OBITUARIES.

Alfred Olivier Des Cloizeaux.

PROFESSOR DES CLOIZEAUX, in whose death we had last year to deplore the loss of one of our most eminent Foreign Members, was born in 1817.

Imbued from childhood with a taste for mineralogy, he came in his student's days into contact with Lévy, Dufrénoy and Senarmont. After holding some minor appointments he was elected Maître de Conférences at the Ecole Normale in 1857, succeeded Delafosse as Professor at the Sorbonne in 1873, and at the Musée d'Histoire Naturelle in 1876, where he was made Honorary Professor in 1892.

In this brief notice it is not possible to do more than indicate in outline a small part of his extensive contributions to science. A complete list of publications is appended to the full and appreciative notice of Des Cloizeaux's life and works issued by his successor, Professor Lacroix, in the 20th volume of the *Bulletin de la Société Française de Minéralogie*, from which the above details are borrowed. His best known work is doubtless the *Manuel de Minéralogie*, which was originally undertaken with the intention of translating Brooke and Miller's edition of Phillips' *Mineralogy*, by which he had been much attracted. The work, however, assumed such large dimensions when he began to incorporate his own researches, that although the first volume was published in 1862, the first part of the second volume did not appear till 1874, and the second part in 1893. At the time when the first volume was issued, this book was quite remarkable for the immense amount of new information which it contained relating to the optical characters and the crystal measurements of minerals. Long tables of calculated and measured angles were a prominent feature of the descriptions, and the marvellous spherical projections which accompanied them added greatly to the utility of the book, and did much to render this mode of representation popular among mineralogists.

But Des Cloizeaux's most solid and enduring contributions to science were his memoirs on the optical properties of minerals, which really put quite a new and very powerful instrument of research into the hands

of investigators. These researches were originally begun under the direction of Biot; the best known among them are the discovery and definition of the dispersions in the monoclinic system, and the remarkable study of the variations introduced into the optical characters of crystals by change of temperature. Des Cloizeaux was the first to determine these characters and their variations for a very large number of substances, among which the most important were the felspars.

It is difficult now to realise how novel were the investigations which have since become familiar in all text-books of Mineralogy; to appreciate the profound influence which Des Cloizeaux's work exerted upon the science one must read again the text-books anterior to the date of his classic memoir on the use of the polarising microscope, and see how meagre were those optical data, without which no mineral description is now complete.

Among the more purely crystallographic memoirs the monograph on the form and structure of quartz stands as one of his most masterly works, and represents a vast amount of research. Among other contributions to Mineralogy, perhaps the best known and those which have exerted most influence on the science are the studies of the chondrodites, of microcline, of zoisite, and of the rhombic pyroxenes and amphiboles.

Des Cloizeaux was in 1870 first President of the Mineralogical Society of France, of which he was one of the founders; he was elected Member of the Institute in 1869, and President of the Academy of Sciences in 1889. He was a Foreign Member of this Society from the time of its formation.

His life was devoted with extraordinary assiduity to the study of minerals almost up to the day of his death, which took place on May 7th, 1897. H. A. M.

Emeritus-Professor M. Forster Heddle, M.D., F.R.S.E.

Matthew Forster Heddle was the younger son of Robert Heddle, of Melsettar, Hoy, Orkney, and was born there in 1828. The family were of Scandinavian descent, and it is doubtless to this strain that we may attribute much of the self-reliance, hardihood, energy and love of adventure which characterised Heddle in after life. These qualities were further developed by an out-door life, largely spent in clambering amongst the dangerous cliffs, or in boating alone amongst the geos, stacks and wild sea inlets, around his native island.

He was sent to Edinburgh to be educated, and he went first to the