

## OBITUARIES.

CHARLES ALEXANDER McMAHON (1830-1904).

In Lieut.-General Charles Alexander McMahon, F.R.S., who died at his residence in Nevern Square, London, on February 21 last, our Society loses an earnest worker on the mineralogical side of geology. The son of Captain Alexander McMahon, of the East India Company's service, he was born at Highgate on March 23, 1830, and obtained his first commission, on February 4, 1847, in the 39th Madras Native Infantry, where he served for eight years. After this he became a member of the Madras Staff Corps, and was transferred to the Punjab Commission. Here he did admirable work for thirty years as Commissioner and Judge, gaining early a reputation for nerve and promptness in action. It was due to the latter that, at the outbreak of the Indian Mutiny—in May, 1857—just after he had taken charge of the Sialkot district, the revolted native troops were met and crushed by General Nicholson, then on the march to Delhi.

About the year 1871, McMahon, then Commissioner of Hissar, began to work at petrological questions, his first contribution, 'On the Blaine group and the central gneiss in the Simla Himalayas,' appearing in the 'Records of the Geological Survey of India' in 1877. In 1879, while on furlough in England, then a Lieutenant-Colonel, McMahon, with characteristic thoroughness, entered as a student at the Royal School of Mines, and attended the lectures by Professors Judd, Huxley, and Warington Smyth. The experience thus acquired was applied, on his return to India, to the thorough study of the crystalline rocks in the Himalayas, and he increased the two papers already published in the 'Survey Records' by nine others, in which he proved some gneisses to be igneous rocks, and their foliation due to movements prior to final consolidation.

After thirty-eight years' service he retired, but was promoted to Major-General in 1888 and Lieutenant-General in 1892, and he settled down in London to work steadily at his favourite studies, publishing papers in the 'Mineralogical Magazine,' the 'Geological Magazine,' the 'Proceedings of the Geologists' Association,' and the 'Quarterly Journal of the Geological Society.' The more notable in the last were on the crystalline rocks of the Lizard district, where his Indian experience stood him in good stead, and on the phenomena associated with the Dartmoor granites—though he did not lose touch with India, and

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 Warrington 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 Warrington 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.

On leaving the School of Mines in 1864, Rutley joined the army and became an Ensign in the First Royal Scots regiment. But in 1867 he resigned his commission to take up an appointment as temporary Assistant Geologist upon the Geological Survey of England and Wales. The country he was sent to survey was a portion of the Lake District, where his old college companion Clifton Ward was already at work. In 1870 and 1871 Rutley wrote letters to the 'Geological Magazine' upon the subject of the glaciation of the Lake District, in which he displayed a minute knowledge of the geology of the area, in his criticism of the views of the late Mr. Mackintosh.

It was at this time that Rutley first showed his skill as a worker with the microscope, in the study of minerals and rocks—a branch of geological inquiry which had only recently been inaugurated by the labours of Sorby, David Forbes, Allport, and a few other workers in this country. This led to his being transferred to the central office of the Geological Survey at Jermyn Street, where he not only arranged a very instructive series of specimens for the Museum of Practical Geology, but also aided the surveyors in the field by his examination and description of rock-specimens sent up to town by them. To this period belong the important memoirs which he wrote for the Geological Survey upon 'The felsitic lavas of England and Wales' and 'The volcano of Brent Tor.'

As early as the year 1879, Rutley wrote a book, 'The Study of Rocks,' which was the first work of the kind in the English language, wherein an attempt was made to systematize the rapidly growing knowledge obtained by the microscopic study of rock-sections. In 1888, a more detailed text-book for students on 'Rock-forming Minerals' was the outcome of his experience as a teacher; while in 1895 he issued his 'Granites and Greenstones: a series of tables and notes for students of petrology.' Rutley also wrote a very compact and compendious manual of 'Mineralogy,' which passed through a number of editions.

In 1882, Rutley was appointed lecturer on mineralogy in the Geological Division of the Royal College of Science, with which the School of Mines had then been incorporated. He devoted himself with the most painstaking care to the instruction of the students, his patience and skill in illustration being always conspicuous. At the same time he was still carrying on work for the Geological Survey, and enriching geological literature by many valuable researches. In the 'Quarterly Journal of the Geological Society' twenty-six papers from his pen attest his constant activity. They include his valuable memoirs on the rocks of the Malvern Hills, upon the structures displayed by various glassy rocks, both fresh

and devitrified, upon novaculites and quartzites, on the 'porfido rosso antico,' and on the dwindling of limestones. To the Royal Society he contributed two papers, one, in conjunction with Mr. Herman, 'On the microscopic characters of some specimens of devitrified glass, with notes on certain analogous structures in rocks'; the other, 'Notes on alteration induced by heat in certain vitreous rocks.' He also wrote papers for the 'Geological Magazine,' the Royal Microscopical Society, and the Geological Societies of Ireland and Cornwall.

Rutley joined the Geological Society in 1870, and in 1881 the balance of the proceeds of the Murchison Fund was awarded to him by the Council of the Society in recognition of his work and to assist him in his researches. He joined the Mineralogical Society in 1888, and served upon the Council from 1890-3, and in 1897-8. He wrote a paper on the classification and nomenclature of crystallites in the 'Mineralogical Magazine,' vol. ix, and several papers on quartz, zircon, manganite, and on fulgurites, &c., in vol. x of the Magazine. He was also a member of the French Mineralogical Society.

In 1898, Rutley's scientific activities and his work as a teacher were alike interrupted by a stroke of paralysis, and though he still continued to do a little work, his friends from that time missed his familiar presence at scientific gatherings. He passed away peacefully on May 16, 1904, after a long and patiently borne illness, and was buried in the Fulham Cemetery. Many friends mourn the loss of a true-hearted colleague and fellow-worker, and will long cherish a memory of the man and of the excellent work that he accomplished.

J. W. J.

#### HENRY PALIN GURNEY (1847-1904).

Henry Palin Gurney, eldest son of Henry Gurney and Eleanor Palin, was born in London on September 7, 1847. He received his early education at the City of London School, proceeding afterwards to Clare College, Cambridge. There he distinguished himself both in Athletics and the Schools: he rowed in the college boat and ran for his University in the Oxford and Cambridge Sports of 1868 and 1869; he took both the Mathematical and Natural Sciences Triposes in the year 1870, being placed fourteenth wrangler in the former and in the first class in the latter; immediately afterwards he was elected to a college fellowship, which he held till 1883. In 1871 Mr. Gurney took orders in the Church of England, and for the next four years worked as curate to Canon Beck in one of the largest and poorest of London parishes, that of Rother-

hithe; in the early part of that period he was married at Whitchurch in Herefordshire to Louisa, daughter of the Rev. H. Selby Hele, of Grays, Essex, and great-granddaughter of Bishop Horne.

Mr. Gurney's innate love of crystals had been developed under the influence of the Cambridge Professor, William Hallows Miller, during whose illness he later acted for some time as Deputy. Appreciating the difficulties which at that epoch presented themselves to English students, Mr. Gurney wrote a very simple and useful Manual of Crystallography (128 pages), founded on the Tract of Professor Miller and the Lectures of Professor Story-Maskelyne; it was published in 1875 by the Society for Promoting Christian Knowledge. He was one of the Original Members of the Crystallogical Society founded on June 14, 1876, and was a Member of its first Council. At one time he meditated acceptance of an appointment in the Mineral Department of the British Museum, but, notwithstanding the great attractions which work in a mineral collection would have had for him, he did not feel justified, having regard to the interests of his family, in becoming a candidate for a post of which the prospective emoluments must be both uncertain and small.

Instead, therefore, of making research in mineralogy and crystallography his life-work, Mr. Gurney accepted an offer made to him and became a colleague, afterwards (1877-94) managing partner, of Mr. Walter Wren in the large establishment which the latter had instituted at Westbourne Park for the training of candidates for the various competitive examinations for posts in the Army and in the Home and Indian Civil Services; there his vast energy, physical and mental, found full employment. His remarkable powers of organization, and the personal influence he was able to bring to bear on young men of ability at a very critical period of their lives, contributed largely to the success of the undertaking. The pupils of that establishment now occupy prominent posts in every part of Greater Britain, and it thus comes about that few tutors have ever been more widely known and respected. During a large part (1876-88) of this period, he officiated as curate of the church of St. Peter in Bayswater.

When the Principalship of the Durham College of Science, Newcastle-upon-Tyne, fell vacant through the resignation of Dr. William Garnett, it was felt that the educational experience, the wide culture and attainments, and the personal character of Mr. Gurney marked him out as the ideal man for that important position. His appointment to the post has been abundantly justified during the ten years which have since elapsed.

He devoted himself to the advancement of the interests of the college

in every possible way. Of the thousands of students who have passed through the institution during his tenure of office, many will long remember his kindly advice and ready help. His charm of manner and sweetness of disposition made him everywhere popular; and at distributions of school-prizes and public meetings in general in Newcastle and the surrounding district, he was sure of a hearty welcome. He took a leading part in inducing the promoters of the Armstrong Memorial Fund to devote its proceeds to the completion of the college buildings, and he afterwards gave help in the encouragement of subscriptions. Mr. Gurney provided a remarkable illustration of the well-known fact that the busiest man is the one who is most ready to add to his work and responsibilities: he was the representative of the college on the governing bodies of schools at Newcastle, Rothbury, Hartlepool, and Middlesbrough; he was a co-opted member of both the Newcastle and Northumberland Education Committees; he was Chaplain to the Bishop of Newcastle, and also to the Third Volunteer Battalion of the Northumberland Fusiliers; he was Warden of the Newcastle Diocesan House of Mercy.

Notwithstanding the great multiplicity of the duties which fell to him as Principal, and the demands made on his time by the professorship of mathematics which he later combined therewith, Mr. Gurney found it possible to give some attention to the development of his old subject, the study of crystals. Impressed with the importance of crystallography both as an independent science and as auxiliary to chemistry, physics, mineralogy, and petrology, he equipped the college with apparatus for the measurement of the angles and for the determination of the symmetry and optical characters of crystals, and arranged that opportunity for the acquisition of a theoretical and practical knowledge of the science should be provided for Newcastle students.

Mr. Gurney received the honorary degree of D.C.L. from the University of Durham; he was a Fellow of the Geological and Physical Societies, and for several years was a Member of the Council of the Mineralogical Society.

Whenever it was practicable for him, Mr. Gurney sought complete relaxation and change of thought in travel, spending many of his vacations abroad and availing himself of every opportunity of visiting places of general or geological interest both in Europe and America. With the present writer he spent several happy holidays; on one occasion journeying to Moscow, Nijni Novgorod, and down the Volga to Kazan afterwards making an excursion with other members of the International



Geological Congress to various noteworthy places in Finland: a brief account of the latter he gave in his 'Notes on the Geology of Finland.' He was an ideal companion; full of energy and enthusiasm; of infinite patience, good temper, and cheerfulness; indeed, to see his pleasant face and hear his hearty laugh was almost a holiday in itself. Only a few short weeks ago he proposed that they should again spend a few weeks together, this time at Arolla in Switzerland, where he was to go with two of his daughters, but the writer was unable to leave London. Soon afterwards came the startling news of his death. With only a walking-stick in his hand, he had started off alone at 8 a.m. on August 13, not saying, probably not knowing, how far he was likely to go. Night came and he did not return. Search was immediately begun, and by dusk the next day his footmarks had been discovered on an *arête* of the Gysa, a southern spur of Mount Roussette; there they ceased. Soon after dawn on the following morning his body was discovered several hundred feet below; his watch had stopped at nearly twelve. Notwithstanding the caution and carefulness which were ever prominent features in his own character, and were strongly impressed by him on others, he had doubtless been gradually led on by the beauty of the view to climb higher and higher, and had eventually and unexpectedly found himself in a place where a slip was easy and would mean instant death.

His loss will long be felt far and wide, more especially in the North of England, where he had lived for the last ten years; but for the members of his family and his intimate friends, more especially for one to whom he always showed the kind feeling of a brother, it will cast a shadow over what remains of life.

L. FLETCHER.

#### FERDINAND ANDRÉ FOUQUÉ (1828-1904).

By the death of Professor Fouqué, on March 7, our Society loses a distinguished Honorary Member, elected in 1898. Since 1877 he had been Professor of Natural History in the Collège de France, and in 1881 was elected Membre de l'Institut. His first paper, with St. Claire Deville in 1854, dealt with the losses experienced by minerals when heated, and his studies in volcanic geology led to the publication, in 1879, of his great work 'Santorin et ses éruptions.' In conjunction with Michel Lévy he published two other important monographs—'Minéralogie micrographique: roches éruptives françaises' (1879), and 'Synthèse des minéraux et des roches' (1882)—and he was the author, often also in collaboration with Michel Lévy, of numerous papers on petrology and on rock-forming minerals.

## EDWARD JOHN CHAPMAN (1821-1904).

Born in London on February 22, 1821, Dr. Chapman was educated in France and Germany, and after acting as Professor of Mineralogy in University College, London, was for many years (1853-1895) Professor of Mineralogy and Geology in University College, Toronto. He died at Hampton Wick, near London, on January 28, 1904. In 1843, he published a 'Practical mineralogy,' and a posthumous work bears the title 'Mineral systems, a review: with outline of an attempted classification of minerals in natural groups.' He was also the author of several other separately-published works, including a volume of poems. Many of his earlier mineralogical papers, on blowpipe analysis, classification of minerals, &c., appeared in the 'Philosophical Magazine,' while later papers, on the mineralogy and geology of Canada, appeared in Canadian journals.

## CHARLES SORET (1854-1904).

Charles Soret, formerly Professor of Mineralogy and afterwards of Physics, and also for a time Rector of the University of Geneva, died at Geneva on April 4. He was the son of Jacques Louis Soret, also Professor of Physics at Geneva. His published papers treat of the optical and thermal properties of crystals, and he was the author of 'Éléments de cristallographie physique' (1893).

## SÁNDOR SCHMIDT (1855-1904).

From 1876 until 1895 Alexander Schmidt was an assistant in the mineralogical division of the Hungarian National Museum, during which time he obtained special permission to study for two years (1882-3) at Strassburg under Professor Groth. Previous to his appointment in 1895 as Ordinary Professor of Mineralogy and Geology in the Polytechnic at Budapest, he was Extraordinary Professor of Mineralogy in the University. His several papers are mainly descriptive of Hungarian minerals. He was born at Szegedin, Comitat Csongrád, Hungary, in 1855, and died at Budapest on May 16, 1904.

## ÉDOUARD CUMENGE (1828-1902).

Cumenge's career as a mining expert commenced with his appointment in the French Corps des Mines, but after 1852 his position was only honorary (Ingénieur en chef honoraire des Mines). With C. Friedel and Mallard he described guejarite, boleite, and carnotite as new species, and the mineral cumengeite was named after him.