co-operated with his son, Major A. H. McMahon, in a valuable account of the geology of Gilgit.

Two or three of these papers were distinctly mineralogical, and, after joining our Society in 1882, he contributed four papers to this Magazine. The first, in volume viii, discusses the cause of a polysynthetic structure in some porphyritic quartz crystals from India; the second, in vol. ix, describes the bowenite or pseudo-jade from Afghanistan, which he shows to be a true serpentine of somewhat unusual hardness, its probable origin being a rather exceptional peridotite; the third, in vol. x, discusses the micro-chemical analysis of rock-making minerals, giving the results of his own experiences; and the fourth, also in that volume, deals with the optical characters of the globules and spherulites of lithium phosphate and some other salts.

He was a frequent attendant at scientific gatherings and an effective contributor to discussions, obtaining a reputation as a terse, clear speaker, who never rose unless he had something valuable to say. He became F.G.S. in 1878, served more than once on its Council, and received its Lyell Medal in 1899, was President of the Geologists' Association in 1894–5, and of the Geological Section of the British Association at Belfast in 1902, and was elected a Fellow of the Royal Society in 1898.

Between two and three years ago his eyesight began to fail, which obliged him to resign, in June, 1902, the Treasurership of this Society, to which he had been elected in the previous November; his general health then began to decline, and after several months' illness he died on February 21, 1904. But while the body was weak, the mind remained vigorous, for his last scientific writing, published in the 'Geological Magazine' for November, 1903, shows all his wonted grasp of his subject, and power of polished satire. One who has discussed with him, in the field and in the study, questions more or less controversial, may be allowed to add that as a worker none could be more thorough, cautious, and conscientious, while as a man he wore 'the white flower of a blameless life,' and combined unswerving rectitude of character with a remarkable gentleness of disposition.

T. G. Bonney.

Clement Le Neve Foster (1841–1904).

By the death of Sir Clement Le Neve Foster, mineralogical science has lost an enthusiastic cultivator, one who by precept and example ever

strove to promote the study of mineralogy, especially in its practical applications. He was the second son of the late Peter Le Neve Foster, for many years secretary of the Society of Arts, and was born at Camberwell on March 23, 1841. After early teaching at the Camberwell Collegiate School, he passed to a school at Boulogne, where at sixteen years of age he obtained his French degree of B.Sc., and then entered as a student at the Royal School of Mines. Here, in spite of youth, he succeeded, during his two years' career, in carrying off nearly all the prizes of the school, and when only nineteen years of age received an appointment on the Geological Survey. During his five years' work on the Survey, he accomplished, in conjunction with his colleague the late William Topley, a very brilliant piece of work, in the solution of the great problem of the denudation and drainage of the Weald.

In 1865, Le Neve Foster became lecturer to the Miners' Association of Cornwall and Devon, and in 1868 undertook exploring expeditions to Sinai and the Caratal gold-field in Venezuela; while from 1869 to 1872 he was resident engineer to some gold mines in Northern Italy.

Le Neve Foster again entered the Government service in 1872, being appointed H.M. Inspector of Mines in the district of Devon and Cornwall. He did much to introduce improved methods of working in the district, and by his efforts the lamentably high death-rate among the miners was greatly diminished; but in 1880 he was transferred to the North Wales district, of which he retained charge till his retirement in 1901.

It was during the period of Le Neve Foster's residence in Cornwall that this Society was founded, and he played an important part in its inauguration. Not only was he an original member and one of the first Council, but he became the first Foreign Secretary. The first volume of the 'Mineralogical Magazine' contains four papers from his pen—two on new minerals and mineral localities in Cornwall and Devon, and two dealing with methods of blowpipe analysis, a subject in which he always took the keenest interest and in which he was a recognized expert.

In later years, Le Neve Foster was so much occupied by his practical work in connexion with mining that he found little time for mineralogical research, though he retained a keen interest in the subject to the last.

At the time of his retirement from the Home Office, he had published twenty-nine annual official reports, which had an important influence in improving mining methods and ameliorating the conditions under which miners work. Until the time of his death he prepared for the Home Office a valuable yearly report on Mineral Statistics. He was also

author of several treatises on mining, which have taken the highest position among scientific manuals.

In 1890, Le Neve Foster succeeded Sir Warington Smyth as Professor of Mining in the Royal College of Science and Royal School of Mines, where the work that he did in improving methods of teaching and in influencing the careers of the students was of the highest importance.

In 1897, while in his official capacity investigating the cause of a great disaster at the Snaefell Mine in the Isle of Man, he nearly lost his life from carbon-monoxide poisoning. Although his life was saved, his health was so seriously impaired that he resigned his position in the Home Office in 1901, but he still continued his work in the School of Mines with some interruptions. On April 19, after a short illness from which he rallied several times, he at last succumbed to the effects of the sad Snaefell accident, passing away at the age of 63.

Le Neve Foster was a D.Sc. of London, and was elected a Fellow of the Royal Society in 1892. Last year he received, in recognition of his great public services, the honour of knighthood.

J. W. J.

Frank Rutley (1842–1904).

Frank Rutley was born at Dover on May 14, 1842. He received his early education at the Faversham Grammar School, and then went for some years to a private English school at Bonn. At an early age he displayed the artistic tastes and skill in draughtsmanship which often proved of such great service to him in his subsequent scientific career.

That at an early date he had acquired a taste for geological study is shown by the first scientific communication from his pen. A curious subsidence took place at Lexden in Essex in the year 1861, which was described in the 'Geological Magazine' for 1865 by the Rev. Osmond Fisher. In a letter to the editor of the Magazine, Rutley reproduces a section made by him after a visit to the locality in 1862, and proceeds to criticize Mr. Fisher's theory for explaining the phenomenon. With characteristic modesty, Rutley writes that he questions Mr. Fisher's explanation 'with all humility, as I am but a very young hand at geology.'

It was in 1862 that Rutley entered the School of Mines, then at Jermyn Street, and he attended the lectures of Hofmann, Tyndall, Huxley, Ramsay, and Warington Smyth in the various branches of science taught there, though he did not complete the associateship course by devoting himself to technical work in mining or metallurgy.