

Obituary

DR. WILLIAM PATTEN

DR. WILLIAM PATTEN, who died at Hanover, N.H., United States, on October 27, aged seventy-one years, will be remembered for his numerous contributions to our knowledge of the earliest fossil fishes, which are generally known as Ostracoderms. After graduating as B.Sc. at Harvard in 1883, and as Ph.D. in Leipzig in 1884, he studied at the Naples Zoological Station; and in 1886-89 he was assistant in the Lake Laboratory, Milwaukee, Wisconsin. He was then professor of biology in the University of North Dakota for four years, and in 1893 he became professor of zoology in Dartmouth College, Hanover, N.H., where he remained until his retirement in 1931.

Dr. Patten's researches on the existing *Limulus* and on the fossil Ostracoderms led him to formulate the theory that primitive arachnids were the ancestors of the vertebrate animals. In 1912 he elaborated this theory in a volume entitled "The Evolution of the Vertebrates and their Kin", which was illustrated with his own beautiful drawings. His facts and arguments, however, failed to convince other zoologists and palaeontologists, and he accordingly proceeded with astonishing energy to collect new fossils which might illustrate the subject. He prepared the fossils with great skill and patience, and published a series of valuable papers which are filled with original observations. In the province of Quebec, Canada, he found the first specimens of the armoured *Bothriolepis* showing the tail and median fins. In the island of Oesel, Estonia, which he visited on three occasions, he collected numerous other Ostracoderms in a remarkable state of preservation, including new genera and species which still remain to be described. A. S. W.

PROF. A. BOSTOCK HILL

PROF. BOSTOCK HILL, who died on November 5, was educated at King Edward's School, Birmingham, and pursued his medical studies partly at Queen's College—at that time the Birmingham

Medical School—and partly at Edinburgh, and he also obtained a medical degree at Giessen. The early part of his career was directed to chemistry and he became public analyst to the county of Warwick and afterwards, in 1879, professor of chemistry in Queen's College. Two years later he was appointed professor of hygiene in Mason College, and then in the University of Birmingham, when this was created in 1900. The whole of his life thereafter was spent in public health administrative work, and he held several appointments under various authorities.

Bostock Hill contributed many useful publications of public health interest, and wrote on the purification of sewage, water filtration, and the spread of scarlet fever by milk. In public lectures and addresses he dealt with such varied subjects as the history of sanitary development in Great Britain, the evolution of the county health department, and the relation of voluntary effort to State authority in sanitary and social reform.

Bostock Hill possessed considerable gifts as a teacher, and his lectures will long be remembered by his students. Since his retirement from Birmingham, he had been a valued member of the Board of Studies in Hygiene of the University of London. A sound administrator, a shrewd man of business, and an attractive personality, he will be missed by a large circle of friends. R. T. H.

WE regret to announce the following deaths:

Mr. Bernard Hobson, formerly lecturer in geology in the University of Manchester, secretary of Section C (Geology) of the British Association at Sheffield in 1910, on December 3, aged seventy-two years.

Prof. Marco Th. Lecco, emeritus professor of chemistry in the University of Belgrade, on November 4, aged seventy-nine years.

Canon John Roscoe, an authority on the ancient customs of the Baganda and kindred tribes, on December 2, aged seventy-one years.

News and Views

Electric Supra-Conduction in Metals

THE account given by Prof. J. C. McLennan, in our Supplement this week, of the discussion at the York meeting of the British Association on electric supra-conduction in metals, is most useful as it shows the progress made both by experiment and theory in elucidating this, at least at present, marvellous phenomenon. As soon as Dewar had succeeded in producing liquid oxygen on a large scale in 1892, he and Fleming made an elaborate research to find out how the resistance of metals varied at very

low temperatures. They were led to the conclusion that at temperatures near the absolute zero the electric resistance of pure metals would be very small or even zero. Twenty years later, Kamerlingh Onnes, when experimenting with liquid helium, discovered that, when mercury was cooled down to about 4.2°K. , it became suddenly and abruptly what is now called a supra-conductor. At and below this temperature it offers no measurable resistance to an electric current. The flow of electrons round the circuit is practically unimpeded. The importance of this from