OBITUARIES.

JOSEPH HENRY COLLINS (1841–1916).—Joseph Henry Collins, although of west country parentage, was born in London on March 16, 1841, and his early life, with the exception of a few years in Derbyshire, was spent in London, where, in May, 1867, he won one of the Royal Exhibitions at the Royal School of Mines in Jermyn Street, the privileges of which, however, owing to some official misunderstanding, he never enjoyed.

In April, 1868, Mr. Collins's connexion with Cornwall began by his appointment as Lecturer and Assistant Secretary to the Miners' Association of Cornwall and Devon in succession to the late Dr. (afterwards Sir Clement) Le Neve Foster. In 1870 he resigned the Lectureship of the Miners' Association (retaining, however, the Secretaryship) in order to become Secretary of the Royal Cornwall Polytechnic Society. During the next ten years his literary activities became very prominent, for in addition to publishing in 1871 his 'Handbook to the Mineralogy of Cornwall and Devon', during the years 1872 to 1878 he brought out in rapid succession a series of elementary students' handbooks on mineralogy and the principles of mining, and in the latter year his 'Hensbarrow Granite District'. In 1873 Mr. Collins was appointed Public Analyst to the County of Cornwall, and to most of its boroughs, and about 1874 he began to practise as a mining engineer, directing in that capacity the operations of several mining ventures (including the Perran iron mines), as well as china-clay works. A considerable part of his scanty leisure was devoted to studying the geology of the county, particularly its stratigraphy, and he was the first to demonstrate that the area covered by Lower Silurian strata is much greater than had been previously supposed, and that a large part of the strata in west Cornwall previously supposed to be of Devonian age is in reality much older. The results of his geological studies are contained chiefly in a series of papers published in the Transactions of the local scientific societies, particularly the Royal Geological Society of Cornwall and the Royal Institution of Cornwall.

Early in 1881 Mr. Collins left Cornwall in order to take up a position as chief chemist and metallurgist to the Rio Tinto Company, but his health suffered so much after three years' residence in Spain that he was

obliged to return to England in 1884 and settle in London, where he practised as a mining engineer in partnership with two of his sons, who, as time went on, gradually undertook most of the foreign business, leaving him free to devote himself to work in London as a consulting engineer and mining director. In 1904 he left London to take up residence in Cornwall for the second time, and again to devote himself to his favourite study of Cornish mining geology, upon which subject he read a number of papers before the local societies already mentioned, and in 1912 brought out his 'Observations on the West of England Mining Region', which is already a classic. He had other works in preparation, but a sharp attack of gastro-enteritis, resulting from a chill, put an end to his activities on April 12, 1916.

Mr. J. H. Collins was practically the founder of the Mineralogical Society. During the winter of 1875 he corresponded with a number of gentlemen interested in mineralogy, including Sorby, Heddle, Church, Marshall Hall, Le Neve Foster, Readwin, Trechmann, and others,[1] with reference to the need of such a society, and early in 1876 his efforts resulted in the formation of the Mineralogical Society of Great Britain and Ireland, of which he became the first honorary general secretary and editor of the magazine,[2] both of which positions he occupied until his departure for Spain in 1881. Many years later, in 1892, in conjunction with the late Geo. Seymour, Prof. Huntingdon, Claudet, Ferguson, Cox, Alford, and others, he took a prominent part in the formation of the Institution of Mining and Metallurgy, of which he became a vice-president, filling the presidential chair in 1895–6. For his services the Institution made him an honorary member, a distinction also conferred upon him by the Imperial Mineralogical Society of St. Petersburg, the Royal Cornwall Polytechnic Society, the Royal Institution of Cornwall, and the Royal Geological Society of Cornwall, of which last he occupied the presidential chair in 1904. The two last-mentioned societies also awarded him respectively the Henwood and the Bolitho gold medals, in each case the greatest honour in their power to bestow.

Mr. Collins's literary activities were great. In addition to the books already referred to, he brought out a translation of Moissenet's 'Lodes of Cornwall', a 'Catalogue of the works of Robert Were Fox, F.R.S.', Museum Catalogues of the minerals in the Royal Institution of Cornwall,

[1] J. H. Collins, 'Formation of a Mineralogical Society.' Letter to Geological Magazine, 1875, p. 569.

[2] An appreciation of his early services to the Society appeared in the minutes (vol. iv, p. xviii; vol. v, p. iv).

and various other separate pamphlets. Five of his papers are to be found in the Quarterly Journal of the Geological Society, twenty (including short notices) in the Mineralogical Magazine, four in the Transactions of the Institution of Mining and Metallurgy, seventeen in the Transactions of the Royal Geological Society of Cornwall, eighteen in the Journal of the Royal Institution of Cornwall, in addition to innumerable articles in the Mining World, Iron and Coal Trades' Review, English Mechanic, Engineering and Mining Journal, Mining Magazine, and other periodicals.

Mr. Collins married in 1868, and had five sons and four daughters. Three of the latter are married, the other died in infancy. Of the sons the eldest, Henry, the fourth, George, and the last, Edgar, survive him, and all have become mining engineers. The second, William, after a brilliant career at Cambridge and as Professor of Ecclesiastical History at King's College, London, was consecrated Bishop of Gibraltar in 1904, and died at sea off Smyrna in March, 1911. The third son, Arthur, who was also a mining engineer, was murdered at Telluride, Colorado, in May, 1902, by emissaries of the Western Federation of Miners, with whom he had come into conflict over the principle of the 'open shop.'

H. F. C.

Henry Bedinger Cornwall (1844–1917) was from 1873 to 1910 Professor of Analytical Chemistry and Mineralogy in Princeton University, New Jersey. He wrote on water analysis, and of his few mineralogical papers there are two on the presence of gallium and indium in American blendes. In 1882 he brought out a 'Manual of blowpipe analysis, qualitative and quantitative, with a complete system of determinative mineralogy', a second edition of which appeared in 1888.

Carl Adolf Ferdinand Hintze (1851–1916) was born at Breslau on August 17, 1851, and died there of heart failure on December 28, 1916. After studying at Breslau, Bonn, and Berlin, he became in 1872 assistant to Professor P. Groth in the new university at Strassburg, where he graduated in 1873. Between the years 1875 and 1886 he carried on the business of a dealer in minerals, first in Strassburg, and later in the employment of the firm of Krantz at Bonn. In 1884 he was a Privat-Dozent for Mineralogy and Crystallo-chemistry in the University of Bonn, and in 1886 was appointed Extraordinary Professor of Mineralogy at Breslau, becoming in 1892 Ordinary Professor and Director of the Mineralogical Institute and Museum, which post he held until his death.

Most of his early work appeared as papers on the crystallography of various minerals and organic compounds, the first, in 1871, being in collaboration with Groth on the crystallography of bloedite. Later he applied himself with energy to the compilation of his monumental work of reference, 'Handbuch der Mineralogie', vol. ii (1,841 pp.) of which, treating of the Silicates and Titanates, appeared during the period 1889–97. Volume i, of which sixteen parts have appeared (1898–1913), already extends to 2,560 pages: in this the Elements, Sulphides, Oxides, and Haloids are completed, but unfortunately there still remain untouched the Carbonates, Sulphates, Borates, and Phosphates.

George Christian Hoffmann (1837–1917), a member of this Society since 1888, was born in London on June 7, 1837. He studied at the Royal School of Mines and the Royal College of Chemistry, where he acted as an assistant to A. W. Hofmann. After working as a research chemist in England, he visited in 1861 Natal, Mauritius, and Australia, settling down in Melbourne. Here he worked in the chemical laboratory of the Botanical Garden under Baron F. Mueller, and published many papers on phytochemistry and reports on economic vegetable products. In 1872, on the retirement of T. Sterry Hunt from the Geological Survey of Canada, he was appointed assistant to B. J. Harrington in the chemical and mineralogical laboratory. Later he became chemist, mineralogist, and assistant-director of the survey, from which he retired in 1907. He took a lively interest in Canadian minerals, describing many new occurrences and publishing the results of a multitude of analyses and assays. Baddeckite and souesite, both from Canada, he described as new species. He died at Ottawa on March 8, 1917.

James Brown Jordan (1838–1915) was born on August 31, 1838, and died at Torquay on December 1, 1915. His father, Thomas Jordan, was in 1840 the first Keeper of Mining Records in the Mining Record Office, then under the Department of Woods, being succeeded by Robert Hunt in 1845. J. B. Jordan was appointed in 1858 an Assistant Keeper in the same office, which at that time was located in the Museum of Practical Geology: later, on its transference to the Home Office in 1883, he became a Clerk of Mineral Statistics, from which post he resigned in 1900. He devised a sunshine recorder, a glycerine barometer, an improved apparatus for preparing micro-sections of rocks, and constructed various geological models. He published in 1862 and 1873 a series of nets for the construction of models of crystals.

JOHN WESLEY JUDD (1840–1916).—By the death of Professor Judd both mineralogy and geology have lost a distinguished investigator and an able exponent. It is pleasant to remember that he had enjoyed some ten years of well-earned but by no means unproductive leisure since his retirement from official duties.

His broad sympathies and wide scientific attainments were, in part at least, the result of an unusually varied career. After a school training at Portsmouth and in London, he studied for the teaching profession at Westminster, and became for a time master of a school in Lincolnshire. But the work of an elementary teacher did not appeal to him, his inclinations lying in the direction of natural history. He became interested especially in geology and mineralogy, and as a result of examinations held in these subjects by the Science and Art Department attracted the notice of Ramsay and Smyth, through whose advice and assistance he eventually became a student at the Royal School of Mines in Jermyn Street. Here he came under the influence, not only of these two professors, but also of Hofmann, Tyndall, Huxley, and others. On completing his course at the school he accepted a post as analytical chemist in one of the large iron and steel works of Sheffield, and it was during this period that he initiated his life-long friendship with Sorby, from whom he acquired his first insight into the study of rocks and minerals in thin sections—a method of study at that time in its infancy. Subsequently he was appointed temporarily to the Geological Survey in order that he might continue and complete work which he had already begun on the Mesozoic rocks of Lincolnshire and Yorkshire and of certain of the midland counties. At a later date he was attached for a short time to the Board of Education as an inspector, in association with Matthew Arnold.

When once more free to return to his geological studies he devoted himself to the outlying patches of Mesozoic strata in the north-east and the west of Scotland, concerning which he produced a classic series of papers under the familiar title of 'The Secondary Rocks of Scotland'. During his labours in the western area he became interested in its igneous rocks, and by his conclusions with regard to these he attracted the attention and sympathetic interest of Darwin, Lyell, and Scrope. At the suggestion and with the help of the last of these, Judd visited and studied all the principal volcanic areas of Europe, presenting the results of his investigations in his well-known 'Contributions to the Study of Volcanoes'. The wide knowledge of the phenomena of eruptive areas which this experience gained for him enabled him in later years to write with unimpeachable authority the admirable volume on 'Volcanoes: what they are and what

they teach' (1881), with which his name will always be associated. It is not always remembered that Judd to a large extent evolved and elaborated the generally accepted classification of igneous rocks, which had already been adumbrated by Bunsen. The institution of 'Intermediate' and 'Ultra-Basic' classes, to include rock-types which did not lie naturally in Bunsen's 'Acid' and 'Basic' groups, we owe to him. He was the first to suggest the geographical distribution of consanguineous rock-types which is expressed by his term 'petrographical provinces', and which has proved such a helpful pointer in the latter-day study of the natural history of igneous rocks.

The standing which Judd had acquired among British geologists was demonstrated in 1876 by the offer of the professorship of geology in the Royal School of Mines in succession to Ramsay on the appointment of the latter to the directorship of the Geological Survey. This post he accepted, and held with great distinction and with much benefit to geological science for nearly thirty years. His desire to introduce adequate courses of practical instruction, similar to those created for biological teaching by his colleague Huxley, led to the transfer of the geological department from Jermyn Street to more spacious quarters at South Kensington, and here in 1881 it and associated departments were linked together to form the Royal College of Science. On the death of Huxley in 1895 Judd became Dean of the College, and continued to hold that office until his retirement in 1905.

Besides his contributions to geology, Judd made many to mineralogy, principally during the tenure of his professorship. These included papers on the determination of the felspars, on the orthorhombic pyroxenes, on gliding- and solution-planes and schillerization, on certain peculiarities of quartz and on other forms of silica, on the scapolitization of felspar, and on the natural history of corundum and the ruby. Particulars of these and his other writings are given in the Geological Magazine for September, 1905, and April, 1916.

Judd became a Fellow of the Royal Society in 1877. He acted as a secretary of the Geological Society from 1877 to 1886, and was elected President in the latter year. He was created C.B. in 1895. For many years (1892–1906) he served as Foreign Secretary of the Mineralogical Society.

His was a lovable personality. His many friends will recall with affection his fine presence, his simplicity and punctiliousness in the matters of dress and personal appearance, his quiet sense of humour, and his kindly and courteous manners. Sensitive himself, he was most

considerate of the feelings of others; but having a strong sense of duty he never shrank from conflict or the expression of righteous indignation if, according to his convictions, these were demanded. As an original worker, he was meticulously careful of details, but did not allow these to impair his vision of broad issues and large principles. As a teacher, he endeavoured to present his subject clearly and accurately, while at the same time imparting to it that dignity and inspiration which he firmly believed it to merit. The courses which he built up at the Royal College of Science were models of admirable organization, and have served as the basis upon which numerous others in many parts of the world have been founded. Their outstanding feature was the importance given to practical instruction, and it is to this impression and amplification of theory by practice that the highly productive results of his academic work have been largely due. Whether as a discoverer of new knowledge, or as an exponent of that already gained, his services to the science he loved will live long after him.

C. G. C.

Carl Georg Richard Lepsius (1851–1915), since 1874 Professor of Mineralogy and Geology in the Technical High School at Darmstadt, and Director of the Geological Survey of Hesse. His chief work was geological, but he also wrote on rock metamorphism.

Domenico Lovisato (1842–1916) was born at Isola in Istria, and as a youth in 1866 enrolled with Garibaldi's volunteers. After banishment as a conspirator, he taught mathematics in a school, and in 1878 gave instruction in mineralogy in the University of Sassari in Sardinia. Since 1884, until his death on February 23, 1916, he was Professor of Mineralogy and Geology in the University of Cagliari, Sardinia. In 1880 he accompanied as geologist the Italian expedition to South America; and he gave a description of the rock specimens collected in Tierra del Fuego by the French expedition of 1882–3. His chief work, however, dealt with the geology and mineralogy of Sardinia, on which he published many papers. Rosasite he described as a new species, and barium-heulandite as a new variety. He was elected a member of the French Mineralogical Society in 1887, and in the Bulletin (1916, vol. xxxix, pp. 82–88) of that Society Professor A. Lacroix has given a notice of his life and work.

Ernst Ludwig (1842–1915) was, since 1872, Professor of Applied Medical Chemistry in the University of Vienna, and in 1883 he was

elected an honorary member of this Society. During the period 1870–88 he published the results of many mineral analyses, more particularly of silicates, while during the longer period, 1865–1901, he analysed a number of Austrian mineral waters. The mineral ludwigite was named after him by G. Tschermak in 1874. He was born at Freudenthal in Austrian Silesia, and died on October 14, 1915. An obituary notice, by F. Berwerth, has appeared in Mitt. Wiener Mineralog. Gesell., 1916, No. 77, pp. 2–17 (issued with Min. Petr. Mitt., 1917, vol. xxxiv).

Henry Skeffington Poole (1844–1917) was born in Nova Scotia and educated at King's College, Windsor, where he took the degrees of M.A. and D.Sc. He also studied at the Royal School of Mines, London, gaining the associateship in 1867, and was elected a Fellow of the Geological Society in 1866. In 1872 he was appointed Government Inspector of Mines in Nova Scotia; and subsequently, for about twenty years, he acted as manager of collieries in Nova Scotia. He was the author of several papers and reports on mining geology, more especially with reference to coal and gold, some of which were prepared for the Geological Survey of Canada. His father, Henry Poole, had also written on the Nova Scotian coal- and gold-fields, and this has given rise to some confusion in the Royal Society's Catalogue of Scientific Papers.

Very shortly before his death, on March 31, 1917, at Stoke near Guildford, Surrey, he had decided to present his collection of minerals, ores, and rocks to the British Museum. The value of this collection lies in the number of well-localized specimens illustrating occurrences in eastern Canada, more particularly Nova Scotia, where Dr. Poole had such exceptional opportunities for collecting.

Sir William Ramsay (1852–1916), the celebrated chemist, was a nephew of the Scottish geologist, Sir A. C. Ramsay. He will be remembered by mineralogists as the discoverer, in 1895, of helium in uraninite, fergusonite, and other minerals.

Robert Henry Scott (1833–1916), a past-President and Trustee of this Society, died on June 18, 1916, at the advanced age of eighty-three. He was born of Irish parentage in Dublin on January 28, 1833, and, after a school education at Rugby, had a brilliant career at Trinity College, Dublin, graduating in 1855 in experimental physics. He afterwards (1856–8) studied chemistry, physics, and mineralogy at Berlin and Munich. In 1862 he was appointed Keeper of Minerals and Lecturer

on Mineralogy to the Royal Dublin Society. It was during this period (1862–7) that his original work in mineralogy was done. This dealt more particularly with the minerals and granites of County Donegal; but he also gave an account of the minerals of Strontian in Argyllshire. In collaboration with Prof. S. Haughton he edited in 1862 G. C. Mahon's 'Mineral Agents' Handbook' and A. Smith's 'Blowpipe Vade Mecum', and in the same year published a 'Manual of Volumetric Analysis'.

In 1867 he was appointed Director of the new Meteorological Office in London, a title changed in 1877 to Secretary of the Meteorological Council. This post he held until his retirement in 1900, and it was as 'Clerk of the Weather' that he was best known, and in this subject that he did his best work. He did not, however, entirely give up his interest in minerals, for he was an original member of the Mineralogical Society, serving on its first Council (1876), and energetically acting as General Secretary (1881–8) and Editor of the Journal (see Min. Mag., vol. viii, p. 144). Later he was President (1888-91), and since 1894 a Trustee of our Society. He was elected a Fellow of the Royal Society in 1870, and received the honorary degree of D.Sc. of Dublin in 1898. He was also an Officer of the Legion of Honour.

Silvanus Phillips Thompson (1851–1916), the well-known physicist, wrote papers on the optical and electrical properties of tourmaline, and on the nicol prism and other polarizing devices. He was much interested in the early history of physics, and prepared English translations with notes of Huygens's 'Treatise on Light' (1912) and Gilbert's 'De Magnete' (1900), the former dealing with 'the strange refraction of Iceland crystal', and the latter with loadstones.

Isidor Weinberger (1838–1915), a founder and honorary member of the Vienna Mineralogical Society, and a councillor of commerce, died on August 15, 1915, in his seventy-eighth year. In early life, as an official on the Hungarian railways and stationed at Dognacska, he had opportunities for collecting minerals. Later he was connected with iron mining and smelting in Bohemia. His collection of minerals is very complete for a private collection; some particulars respecting it are given in the 'Mineralogisches Taschenbuch' (1911, p. 186) of the Vienna Mineralogical Society. The frontispiece of the volume just quoted shows his portrait. The meteoric mineral weinbergerite was named after him by F. Berwerth. An obituary notice has appeared in Min. Petr. Mitt., 1915, vol. xxxiii, pp. 521–2.