

retained until 1895, when he retired on a pension. While in the Museum he prepared ten volumes of the Catalogue upon Colubrine Snakes, Batrachia, and Fishes. He also published "The Reptiles of British India", "Shore Fish", "Deep Sea Fishes", and "Pelagic Fishes" in the *Challenger Reports*; and an "Introduction to the Study of Fishes". In 1880 he took charge of the removal of the Zoological Collections from the British Museum, Bloomsbury, to the New Natural History Museum in Cromwell Road.

In 1864 Dr. Günther founded the *Zoological Record*,<sup>1</sup> an annual publication. He was also one of the editors for more than thirty years of the *Annals and Magazine of Natural History*. So long ago as September, 1864, Dr. Günther contributed a paper on "A New Fossil Fish from the Lower Chalk, *Plinthophorus robustus*, Gthr." (*GEOL. MAG.*, Vol. I, pp. 114-18, Pl. VI, 1864), and in 1876 "On the Fish Fauna of the Tertiary Deposits of the Highlands of Padang, Sumatra" (*GEOL. MAG.*, Dec. II, Vol. III, pp. 433-40, Pls. XV-XIX).

Dr. Günther was elected to the Royal Society in 1867, became a Vice-President 1875-6, and received a Royal Medal in 1878. He was President of Biology, British Association, 1880; President of the Linnæan Society 1898-1901, F.Z.S. in 1862, and V.P.Z.S. 1874-1905.

He married, first, in 1868, Roberta Macintosh, of St. Andrews (who died in 1869); second, 1879, Theodora Dawrsh, daughter of Henry Holman Drake, of Fowey, Cornwall, who survives him. His eldest son, Mr. R. T. Günther, is a Fellow and Tutor of Magdalen College, Oxford, and is distinguished as a zoologist, geographer, and antiquarian.

Dr. Günther died on February 1, 1914, in his 84th year at 2 Lichfield Road, Kew Gardens, leaving behind him a splendid record of biological work accomplished during his long and strenuous life.

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### HORACE BOLINGBROKE WOODWARD, F.R.S., F.G.S.

BORN AUGUST 20, 1848.

DIED FEBRUARY 6, 1914.

(WITH A PORTRAIT.)

WHEN death severs a friendship of forty years it is difficult to form a true estimate of the friend's lifework, and this is specially difficult in the case of H. B. Woodward, whose life was more generously spent in aiding others than in those original researches which might permanently establish his reputation.

Born in London in 1848, the son of Dr. S. P. Woodward, F.G.S.,<sup>2</sup> of the Department of Geology in the British Museum (1848-65), Horace was educated in a private school, and in 1863 was appointed assistant to the Secretary, Mr. H. M. Jenkins, at the Geological Society, Somerset House. This position he did not hold for long, being appointed in 1867, at the age of 19, an Assistant Geologist on the Geological Survey, under Sir Roderick Murchison. The greater part

<sup>1</sup> Still continued by a Committee of the Zoological Society.

<sup>2</sup> See Obituary, *GEOL. MAG.*, August, 1865, pp. 383-4.

of his life was thus spent in official harness, for he did not retire until the end of 1908.

His Survey work was so varied that it is difficult to give a connected account of it. In his early life he worked much under Mr. H. W. Bristow, F.R.S., in Somerset and various other districts. He took part in the first Drift Survey of the London area; but he was before long transferred to the disturbed rocks of the Somersetshire Coal-field. Then he was engaged on the Palæozoic and Secondary rocks of Devon and Somerset; this varied experience assisting him greatly in the preparation of his very useful *Geology of England and Wales*.<sup>1</sup> In Devon the writer joined him, and he has reason to remember Horace Woodward's kind help and patience with the inexperienced; he never tired of assisting those who worked with him, and this was a most striking characteristic till the end of his life.

Much of this early work by Horace Woodward is unpublished, or has only lately appeared, for after several years in Devon, Somerset, and Dorset, he was transferred to Norfolk and Norwich, leaving the Devon maps to be completed by Mr. W. A. E. Ussher and others. He was, however, the chief author of the memoir on the East Somerset and Bristol Coal-fields, published in 1876.

In Norwich he spent a good many years, probably some of the happiest in his life. He was in the native city of his grandfather, his father, and uncles, and he liked to recall the connexion of his family with the county, for his grandfather, Samuel Woodward, had been one of the earliest writers on that country, and had published the *Geology of Norfolk* in 1833. Here also, after his recovery from a serious illness which had interfered with his work for some time, he was again able thoroughly to enjoy the open-air life. He was in his element leading a geological excursion, presiding at some meeting for popularizing science, or discussing geological questions with his colleagues, several of whom were then working in the eastern counties. The principal result of his stay in Norfolk is seen in the accurate geological maps, and in his *Geology of Norwich, of Fakenham, Wells, and Holt*, and other memoirs; but in his leisure he was already collecting material for a second edition of his valuable work, the *Geology of England and Wales*.<sup>2</sup>

During his residence in Norwich he was President of the Norwich Science Gossip Club and of the Norwich Geological Society. At a later period he was President of the Norfolk Naturalists' Society.

Among his other publications he wrote *Memorials of (Rev.) John Gunn*, formerly Rector of Irstead (1891), whose remarkable collection of Forest Bed Pleistocene Mammalia from the Norfolk coast now adorn the Norwich Castle Museum.

His next extensive piece of work was the writing of three volumes of a memoir on the *Jurassic Rocks of Britain*, which necessitated several years spent in visiting the numerous exposures; but this work was much hindered by official calls, which every year became more pressing. He was able, however, at intervals, after 1892, to aid in the mapping of the Jurassic strata in Scotland, including Skye and

<sup>1</sup> 8vo, Longmans (1876), pp. xx, 476.

<sup>2</sup> 1887, Geo. Philip and Son, 8vo, pp. 16, 670, with maps and illustrations.

Raasay, and was the first to point out the presence in Raasay of a bed of iron-ore, which is now recognized to be of high commercial value.

In 1893 he was appointed, on the death of Mr. William Topley, to take charge of the Geological Survey Office in Jermyn Street, London, under Sir Archibald Geikie, and from that time the endless duties of inspection, editing, and official correspondence left him little leisure for original work. In time Horace Woodward's responsible position was recognized and he became Assistant Director for England and Wales; but this led to no lessening of the amount of routine work. In his spare time he still worked hard, and to him we owe the History of the Geological Society of London prepared for the Centenary of 1907 (8vo, pp. xx, 336). Besides contributing to the Scottish memoir on Glenelg, etc. (1910), he took the principal share in the Water-supply memoirs of Lincolnshire (1904) and Bedfordshire and North Hants (1909). He also wrote a memoir on the London district (1909), and one on soils and subsoils which passed through a second edition (1906).

Mr. Horace Woodward was an Honorary Member of the Yorkshire Philosophical Society, the Cotteswold Naturalists' Field Club, and the Essex Field Club. He was elected a Fellow of the Geological Society of London, 1868; he served on the Council eleven years, and was a Vice-President 1904-6. He was elected a Fellow of the Royal Society in 1896.

The value of his work was recognized by the Geological Society in the successive awards of the Murchison Geological Fund in 1885, the Murchison Medal in 1897, and the Wollaston Medal in 1909. Mr. Horace Woodward was President of the Geologists' Association 1893-4.

He married Miss Alice Jennings at Dorking, on June 5, 1873; she died in 1902. He leaves one daughter, now married (Mrs. Sydney Barnwell).

During the last five years Mr. Horace Woodward has suffered severely at times from an internal malady, but in spite of his drawbacks his Spartan courage enabled him to continue his literary labours, and he brought out the following works: E. Stanford's Geological Atlas of Great Britain and Ireland (1907, pp. x, 160, explanatory and descriptive geology with numerous maps and illustrations; a third edition, including the Channel Islands, has just appeared); The Geology of Water Supply (Arnold's Geological Series, 1910, 8vo, pp. x, 340); The Geology of Soils and Substrata (1912, pp. xvi, 366); and, jointly with Dr. Henry Woodward, a Table of British Strata (Dulau & Co.). He also contributed the geological chapters to several volumes of the Victoria County Histories. As Assistant Editor of the GEOLOGICAL MAGAZINE he has for many years written very numerous reviews and notices of current geological literature up to the last.

Mr. Woodward died at his residence, 85 Coombe Road, Croydon, on Friday, February 6, 1914, and was interred at Brookwood on February 10. His memory is warmly cherished by his colleagues on the Geological Survey and by a large circle of geologists both in the Geological Society and the Geologists' Association.

C. R.