

slightly different from most text-books of the subject, one being that a short account is given of the history of most of the physiological discoveries of importance, which is generally neglected in works of similar character, notwithstanding the additional interest which is thereby introduced. The other point is, that an account is given of the anatomical construction of the organs whose functions are to be studied, by which means those who have not, as medical students, gained the necessary amount of knowledge of anatomy to make clear their fundamental notions, can read on and understand without reference to other works.

In the preface Dr. Le Bon enters into a short account of the aims and objects of the study of physiology. He remarks that "it is with profound wisdom that the philosophy of the ancients epitomised what ought to be known by man, in the maxim, printed in golden letters on the doors of their temples, *Know thyself*." We cannot, however, in any way agree with this physical distortion of the proverb, and think that the endeavour to place physiology on such a footing will never lead to successful results. The subject is not taught in schools, and it is true that the youth during several years of his life has, instead, been a student of the past, in company with the heroes of Greece and Rome. "The time has arrived for him to make use of his knowledge. He enters the business of life. He has to instruct the masses, lead the multitude; yet, of the nature of men, of their instincts, of their passions, he is absolutely ignorant." Notwithstanding all this, we must differ from our author in assuming that a thorough knowledge of the human organisation is indispensable, or even useful, in supplying the deficiency indicated; and there are many, we think, who will agree with us. No better proof that such is the case can be adduced than the medical profession itself. Its members are all more or less acquainted with the most important physiological facts and theories; supplemented, which is much to the point, with a thorough anatomical knowledge. Nevertheless, it is not to the medical profession that we are accustomed to look for moral philosophers, politicians, or novelists, but rather for thorough scientific workers, and an overwhelming percentage of nonentities, as far as the world at large is concerned. Statistics as to the average length of life amongst medical men would hardly show any advantage in their favour, and as patients they are notably unmanageable. As an education, physiology is therefore, no doubt, as good as any other science, but its further value is a delusion and a snare. It has been our object, on several occasions, to ascertain the amount of information as to the mechanism of the organ and of the piano possessed by some of the most accomplished musicians, and in nearly every case we have found that they are perfectly ignorant of acoustics and the mechanical construction of the machinery they are employing. And yet is not *Know thy instrument* at first sight as applicable to the musician as *Know thyself* to humanity at large? How few of us could pick to pieces and reconstruct a clock or watch, and yet how many of us have never missed a train in our lives!

These remarks are not made in disparagement of physiology, but in opposition to the misleading argument adopted by several others as well as the author of the work before us, to the injury of science itself in the estimation of the public at large, because of the false expectations it raises.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

Fossil Remains of the Fallow Deer found in Malta

REFERRING to Dr. Jetteles' monograph on the Distribution of the Fallow Deer, translated by Mr. Sclater (NATURE, vol. xi., p.

71), it may be interesting to record that fossil exuviae referable to *Cervus dama* were discovered in Malta within the last few years. From inquiries I learn that they were found in a rock fissure impacted amongst the red soil which usually fills all the numerous rock rents of the island, where also fossil elephants' remains have been met with. The exuviae in question were sent to the late Mr. W. Flower, F.G.S., and subsequently examined by Mr. Busk, Mr. Boyd Dawkins, and myself. They contain fragments of long bones and several entire feet bones and teeth, referable to small-sized adult individuals of the Fallow Deer. There is, besides, the molar of *Equus* and a canine referable to *Canis*, from the same situation.

The mineralogical aspects of the specimens are similar to those of the Quaternary fossil fauna of the island, but this is, as far as I can discern, the first instance of fossil remains of *Cervus* and *Equus* having been discovered in Malta or Gozo. Canine teeth of the same dimensions as the above, and referable to *Canis*, were found by Admiral Spratt and myself in conjunction with teeth and bones of *Hippopotamus pentlandi*, from the Malak Cavern of Malta.

Royal College of Science,
Dublin, Jan. 21

A. LEITH ADAMS

Electric Conductivity of Nerves

IN a recent number of NATURE (vol. x. p. 519) the reviewer of "The Protoplasmic Theory of Life" states broadly that few physiologists will agree with the statement in the book that the nerves are not better fitted for the conduction of electric currents than the other moist tissues, and that they possess no demonstrable apparatus for insulation of these currents. There must be some misunderstanding here, for I have adduced proofs from Dubois-Reymond, Ranke, Fick, and others, and I believe all physiologists of note concur in the view as represented by me. The reviewer has apparently overlooked the circumstance that one of the principal points in the chapter was the distinction of the conveyance by nerves of the stimulus caused by electricity, and the mere conduction of an electric current, for he says "there is not the least doubt that it is through the nerve-fibres that electric stimulation will most readily and most powerfully affect muscular fibres at a distance." No one, I imagine, does doubt this, but it is not at all the same thing as saying that the nerve is the best medium for affecting the muscle owing to its superior power of conducting electricity, for it may also mean that the nerve is susceptible to the stimulus of electricity. This is, indeed, sufficiently shown by the fact that a mechanical stimulation of the nerve will have a similar effect, while we do not attribute to the nerve any superior power of conducting mechanical force. Permit me to refer to the additional light thrown on the question in the recently published work of Prof. Vulpian ("Leçons sur l'Appareil Vaso-moteur," 1875). It had been asserted by Legros and Onimus, that on passing a galvanic current through a nerve containing vaso-motor filaments, the ascending current caused contraction, while the descending ones produced dilatation of the capillary arteries. The experiments of Vulpian and Carville yielded results not in accordance with this statement, and both currents were found to cause contraction. Vulpian explains this discrepancy by pointing out that Legros and Onimus assumed to act on particular nerves by sending the current through the skin and subjacent parts. "Not only," says Vulpian, "are we not authorised to believe that we act on these nerves by this mode, but, in addition, it is evident that we determine excitation of all the tissues comprehended in the current, the skin among others, and that that excitation may provoke reflex vascular dilatations which complicate the results" (p. 114). To perform the experiment properly, it is necessary to secure isolation artificially by cutting the channels of reflex vaso-motor action. Again, if you electrify the sciatic nerve in a dog which has been curarised, no contraction of the voluntary muscles to which it is distributed takes place. And in paralysis of the radial nerve in man from cold, the power of volition over the muscles supplied by it is lost, while the sensory and vaso-motor filaments bound up in the same nerve retain their functional activity. In those cases the power of conducting electricity is not impaired, nor is it indeed in the dead body even; but here, as expressed by Vulpian, "the musculo-motor filaments have lost their normal aptitude to cause the muscular bundles to pass from the state of repose to the state of activity" (p. 122). What that "normal aptitude" consists in is still a question, but it is certainly not the power of conducting electricity, although a knowledge of the latter is of great importance in judging of Dr. Beale's theory of muscular contraction,