

LL.D. St. Andrews, and in 1913 the Davy Medal of the Royal Society. He was also elected a member of the Athenæum Club under Rule ii. He was president of the Maccabæans in 1911. In 1886 he married a daughter of the late Dr. Maurice Davis, J.P., who survives him.

W. A. T.

Raphael Meldola occupied a unique position. In an age of ever-increasing specialisation he kept alive and fresh every one of the diverse interests that had appealed throughout his life to his many-sided intellect: by sure scientific insight he spoke with authority on them all. What scientific man of our time could have brought out in a single year three memoirs dealing with subjects so far removed from one another as the following?—

“Contributions to the Chemical History of the Aromatic Derivatives of Methane” (Trans. Chem. Soc., May, 1882); “Mimicry between Butterflies of Protected Genera” (*Ann. Mag. Nat. Hist.*, December); “Preliminary Report of the Committee appointed to investigate the Ancient Earthwork in Epping Forest known as the Loughton Camp” (Report Brit. Assoc., 1882, p. 274).

Apart from his researches in organic chemistry, and his work on natural history, Meldola conducted and wrote the report on the Eclipse Expedition to the Nicobar Islands (1875); founded the Epping Forest and County of Essex Naturalists' Field Club, laying down in the inaugural address (1880) the policy and lines of work which have made this society one of the best in existence, gave in the coming-of-age address a *résumé* of all that had been accomplished; wrote, with his friend, William White, the first volume of special memoirs of the club—an account of the East Anglian earthquake of April 22, 1884; took a leading part in founding the Corresponding Societies of the British Association (1883); defended the “scientific use of the imagination” in the study of insects in his first presidential address to the Entomological Society of London (1896); considered the part played by physiological correlation in the utility of specific characters in his second address; delivered the Herbert Spencer lecture at Oxford on “Evolution, Darwinian and Spencerian” (1910).

Meldola was naturally brought, by the immense breadth of his interest, into intimate association with the leaders in all branches of science. Hence, with his well-known unselfishness and warm-hearted appreciation of good work of every sort, he was often applied to for help, and took a prominent part in movements for the recognition of important researches, or for preserving the memory of great men. This and the public work—especially in connection with scientific and technical education and industry in its relations with science—he was constantly called on to perform, cut deeply into his limited time and his strength, which was never great.

Natural history was his first love. He began to write papers, especially dealing with British insects, in 1868, six years before his first chemical research was published. The necessities of space

forbid anything more than a brief account of his principal work—the development of the theories of insect mimicry and allied subjects. In this he was encouraged by Charles Darwin, who sent him letters received from Fritz Müller in Brazil, and suggested the translation of Weismann's “Studies in the Theory of Descent” (1881-2). Thus it came about that Fritz Müller's work and the theory of Müllerian mimicry became known in this country almost as soon as in Germany, and penetrated the world through more important and far-reaching channels. These and Meldola's own researches, published in several memoirs, together with his translation of Weismann, greatly enriched by his editorial notes, erected, upon the foundation supplied by Bates and Wallace, the peculiarly British study of the bionomic value of colour, marking, and attitude in nature.

Meldola always spoke with the greatest enthusiasm of his association with Darwin and his visits to Downe. He had the distinction of being proposed by Charles Darwin as a candidate for the fellowship of the Royal Society. Among Meldola's warmest friends were Wallace, Bates, and Trimen, his seniors in the important department of evolution that he made his own. Those who came later and attempted to confirm and extend his work can never forget the encouragement they owe to his constant sympathy and help.

The present writer feels the inadequacy of this brief notice, and regrets that in the allotted space it was impossible to prevent it from bearing the appearance of a list.

In the future period of reconstruction Meldola's many-sided activities and devotion to science would have been a precious asset to the nation; but in this sad hour the loss that presses most heavily is that of a dear friend and brother in science.

E. B. P.

#### DR. H. CHARLTON BASTIAN, F.R.S.

BY the death of Dr. Charlton Bastian on November 17, the last of a distinguished band of men of science, which numbered among its members Pasteur, Darwin, Huxley, and Tyndall, has passed away.

Born at Truro in 1837, Dr. Bastian was educated at University College and Hospital, London, and graduated M.A. in 1861 and M.D. in 1866 in the University of London. His first appointments were those of lecturer on pathology and assistant physician at St. Mary's Hospital; these posts he held until 1867, when he was elected professor of pathological anatomy in University College Hospital. He afterwards became physician to this hospital, and in 1887 professor of the principles and practice of medicine there.

Dr. Bastian devoted minute and prolonged study to the nature and functions of the brain and nervous system. He was a recognised authority on nervous affections, and was for some years physician to the National Hospital for Paralysis and Epilepsy, as well as being a Crown referee in cases of supposed insanity. His best known

works on the nervous system are "The Brain as an Organ of Mind," "Paralyses: Cerebral, Bulbar, and Spinal," and "Aphasia and other Speech Defects." Herbert Spencer was a life-long friend, and, as one of his trustees, Dr. Bastian was joint-editor of that writer's posthumous "Autobiography." He was also a naturalist of catholic tastes, and contributed a monograph on the Anguillulidæ, a family of free nematode worms, to the Linnean Society and compiled a "Flora of Falmouth."

But it is particularly in connection with the "origins" of life that Bastian's name will be chiefly remembered. Contrary to generally accepted views, he denied that life always originates from pre-existing life, and maintained that, just as presumably in past ages life developed from non-living matter, so at the present time lowly living organisms are, under certain conditions, being generated from non-living elements. He was, in fact, an upholder of the doctrine of spontaneous generation, or, as he preferred to term it, of "archebiosis." By the use of solutions containing colloidal silica and iron, enclosed in sealed glass tubes and sterilised by heat, and maintained under particular conditions of light and temperature, he claimed that after a time micro-organisms, such as bacteria and torulæ and even moulds, developed. His results have been detailed in several papers which have appeared in the pages of NATURE during the last few years, and in "The Beginnings of Life" and "Nature and Origin of Living Matter." Few have cared to undertake the laborious investigations necessary to follow this work, which cannot be said to have been confirmed, though the MM. Mary, of Paris, and a correspondent writing only last week in the *English Mechanic*, state that they have observed the development of lowly organisms in culture tubes prepared according to his directions.

Dr. Bastian also supported the doctrine of "heterogenesis," the sudden appearance of one kind of organism as the offspring of another, e.g., ciliates and flagellates descending from amœbæ. This work was published in book form under the title of "Studies in Heterogenesis." Dr. Bastian maintained his views against all opposition with a tenacity and ingenuity which won the respect of his bitterest opponents. A man of great personal charm and originality he literally died in harness, for up to three or four months ago he was continuing his investigations and planning new experiments with a vigour which showed little decline in spite of his four-score years, and to the last his interest in science he had served so well remained undimmed.

R. T. H.

#### NOTES.

HIS MAJESTY THE KING has been pleased to approve of the following awards this year by the president and council of the Royal Society:—A Royal medal to Prof. Sir Joseph Larmor, F.R.S., for his numerous and important contributions to mathematical and physical science; a Royal medal to Dr. W. H. R. Rivers,

F.R.S., for his important contributions to ethnography and ethnology. The following awards have also been made by the president and council:—The Copley medal to Prof. Ivan Petrovitch Pavlov, for his investigations in the physiology of digestion and of the higher centres of the nervous system; the Davy medal to Prof. Paul Sabatier, for his researches on contact action and the application of finely-divided metals as catalytic agents; the Hughes medal to Prof. Paul Langevin, for his important contributions to, and eminent position in, electrical science.

THE Admiralty announces that Staff-Surgeon G. M. Levick has been specially promoted to the rank of Fleet Surgeon for his services with the British Antarctic Expedition in 1910.

THE council of the Royal Meteorological Society has awarded the Symons Memorial gold medal, which is presented biennially for distinguished work done in connection with meteorological science, to Dr. C. A. Angot, director, Central Météorologique de France, Paris. The medal will be presented at the annual general meeting of the society on January 19, 1916.

IN the death of Lieutenant Frank Stevenson Long, 11th Essex Regiment, British science loses a young man of great promise. Educated at Parmiter's School, he proceeded to East London College as a Drapers' Company scholar in 1906, and graduated with first-class honours in chemistry in 1909. He acted as demonstrator in the chemical department for a year, publishing his first paper on the velocity of addition of alkyl bromides to cyclic tertiary bases in the Transactions of the Chemical Society in 1911. In the same year he took honours in physics, and went to Cambridge, first as a member of the Day Training College, and successively as secretary to the censor and librarian at Fitzwilliam Hall. At the outbreak of war he had already taken the mathematical tripos in the first class, and was intending to sit for physics in the following June. With such careful preparation for his future work and with so wide an outlook, Long was regarded as a man for whom a brilliant career could safely be predicted. He obtained his commission in September of last year, and was killed in action on September 26, 1915.

A BRONZE statue of Captain R. F. Scott, R.N., subscribed for by officers of the Navy, has been erected in Waterloo Place. The statue, which shows the explorer in polar dress, is the work of Lady Scott. Mr. A. J. Balfour, First Lord of the Admiralty, in unveiling the statue on November 5, said that it was not a bad thing even in the midst of a great war to remember how great have been the performances of the British Fleet in times of peace. The statue was to commemorate the hero of one of those peaceful victories which resemble the victories of war, in that it involved danger, struggle, and an heroic death. We are apt to forget how much the Navy has done in the unwarlike and yet most dangerous work of exploration, travel, and of wresting from nature secrets most jealously held. Captain Scott was worthy to be ranked with those two great explorers whose