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## OBITUARY.

### Henry Woodward.

BORN 24TH NOVEMBER, 1832. DIED 6TH SEPTEMBER, 1921.

HENRY WOODWARD was born at Norwich on 24th November, 1832, the youngest son of Samuel Woodward, the well-known geologist and antiquary. His father died when he was 6 years old, and his early life was spent under difficult circumstances. He was educated at the Norwich Grammar School until the age of 14, when he left to accompany his brother, Samuel Pickworth Woodward, to Cirencester, where the latter was beginning his career as Professor of Natural History in the Royal Agricultural College. Henry Woodward was by inclination a naturalist from the beginning, and at Cirencester he had the opportunity of making systematic studies. In 1848 he removed to London with his brother, who was then appointed assistant in the Geological Department of the British Museum. Here he attempted to obtain congenial occupation, which would at the same time maintain him, but in 1851 he felt obliged to return to Norwich, where he spent seven years as a clerk in Gurney's Bank. At last, in 1858, he realized his ambition, and became an assistant in the Geological Department of the British Museum, of which he was eventually Keeper from 1880 until 1901.

As an officer of the British Museum, Henry Woodward devoted himself most assiduously to curatorial work, and when the collection of fossils was removed to South Kensington at the beginning of his Keepership, he planned and supervised the whole of the rearrangement in the new building. He made the public galleries more attractive by adding illustrative diagrams and descriptive labels, and he improved the guide-books by providing them with figures of important specimens. He also increased the value of the collections for the progress of science by planning and editing a series of catalogues, among which may be specially mentioned Etheridge and Carpenter's *Blastoidea*, Hinde's *Fossil Sponges*, Smith Woodward's *Fossil Fishes*, and Lydekker's *Fossil Reptiles, Birds, and Mammals*. His genial personality and helpful ways attracted an increasing number of scientific visitors, and as a result of his efforts the extent and scope of the collections enlarged with greater rapidity than at any previous time. He acquired not only

an immense mass of material for research, but also numerous particularly fine specimens which would be instructive for the public exhibition. Among the more important acquisitions were Williamson's Carboniferous Plants, Davidson's Brachiopods, Nicholson's Stromatoporoids, Stürtz's Devonian Starfishes, Egerton and Enniskillen's Fishes, Lewis' Lebanon Fishes, Leeds' Oxfordian Reptiles, and Forsyth Major's Pliocene Mammals from Samos.

In 1864 Henry Woodward joined Professor T. Rupert Jones in founding the GEOLOGICAL MAGAZINE, and from July, 1865, until the end of 1918 he was sole editor. It is unnecessary to refer to the influence of this serial on the progress of research—it is sufficient to repeat the common saying that almost every British recruit to geology since 1864 has begun authorship in its pages. Under Woodward's judicious and tactful editorial direction, it always welcomed and published honest work, whether on orthodox lines or otherwise; and it afforded a medium for discussion not to be found elsewhere. If his well-laid plans and methods are followed, the MAGAZINE cannot fail to continue its usefulness—provided, of course, that the new generation is willing to give it the same financial support as its predecessors.

Soon after he joined the staff of the British Museum, Henry Woodward began to write notes on newly acquired fossils, which were of general interest. Among these his account of the primitive Jurassic bird, *Archaeopteryx*, in the *Intellectual Observer* for 1862, must be specially mentioned. After the foundation of the GEOLOGICAL MAGAZINE, most of his notes were contributed to its pages, and one of these, in the first volume, on the skull of a mammoth found at Ilford, is particularly memorable. In this communication the first well-preserved skull of an English mammoth is noticed, and as soon as the specimen was mounted in 1868 he pointed out the true inward curvature of the tusks, which showed that in the published figures of the Siberian mammoth in Petrograd the tusks were reversed. In 1869 he wrote on the peaty deposits in the Lea valley, in which numerous Holocene mammalian remains had just been found. In this, and in a later paper, published by the Essex Field Club in 1882, he emphasized the geological importance of the work of beavers, both in the Lea valley and in the Fenland. In 1874, in a paper read before the Geological Society, he discussed the fossil links between birds and reptiles, and referred to the footprints of bipedal reptiles in the lithographic stone of Solenhofen, Bavaria. In 1885, to the same Society, he gave an account of a skeleton of the gigantic extinct Sirenian, *Rhytina*, which had recently been acquired by the British Museum.

Henry Woodward's chief contributions to science, however, were his descriptive memoirs and papers on fossil Crustacea and other Arthropods, on which he became a leading authority. The first of his long series of original papers, on a new macrurous Crustacean from the Lower Lias of Lyme Regis, was published by the Geological

Society in 1863. From 1865 to 1875 he contributed an annual report on British fossil Crustacea to the British Association, and made many advances in knowledge of the subject. In 1864 he exhibited to the British Association at Bath some restorations of the strange Devonian Merostomata, and for many years devoted special attention to this group, which he described in a monograph issued by the Palæontographical Society 1866–78. He pointed out the relationship of the Eurypterids to the existing Xiphosura (king crabs) more clearly than it had been done previously. He also contemplated continuing Salter's unfinished work on the British Trilobites, but unfortunately completed only one small volume on the Carboniferous genera (Palæontographical Society, 1883–4). He joined Professor Rupert Jones in a monograph of the British Palæozoic Phyllopoda (Phyllocarida), likewise published by the Palæontographical Society in 1888. Early in his career he prepared a useful Chart of Fossil Crustacea, with the aid of Mr. J. W. Salter; and in 1877 he summarized all that was known of British Fossil Crustacea in a British Museum Catalogue. During more recent years he also published much on the Carboniferous Arachnids, Myriapods, and Insects, especially from the English Coal Measures. All his papers were well illustrated, many by his daughters.

Henry Woodward occasionally described other invertebrate fossils besides Arthropods, and among his contributions to the GEOLOGICAL MAGAZINE are accounts of Tertiary shells from Sumatra (1879), Palæozoic fossils from Beechey Island (1878), and a well-preserved cuttle-fish from the Chalk of Mount Lebanon (1883).

Almost all Henry Woodward's writings may be described as bringing together useful materials for science rather than as finished contributions. He rarely did more than state the facts and make a few obvious comparisons. He always hesitated to deal with principles, and although he admitted the general truth of the doctrine of evolution, he left to others its application to palæontological research. At the same time he encouraged younger students to adopt the new methods, and he was ever eager to help them with his learning and judicious criticism. He realized the possibility of formulating at least some laws; he only insisted on tempering scientific enthusiasm with discretion.

In 1857 Henry Woodward married Miss Ellen Sophia Page, of Norwich, who took a keen interest in his work, and gave him much help until her death in 1913. Readers of the GEOLOGICAL MAGAZINE remember with gratitude her valuable index to the first forty volumes, which was published in 1905. Of the two sons, both already dead, Harry P. Woodward was for several years Government Geologist of West Australia, while Martin F. Woodward began a promising career as a zoologist. Of the five daughters, Miss Gertrude M. Woodward has long been known for her beautiful illustrations of fossils and zoological specimens in the works of many authors.

Henry Woodward took a very active share in the work of the Geological Society. He was elected a Fellow in 1864, was awarded

the Wollaston Fund in 1866, the Lyell Fund in 1879, the Murchison Medal in 1884, became President in 1894, and received the Wollaston Medal in 1906. He was also an early member of the Geologists' Association, became President in 1873, and from 1875 onwards was an honorary member. He joined the Palæontographical Society at the beginning of his career, and in 1895 he succeeded Professor Huxley as President, retaining this office until his death. He was President of Section C of the British Association at Manchester in 1887. He was the first President of the Malacological Society in 1893, and he served two years as President of the Royal Microscopical Society in 1903–4. For many years he was also an active Vice-President of the Zoological Society. He was elected a Fellow of the Royal Society in 1873, and received the honorary degree of LL.D. from St. Andrews in 1878. He was an honorary member of many other Societies at home and abroad. In all his activities he was a cheery colleague, tactful and sympathetic and full of resource, and his loss is mourned by a large circle of devoted friends.