2.—Dr. J. C. Cox, edible Australian oysters.—C. W. de Vis, new birds of Queensland; description of a new *Belideus* from Northern Queensland; on two new Queensland fishes.—Rev. C. Kalchbrenner, *Fungi aliquot Australiæ Orientalis*, and on new species of Agaricus.—Rev. J. E. Tenison-Woods, botanical notes on Queensland; on a species of *Brachyphyllum* from mesozoic coal beds, Ipswich, Queensland.—Wm. Macleay, new fishes of New Guinea, No. 3.—Wm. A. Haswell, on *Phoronis australis*, n.sp.; an instance of symbiosis (an Actinia lodging in the pits of a species of Cellepora); segmental organs of Aphrodite.—On some new species of Australian tubicolous annelids (plate).—E. Haviland, plants indigenous to Sydney.—Rev. Dr. Woolls, Eucalypts first known in Europe.—J. J. Fletcher, comparative anatomy of the female urogenital system in kangaroos, part 1.—Dr. H. B. Guppy, habits of the *Birgus* of the Solomon Islands.

Vol. viii. part 1, June 19, 1883, contains:—William Macleay, a new form of mullet from New Guinea.—J. J. Fletcher, anatomy of the urogenital system of the kangaroos, part 2.—C. W. de Vis, extinct marsupial remains.—C. P. Ramsay, contributions to the zoology of New Guinea (plate, *Hapalotes papuanus*).—Some new Australian fishes.—H. R. Whittell, habits of *Pelopæus letus*, and *Larrada australis*; on the voracity of a species of *Heterostema*.—Rev. J. E. Tenison-Woods, on the coal flora of Australia (eleven plates, heliotypes); gives a history of the subject and descriptive list of fossils (pp. 36-167).—Rev. B. Scortechini, contributions to the flora of Queensland.—Rev. C. Kalchbrenner, two new fungi.—Jas. Norton, fructification of the *Bunya* (*Aravucaria bidwellii*) in Queensland.

Vol. viii. part 2, July 17, 1883, contains:—E. Haviland, plants indigenous to Sydney, Nos. 3 and 4.—C. W. de Vis, tooth-marked bones of extinct marsupials; on *Brachalletes palmieri*, an extinct marsupial; on a lower jaw of *Palorchestes azeai*; on some new genera and species of Australian fishes.—H. K. Bennett, habits of *Leipoa ocellata*; on water from Eucalypti roots.—Wm. Macleay, fishes from the Burdekin and Mary Rivers; New Guinea fishes, No. 4.—J. J. Fletcher, on a viviparous lizard (*Himulia elegans*).—John Brazier, synonymy of Australian and Polynesian land and marine mollusca; localities of some species of recent Polynesian mollusca.—Rev. J. E. Tenison-Woods, mesozoic fossils from Central Australia (two plates).—Rev. B. Scortechini, second half century of plants new to South Queensland.

*Revue Internationale des Sciences Biologiques* for July, 1883, contains:—Elie Reclus, studies on indigenous people: the Khonds.—Prof. Huxley, living organisms and the way to study them (translated).—Proceedings of the Academy of Sciences, Paris.

August.—Leon Metchnikov, essay on the Christian communion: the God of Nyssa and the God of Nazareth.—Prof. Huxley, living organisms and the way to study them (translated).—Proceedings of the Academy of Sciences, Amsterdam, and of the Academy of Sciences, Paris.

September.—Prof. Huxley, living organisms and the way to study them (translated).—Prof. Williamson, the primitive ancestors of living plants and their relation to the doctrine of evolution.—Proceedings of the Academy of Sciences, Paris.

*Atti of the Royal Academy dei Lincei*, June 17.—Remarks on Schiff's memoir on changes of volume during fusion, by Sig. Camizzaro.—On De Stefani's upper crest of the Apennines, by S. Capellini and Taramelli.—On the temperature corresponding with the glacial period, by S. Pietro Blaserna.—On the measurement of altitudes by means of the barometer, by S. Paolo Busin.—On the isobarometric types of Italy, by the same author.—On the first phenomena in the development of the embryo of the Böops (*Salpa maxima*), by S. Francesco Todaro.—On the caloric developed in liquids by the