Falls, Otago, have the angle of the mouth reaching only to under the centre of the eye. As this is the large-mouthed species of eel, it is possible that we have here a hybrid with the mouth of *australis* and the fins of *dieffenbachii*.

In April 1932, I had the opportunity of visiting Lake Ferry, Wellington, through which many eels run in the seaward migration. Among a number of male long-finned eels, I found a female of the short-finned species which was caught with them. This example is 35.7 in. long, and has the fins and small mouth as in *A. australis*; but the teeth are as in *A. dieffenbachii*. The vomerine band is widest about the centre and tapers well backwards reaching nearly as far back as the maxillary bands. While this tapering band of teeth does not reach quite so far back as it should to be exactly true to *dieffenbachii*, it is certainly not pear-shaped and is close enough to that species in this important respect. I can only conclude that the eel which I have mentioned is a hybrid between our two common species, thus shedding new light on the species problem of *Anguilla* throughout the world.

Dominion Museum,
Wellington,
New Zealand.

W. J. PHILLIPPS.

¹ *Trans. N.Z. Inst.*, 58, 379-388; 1928.

² *N. Z. J. Sci. and Tech.*, 13, No. 4, 228; 1932.

Priapulius caudatus in New Zealand Waters

THE antarctic variety of this northern species of *Priapulius*, whether it be called *tubercule-spinatus* Baird or *antarcticus* Michaelsen, is confined, according to recent authorities, to the most southern seas; for example, off Tierra del Fuego, Patagonia, South Georgia, Falkland Is., Graham area, Cape Adare, Kerguelen.

Early in this year I received from Mr. A. B. W. Powell, the conchologist at the Auckland Museum, a collection of polychaetes dredged in the harbour at that city, and in one of the phials I found to my intense surprise a small specimen of *Priapulius* measuring about one inch in length. It is well preserved and exhibits the characteristic arrangement of the spines or teeth described by Theel and so beautifully figured by his artist. It was obtained at a depth of 8 fathoms in Islington Bay, Auckland Harbour, associated with *Terebellides stroemi*, *Lanice conchilega*, and *Lagis australis*; the bottom was of black gritty mud.

As the variety has never been recorded from so far north it seems worthy of record in NATURE.

University Museum,
Dunedin, N.Z.

WM. B. BENHAM.

Oct. 12.

Chemical Composition of the Animal Body

It is customary to express the results of an ultimate analysis as mass percentages, thus: oxygen, 65 per cent; carbon, 18.25 per cent; hydrogen, 10 per cent, and so on. But, on modern views, the chemical activities of these elements do not depend on the nuclear masses of the atoms but on their outer valency electrons. Therefore the chemical composition of, say, clupein (the protamine of the testis of the herring) is best expressed as $C_{30}H_{57}N_{17}O_6$, or by some such empirical formula. When the results are stated in this way it appears that the order of abundance of the chemical elements in an animal body is directly proportional to their atomic numbers, so that the characteristic organic element is hydrogen.

Some interesting speculations are suggested when-

ever one studies a recent statement of the Periodic Law with this relation in mind. Unfortunately there is no really good complete ultimate chemical analysis of the whole body of any one animal in the literature of physiology, and so it is impossible to be sure as to the order of abundance of oxygen and nitrogen, and of the elements sodium, potassium, etc., in the results. The empirical formulæ of most of the substances composing the tissues are known but it is difficult to 'weight' these numbers according to the proportions of the tissues in the whole body. Perhaps, also, the water in the tissues is really an organic constituent in the same sense as carbon is such a constituent. Is the order of abundance of the mass numbers of the isotopes of oxygen and nitrogen known in cases where these elements have been isolated from living organisms? Other questions immediately occur to one and it is plain that here there is something to be investigated.

JAS. JOHNSTONE.

University of Liverpool.

Nov. 19.

Magnetic Rotatory Dispersion and Absorption of the Cerous Ion in Solution

BEQUEREL and de Haas,¹ from their work on the magnetic rotation of the crystal tysonite, predicted that the Ce^{+++} ion possesses an intense paramagnetically active absorption band in the neighbourhood of λ 2370 Å. This prediction was based on the assumptions that (1), although tysonite is a complex fluoride of Ce^{+++} , Pr^{+++} and Nd^{+++} , the only sensibly rotating ion is Ce^{+++} ; (2) the rotation due to Ce^{+++} is controlled by a single absorption frequency. It occurred to us that it would be of interest to test the validity of this predicted property of the Ce^{+++} ion, by investigating the magnetic rotation of solutions of cerous salts in the visible and near ultra-violet regions of the spectrum.

By means of the polarimetric method of Bruhat and Pauthenier² (without using double monochromator) we have investigated at room temperature the magnetic rotation of three solutions of cerous sulphate in water, of strengths approximately 0.7, 2.7 and 4.4 per cent, for the mercury lines 5780, 5461, 4358, 4046, 3652, 3341 and 3128 Å. Our results for the dispersion of the specific magnetic rotation of cerous sulphate indicate the existence of two paramagnetically active absorption bands; a weak one in the neighbourhood of 300 m μ and a strong one in the neighbourhood of 240 m μ . Our results are not sufficiently precise to determine with accuracy the wave-lengths of both these active bands; recourse must be made to absorption data.

Recently, the absorption of the Ce^{+++} ion in solution has been investigated by Bose and Datta,³ who find in solutions of cerium trichloride in water a weak band at 2960 Å. and a strong band at 2550 Å. If we assume in our calculations the wave-length of the weak active band to be 296 m μ , we find the value 239 m μ for the effective wave-length of the strong band. It must be pointed out that this absorption band alone, although having a wave-length in close agreement with that obtained by Becquerel and de Haas, will not account for the ultra-violet dispersion of cerous sulphate as determined by us.

In comparison with the value 255 m μ given by Bose and Datta for the position of the strong absorption band, the value 239 m μ seems to indicate the presence of other absorption bands of the Ce^{+++} ion