Forbes, from an examination of the Mollusca, and by Prof. Haeckel after studying the Radiolaria, gave his reasons for supposing that it is in reality more modern than these authors supposed, and may be referred to the Pliocene or Pleistocene.

Though *Cystechinus crassus* possessed plates of greater thickness than those of the previously described species, the ambulacra were apetaloid, and the author concluded that though an inhabitant of seas of less depth than those in which the modern forms occur, it may be fairly considered to have been a dweller in deep seas, and to indicate that the Radiolarian deposit is a true deep-sea ooze.

CORRESPONDENCE.

A PALÆONTOLOGICAL RECORD.

Sir,—Now that Palæontology has become so complex a science, and new species are from day to day described in various parts of the world, is it not desirable that some International Record of them should be published at stated intervals?

We would suggest that the matter be taken up by the International Geological Congress; and if this be adopted, every one who describes a new species of fossil should send in the name and full references to the work in which it was published and figured, with accounts of the locality, geological horizon and biological order of the species.

In this way we should have an authentic register of new species, that would be of great value to all students of Palæontology; and, in short, "facilitate the preparation of that general list of all described fossils which is at present one of the greatest desiderata in geological science."[1]

Rudolf Schäfer.
Horace B. Woodward.

OBITUARY

HENRY WILLIAM BRISTOW, F.R.S., F.G.S.,

Late Director of the Geological Survey of England and Wales.

Born, May 17, 1817. Died, June 14, 1889.

THE name of H. W. Bristow will always be associated with the history of the Geological Survey, on which he served for a period of forty-six years. During the first few years of the official existence of the Survey, De la Beche had to depend to a large extent on voluntary or temporary assistance, but gradually he gathered around him a permanent staff of field-geologists and of others occupied in museum-work. Among those attached to the Survey in these early days were John Phillips, Ramsay and Aveline. In 1842 Mr. Bristow, then nearly twenty-five years of age, was appointed an Assistant Geologist, and during the next few years [Sir Warington] Smyth, Baily, Edward Forbes, Jukes, Selwyn and others joined the staff, whose headquarters were then situated in Craig's Court.

[1] See Address to the Geol. Soc. 1889, by W. T. Blanford.

Mr. Bristow was born on May 17th, 1817, and was educated at King's College, London, where, in 1840-41, he obtained certificates of honour in the departments of civil engineering and applied science. His father, Major-General H. Bristow, belonged to an old Wiltshire family, and had served in the Peninsular War.

Commencing Geological Survey work in the neighbourhood of Radnor, on the Old Red Sandstone and Silurian rocks, Mr. Bristow was shortly afterwards transferred to the Jurassic regions of Gloucestershire and Somerset, mapping portions of the Cotteswold Hills near Wotton-under-Edge and Chipping Sodbury, and of the Oolitic district near Bath. In these areas he received guidance from John Phillips and William Lonsdale. Still later he proceeded to the south coast, and working eastwards of Lyme Regis, he personally surveyed the greater portions of Dorsetshire, and eventually much of Wiltshire, Hampshire, and the Isle of Wight, and parts of Berkshire, Sussex, the Wealden area, and eastern Essex.[1]

In the course of this extensive survey all the subdivisions of the Jurassic, Cretaceous, and Lower Tertiary strata came under notice; and students who have subsequently paid attention to the structure of these tracts, whether along the fine cliff-sections of the Dorsetshire coast or inland over the Isle of Purbeck, the Ridgway, or Bridport, have borne testimony to the care and accuracy with which Mr. Bristow has depicted the geology. For it must be remembered that, excepting the small geological maps of Buckland and De la Beche, of Webster, Fitton, and Mantell, the detailed structure of the district had all to be unravelled. Nor was this a simple and easy task, considering the unconformable overlaps (or oversteps), and the effects produced by anticlinal disturbances and faults. In fact, no one, without actual experience of the process of geological mapping, can fully realize the amount of physical toil and mental labour involved in tracing the geological boundaries and faults in a region where so many subdivisions occur, and where they appear often in irregular and unexpected juxtaposition.

It is Mr. Bristow's field-work which will remain as a lasting memorial of his devotion to geological science. If his literary work on the Survey appears small, it must be remembered that in the early days of the Survey, the geologists were moved rapidly on from place to place, so that unfortunately little time was allowed for making detailed notes of the strata, and still less for observing the mode of occurrence of the organic remains. Mr. Bristow's intimate knowledge of the lithology of the stratified rocks is shown in the portions he contributed to the Descriptive Catalogue of the Rock Specimens in the Museum of Practical Geology.

The preparation of the Survey maps, however, was supplemented by numerous sections, longitudinal and vertical, which Mr. Bristow constructed with much skill and neatness to illustrate and explain the geology of the regions he had surveyed. The Purbeck Beds were especially illustrated in this way, and while the palæontology

[1] The Sheets of the Geological Survey Map on which Mr. Bristow was principally engaged, are Nos. 1, 5, 7, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 35, 36, and 56.

of these beds was studied by Edward Forbes, the strata themselves were measured in great detail by Mr. Bristow, partly in conjunction with the Rev. Osmond Fisher, and partly with the aid of Mr. Whitaker. In like manner sections of the Tertiary strata in the Isle of Wight were prepared, while the palæontology was worked out by Forbes. The results of this work were published by Forbes, while the geology of the whole island was afterwards described by Mr. Bristow. The task of his later years had been to prepare a new edition of his Geology of the Isle of Wight; and this is now nearly ready for publication, having been revised and considerably augmented by Messrs. C. Reid and A. Strahan, who have lately re-surveyed the island on the scale of six inches to a mile.

In later years other areas surveyed by Mr. Bristow were illustrated by Memoirs. In conjunction with Mr. Whitaker, parts of Berkshire and Hampshire were described, and Mr. Bristow also contributed notes to the Memoirs on the Geology of the London Basin, the Weald, and East Somerset.

Considerable attention was given to the Rhætic Beds by Mr. Bristow, and in company with Mr. Etheridge, he visited the principal sections in the south of England and Wales, measuring the beds in detail, and eventually publishing the records. At the suggestion of Sir Roderick Murchison, in 1864, Mr. Bristow recommended that the name Penarth Beds be applied to the British representatives of the Rhætic Beds. He subsequently was occupied for several years in mapping these strata in parts of Glamorganshire, Gloucestershire, and Somerset, at the same time revising the geological maps over the regions visited.

Notwithstanding his arduous out-door occupation Mr. Bristow utilized his leisure hours in the preparation of a "Glossary of Mineralogy," which was published in 1861. This book was at once well received, proving to be an exceedingly useful work of reference, from its convenient arrangement, and the accurate and concise information given. The author had made considerable progress towards a new edition of the work.

Other works of a more popular nature likewise engaged his attention. In 1869 a translation by him of L. Simonin's "La Vie Souterraine" was published, under the title of "Underground Life; or Mines and Miners," a work which was adapted to the then present state of British mining. Three years later (1872), he produced a translation of Louis Figuier's "World before the Deluge," contributing a fresh chapter on the Rhætic or Penarth Beds. In previous years Mr. Bristow had also written mineralogical articles for Brande's Dictionary of Science, and Ure's Dictionary of Arts, Manufactures, and Mines. He also largely assisted the late Mr. Damon in his Geology of Weymouth, contributing much general information and some sections of the strata.

It only remains to be mentioned that after five years' service on the Geological Survey, Mr. Bristow was in 1847 promoted to the rank of Geologist. Twenty years later (1867) he was appointed District Surveyor, taking charge of the southern counties. In 1872 he was made Director for England and Wales, during the tenure

of which office he saw the completion of the Geological Survey of the country on the one-inch scale. Retiring in July, 1888, he enjoyed but for a brief period his well-earned repose. A sudden stroke of paralysis was the immediate cause of his passing away, after a lingering illness, on June 14th, in his seventy-second year.

Mr. Bristow was elected a Fellow of the Geological Society in 1843, and of the Royal Society in 1862. Unfortunately afflicted with partial deafness, he was unable to hold free intercourse with his brother geologists; hence he seldom took part in the meetings of the Geological Society, although he served on the Council for a short time.

He received a Diploma from the Imperial Geological Institute of Vienna, and from the King of Italy the Diploma and Insignia of an officer of the Order of SS. Maurice and Lazarus. For several years, and until the close of his life, he was Examiner in Geology for the Science and Art Department.

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H. B. W.