THE MINERALOGICAL MAGAZINE
AND
JOURNAL OF
THE MINERALOGICAL SOCIETY

No. 153 June, 1936 Vol. XXIV

Biographical notices of mineralogists recently deceased. (Sixth series.) [1]

By L. J. SPENCER, C.B.E., M.A., Sc.D., F.R.S.
Formerly Keeper of Minerals in the British Museum.

[Read March 26, 1936.]

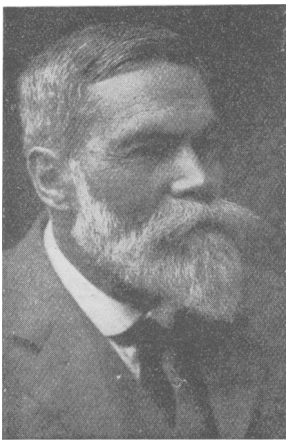
IN the following list of 36 lives, with a range in ages from 56 to 89, the average age is 71·0 years. The average of 460 lives noticed in this Magazine since 1877 is 65·9 years; and in the six numbers of this series since 1919 there has been a gradual and steady increase from 63·6 to 71·0.

Particulars respecting Czech, Italian, Japanese, and Russian subjects have been kindly supplied by Professors F. Slavík, G. R. Levi, R. Ōhashi, and Mr. S. I. Tomkeieff respectively, and to these colleagues I express my thanks.

BARLOW (William) [1845–1934], a past-President (1915–18) of this Society, was born at Islington, north London, on August 8, 1845, and died at his home at Stanmore, Middlesex, on February 28, 1934. He was noted for his pioneer work in the development of the theories of crystal-structure and the homogeneous partitioning of space. After a private education, he entered his father's business, that of a speculative builder, at a time when the northern suburbs of London

[1] Series I–V in Min. Mag., 1921–33, vols. 19–23. An index to earlier notices in vols. 1–18 (1877–1919) is given in vol. 19, pp. 259–262, and to later notices in vols. 19–23 (1921–33) in vol. 23, pp. 364–366. A mortality curve is given in vol. 20, p. 253; and a table of averages for different periods in vol. 23, p. 337.

were rapidly developing. On the death of his father he realized the business, and at an early age was so endowed with a fortune and leisure for his favourite pursuit. It was, perhaps, the problems of how many houses and persons could be accommodated on an acre of land and the different ways of arranging them, the partitioning of houses and placing of doors and windows, and the patterns on the wall-papers, that gave rise to his extraordinary geometrical vision, which had been developed by practical methods of his own rather than according to recognized academic methods. He was an expert wood-worker and cabinet-maker, and his workshop, where he constructed his own models, presented the appearance of a toy factory with thousands of balls of various sizes and colours and myriads of doll's hands, right and left, with which to demonstrate the enantiomorphous relations of crystals (see Min. Mag., vol. 11, pls. 1 and 2). About 1888 he attended the classes in crystallography held by Sir H. A. Miers, and later by Sir W. J. Pope, at the Central Technical College of the London City and Guilds; and he also spent some time in München with the celebrated P. Groth. But he was not much influenced by outside teaching, always working out methods of his own. His first paper, in 1883, on the 'Probable nature of the internal symmetry of crystals' (Nature, vol. 29, pp. 186, 205) was followed by a few other short notes on the grouping of atoms in crystals; and during this period he wrote a book, 'New theories of matter and of force' (London, 1885, 395 pp.). In 1894 appeared his paper (Zeits. Kryst. Min., vol. 23, pp. 1–63) in which he independently established the 230 space-groups, now of prime importance in the X-ray work on the structure of crystals. This result had, however, already been arrived at, unknown to Barlow and by different methods, by E. S. Fedorov in 1890 (but published only in Russian) and by A. Schoenflies in 1891. Later, in collaboration with Sir W. J. Pope, a theory of the valency-volumes of atoms in crystals was elaborated. He joined the Geological Society of London in 1887, reading a paper 'On the horizontal movement of rocks . . .' in 1888, the Mineralogical Society in



W. BARLOW.

1894, and the Chemical Society in 1897, and he was elected a Fellow of the Royal Society in 1908. On the council of our Society he served for four periods from 1896, and was President in 1915–18. He was a man of simple tastes and engrossed in his work. (W. J. Pope, Nature, London, 1934, vol. 133, pp. 637–638; Journ. Chem. Soc. London, 1935, pp. 1328–1330; Obituary Notices of Fellows of the Royal Society, 1935, vol. 1, pp. 367–370, with portrait. G. F. H. Smith, Quart. Journ. Geol. Soc. London, 1935, vol. 91, pp. lxxxv–lxxxvi.)

BELL (Robert) [1864–1934], a mineral and fossil collector in the north of Ireland; was born at Ballycreen, Co. Down, on December 29, 1864, and died at Belfast on April 12, 1934. He collected a fine suite of zeolites from Co. Antrim, dopplerite from Sluggan bog (Antrim), rare contact-minerals at Scawt Hill (Antrim), and large blocks of orbicular granite at Mullaghderg (Donegal). Many of these are preserved in the mineral collection of the British Museum, thanks to the generosity of Mr. F. N. Ashcroft. Acknowledgements to Bell are recorded in this Magazine (**17**–275, **22**–86). He was a life-member of the Society since 1912. (Irish Naturalist, 1935, vol. 5, pp. 62–63, with portrait.)

BUTLER (Francis Henry) [1849–1935], mineral dealer and scholar, was born at no. 6 Cheyne Walk, Chelsea, London (on the site of the old Manor House where Sir Hans Sloane had his collections), on March 2, 1849, the fifth son of Thomas Butler (1809–1907), assistant secretary of the British Museum. Two of his brothers were also on the staff of the British Museum, E. D. Butler in the map room, and A. G. Butler assistant keeper in charge of the collections of insects; and his seven other brothers and sisters were medical missionaries. He died at his home at Sutton in Surrey on August 19, 1935. He studied at the Royal School of Mines, London, 1866–69, taking the associateship in geology. After lecturing on science at Reading, he matriculated at Worcester College, Oxford, in 1871, where he was an

F. H. BUTLER.

exhibitioner, and in 1874 he was placed in the first class in the natural science honour school. In 1877 he entered St. Mary's Hospital, London, as a student, and became a fully qualified medical man. Later he was for a time an assistant editor for the ninth edition (1875–89) of the Encyclopaedia Britannica. When collecting minerals in Cornwall he became acquainted with Richard Talling (1820–1883) of Lostwithiel. As Talling's executor he commenced disposing of the large stock of minerals in a retail fashion, and at the end of his long career as a mineral dealer in London much of this material still remained on hand. He was elected a member of this Society in 1885, and he contributed seven papers on Cornish minerals to this Magazine. He was also the author of a book of verse, 'Quæ scripsi' (London, 1902), and of various essays and reviews.

Cook (Charles Wilford) [1882–1933], Professor of Economic Geology in the University of Michigan, was born at Fenton, Michigan, on September 17, 1882, and died on February 17, 1933. Educated at the University of Michigan at Ann Arbor, he was assistant there first in mineralogy and afterwards in economic geology. His early papers in collaboration with E. H. Kraus were on the crystallography of datolite and iodyrite, and later he described new occurrences of pearceite, ilsemannite, and molybdenite. (W. H. Hobbs, Proc. Geol. Soc. Amer., 1934, for 1933, pp. 181–184, with portrait and bibliography; W. F. Hunt, Amer. Min., 1934, vol. 19, pp. 114–117, with portrait and bibliography.)

Copaux (Hippolyte) [1872–1934], Professor of General Chemistry in the École de Physique et de Chimie in Paris, was born on March 9, 1872, in Paris, and died suddenly on August 28, 1934, at Étampes. His main work was chemical, but under the influence of G. Wyrouboff he published a few papers on the crystallography of polymorphous and optically active forms of sodium chlorate, and alkali silicomolybdates and cobaltioxalates. He was president of the French Mineralogical Society in 1913. (H. Arsandaux, Bull. Soc. Franç. Min., 1935, vol. 58, pp. 78–80, with bibliography.)

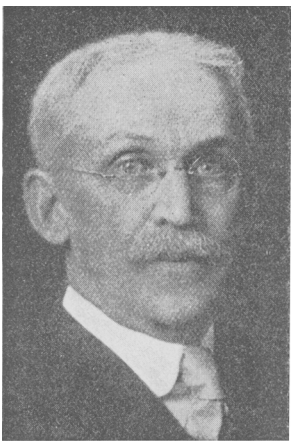
Curie formerly Sklodowska (Marja = Marie) [1867–1934] was born in Warsaw, Poland, on November 7, 1867, where her parents were school teachers. She died in a sanatorium at Haut-Savoie on July 4, 1934. After a school education she worked as a governess in Warsaw, saving sufficient to enter the Sorbonne in Paris as a

student in 1891. There in 1895 she married the physicist Pierre Curie (1859–1906; Min. Mag., vol. 14, p. 273), who was unfortunately killed in a street accident by a lorry; and she succeeded her husband as the first woman professor in the Sorbonne. Her first work was on the magnetic properties of tempered steel, but with the discovery of the radioactivity of uranium compounds by H. Becquerel in 1896 intensive work was done on this new subject, and in 1898 the Curies working together discovered polonium (named after her native country) and radium. The chemical work was done by Madame Curie, large quantities, one to two tons, of pitchblende (*uraninite*) from Jáchymov, Bohemia, being worked up to extract the minute quantities of these new elements. For this work the Nobel Prize for physics was awarded to H. Becquerel and the Curies in 1904, and the Nobel Prize for chemistry to Madame Curie alone in 1911. Of mineralogical interest is the fact that no other person has had three new minerals named after them—curite, sklodowskite, and cuprosklodowskite, all uranium minerals from the Belgian Congo. A curie is the name for the unit of radioactivity. Her daughter Irène also married a Parisian physicist, F. Joliot, and they, working together, have recently discovered artificial radioactivity. (Lord Rutherford, Nature, London, 1934, vol. 134, pp. 90–91; A. F. Kovarik, Amer. Journ. Sci., 1934, ser. 5, vol. 28, pp. 464–466; A. S. Russell, Madame Curie memorial lecture, Journ. Chem. Soc. London, 1935, pp. 654–663, with portrait.)

M. CURIE.

DANA (Edward Salisbury) [1849–1935], American mineralogist, was born at New Haven, Connecticut, on November 16, 1849, the son of J. D. Dana (1813–1895) and grandson of Benjamin Silliman (1779–1864). He died at New Haven on June 16, 1935, at the age of eighty-five. After graduating at Yale in 1870, he worked at mineralogy under G. J. Brush, and in 1872–74 studied at Heidelberg and under G. Tschermak and V. Lang at Wien (Vienna). Returning to Yale in 1874, he was appointed curator of the mineral collection in the

Peabody Museum, from which post he retired in 1922. Unfortunately at that time no paid teaching position in mineralogy was vacant, and he was obliged to take up a tutorship in mathematics, physics, and chemistry, becoming assistant professor of natural philosophy in 1879 and professor of physics in 1890, and retiring from this in 1917, but he still continued to perform various administrative duties in the university. His first paper in 1872 on the labradorite rocks of Waterville in New Hampshire and another in 1874 on the trap rocks of the Connecticut valley were the earliest in America on microscopic petrography. Several papers on the crystallography of various minerals appeared from 1872, some of them in Tschermak's 'Mineralogische Mittheilungen'; and in 1874 a paper with A. Schrauf on the thermoelectric properties of minerals was published by the Academy of Sciences of Wien. In 1879–80 and again in 1890 a series of papers with G. J. Brush dealt with the remarkable phosphate minerals, several of them new species, discovered at Branchville in Connecticut. Beryllonite was another interesting phosphate mineral discovered by E. S. Dana. His energies were, however, directed more to the recording and collating the work of other mineralogists. His well-known 'Textbook of Mineralogy' first appeared in 1877 and passed through many editions and reprints, the last by W. E. Ford in 1932. A popular book, 'Minerals and how to study them', appeared in 1895, and an elementary text-book on mechanics in 1881. He was responsible for the second (1875) and third (1882) appendices to the fifth edition of J. D. Dana's 'System of Mineralogy'. But his crowning work was the production in 1892 of the sixth edition of this book which had been started by his father in 1837. This work, undertaken singlehanded, occupied ten strenuous years and unfortunately ended with a nervous break-down. It was entirely rewritten and the crystallographic constants of each species were calculated afresh, while the selection of material showed a wise and balanced judgement. Although forty-four years have now passed, this volume still remains the standard work of reference, or bible, of mineralogists in every country of the



E. S. DANA (in 1923).

world. A new (seventh) edition has been in preparation for some years, and is anxiously awaited, but it will not be a 'Dana'. The American Journal of Science, founded by Benjamin Silliman in 1818, was carried on by the Danas, father and son, and remained the property of the Silliman–Dana family until handed over to Yale University in 1926. E. S. Dana worked on this since 1875—a period of sixty years. He was an honorary member of this Society since 1897. He had white hair, blue eyes, and a ruddy complexion. (C. Schuchert, Amer. Journ. Sci., 1935, ser. 5, vol. 30, pp. 161–176, with portrait; W. E. Ford, Science, New York, 1935, n. ser., vol. 82, pp. 343–344; W. E. Ford, Amer. Min., 1936, vol. 20, pp. 173–174, with portrait.)

DAVID (*Sir* Tannatt William Edgeworth) [1858–1934], Australian geologist, was born on January 28, 1858, at St. Fagans near Cardiff in South Wales, and died at Sydney, New South Wales, on August 28, 1934. After a classical education at Oxford, he studied geology at the Royal School of Mines in London, and in 1882 joined the Geological Survey of New South Wales. In 1891 he was appointed Professor of Geology in the University of Sydney, retiring in 1924, when he devoted himself to writing a geology of Australia, but only the map with explanation was issued at the time of his death. He reported on tin-ores, coal, and other mineral deposits, and described diamond, emerald, and glendonite from New South Wales, and darwin glass from Tasmania. Of his extensive geological work mention may be made of his study of glacial deposits in South Wales (in 1882) and Australia, and in the Antarctic when on the Shackleton Expedition of 1907–9. He had charge of the Royal Society Coral-boring Expedition to Funafuti in 1897. The pseudomorphous mineral glendonite was named by him, and davidite was named after him. ('Eminent living geologists', Geol. Mag. London, 1922, vol. 59, pp. 4–13, with portrait and bibliography; Sir D. Mawson, Obituary Notices of Fellows of the Royal Society, London, 1935, vol. 1, pp. 493–501, with portrait and bibliography; Quart. Journ. Geol. Soc. London, 1935, vol. 91, pp. xc–xciii; R. E. Priestley, Nature, London, 1934, vol. 134, pp. 523–524.)

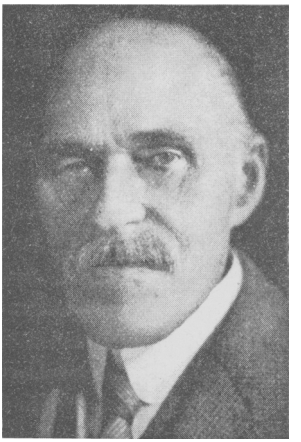
DAY (Thomas Cuthbert) [1853–1935] was born at Burton-on-Trent, where he was engaged in the brewing industry, and was afterwards head maltster and chemist to an Edinburgh firm. Later he founded the firm of Hislop and Day, photo-process engravers, and with his knowledge of chemistry he was able to introduce improvements in

colour reproduction. The geology of the volcanic rocks of the south of Scotland he worked at enthusiastically as a hobby, describing volcanic vents and giving many rock analyses in a series of papers in the Transactions of the Edinburgh Geological Society. He was elected a Fellow of the Chemical Society of London in 1881, and died in Edinburgh on June 14, 1935. (A. Lauder, Journ. Chem. Soc. London, 1935, p. 1340; R. Campbell, Trans. Roy. Soc. Edinburgh, 1935, vol. 55, pp. 148–149.)

Dunstan (Benjamin) [1864-1933], Government Geologist of Queensland, was born at Castlemaine, Victoria, on July 8, 1864, and died at Brisbane on September 2, 1933. After a period (1891–97) as lecturer in geology, mineralogy, and mining at the Technical College at Sydney, he joined the Geological Survey of Queensland, becoming Government Geologist in 1908. Since his retirement he was engaged in consulting work for mining companies. He produced many reports on the geology of the mining districts and papers on the mineral resources of the State, including some on the sapphire of Anakie, ruby of Chillagoe, and on other gemstones in Queensland. His 'Queensland mineral index and guide' (1913) is a mine of information on mineral localities. (Queensland Government Mining Journal, 1933, vol. 34, p. 276, with portrait.)

Farrington (Oliver Cummings) [1864–1933], a prominent worker on meteorites, was born at Brewer, Maine, on October 9, 1864, and died at Chicago on November 2, 1933. He had a heart attack in 1931 from which he never recovered. After graduating at Maine State College, he was able to save enough by science teaching in schools to enter Yale University in 1887, where he studied geology and mineralogy under J. D. Dana and S. L. Penfield, was assistant in mineralogy and biology, and took the Ph.D. degree in 1891. For a short time in 1893 he was an assistant under his brother-in-law G. P. Merrill (another famous American worker on meteorites) in the United States National Museum at Washington, D.C. Early in 1894 he was appointed the first Curator of Geology in the new Field Columbian Museum (now Field Museum of Natural History) at Chicago. There for nearly forty years he was prominent for his curatorial work; and during part of that time he lectured on mineralogy in the University of Chicago and gave assistance in international expositions. He also undertook various collecting expeditions, to

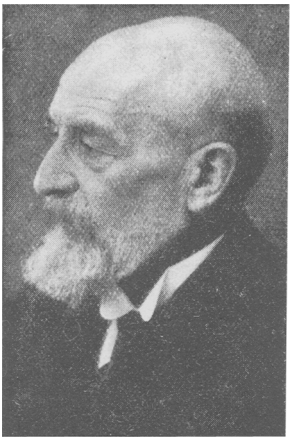
Mexico in 1896 and Brazil in 1922–23. His earlier and some of his later papers dealt with minerals, but his main work was on meteorites, and he worked with energy in increasing the meteorite collection. As shown in his published catalogues of this collection the number of representative falls was increased from 179 in 1895 to 251 in 1903, and to 657 in 1916; the latter large increase being due to the acquisition of the Ward-Coonley collection. By 1934 the number had been increased to 727 of the 1050 known falls, and said to be the largest number in any collection in the world. In addition to many papers descriptive of new meteorites, useful compilations of the chemical analyses of irons and stony meteorites and a large monograph on the meteorites of North America were published. His book 'Meteorites' (1915) is the only complete work on the subject. In another direction he specialized on the subject of precious stones, writing a book 'Gems and gem minerals' (1903) and museum hand-books on 'Amber', 'Agate', and 'Famous diamonds'. (Ann. Rep. Field Museum of Natural History, Chicago, 1934, vol. 10 (for 1933), pp. 13–14, with portrait; S. K. Roy, Proc. Geol. Soc. Amer., 1934, for 1933, pp. 193–210, with portrait and bibliography.)



O. C. FARRINGTON (in 1930.)

FRIEDEL (Georges) [1865–1933], French crystallographer, was born at Mulhouse in Alsace on July 19, 1865, son of the distinguished chemist and mineralogist Charles Friedel (1832–1899) [Min. Mag. **13**–91], and he died at Strasbourg on December 11, 1933. After an education at the Polytechnic School and the School of Mines in Paris, he was an engineer in the Corps des Mines and professor in the School of Mines at Saint-Étienne, becoming in 1907 a Chief Engineer and Director of the school. In 1922 he was promoted to the rank of Inspecteur Général des Mines. Here he did important work on the geology of the coal-fields. In 1919 he was appointed Director of the Geological Institute and Professor of Mineralogy and Crystallography in the reorganized University of Strasbourg. His first research work was with his father in 1890 on the action of alkali solutions at

high temperature and pressure on mica, resulting in the artificial production of nepheline, leucite, sodalite, and felspar. In the same year he studied the puzzling mineral melanophlogite. In 1896–99 he did important work on the zeolites, showing that the amount of water expelled on heating depended on the tension of aqueous vapour in the surrounding atmosphere, and that the partially dehydrated material was capable of absorbing various gases and liquids into the spaces vacated by the water. As a pupil of E. Mallard he continued the work of that master on the reticular structure of crystals, especially in relation to theories of twinning, and he was quick to recognize the importance of the new results obtained by means of X-rays in 1912. Other problems to which he made important contributions were the growth and corrosion of crystals; liquid crystals, in which he recognized a mesomorphous (nematic and smectic) state of matter intermediate between amorphous and crystalline; and the structure and origin of diamond. He published a 'Cours de minéralogie' (1904) and 'Leçons de cristallographie' (1911 and 1926), the last of which gives a good summary of some of his original work. (Compt. Rend. Acad. Sci. Paris, 1933, vol. 197, pp. 1545–1547; F. Grandjean, Bull. Soc. Franç. Min., 1934, vol. 57, pp. 144–183, with portrait and bibliography; R. Weil, Zeits. Krist., 1934, vol. 89, pp. 1–9; J. D. H. Donnay, Amer. Min., 1934, vol. 19, pp. 329–335, with portrait and bibliography.)



G. FRIEDEL.

N. FUKUCHI.

FUKUCHI (Nobuyo) [1877–1934] was born at Tokyo on July 15, 1877, and died there on May 22, 1934. After completing the geology course at the Imperial University of Tokyo,

he continued as a research student with an investigation on the modes of occurrence of minerals. For several years he was engaged in the exploitation of mineral deposits with the Furukawa Mining Company, and was afterwards lecturer in mineralogy in the Imperial University of Tokyo, which post he held until the time of his sudden death. He was an alert little man, always dressed in a kimono, and an excellent performer in old Japanese and Chinese plays and dances, as well as a good painter. He was the author of many papers on the mineralogy and geology of Japan, Korea, Manchuria, and China [M.A. 1–134–5], and was one of the active editors of T. Wada's 'Minerals of Japan'. (T. Ito, Beitr. Min. Japan, 1935, Neue Folge, no. 1, pp. 255–259, with portrait and bibliography.)

GLINKA (Sergei Fedorovich), Глинка (Сергей Федорович) [1855–1933], Russian mineralogist, was born at Sysert, Urals, on August 26 (old style), 1855. He studied at Kazan and St. Petersburg, and in 1881 was curator of the mineral collection and later (1885) docent in the University of St. Petersburg. In 1913 he became Professor of Mineralogy in the University of Moscow. His first paper in 1885 was on the crystalline form of calcium hydroxide present in hydraulic cement, and he produced two long papers on albite from Russian localities. Text-books were written on mineralogy, crystallography, and building stones. Later papers were published in a journal, 'Sbornik of the Mineralogical and Geological (later Mineralogical) Cabinet of Moscow University', which he edited. (Mém. Soc. Russe Min., 1933, vol. 62, pp. 276, 298.)

GOLDSCHMIDT (Victor) [1853–1933], a distinguished German crystallographer, was born, the son of a Jewish merchant, at Mainz on February 10, 1853, and died at Salzburg on May 8, 1933. He entered, in 1870, the Gewerbeakademie (Technical School) in Berlin with the idea of becoming an engineer, but in 1871 he passed to the Bergakademie (School of Mines) at Freiberg, where in 1874 he qualified as a metallurgical engineer, and in 1875–78 was assistant to T. Richter in assaying and blowpipe analysis. During that period these were the subjects of his earliest scientific papers. In 1878 he studied organic chemistry under A. von Bayer and palaeontology under K. A. Zittel at München, and in 1879 petrography under H. Rosenbusch at Heidelberg, graduating at Heidelberg in 1880 with a dissertation on the use of potassium mercuric iodide solution in mineralogical and petrographical research, and devising a set of

indicators for the determination of specific gravity. After such a training the sudden and violent devotion to morphological crystallography, which he called the 'Queen of the Sciences', was rather surprising. In 1881 he studied crystallography under A. Brezina at Wien (Vienna), where he remained until 1887, working mostly alone and developing his own system of crystallography. Here he began his well-known and useful 'Index der Krystallformen der Mineralien' (3 vols., 1886–91), a laborious compilation of all the crystal-forms that had been observed on minerals with a critical revision of the whole of the literature. In 1887 he also published 'Krystallographische Projectionsbilder', and 'Projection und graphische Krystallberechnung'. Returning to Heidelberg he became in 1888 a docent in the university, giving no formal lectures, but teaching a few selected research students in his private laboratory. In the same year he married his cousin Leontine von Portheim of Praha (Prag), who, besides bringing ample funds, was a close and helpful collaborator in his work. Later, in 1916, they together founded and endowed the 'Josefine und Eduard von Portheim-Stiftung für Wissenschaft und Kunst' in connexion with the University of Heidelberg, which includes an Ethnographical Institute, Institute of Folk-lore, and the 'Victor Goldschmidt Institut für Kristallforschung'. Victor Goldschmidt was recognized as an extraordinary professor in the university in 1893, and later he was given the title of ordinary honorary professor, but his work was always done in his private laboratory, which attracted serious students from all parts of the world, especially America. In 1893 he devised his first form of two-circle goniometer, and in 1897 published the 'Kristallographische Winkeltabellen', which involved the calculation of some 65,000 angles for crystallized minerals. These are, however, not the natural angles between the crystal faces, but the angles of two-circle goniometry and the gnomonic projection, which depend on one particular and arbitrary setting of the crystal. This 'Goldschmidt method' he enthusiastically and persistently advocated to the exclusion of

V. GOLDSCHMIDT (in 1928).

all others. A monumental work is his 'Atlas der Krystallformen' (1913–23; Min. Abstr., vol. 2, p. 289), with nine quarto volumes of plates reproducing about 30,000 published figures of mineral crystals and nine quarto volumes of text—a most useful work of reference. His numerous published papers, written in a clear and philosophical style, deal with the crystals of various minerals, their forms, twinning, growth and corrosion, surface characters of the faces ('Accessorien'), &c.; while others were of a philosophical character with analogies to the regularities in crystals. Some of these were published in his own periodical, 'Beiträge zur Krystallographie und Mineralogie', which he started in 1914. A mineral named goldschmidtite in his honour was afterwards proved to be identical with sylvanite, the error having arisen from a different setting up of the crystal.

Victor Goldschmidt held a unique position in our Society, being an ordinary life member since 1886, and also an honorary member since 1912. He paid many visits to London, where his brother Ernst Gabriel Goldschmidt (died September 13, 1935, aged 83) was a metal merchant. A 'Festschrift Victor Goldschmidt' (Heidelberg, 1928) published on the occasion of his seventy-fifth birthday, contains an appreciation of his scientific work by L. Milch, his first pupil at Heidelberg, with portrait and bibliography of 177 items. Later notices are given by his successor, H. Himmel, in Centr. Min., Abt. A, 1933, pp. 391–398, with portrait and supplementary bibliography (items 178–188); A. E. H. Tutton, Nature, London, 1933, vol. 131, pp. 791–792; and his old pupil, C. Palache, Amer. Min., 1934, vol. 19, pp. 106–111, with portrait and supplementary bibliography.

GRÄNZER (Josef) [1857–1934], Czech mineralogist, was born at Suchdol (= Zauchtl) in Moravia in August 16, 1857, and died at Opava (= Troppau) in Czech Silesia on March 17, 1934. He studied at Wien (= Vienna), and was assistant there to G. Tschermak. He was afterwards a schoolmaster, and in 1894 professor in the training school for teachers at Liberec (= Reichenberg) in Bohemia, where later he was also director of secondary schools. He gave a detailed account of epidote crystals from Salzburg, and described a drusy form of orthoclase from basalt; the latter has since been named gränzerite after him [Min. Mag. **23**–630]. Some later papers were on the rocks and mineral occurrences of northern Bohemia.

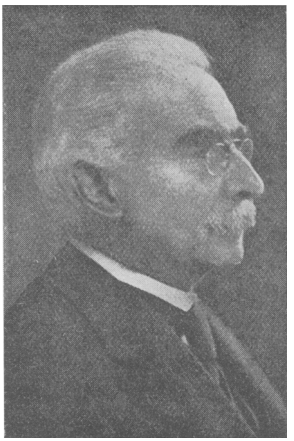
HAMBERG (Axel) [1863–1933], Swedish mineralogist and later geographer, was born in Stockholm on January 17, 1863, and died

at Djursholm, near Stockholm, on June 28, 1933. After studying under W. C. Brøgger at the University (Högskola) of Stockholm, he was a docent there in mineralogy and crystallography since 1893. In 1907 he was appointed Professor of Geography in the University of Upsala, from which post he retired in 1928. He was hydrographer on A. E. Nordenskiöld's expedition to Greenland in 1883, and he also took part in A. G. Nathorst's expeditions to Spitsbergen and King Karls Land in 1892 and 1898. His mineralogical work was published during the period 1886 to 1906, when he described as new minerals caryopilite, flinkite, ganophyllite, manganchlorite, and pyrophanite. The rare beryllium borate, named after him so long ago as 1890, has since been found as large crystals in Madagascar. His later work dealt largely with glacier and sea ice. His collection of minerals was presented to the Riksmuseum at Stockholm. (G. Aminoff, K. Svenska Vetenskapsakad. Årsbok, for 1934, 1935, pp. 265–272, with portrait.)

JOHNSEN (Arrien) [1877–1934], Professor of Mineralogy in the University of Berlin, was born at Munkbrarup in Schleswig on December 8, 1877, and died after an operation on March 22, 1934. He studied under G. Linck at Jena, T. Liebisch at Göttingen, and O. Mügge at Königsberg, and from 1904 was assistant to Mügge first at Königsberg and afterwards at Göttingen. In 1909 he was appointed Professor of Mineralogy at Kiel, where in 1920 he was Rector of the University. In 1921 he succeeded H. E. Boeke at Frankfurt, and in 1922 T. Liebisch at Berlin. His work followed on very much the same lines as that of Mügge, being first petrographical, and later on the structure and deformation (gliding) of crystals. He was President of the German Mineralogical Society (1927–30), and for a time editor of the journal of that society. He was instrumental in founding in 1928 the German institute for the investigation of precious stones and pearls, and on these subjects he wrote a number of popular articles. (H. Seifert, Forschung und Fortschritte, 1934, vol. 10, p. 175; Zentr. Min., Abt. A, 1935, pp. 3–13, with bibliography. H. Stille, Sitzungsber. Preuss. Akad. Wiss. Berlin, 1934, p. 130.)

JOLY (John) [1857–1933], Professor of Geology and Mineralogy in the University of Dublin (Trinity College), was born at Hollywood, King's Co., Ireland, on November 1, 1857, his father being of French descent, and his mother a German countess of Greek, Italian, and English ancestry. The records of the date (1857 or 1858) of his

birth are contradictory, but John Joly himself 'after examining the matter carefully believed he was born in 1857'. Here are surely the materials for the making of a genius. He died in Dublin on December 8, 1933. Entering Trinity College in 1876 he graduated in engineering, and from 1882 to 1891 he was demonstrator in civil engineering, and afterwards in experimental physics. He was appointed Professor of Geology and Mineralogy in 1897. The versatility and energy of the man overflowing with bright ideas were astonishing. His published papers cover an extraordinarily wide range of subjects. Early papers (1884–6) recorded the occurrence of beryl, cordierite, and harmotome in County Wicklow, and described the microscopical characters of volcanic ash from Krakatoa and New Zealand. Ingenious yet simple pieces of apparatus were devised for determining the specific gravity, melting point (meldometer), volatility (apophorometer), specific heat, and the birefringence of minerals; the changes in volume of minerals and rocks on fusion; and the thermal expansion of diamond. He also studied the order of formation of silicates in igneous rocks, and was the first to examine paving and road stones by petrographical methods. In his specially designed electric furnace crystals of calcium oxide, magnesium oxide, platinum, and palladium were prepared artificially. Later came his important work in connexion with radioactivity. He was the first to give the correct explanation of the pleochroic haloes shown by certain minerals, and from measurements of these he was able to give an estimate of the age of the earth. (He had earlier given an estimate of the age of the earth from the amount of salt present in the sea.) The radium and thorium contents of different kinds of rocks were determined, and he elaborated a theory of the development of the earth's internal heat by radioactivity and the consequent changes in the crust, a subject on which he wrote many papers, and a book, 'Radioactivity and geology' (1909). The items mentioned above represent but a small part of his many-sided activities. He was elected a Fellow of the Royal Society in 1892, and was President of



J. JOLY.

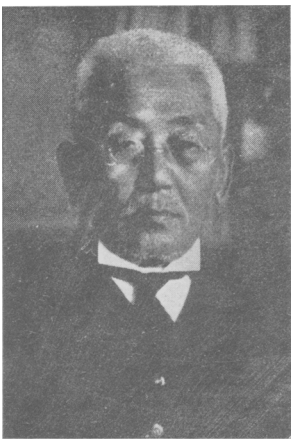
the Royal Dublin Society, in whose Proceedings most of the papers were published. His fine private collection of minerals was bequeathed to Trinity College. (Sir Oliver Lodge, Phil. Mag. London, 1934, ser. 7, vol. 17, pp. 198–200; H. H. Dixon and J. H. J. Poole, Nature, London, 1934, vol. 133, pp. 90–92. Obituary Notices of Fellows of the Royal Society, London, 1934, vol. 1, pp. 259–286, with portrait and bibliography; L. B. Smyth, Quart. Journ. Geol. Soc. London, 1934, vol. 90, pp. lv–lvii.)

KAISER (Friedrich Wilhelm Erich) [1871–1934], German geologist, was born at Essen on December 31, 1871, and died at München (Munich) on January 6, 1934, at the age of 62, after a long illness with heart trouble. Educated at the Universities of Marburg, München, and Bonn, he graduated in physics at Bonn in 1894, where he became assistant to H. Laspeyres in mineralogy. From 1900 to 1904 he was a geologist on the Prussian Geological Survey, engaged mainly with mapping in the Rhineland. In 1904 he succeeded R. Brauns as Professor of Mineralogy and Geology in the University of Giessen, and in 1920 was appointed to a new professorship of general and applied geology in the University of München. In 1914 he joined P. Groth in the editing of the 'Zeitschrift für Krystallographie und Mineralogie', and produced three large index volumes (authors, subjects, and localities) to the set of fifty volumes published since 1877. From 1922 he was one of the editors of the 'Neues Jahrbuch für Mineralogie'. His early papers were mainly on the mineralogy, petrography, and geology of Rheinland. He took every opportunity that offered for travel. In July 1914 he went to South-West Africa to visit an outcrop of nepheline-syenite of which specimens had been sent to him (he had already in 1909 and 1912 written on diamond and aquamarine from that region) with the result that he was marooned there for five years. But he made very good use of the opportunity, and produced two large and really remarkable volumes 'Die Diamantwüste Südwest-Afrikas' (1926; M.A. **3**–281),

E. KAISER (in 1933).

descriptive of the rocks, desert weathering, and occurrence of diamond in the sand-dunes in the Namib Desert. I had the privilege of travelling with him in 1929 in that region, and also in the copper belt of Northern Rhodesia. (R. Brauns, Centr. Min., Abt. A, 1934, pp. 97–112, with portrait and bibliography.)

Kotô (Bundjirô) [1856–1935], father of Japanese geology and petrology, was born at Tsuwano, prefecture of Shimané, western Japan, on March 4, 1856, and died at Tokyo on March 8, 1935. After taking the course of geology at the Imperial University as the first pupil of John Milne in 1875, he went to Germany and studied at Leipzig under F. Zirkel and at München during 1880–3. His first paper dealing with the petrography of some Japanese rocks, work done in Leipzig, was published by the Geological Society of London in 1884, and another paper on piedmontite-schist appeared in the same journal in 1887. Later petrographical papers dealt with the crystalline schists of the Chichibu district and nepheline-basalt from Manchuria, and he also wrote on the geology of Korea. His principal work related to the volcanoes and earthquakes of Japan, and he long had charge of the Volcanological Survey and the Earthquake Investigation Committee. He was elected a Foreign Correspondent of the Geological Society of London in 1905 and a Foreign Member in 1909, and for a short time (1913–17) he was a member of the Mineralogical Society. A 'Kotô commemoration volume' (Tokyo, 1925) with his portrait and a collection of scientific papers was issued on the occasion of his seventieth birthday.



B. Kotô.

Kučera (Bruno) [1863–1934], Moravian mineralogist, was born at Velké Meziříčí on November 16, 1863, and died at Brno (Brünn) on October 26, 1934. He was a hospital director at Brno and a keen collector of minerals. His collection, the best that has ever been made of Moravian minerals, is now in the County Museum at Brno. His published list of Moravian minerals was followed by a series of supplements (Min. Abstr., **1**–292, **2**–117, **3**–349, **4**–318, **5**–86).

MACKIE (William) [1856–1932] was born at Loanends of Durno in Aberdeenshire on April 28, 1856, and died on July 15, 1932, at Glasgow, where he lived after his retirement. After graduating at Aberdeen University he was a science teacher in schools; but returning to the University he took a medical degree in 1888, and for over thirty-five years was a medical practitioner in Elgin, and for eighteen years also Medical Officer of Health. During his leisure time he worked on the rocks of the north of Scotland, producing a long series of papers which were published mainly in the Transactions of the Edinburgh Geological Society, of which Society he was President in 1925–27. Many chemical analyses were made, and the heavy minerals were separated from sedimentary and igneous rocks. In the granites he recorded the presence of dumortierite, allanite, monazite, xenotime, &c. (R. Campbell, Trans. Edinburgh Geol. Soc., 1934, vol. 13, pp. 106–109, with portrait and bibliography.)

MACLAREN (James Malcolm) [1873–1935], mining engineer, was born on October 23, 1873, at Thames in New Zealand, where his father was county engineer, and he died on March 13, 1935, at his home at Gwennap in Cornwall, soon after returning ill from one of his many trips to Australia. I travelled with him part of the way in January, 1935, and he then had a distressing cough. He was a pupil of James Park at the Thames School of Mines, and after graduating at the University of Otago he was lecturer in geology and mining in the Coromandel School of Mines in New Zealand. Four years were then spent as assistant geologist with the Mines Department in Queensland, after which he came to London with an 1851 Exhibition Research Studentship and worked on the precipitating agents of gold. Then for four years (1902–6) he was on the staff of the Geological Survey of India as mining specialist. Afterwards he started a private practice as consulting mining engineer and geologist, in which he was eminently successful, reporting for mining companies in all parts of the world and travelling extensively. Practically all of his published works related to occurrences of gold, in New Zealand (1898), Queensland (1900), British Isles (1901), India (1904), &c.; and in 1908 he produced an exhaustive treatise 'Gold, its geological occurrence and geographical distribution'. In 1931 he gave an account of the crater lake of Bosumtwi in Ashanti, suggesting that it was a meteorite crater. He was elected a Fellow of the Geological Society of London in 1901, and a member of the Mineralogical Society in 1925, and in

1907 took the D.Sc. degree at London University. (Mining Journ. London, 1935, vol. 187, p. 195; Mining Mag. London, 1935, vol. 52, pp. 231–232; L. L. Fermor, Rec. Geol. Survey India, 1935, vol. 69, pp. 385–386.)

Moss (Richard Jackson) [1847–1934] was appointed Keeper of Minerals and analyst to the Royal Dublin Society in 1875, a post previously held by C. Giesecke and R. H. Scott. In 1878 he also became Registrar, which involved making arrangements for the Dublin Horse Show, art exhibitions, musical recitals, scientific meetings, &c. But in spite of this he was able to do some work on Irish minerals. He was the first to describe the peculiar pearly quartz from Co. Cork, which was independently described by R. Harkness (Min. Mag., **2**–82) under the name 'cotterite'. By grinding pitchblende in a vacuum he estimated the amount of helium present. In association with John Joly he founded the Radium Institute of the Royal Dublin Society and devised the radon capillaries. He retired in 1921 and died on January 27, 1934. He was a Fellow of the Chemical Society of London since 1871. (H. H. Poole, Journ. Chem. Soc., 1934, pp. 563–564; J. H. J. Poole, Nature, London, 1934, vol. 133, p. 440.)

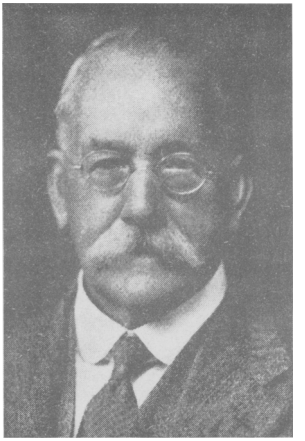
Panebianco (Ruggero) [1848–1930], Italian mineralogist, was born at Messina on June 2, 1848, and died at Padova (Padua) on March 28, 1930. His mother was English, and his first studies were at the English College in Malta, and for two years he studied mathematics at Messina University. Joining Garibaldi's campaign in 1866, he was taken prisoner at Bezzecca, but escaped to England, where he remained until 1870. Returning to Italy, he studied at Milano and Roma, graduating at the latter in 1878 under the celebrated chemist S. Cannizzaro, and in 1880 becoming assistant in mineralogy under G. Strüver at Roma. In 1882 he was appointed Professor of Mineralogy in the University of Padova, from which post he retired in 1923 with the title of Emeritus Professor. His early papers were

R. Panebianco.

on the crystalline form of organic compounds, and many of his later short notes dealt with geometrical and optical crystallography, often criticizing the work of other authors. He founded and edited the 'Rivista di Mineralogia e Cristallografia Italiana', which ran from 1887 to 1918, forming a series of fifty volumes (but these occupy barely a foot on the library shelves). He also commenced in 1887 a 'Trattato di Mineralogia', but of this only the first volume dealing with crystallography was published, which was later extended as 'Trattato di Cristallografia morfologica' (Padova, 1905). He appears to have been rather eccentric. Some of his papers were written in Esperanto, and his last, in 1929, in Latin. He objected to naming minerals after kings, and changed the name willemite (after Willem I of the Netherlands) to belgite, oblivious of the fact that the mineral did not occur in Belgium.

Prior (George Thurland) [1862–1936], formerly Keeper of Minerals in the British Museum and a past-President of this Society, was born at Oxford on December 16, 1862, and died from heart failure at Hatch End near London on March 8, 1936. His father, George Thomas Prior, kept a small chemist's shop in Oxford, and in this environment the only son developed an inclination towards chemistry, eventually becoming a skilled analyst and a distinguished mineral chemist. He was educated at Christ Church Cathedral School and Magdalen College School, and in 1881 he gained a scholarship (demyship) in natural science at Magdalen College, graduating with first class honours in chemistry (1885) and in physics (1886). For a short time he also studied chemistry under A. Classen at the Technical High School at Aachen in Germany. In 1887 he entered the Mineral Department of the British Museum and, as successor to W. Flight (1841–85), was placed in charge of the chemical laboratory. On the death of T. Davies (1837–92) he also took charge of the extensive collection of rocks; and on the promotion of Sir Lazarus Fletcher to the Directorship of the Natural History Branch of the British Museum (whom he succeeded as Keeper of the department in 1909), he turned over to meteorites. Good curatorial work and original research were done in both of these sections; but, until his retirement under the age limit in 1927, he still remained in charge of the chemical laboratory, personally undertaking all the more difficult analytical work. He was always called upon to make the analyses of new and rare minerals, and many of his results appear in the works of other

authors. With E. Hussak no less than six new minerals were described from Brazil, namely, derbylite, florencite, lewisite, tripuhyite, senaite, and zirkelite; with other authors fermorite, iodembolite, and serendibite were established as new; while teallite, a rare tin and lead sulphide from Bolivia, he described alone. The minerals containing titanium, niobium, tantalum, and rare earths present special difficulties in their chemical analysis; and one of these, a titano-niobate of yttrium and cerium earths from Swaziland, analysed by Prior, was named priorite after him by W. C. Brøgger. In his petrographical papers he described rocks from the Antarctic collected by Ross's Expedition in 1839–43 and by Scott's 'Discovery' Expedition in 1901–4; also rocks from Abyssinia and East Africa (Kenya and Uganda). Here again many of his determinations and short reports on rocks are to be found in the papers of other authors.



G. T. Prior (in 1932).

Since 1910 all his published work related to meteorites. He described and analysed in detail the stones (but no siderites) of many new falls. In addition, he made partial analyses of a large number of previously known meteorites, and from his results he was able to show that in meteoric stones 'the richer in nickel is the nickel-iron, the richer in ferrous oxide are the magnesium silicates'. This may well be called Prior's Law. On it he based a new classification of meteorites, depending on the ratios of nickel to iron in the metallic portion and of ferrous oxide to magnesia in the silicate portion. He further concluded that by progressive oxidation (the iron, but not the nickel, of the metallic portion being oxidized) all meteoric stones have been derived from the same magma. His 'Catalogue of Meteorites' published by the British Museum (1923, with appendix 1927) is the standard work of reference, in which all the essential details respecting 992 meteorites then known are collected together.

He joined this Society in 1887, serving on the Council since 1893 (apart from gaps insisted upon by the bye-laws), and was General Secretary for eighteen years (1909–27) and President in 1927–30.

He took the Oxford degree of D.Sc. in 1905, was elected a Fellow of the Royal Society in 1912, and was awarded the Wollaston Fund and the Murchison Medal by the Geological Society, of which society he was a Vice-President in 1921–3. (W. C. Smith, Nature, London, 1936, vol. 137, p. 485.)

Bibliography of the Works of G. T. Prior.

Most of his more important papers were published in the 'Mineralogical Magazine', the first in 1889 'Note on connellite from a new locality'. These are listed with the full titles in the Indexes to vols. 1–10 (1895) and vols. 11–20 (1926), and include 35 papers under his own name and 27 with joint authors. Other papers are listed below.

63. [with H. A. Miers] Ueber einen antimonhaltigen Proustit. Zeits. Kryst. Min., 1888, vol. 14, pp. 113–115. [Translation from Min. Mag., 1887, vol. 7, pp. 196–200.]
64. [with H. A. Miers] Beiträge zur Kenntniss des Pyrargyrit und Proustit. Zeits. Kryst. Min., 1889, vol. 15, pp. 129–193, 2 pls. [Translation from Min. Mag., 1888, vol. 8, pp. 37–102, 4 pls.]
65. [with L. J. Spencer] Ueber die Identität von Andorit, Sundtit und Webnerit. Zeits. Kryst. Min., 1898, vol. 29, pp. 346–360. [Translation from Min. Mag., 1897, vol. 11, pp. 286–301.]
66. Petrographical notes on rock-specimens collected by Mr. R. T. Günther in the neighbourhood of Lake Urmi, Persia. Geogr. Journ., London, 1899, vol. 14, pp. 521–523.
67. [Report on some fine brown dust collected during a thunderstorm in the Mediterranean.] Nature, London, 1899, vol. 60, p. 205.
68. [Petrographical notes] in M. Fergusson, Geological notes from Tanganyika northwards. Geol. Mag., London, 1901, dec. 4, vol. 8, pp. 362–370.
69. Preliminary report on the rock-specimens collected by the *Southern Cross* Antarctic Expedition. In C. E. Borchgrevinck, First on the Antarctic Continent. London, 1901, pp. 324–325.
70. Report on the rock-specimens collected by the 'Southern Cross' Antarctic Expedition. In Report on the collections of natural history .... London (British Museum), 1902, pp. 321–332, 1 pl.
71. Report on specimens of mud, etc., from the bottom of Lake Nyasa, obtained by Lieut. E. L. Rhoades during sounding operations in 1900 and 1901. Geogr. Journ., London, 1902, vol. 20, p. 69.
72. [with L. Fletcher] Notes on the collections of rocks and mineral specimens from the Uganda Protectorate made by Sir Harry Johnston. In Sir Harry Johnston, The Uganda Protectorate. London, 1902, vol. 1, pp. 304–308.
73. Notes on rock-specimens from Unyoro. In Sir Harry Johnston, The Uganda Protectorate. London, 1902, vol. 1, pp. 309–310.
74. [with L. J. Spencer] Krystallisirter Zinnkies von Bolivia. Zeits. Kryst. Min., 1902, vol. 35, pp. 468–479, 1 pl. [Translation from Min. Mag., 1901, vol. 13, pp. 54–65, 1 pl.]
75. [with G. F. H. Smith] Ueber das bemerkenswerthe Problem der Entwickelung der Krystallformen des Calaverit. Zeits. Kryst. Min., 1903, vol. 37, pp. 209–234, 1 pl. [Translation from Min. Mag., 1902, vol. 13, pp. 122–150.]

76. Visit to the British Museum (Natural History). [Demonstration on meteorites.] Proc. Geol. Assoc., London, 1903, vol. 18, p. 145.
77. Note on a pillow-lava apparently forming a continuous horizon from Mullion Island to Gorran Haven in Cornwall. Geol. Mag., London, 1904, dec. 5, vol. 1, pp. 447–449.
78. A new thallium mineral. Nature, London, 1905, vol. 71, p. 534.
79. Report on the rock-specimens collected by the "Discovery" Antarctic Expedition 1901–4. In National Antarctic Expedition 1901–1904, Natural History, vol. 1, Geology. London (British Museum), 1907, pp. 101–140, 3 pls.
80. [with G. F. H. Smith] Über Paratacamit, ein neues Kupferoxychlorid. Zeits. Kryst. Min., 1907, vol. 43, pp. 28–35. [Translation from Min. Mag., 1906, vol. 14, pp. 170–177.]
81. Report on a white siliceous nodule [from the Isle of Wight chalk]. Proc. Geol. Assoc., London, 1908, vol. 20, pp. 289–290.
82. Petrographical notes on the dolerites and rhyolites of Natal and Zululand. Ann. Natal Museum, 1910, vol. 2, pp. 141–157, 4 pls.
83. Pyrochlor; Äschynit; Euxenit-Polykras; Blomstrandin und Priorit; Derbylit (Lewisit, Mauzeliit). In C. Doelter, Handbuch der Mineralchemie, 1913, vol. 3, part 1, pp. 95–108.
84. Polymignit; Niobate und Tantalate. In C. Doelter, Handbuch der Mineralchemie, 1913, vol. 3, part 1, pp. 171, 249–264.
85. Review of progress of mineralogy from 1864 to 1918. Geol. Mag., London, 1919, dec. 6, vol. 6, pp. 10–16.
86. Forms of silica in the Mineral Department, Natural History Museum. Proc. Geol. Assoc., London, 1920, vol. 31, pp. 30–31.
87. Obituary. Sir Lazarus Fletcher, Kt., M.A., F.R.S., etc. Geol. Mag., London, 1921, vol. 58, pp. 141–143.
88. Guide to the Mineral Gallery, British Museum (Natural History). 13th edition, 1921, 32 pp.
89. Catalogue of meteorites, with special reference to those represented in the collection of the British Museum (Natural History). London, 1923, x+196 pp.
90. A guide to the collection of meteorites, with an alphabetical list of those represented. British Museum (Natural History), London, 1926, 43 pp.
91. Three South African meteorites: Vaalbult, Witklip, and Queens Mercy. Min. Mag., 1926, vol. 21, pp. 188–193, 1 pl.
92. Appendix to the Catalogue of meteorites .... British Museum (Natural History). London, 1927, 48 pp.
93. Tektites. Nat. Hist. Mag. (Brit. Mus.), 1927, vol. 1, pp. 8–13.
94. Note on the alkali-lavas of Mount Nimrud, Armenia. Min. Mag., 1928, vol. 21, pp. 485–488.
95. The meteoric stone of Lake Brown, Western Australia. Min. Mag., 1929, vol. 22, pp. 155–158.

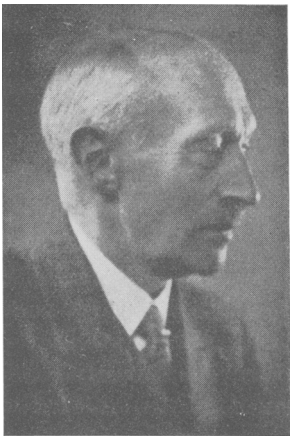
RANSOME (Frederick Leslie) [1868–1935], American geologist, was born at Greenwich, London, on December 2, 1868, and died at Pasadena, California, on October 6, 1935. He received his geological training under A. C. Lawson at the University of California at Berkeley,

where he described in 1895 the remarkable new mineral which he named lawsonite. In 1896–97 he was assistant in mineralogy and petrology at Harvard University, working there with C. Palache. From 1897 till 1924 he was on the staff of the United States Geologica. Survey when he produced a series of valuable monographs on the geology and ore-deposits of the mining districts in Arizona, Colorado, Nevada, and Idaho. Later he was professor of economic geology in the University of Arizona at Tucson, and since 1927 in the California Institute of Technology at Pasadena. Goldfieldite was another new mineral described by him, and ransomite was named after him. He was an associate editor of the 'American Journal of Science' and of 'Economic Geology', and he wrote many articles for encyclopaedias and dictionaries. (W. Lindgren, Econ. Geol., 1935, vol. 30, pp. 841–842.)

SCHARIZER (Rudolf) [1859–1935], Emeritus Professor of Mineralogy and Petrography in the University of Graz in Steiermark (Styria), was born on April 1, 1859, at Freistadt in Upper Austria, where he returned to the family estate after his retirement in 1930, and he died there on December 14, 1935. He graduated in 1883 at Wien (Vienna) and was afterwards assistant there to A. Schrauf. In 1891 he succeeded F. Becke as Professor of Mineralogy in the University of Czernowitz (now Cernauți in Romania), and in 1909 he succeeded C. Doelter in the University of Graz. He was Rector of these two Universities in 1902 and 1917 respectively. Since 1879 he had written on Austrian minerals, more especially the pegmatite minerals of Bohemia; but his main work was on the constitution and genesis of the iron sulphates, on which over a long period (1898–1930) he published a series of fourteen papers. He described in 1884 rocks from Jan Mayen, and his analysis of the basaltic hornblende from there showed it to consist mainly of orthosilicate, to which he applied Breithaupt's (1865) name, syntagmatite. In collaboration with his successor, F. Angel, he published in 1932 a useful volume on the paragenesis of minerals. (F. Angel, Zentr. Min., Abt. A, 1936, pp. 88–92, with bibliography.)

SCHETELIG (Jakob Grubbe Cock) [1875–1935], Norwegian mineralogist, was born at Asker on December 18, 1875, and died at Oslo after a long illness on October 17, 1935. He started his scientific career as an assistant (1900–2) to F. Nansen in working out the oceanographical results of the first 'Fram' expedition (1893–6). Later, for a short period (1902–3), he was assistant in the Physical

Institute of the University of Oslo, and in 1905 under the inspiring influence of W. C. Brøgger he was transferred to the Mineralogical Institute. Here he succeeded Brøgger in 1917 as Professor of Mineralogy and Geology and as Director of the Mineralogical and Geological Museum. Working with Brøgger, many geological maps were prepared for the Geological Survey of Norway. His first mineralogical paper was descriptive of a new mineral thortveitite, remarkable in being a silicate of scandium. Other papers dealt with the rare minerals from pegmatites in Arctic Norway and the south of Norway. He described the rocks collected on R. Amundsen's South Pole expedition (1911–12), and also a meteorite which fell in Norway in 1928. He joined the Norwegian Geological Society in 1905 and was three times its president, and since 1923 editor of its journal. (O. Holtedahl, Nature, London, 1936, vol. 137, p. 58.) Norsk Geol. Tidsskr., 1936, vol. 16, pp. 45–51, with portrait and bibliography.



J. SCHETELIG (in 1934).

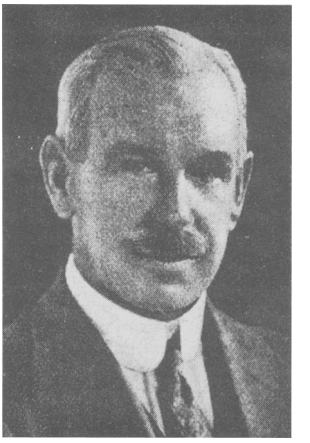
SEDERHOLM (Jakob Johannes) [1863–1934], Finnish geologist and petrologist, was born of Swedish stock at Helsinki (Helsingfors) on July 20, 1863, and died there on June 26, 1934. Entering the University of Helsinki in 1882, he began the study of philosophy, but owing to delicate health, and acting on medical advice, he turned to geology, which he studied under F. J. Wiik, and afterwards under W. C. Brøgger at Stockholm and H. Rosenbusch at Heidelberg. In 1888 he was appointed geologist on the Geological Commission (Survey) of Finland, becoming director in 1893, and retiring in 1933. Extensive mapping and search for ores of economic value were undertaken, but Sederholm's chief interest was the study of the Archaean crystalline rocks which occupy practically the whole of Finland. He early showed that the uralite-porphyrites were metamorphosed basalts, and that some other rocks resulted by the assimilation and melting down of pre-existing rocks. In this connexion he introduced the terms anatexis, migmatite, and synantetic. He also studied these crystalline rocks in other countries, making several visits to America,

which he combined with lecture tours. A later paper gave a good collected account of the remarkable orbicular granites of Finland. (V. Hackman, Bull. Comm. Géol. Finlande, 1935, no. 112, 29 pp., with portrait and bibliography; Terra, Geogr. Sällsk. Finland Tidskrift, 1934, vol. 46, pp. 129–133, with portrait. E. Antevs, Proc. Geol. Soc. Amer., 1935, for 1934, pp. 259–270, with portrait and bibliography. K. H. Scheumann, Min. Petr. Mitt. (Tschermak), 1934, vol. 46, pp. 89–90.)

SZÁDECZKY (Gyula = Julius) [1860–1935], whose full title was Baron Szádeczky-Kardoss of Szádecsne and Kardosfalva, was Professor of Mineralogy in the University of Kolozsvár (= Klausenburg) in Hungary, afterwards known as Cluj in Romania, and also director of the mineralogical collection in the Transylvanian Museum (Erdélyi Múzeum). Later he also served as a geologist on the reorganized Geological Survey of Romania. His work was mainly geological and petrographical, his first paper in 1886 being on Hungarian occurrences of obsidian. He also described rocks and minerals from Egypt. He died on November 7, 1935. (Erdélyi Múzeum, 1935, vol. 40, p. 381. S. von Szentpétery, Acta Chem. Min. Physica, Szeged, 1936, vol. 5, pp. 1–10, with portrait.)

THOMAS (Herbert Henry) [1876–1935], Petrographer to the Geological Survey of Great Britain, was born at Exeter on March 13, 1876, and collapsed when alighting from a train at a London railway station on May 12, 1935. He graduated at both Cambridge and Oxford, and from 1898 to 1901 was assistant to the Professor of Geology at Oxford. In 1901 he joined the Geological Survey and was at first engaged in mapping in South Wales, and later, in 1911, was appointed petrographer. In this capacity, rocks collected by the surveyors in all parts of the country passed through his hands for examination and description in the Survey Memoirs. Some of his earlier papers dealt with the minerals present in sands and sedimentary rocks, and he was able to suggest the source of the detrital materials. From his wide knowledge of rocks of all kinds he was able to assign a source to most materials; showing, for example, that the 'blue stones' of Stonehenge must have been transported from Pembrokeshire. In xenoliths in igneous rocks from Mull he found fibrolite (afterwards found to contain an excess of alumina and named mullite), sapphire, spinel, and anorthite. With D. A. MacAlister he wrote a book on 'The geology of ore deposits' (1909). He

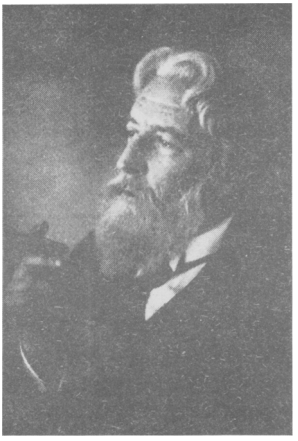
joined this Society in 1903 and served for fourteen years on the Council, at one period (1921–4) as Vice-President. Six papers, some with joint authors, were contributed to this Magazine. These dealt with occurrences of British minerals and with new instruments for determining the refractive index of liquids and for cutting crystal plates and prisms. In the Geological Society of London he served as secretary for ten years and was twice Vice-President. He was elected a Fellow of the Royal Society in 1927, and in the same year was President of the geological section of the British Association. (Nature, London, 1935, vol. 136, p. 95. A. Harker, Obituary Notices of Fellows of the Royal Society, 1935, vol. 1, pp. 591–594, with portrait.)



H. H. THOMAS (in 1927).

VAN HORN (Frank Robertson) [1872–1933], was born at Johnsonburg, New Jersey, on February 7, 1872, and died at Cleveland, Ohio, on August 1, 1933. After graduating at Rutgers College (now University) at New Brunswick, New Jersey, in 1892, he was assistant in mineralogy under A. H. Chester. Four years (1893–7) were then spent at Heidelberg studying petrology and crystallography under H. Rosenbusch and V. Goldschmidt, where his doctor dissertation was on the petrography of noritic rocks from Ivrea in Piedmont. On his return he was appointed instructor, and in 1899 professor, of geology and mineralogy in the Case School of Applied Science at Cleveland, Ohio, where he remained until the end. Here he devoted his energy to teaching and organizing the sports clubs, and he was also Director of the Cleveland Museum of Natural History. He published lecture notes on geology (1902) and on mineralogy (1903), and was the author of a number of short papers dealing with unusual occurrences of American minerals, of which he was a keen collector. He was one of the founder members of the Mineralogical Society of America in 1919, and for ten years acted as its secretary. (J. E. Hyde, Proc. Geol. Soc. Amer., for 1933, 1934, pp. 273–288, with portrait and bibliography. E. H. Kraus, Amer. Min., 1934, vol. 19, pp. 101–105, with portrait and bibliography.)

HENRY STEPHENS WASHINGTON (1867–1934), distinguished as a chemical petrologist, was born at Newark, New Jersey, on January 15, 1867, and died at Washington, D.C. on January 7, 1934. After graduating A.B. in 1886 with special honours in natural science at Yale College (afterwards University), he held the Silliman Fellowship in Physics and was Assistant in Physics until taking the A.M. degree in 1888. He had studied there under J. D. Dana, E. S. Dana, G. J. Brush, H. L. Wells, and S. L. Penfield. In his first paper, with W. F. Hillebrand, in 1888 he described the crystallography of rare copper arsenates from Utah. Four years were then spent in travel in the West Indies, Europe, Egypt, Algeria, and Asia Minor, and during the winter semesters of 1891–2 and 1892–3 he studied at the University of Leipzig under F. Zirkel and C. H. Credner, taking the Ph.D. degree with a dissertation on 'The volcanoes of the Kula basin in Lydia' (printed in New York in 1894). He also joined the American School of Classical Studies at Athens, taking part in and conducting excavations at several sites in Greece. The results of work done with his brother Charles M. Washington at Phlius in 1892 were published many years later (1923) in the American Journal of Archaeology. After returning to America he was for a short time (1895–6) Assistant in Mineralogy at Yale. But from 1896 till 1912 he worked in his private laboratory at Locust, New Jersey, analysing and describing the rocks which he had previously collected in Europe and Asia Minor, and producing a long series of important papers and books, including his standard text-book 'Manual of the chemical analysis of igneous rocks' (1904; 4th edition, 1930), the tabulated 'Chemical analyses of igneous rocks' (1903; 2nd edition of 1201 quarto pages in 1917), and the celebrated Cross-Iddings-Pirsson-Washington 'Quantitative classification of igneous rocks' (1903). Later he offered his services as a consulting mining geologist (1906–12), but this did not interrupt the flow of petrological papers, during which period appeared his 'Roman co-magmatic region' (1906), and he described the new minerals linosite and (with F. E. Wright) anemousite and carnegieite.



H. S. WASHINGTON (in 1920).

In 1912 he joined the staff of the Geophysical Laboratory of the Carnegie Institution of Washington as petrologist. There until the end he continued his work on just the same lines as before, giving detailed chemical analyses and careful petrographical descriptions of igneous rocks from various regions. He also analysed many rock-forming minerals (the physical data of which were determined by H. E. Merwin) and ancient stone implements. Partly in collaboration with F. W. Clarke he produced a series of papers on the average composition of the earth's crust and even of the whole earth.

Dr. Washington had a striking personality, and with his tall stature, long white hair and beard, and distinctive dress he presented quite a picturesque figure. He was hospitable and generous (which I was fortunate in experiencing) and was popular in many circles. A cigar was his constant companion, and he handed one to whoever he met. It was playfully suggested that tobacco-ash accounted for the high percentages of potash in his rock analyses. He was elected a Foreign Correspondent of the Geological Society of London in 1904 and a Foreign Member in 1921, and was Honorary Member of the Academies of Lincei (Roma), Zelanti (Acireale), Torino, Modena, France, Spain, and Norway, and a Cavalier of the Order of the Crown of Italy. He was elected a member of this Society in 1923, and his election as an Honorary Member in 1932 gave him much pleasure during his last illness. (C. N. Fenner, Science, New York, 1934, vol. 79, pp. 47–48. Mary G. Keyes, Zeits. Vulkanologie, Berlin, 1934, vol. 16, pp. 1–6, with portrait and bibliography. A. Pelloux, Boll. Soc. Geol. Italiana, 1935, vol. 53, pp. ciii–cviii, with Italian bibliography. J. V. Lewis, Amer. Min., 1935, vol. 20, pp. 179–184, with portrait. S. Kôzu, Journ. Japanese Assoc. Min. Petr. Econ. Geol., 1934, vol. 12, pp. 41–44, with two portraits. Nature, London, 1934, vol. 133, pp. 557–558. L. J. Spencer, Quart. Journ. Geol. Soc. London, 1934, vol. 90, pp. xlix–l. T. F. W. Barth, Min. Petr. Mitt. (Tschermak), 1936, vol. 47, pp. 371–372.)

ZHEMCHUZHNYI (Sergei Fedorovich), Жемчужный (Сергей Федорович) [1873–1929] was born at Kerch in the Crimea on June 24, 1873, and died at Leningrad on September 27, 1929. In the literature there are various forms of transliteration of his name, e.g. Žemčužnyj, Żemczużnyj, Schemtschuschnij, Shemtschushni, and several other variations. He graduated at Moscow University in 1895 and at the St. Petersburg Mining Institute in 1900. From 1901 he was lecturer

in inorganic chemistry in the St. Petersburg Polytechnic Institute. Several of his papers have a mineralogical bearing, dealing with the salts of salt-lakes (1899; M.A. **2**–129), porphyritic structure and eutectics (with F. Y. Levinson-Lessing), melts of alloys and salts (M.A. **2**–154), structure of native platinum (M.A. **2**–441) and gold, liquid crystals, chemical equilibrium, crystallization, &c.

A later death is that of:

GREGORY (Albert George Frederick), January 15, 1864–May 5, 1936.