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Biographical notices of mineralogists recently deceased.
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IN the following list of 40 lives, with a range in ages from 32 to 91 years, the average age is 68.2 years. Including previous lists, the average of 384 lives is 64.9 years.

ARAUJO FERRAZ (Jorge Belmiro de) [1883–1926], Brazilian mineralogist, was born at Rio de Janeiro on August 30, 1883, the son of Baron de Araujo Ferraz, and died there on February 7, 1926. He studied at the polytechnic school of his native city, taking the degree of doctor in civil engineering. After teaching physics and chemistry in the municipal school at Rio de Janeiro and in the School of Mines at Ouro Preto, he was appointed petrographer on the Geological and Mineralogical Survey of Brazil, of which for a time he acted as director. Dr. Araujo Ferraz had an extensive private collection, and he was responsible for the display of Brazilian minerals at the Torino exhibition in 1911 and at the Brazilian centenary exhibition in 1922. He translated and edited E. Hussak's work, 'Os satellites do diamante' [Min. Mag. 18–148], and for many years had worked on a mineralogy of Brazil, portions of which have been edited by A. Roccati [Min. Abstr. 3–446]. The mineral ferrazite, named after him, is one of the 'favas' from the Brazilian

¹ Series I–III in Min. Mag., 1921, vol. 19, pp. 240–259; 1924, vol. 20, pp. 252–275; 1927, vol. 21, pp. 229–257. An index to earlier notices in vols. 1–19 was given in vol. 19, pp. 259–262.

diamond deposits. He was a member of our Society since 1920. (A. Roccati, *Bull. Soc. Franç. Min.*, 1926, vol. 49, pp. 145-148.)¹

ARTINI (Ettore) [1866-1928], Professor of Mineralogy at Milano and Director of the Civic Museum of Natural History, was born at Milano on August 29, 1866, and died there on March 7, 1928. He



ETTORE ARTINI.

studied in Firenze and Padova, and from 1887 to 1893 was assistant to Prof. F. Sansoni in the Mineralogical Institute of the University of Pavia. In 1893 he was placed in charge of the section of mineralogy in the Civic Museum of Natural History in Milano, of which Museum he became director in 1912. He was also teacher of mineralogy and of constructional materials in the Technical Institute and the Agricultural School, and later (1924) Professor of Mineralogy in the new University at Milano. Artini was the author of a number of descriptive papers on Italian

minerals and rocks, and on the crystallography of organic compounds, especially derivatives of benzene. He described bavenite, bazzite, and brugnatellite as new species, and artinite was named after him by L. Brugnatelli in 1902. He also wrote several textbooks, one of which, 'I minerali' [*Min. Abstr.*, vol. 1, p. 300], passed through three editions. He was president of the Italian Geological Society (1919 and 1925) and of the Italian Society of Natural Science (1904-1912). (Obituary notices by G. D'Achiardi, *Boll. Ufficio Geol. Italia*, 1929, vol. 54 (for 1928), no. 13, 16 pp., with portrait and bibliography of 104 items. E. Reposs, *Atti R. Accad. Sci. Torino*, 1928, vol. 63, pp. 190-192.)

BRALY (Adrien) [1864-1927], prospector, was born at Montbrison, Loire, on March 13, 1864, and died in Paris on August 6, 1927. The material collected on prospecting expeditions was worked out by him in the laboratory of the Natural History Museum at Paris, where he devised many new blowpipe methods for testing ore-minerals [*Min. Abstr.*, vol. 3, p. 510]. (Obituary notice by A. Lacroix, *Bull. Soc. Franç. Min.*, 1927, vol. 50, pp. 460-463, with bibliography.)

¹ Here the second name is given incorrectly as Palmiro, and the date of death as February 8.

BRAVO (José J.) [1874–1927], Director of the Cuerpo de Ingenieros de Minas y Aguas de Peru, was born at Lima on April 17, 1874, and was killed in a motor-car accident at Akron, Ohio. He was also Professor of Physical Geography in the University of Lima and of Mineralogy and Geology in the Engineering School, and he was a leading spirit in scientific matters in Peru. From the vanadium deposit of Cerro de Pasco he described in 1906 the mineral rizo-patronite (= patronite), and another mineral from the same locality was named bravoite by W. F. Hillebrand. (L. Garcia, *Amer. Min.*, 1928, vol. 13, pp. 103–104.)

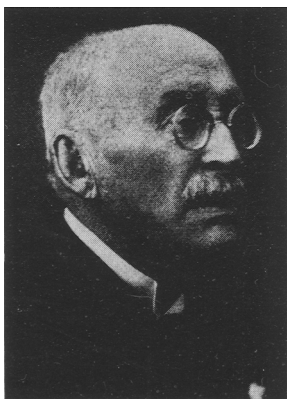
BRUGNATELLI (Luigi) [1859–1928], Professor of Mineralogy in the University of Pavia, was born at Sairano, near Pavia, on December 9, 1859, and died on April 27, 1928. His great-grandfather, grandfather, and father had been professors of chemistry at Pavia since 1796. After graduating in chemistry at Pavia in 1883, he spent some years at Torino and under Groth at München, returning to Pavia in 1888, where he was appointed full professor in 1904. His published papers, relatively few in number, and none since 1904, deal with Italian minerals and the crystallography of organic compounds. In 1894 he determined the crystallographic constants of potassium fluoborate, which has since been found as a mineral (avogadrite). Amongst the minerals described from the asbestos deposits in Val Malenco, Lombardia, was one he named artinite; and E. Artini returned the compliment by naming another closely allied mineral from the same deposits brugnatellite. (G. D'Achiardi, *Rend. R. Accad. Lincei, Cl. Sci. fis. mat. nat. Roma*, 1929, ser. 6, vol. 10, Comm. pp. xvii–xxv, with portrait and bibliography. A. Pelloux, *Bull. Soc. Franç. Min.*, 1929, vol. 52, pp. 69–71.)¹

BRUHNS (Franz Siegfried Willy) [1864–1929], since 1909 Professor of Mineralogy and Petrography in the Mining Academy at Clausthal in the Harz, was born at Leipzig on February 5, 1864, and died on June 18, 1929. He graduated at Leipzig in 1886, and was afterwards assistant in mineralogy, first at Bonn (1889) and later (1894) at Strasbourg. At Strasbourg he also worked on the Geological Survey of Elsass-Lothringen. At Bonn he compiled an elaborate index of the works of G. vom Rath, and in 1906 he prepared a new

¹ In *Bull. Soc. Franç. Min.*, 1928, vol. 51, p. 340, the date of death is given incorrectly as April 28, 1928; and in Poggenдорff's 'Biographisch-literarisches Handwörterbuch', 1902, vol. 4, p. 193, the year of birth as 1860.

edition of von Dechen's 'Die nutzbaren Mineralien und Gebirgsarten im Deutschen Reiche'. W. Bruhns was also the author of elementary text-books on crystallography and petrography. With W. Busz in 1890 he described the mineral phosphosiderite.

DOELTER (Cornelio August) [1850–1930], was born on September 16, 1850, at Arroyo, Porto Rico in the West Indies, where his father



C. DOELTER (in 1930).

was a German planter and slave-owner, who had emigrated from Emmendingen in Baden. His mother, Francisca Cisterich, was Spanish, and on this account his name was sometimes given as Doelter y Cisterich. He died at Kolbnitz, Carinthia, on August 8, 1930. At the age of six he was taken to Paris, and he later studied at Freiburg in Baden, Heidelberg, and Wien, graduating (Ph.D.) at Heidelberg in 1872. For a time from 1873 he was attached to the Austrian Geological Survey, and in 1875 was a privat-docent in the University of Wien. From 1876 till 1906 he was Professor of Mineralogy in the Uni-

versity of Graz in Steiermark (= Styria), where in 1906 he was also Rector of the University. In 1907 he succeeded G. Tschermak as Professor of Mineralogy and Petrography in the University of Wien, from which post he retired with the title of Emeritus Professor in 1922.

Doelter's earlier papers from 1873 dealt with volcanic rocks, during which period he produced monographs on the volcanoes of the Ponza Islands, the Cape Verde Islands, and of southern Tyrol. From 1884 he did intensive work on the synthesis of minerals and rocks and on silicate fusions. At a later period he was much interested in the changes in colour produced by the action of radium, X-rays, and other radiations on gem-stones and other minerals; and he wrote several papers on the cause of the blue coloration of rock-salt. Doelter wrote a number of books on chemical mineralogy, petrogenesis, precious stones, colour of minerals, and the mineral resources of the Balkans and Asia Minor; but his magnum opus, by which he will be best remembered, is his 'Handbuch der Mineral-

chemie'. This great work of reference (not entirely free from misprints) was commenced by him in 1911, after the age of sixty, and, although nine large volumes have appeared, it unfortunately remains incomplete at his death.

DRAPER (David) [1849–1929], a veteran South African geologist, was born at Capetown on January 3, 1849, his father being an early British settler in 1820. Only shortly before his death on September 9, 1929, he had taken part in excursions around Johannesburg of the International Geological Congress, pointing out the spot where gold was first mined on the Witwatersrand, explaining the geology and development of the Western Rand, and overflowing with interesting reminiscences amidst clouds of smoke from Boer tobacco. He had an adventurous and varied career. As a burgher he took part in the Basuto War of 1868, the defence against the Jameson Raid of 1895, and in the Boer War of 1899–1902. He went to Kimberley at the time of the first discovery of diamonds in 1868, and it was there that he first became interested in geology. His first papers on the geology of South Africa were contributed to the Geological Society of London in 1894 and 1895; but feeling that a local society was needed he was one of the founders and the first secretary of the Geological Society of South Africa, which was founded in Johannesburg in 1895. He spent several years in Brazil studying the diamond deposits; and a white talcose matrix, called 'draperite', was believed by him to represent a volcanic breccia allied to kimberlite. His last work was an interesting history, 'The birth of the diamond industry in South Africa', the publication of which in parts in 'The South African Mining and Engineering Journal' [Min. Abstr., vol. 4, p. 293] commenced only shortly before his death. The honorary degree of Doctor of Science was conferred on him by the University of the Witwatersrand in 1927. (Obituary notices in *S. African Mining and Engin. Journal*, 1929, vol. 40, p. 34, with portrait; *Mining and Industrial Magazine of South Africa*, 1929, vol. 9, p. 72; H. S. Harger, *Trans. Geol. Soc. S. Africa*, vol. 33 (for 1930), pp. 19–30, with bibliography and portrait.)

GIANNOTTI (Carlo) [1897–1929], since 1922 assistant in the Mineralogical Institute in the University of Pisa, was killed in an aeroplane accident on October 16, 1929. He was born at Pieve Fosciana, Lucca, on December 21, 1897, and, after serving in the war as an observation officer in aeroplanes, he studied at Pisa and

Firenze. His few papers have recently been noticed in 'Mineralogical Abstracts', vol. 4, pp. 55, 82, 153, 299. (G. D'Achiardi, Atti (Proc. Verb.) Soc. Toscana Sci. Nat., 1929, vol. 38, preprint 4 pp.)

GLINKA (Konstantin Dmitrievich), Глинка (Константин Дмитриевич) [1867–1927], Russian pedologist, was born at Smolensk, and died at Leningrad on November 2, 1927. After studying at St. Petersburg and Moskva, he became in 1894 assistant, in 1895 assistant professor in mineralogy and geology, in 1900 also professor of pedology, and later director of the Agricultural Institute at Nova-Alexandria, govt. Lublin (now Puławy in Poland). In 1913 and 1922 he was director of the Agricultural Institute in Voronezh and Leningrad respectively. In connexion with his work on the mineralogy of soils he studied the alteration of minerals and the weathering of rocks. Hydrothomsonite [Min. Mag., 15–422] was described as a zeolite occurring in soils. (Obituary notices by V. V. Polynov, Priroda [= Nature], Leningrad, 1927, no. 12, pp. 935–942, with portrait; Sir E. J. Russell, Nature, London, 1927, vol. 120, pp. 887–888.)

GRAVES (John) [1842–1928], mineral dealer of Frizington, Cumberland, was born on March 12, 1842, at Langdale in the Lake District, and he died at an advanced age on December 3, 1928, at Frizington. When a young man he went to work as a miner in the west Cumberland iron mines, at a time when beautiful crystallized specimens of calcite and barytes were found in almost superfluous abundance. Seizing the opportunity, he collected these in large quantities and supplied dealers and museums all over the world. He thus did good work in preserving material which would otherwise have been largely destroyed and lost. At the time of the writer's first visit to Frizington in 1886 Graves had a large stock of minerals and a flourishing business.

GROTH (Paul Heinrich Ritter von) [1843–1927], a well-known teacher and leader in mineralogy and crystallography, was born at Magdeburg in Preussen on June 23, 1843, but his childhood was spent at Dresden in Sachsen, where his father was a portrait painter. He died at München in Bayern on December 2, 1927, at the ripe age of 84. After studying at the Polytechnic School at Dresden, he passed in 1862 to the Mining Academy at Freiberg in Sachsen, where he was a pupil of Breithaupt. In 1865 he migrated to the University of Berlin, studying physics and crystallography under Gustav Rose,

and he graduated from there in 1868. During 1868-70 he was assistant in physics at Berlin, and during 1870-1872 teacher of mineralogy and geology in the Mining Academy at Freiberg. In 1872 he was appointed Professor of Mineralogy in the reorganized University at Strasbourg in Alsace, and in 1883 he was transferred to München as successor to F. von Kobell. The latter post, which included also the charge of the State Collection of Minerals attached to the University, he held till 1924, retiring at the age of 81. Both in Strasbourg and in München his laboratory was for many years the centre of training for mineralogists from all parts of the world. He was an inspiring teacher, and holding a unique position as a leader he did more than any one else in co-ordinating and stabilizing crystallographic nomenclature and methods.

Groth's list of original scientific papers is a comparatively short one, the reason for this being that he always handed over a problem to his many advanced students, and in the publication of the results his name never appeared as joint-author, although he had actually directed the work. His first mineralogical paper, in 1866, was on an altered sphene from the syenite of Plauen near Dresden, to which J. D. Dana in 1867 applied the name *grothite*.² His doctor's dissertation in 1868 was on the isomorphism of the perchlorates and permanganates. Between that time and 1872 he published several papers on the relation between chemical composition and crystalline form, for example, amongst the derivatives of benzene, and it was then that he conceived the idea



P. GROTH (in 1893).¹

¹ The above portrait showing Groth in his prime is reproduced from a photograph purchased by the writer in München in 1893, when a student under Groth. In those days photographs of professors were almost as popular as those of actresses, and both sorts were displayed together in many of the shop-windows.

² *Grothine*, of F. Zambonini, 1913, is another ill-defined mineral named after Groth. Distinguished mineralogists have been rather unfortunate in the minerals that have been named after them; and also, it may be said, they have often erred with the minerals that they have themselves described as new.

of morphotrophy. Chemical crystallography was the key-note of all his later work.

In other directions Groth did good and useful work in publishing standard text-books and works of reference. His 'Tabellarische Übersicht der einfachen Mineralien' (1874) and his 'Physikalische Krystallographie' (1876) each passed through four editions, with translations in other languages, and his monumental work 'Chemische Krystallographie' (5 vols., 1906-1919) brought together all the known crystallographic data relating to 7,350 substances. Other books deal with gem-stones, the Strasbourg and München mineral collections, 'Einleitung in die chemische Krystallographie' (1904), and lastly in 1926 an interesting history 'Entwicklungsgeschichte der mineralogischen Wissenschaften' [Min. Abstr., 3-223] which he was particularly fitted to write. In 1877 he founded the 'Zeitschrift für Krystallographie und Mineralogie', which he edited until 1920 (vols. 1-55). In this work he obtained the willing co-operation of workers in all countries, and an excellent abstract review of the current literature was followed by detailed indexes which much simplified bibliographical search. This periodical, commonly known as 'Groth's Zeitschrift', has been carried on since 1921 by P. Niggli under the title 'Zeitschrift für Kristallographie', and in marking its jubilee Groth gave in vol. 66, only shortly before his death, an interesting review of the work that had been done [Min. Abstr., 3-467].

The honours bestowed on Groth were not undeserved, for his name will for ever stand out as a landmark in the history of crystallography. He was knighted in 1903, but he always preferred to style himself P. Groth. He was an honorary member of our Society for over fifty years (elected March, 1877), a foreign member of the Royal Society of London since 1911, and an honorary life fellow of the Mineralogical Society of America (1926). He was elected a foreign correspondent of the Geological Society of London in 1895, a foreign member in 1900, and in 1908 received its highest award, the Wollaston Medal. The honorary degree of Sc.D. was conferred on him at Cambridge in 1904, and he was also honorary Ph.D. of Genève and Praha. In 1904 his portrait, painted by Prof. E. Grützner, was presented to him on behalf of 273 individual admirers [Min. Mag., 14-66].

A 'Festband P. H. v. Groth' (= Zeits. Krist., vol. 58) was published in 1923 on the occasion of his eightieth birthday; this

contains a short biographical note, a portrait, and a bibliography of 69 titles of his published works for the period 1866–1921. (Obituary notices by Sir H. A. Miers, *Nature*, London, 1928, vol. 121, pp. 98, 107; *Proc. Roy. Soc. London*, Ser. A, 1928, vol. 119, pp. xx–xxii, with portrait. E. H. Kraus, *Science*, New York, 1928, vol. 67, pp. 150–152; *Amer. Min.*, 1928, vol. 13, pp. 93–96, with portrait. H. Steinmetz, *Ber. Deutsch. Chem. Gesell.*, 1928, vol. 61, Abt. A, pp. 65–68, with portrait. B. Mauritz, *Földtani Közlöny*, Budapest, 1929, vol. 58 (for 1928), pp. 29, 162–163.)

HENSON (Samuel) [1848–1930], mineral and gem dealer, was born in London on September 22, 1848, and died at Chislehurst, Kent, on June 9, 1930. His father, Robert Henson,¹ had established a mineral business in 1840, and this was carried on by the son, first in the Strand and later in Regent Street, London. Since 1878 he had supplied a constant stream of carefully selected specimens for the British Museum collection of minerals. He had been a member of our Society for over fifty years (elected 1879), and in 1883 he contributed to the Magazine a short note on a fine crystal of apatite (now in the British Museum). His wife, Fanny Henson, also had a good knowledge of minerals and assisted in the business, and was also for some years, 1910–17, a member of our Society. She died in 1926.

HIORTDAHL (Thorstein Hallager) [1839–1925], since 1872 Professor of Chemistry in the University of Kristiania (now Oslo), was born at Bergen on May 4, 1839, and died on October 29, 1925. He had studied in Paris under H. Sainte-Claire Deville and A. Des Cloizeaux, and at one time was assistant under T. Kjerulf in the mineral collection at Kristiania. He analysed several minerals and also the Tysnes meteorite, and determined the crystalline forms of homologous series of organic compounds. For several years he was one of the editors of the Norwegian journal 'Nyt Magazin for Naturvidenskaberne'. The mineral hiortdahlite was named after him by W. C. Brøgger in 1889. (V. M. Goldschmidt, *Vid. Akad. Årbok*, Oslo, 1926, pp. 65–69.)

HIRSCHWALD (Julius) [1845–1928], since 1879 Professor of Mineralogy in the Technical High School, Charlottenburg, Berlin, was born on February 14, 1845, at Lauenburg in Pommern, and died on April 14, 1928, while on his return from a holiday cruise to

¹ Robert Henson [1814–1864] started as an assistant to James Tennant [1808–1881].

Tenerife. He studied at Danzig, Berlin, and Zürich, and graduated at Tübingen in 1868 with a crystallographic dissertation. He joined the old Trade School (Gewerbeakademie) in Berlin which by amalgamation with the School of Architecture (Bauakademie) formed the Charlottenburg Institute in 1879, of which he was the first professor of mineralogy and geology, then attached to the division of chemistry and metallurgy. There he built up a good mineral collection, the most important acquisition being the collection of Friedrich Tamnau (1802–1879). Later, he devoted much attention to the study of building stones, starting a collection and a laboratory for testing the materials, and on this subject he wrote several reports and textbooks. On his retirement in 1926, this was divided up and the mineralogy and geology was amalgamated with the mineralogy and petrography of the Mining Academy to form a new Institute for Mineralogy and Petrography. (K. H. Scheumann, *Centralblatt Min.*, Abt. A, 1928, pp. 242–252, with bibliography.)

KIŠPATIĆ (Mišo = Mijo = Mijat = Mihály = Michael)¹ [1851–1926], since 1894 director of the mineralogical and petrographical section of the Croatian National Museum at Zagreb (= Agram) in Yugoslavia. He was also from 1896 to 1918 Professor of Mineralogy and Petrography in the University of Zagreb, in which post he was succeeded by Fran Tućan. He was born at Osijek (= Eszék = Esseg) in Slavonia on September 21, 1851, and died at Zagreb on May 17, 1926. He wrote several papers on the rocks and minerals of Croatia and Bosnia, and did much to popularize the study of natural sciences in Yugoslavia. In a detailed study of the bauxite deposits of the Croatian Karst region he proposed the name sporogelite for a constituent of the bauxite. (Obituary notice in *Priroda*, popularni časopis hrv. prirodoslovnog društva u Zagrebu, 1926, vol. 16, pp. 129–130, with portrait.)

KRITO (Benedict) [1841–1928], a well-known assayer, was one of the founders and an original member of council of this Society in 1876. He was also a founder and trustee of the Institution of Mining and Metallurgy in 1892, and a fellow of the Geological Society since 1873. He was born at Breage in Cornwall on February 9, 1841, and died in London on May 13, 1928, at the

¹ The various equivalent forms were used following the language (Croatian, Serbian, Slovene, Hungarian, or German) in which his published papers were written.

advanced age of 87. He attended classes at the old College of Chemistry and at the Royal School of Mines in London, and for some years (1872–1880) was lecturer and assistant secretary to the Cornwall and Devon Miners' Association. In 1881–1882 and 1892–1928 he was public analyst for the county of Cornwall, and from 1882 to 1887 chief chemist and assayer in London to the Rio Tinto Mining Company. In 1887 he established a practice in London as assayer, analyst, and consulting chemist and mineralogist, which is still carried on as Benedict Kitto & Sons.

KOCH (Antal = Anton, *of Bodrog*) [1843–1927], Hungarian geologist, was born at Zombor, Hungary (now Sombor in Yugoslavia) on January 7, 1843, and died on February 8, 1927. He studied in the University of Budapest, where he was later assistant to J. Szabó. He joined the Hungarian Geological Survey in 1869, and in 1872 was appointed Professor of Mineralogy, Geology, and Palaeontology in the University of Kolozsvár in Transylvania (now Cluj in Rumania). Later, from 1895 to 1913, he was Professor of Geology and Palaeontology in the University of Budapest, and when pensioned in 1913 he was raised to the nobility with the title Dr. Bodrogi Koch Antal. Most of his work, presented in 220 papers, was done during the period 1872–1895 in Kolozsvár. In the andesites of Arany in Transylvania (now Uroiul in Rumania) he described various minerals of late volcanic origin, including the two he named pseudobrookite and szaboite. The Geological Society of London elected him a foreign correspondent in 1897 and a foreign member in 1903. (*M. Pálffy, Földtani Közlöny, Budapest, 1929, vol. 58 (for 1928), pp. 7–14, 149–151, with portrait.*)

LIVERSIDGE (Archibald) [1847–1927], for many years (1872–1907) Professor of Chemistry and Mineralogy in the University of Sydney, New South Wales, was born at Turnham Green, London, on November 17, 1847,¹ and died at his home at Kingston, Surrey, on September 26, 1927. He studied at the old College of Chemistry in 1866, and in 1867 entered the Royal School of Mines, London, with a Royal Exhibition, taking the associateship (A.R.S.M.) in mining and metallurgy in 1870. In that year he gained a science scholarship at Christ's College, Cambridge. During his first year at Cambridge he acted as deputy demonstrator in chemistry (for J. W. Hicks, afterwards Bishop of Bloemfontein), and before taking his degree he was

¹ The year of birth has been in some places erroneously given as 1846.

elected Professor of Chemistry and Mineralogy in the University of Sydney. The Cambridge degree of honorary M.A. was given to him in 1887. He did much for the advancement of science in Australia, where he occupied many public positions. He also accomplished a large amount of original work in chemistry and mineralogy; and after he returned to London in 1908 he continued to work in his private laboratory. His first paper, in 1870, was on supersaturated

solutions, and in 1872, soon after his arrival in Sydney, he gave a description of the Barratta meteorite. Several other Australian meteorites were subsequently analysed and described by him. His excellent book, 'The minerals of New South Wales' (third edition, 1888), was an extension of an early paper in 1874 in the Transactions of the Royal Society of New South Wales.



A. LIVERSIDGE (in 1899).

Professor Liversidge was a keen collector and he showed his collection at several international exhibitions. The better examples of Australian gemstones he gave some years ago to the Australian Museum at Sydney, and the

main part of his large collection of Australian minerals, ores, and rocks, together with many meteorites and sections of gold nuggets which he had figured and described, was bequeathed to the British Museum. Being a bachelor, he left endowments for scholarships to the University of Sydney, Christ's College at Cambridge, and the Royal School of Mines in London, and funds to the Royal Society of New South Wales, the Australian Association for the Advancement of Science, and the Chemical Society of London. He was an original (1876) member of our Society, and was elected F.R.S. in 1882. (Obituary notices in *Nature*, London, 1927, vol. 120, pp. 625-626; *Journ. Roy. Soc. N.S.W.*, 1929, vol. 62 (for 1928), pp. 8-10 (reprinted from *The Times*, London, September 28, 1927); Sir T. W. E. David, *Proc. Roy. Soc. London*, Ser. A, 1930, vol. 126, pp. xii-xiv, with portrait).

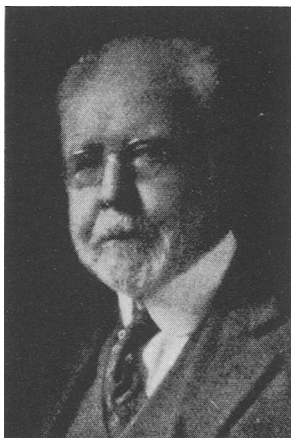
LUQUER (Lea McIlvaine) [1864-1930], tutor and associate professor of mineralogy in Columbia University, New York City, from

1887 to 1925, was born at Brooklyn, New York, on September 4, 1864, and died on January 30, 1930. In association with the late Professor A. J. Moses [1859–1906] at Columbia University he did some useful mineralogical work. Since then he published in 1908 a third edition of his book, 'Minerals in rock sections', which first appeared in 1898. He married a rich wife and had social duties to perform.

MAUCHER (Wilhelm) [1879–1930], mineral dealer in München (= Munich), was born at Winterstettenstadt in Württemberg on June 15, 1879, and died in München on May 4, 1830. After a school education in Württemberg, he entered the Mining Academy at Freiberg in Sachsen, where in 1901 he gained the diploma in engineering. A short time was spent in smelting works in Saxony and he then returned to the Freiberg Academy to succeed H. Zinkeisen as Faktor of the Mineralien-Niederlage, which had been primarily founded to supply the students with specimens and afterwards developed into a business for the sale of minerals generally. In 1909 he established a mineral business of his own in München: this will be carried on by his two sons. The many good specimens which since 1905 he supplied for the British Museum mineral collection were accompanied with detailed labels often with neat drawings of the crystals. While at Freiberg he issued pamphlets for the use of students, a very suggestive one dealing with the order of deposition of various minerals in metalliferous veins ('Die Bildungsreihe der Mineralien'. Freiberg, 1914). Later, in 1924, he wrote on the influence of gravity on the growth of crystals. The mineral maucherite (Ni_3As_2) was named after him by F. Grünling in 1913. His portrait appears in the group taken at the time of the Society's Jubilee in 1926 (Min. Mag., vol. 22, pl. 2).

MERRILL (George Perkins) [1854–1929], for many years Head Curator of Geology in the United States National Museum at Washington, D.C., was born on May 31, 1854, at Auburn in Maine, and he died there suddenly of a heart attack on August 15, 1929. After graduating at the University of Maine in 1879, he became in 1881 curator of mineralogy in the United States National Museum, and in 1897 head curator of the division of geology, an appointment which he held till the end. There he did remarkably good work in gathering together material on a large scale and displaying it

effectively. The economic collections which he installed are probably the best that are to be seen in any museum. In connexion with this work he wrote a useful book, 'The non-metallic minerals, their occurrence and uses' (1904 and 1910), which was one of the first and best books on economic minerals; also 'Stones for building and decoration' (three editions, 1891, 1897, and 1903), and 'Treatise on rocks, rock-weathering and soils' (1897, 1907). Excellent handbooks



GEORGE P. MERRILL (in 1927).

and descriptive catalogues were also issued of the important collections of gems and precious stones (1922) and of meteorites (1916). Other useful books are his 'History of American geology' (1906) and 'History of American state geological and natural history surveys' (1920), in which are collected many biographical details and portraits. In addition to all this work, he had for many years made a special study of meteorites, and in a series of sixty papers he had described as many as forty new falls. He did much to make the national collection one of the great meteorite collections of the world.

The meteoritic mineral merrillite was named after him. From 1893 till 1916 he was also Professor of Geology and Mineralogy in the George Washington University. A complementary dinner was given to Dr. Merrill on the occasion of his seventy-fifth birthday on May 31, 1929, an account of which appeared in 'Science' (New York, 1929, vol. 70, pp. 122-123), and in sad contrast the same journal gave a few weeks later an obituary notice (vol. 70, pp. 274-275). (M. Benjamin, Amer. Journ. Sci., 1929, ser. 5, vol. 18, p. 364.)

MICHEL (Léopold Jean) [1846-1919] was born on July 20, 1846, at Riaucourt, Haute-Marne, where his father was manager of the ironworks, and he died on October 1, 1919. He entered the School of Mines in Paris in 1867 and had just finished his course when the war of 1870 broke out; he also went through the war of 1914-1918, after which he was promoted to officer of the Légion d'honneur. For some years after 1870 he was engaged in the working of iron-ores,

but gave this up to enter the laboratories of C. Friedel and Haute-feuille in the University of Paris, where in 1880 he became assistant and later (1900) assistant professor in mineralogy. A thesis for the degree of doctor in 1889 dealt with the crystallography of a number of tungstates, molybdates, selenates, and tellurates. L. Michel prepared artificially a number of minerals, and described haute-feuillite as a new species. He was twice (1903 and 1919) President of the French Mineralogical Society. This belated notice is based on one by J. OrceI, *Bull. Soc. Franç. Min.*, 1929, vol. 52, pp. 8-14, with bibliography.

MILCH (Ludwig) [1867-1928], since 1917 Professor of Mineralogy in the University of Breslau, was born at Breslau on August 4, 1867, and died there from a stroke on January 6, 1928. Educated at Breslau, he was assistant there in mineralogy and geology, and in 1906 succeeded E. Cohen as Professor of Mineralogy in the University of Greifswald, returning to Breslau in 1917 as successor to C. Hintze. His main work was petrographical—on the diabase-schists of the Taunus Mts. (1889) 'Verrucano' of the Alps (1892, 1896), rocks from Paraguay (1893, 1895), Sumatra (1899), &c. He described as new minerals lossenite and hintzeite; the latter, named after C. Hintze, was also independently described in the same year and curiously named heintzite. Milch was Victor Goldschmidt's first pupil at Heidelberg, and he acted as editor of the 'Festschrift Victor Goldschmidt' (1928), which was completed though not issued at the time of his sudden death.

NORDENSKJÖLD (Nils Otto Gustaf) [1869-1928], explorer, nephew of Baron A. E. Nordenskjöld, was born at Sjögelö, Småland, on December 6, 1869, and died as the result of a street accident on June 2, 1928. He studied at Upsala, first chemistry and afterwards geology, and from 1894-1906 he was assistant in mineralogy and geology. Since 1905 he was Professor of Geography and Ethnography in the University of Göteborg (= Gothenburg). His early papers were chemical and on the crystallography of organic compounds, and he gave a chemical analysis of the Lundsgård meteorite. Other rather later papers were petrographical and on ore-deposits, and a good account of the mineral edingtonite from Sweden. In 1895-1897 Otto Nordenskjöld was leader of the Swedish expedition to the Magellan territories, and in 1901-1903 of the Swedish Antarctic

expedition. (A. Hamberg, *Geol. För. Förh.* Stockholm, 1928, vol. 50, pp. 469-471. H. R. Mill, *Nature*, London, 1928, vol. 121, pp. 1026-1027.)

PEARCE (Richard) [1837-1927], a successful metallurgist, was born at Barrripper, near Camborne in Cornwall, on June 29, 1837, and died in London on May 18, 1927. Leaving school at the age of



RICHARD PEARCE (in 1916).

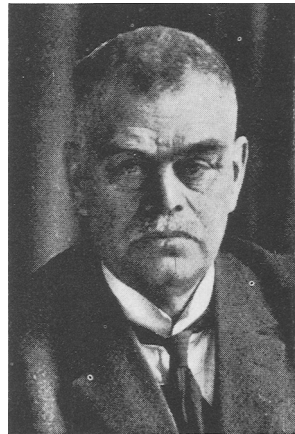
fourteen he worked with his father as a tin-dresser at the Dolcoath mine, but attending evening classes at the Truro Mining School he soon advanced himself to the position of assistant in chemistry. When the school closed in 1848 he returned to Dolcoath as assayer. With another revival of the Cornish mining schools in 1858 he started classes at the St. Just centre and during the winter at the Royal Institution of Cornwall. During that period of teaching he studied for a year (1859-1860) at the Royal School of Mines in Jermyn Street, London, under John Percy and A. W. von Hofmann. In 1865 he was

commissioned to erect a smelter at Swansea in South Wales, and in that connexion he visited the works at Freiberg and Eisleben in Germany, where he first met S. F. Emmons. He visited Colorado in 1871 and migrated there in 1872 in the early days of mining in that region. There he erected smelters at Empire, Black Hawk, Argo near Denver, and at Butte in Montana. Large quantities of silver and gold were extracted from the copper ores by a new process devised by him. With the group of well-known men, W. F. Hillebrand, Whitman Cross, and S. F. Emmons, he was one of the founders, in 1882, of the Colorado Scientific Society, of which he was twice President. In 1885 he was appointed British Vice-Consul at Denver. In 1889 and 1890 he was President of the American Institute of Mining Engineers, and in 1890 was given the honorary degree of Ph.D. of Columbia University, New York City. Returning to England in 1902, he erected a smelter at Bootle near Liverpool for the treatment of Bolivian and Nigerian tin ores [see *Min. Mag.*, vol. 19, p. 116], and he finally settled in London in 1915. He was

President of the Royal Institution of Cornwall in 1908–1909 and of the Royal Geological Society of Cornwall in 1905–1906.

Dr. Richard Pearce, during the course of a busy life as works manager, contributed many short papers and notes on minerals and crystallized furnace products, particularly in the Proceedings of the Colorado Scientific Society and in Cornish journals, and in 1907 he wrote on cassiterite pseudomorphs from Bolivia in this Magazine. In 1884 he noticed the presence of crystallized copper arsenates in the cargoes of ore sent for smelting from the Tintic district in Utah; and as long ago as 1871 he discovered pitchblende in Colorado, a mineral which he had previously found in Dolcoath mine, Cornwall. The mineral vandiestite was first described by him in 1898, and pearceite was named after him by S. L. Penfield in 1896. He had for many years been a generous donor of specimens to the mineral collection of the British Museum, and in 1924 he gave a handsome contribution to the publication fund of our Society, of which he had been a member since 1880. He was a Fellow of the Geological Society of London since 1869.

RAMSAY (Wilhelm) [1865–1928], Professor of Geology and Mineralogy in the University of Helsingfors (= Helsinki), was born at Dragsfjärd, Finland, on January 20, 1865, and died on January 8, 1928. He was of Scottish descent from a branch of the Dalhousie Ramsays that settled in Finland in the sixteenth century. His mother was a daughter of G. S. Tham, Director of the Mining School at Falun in Sweden, where his father had been a student. After studying under F. J. Wiik at Helsingfors, he derived much benefit under W. C. Brøgger in the Technical High School at Stockholm (1885–1887), and he afterwards worked for short periods at the Universities of Berlin (under C. Klein), München (P. Groth), Heidelberg (H. Rosenbusch), Wien (G. Tschermak), Göttingen (T. Liebisch), and Paris (F. Fouqué). His first paper, in 1885, was on the variations in the optical characters of milarite with changes of tem-



WILHELM RAMSAY.

perature, and he did important work on the pleochroism and absorption of light in epidote. As geologist he took part in seven Finnish expeditions (1887-1914) to the Kola peninsula in Russian Lapland, where in the nepheline-syenite districts he discovered new minerals and new rock types. A mineral from there has since (1922) been named ramsayite. He also did exploration work in the Kanin peninsula and in Karelia in northern Russia, and was an authority on the geology of Fennoscandia. After acting as assistant and as deputy he succeeded his old teacher F. J. Wiik in 1899, after whom he had named the mineral wiikite. (J. J. Sederholm, *Årsbok Soc. Sci. Fennica*, 1928, vol. 6 B, no. 6, 27 pp., with portrait. L. H. Borgström, *Förh. & Meddel. Svenska Tekniska Vetenskapsakad. i Finland*, 1929, no. 5 (7), 26 pp., with portrait. A. Hamberg, *Geol. För. Förh. Stockholm*, 1928, vol. 50, pp. 111-112.)

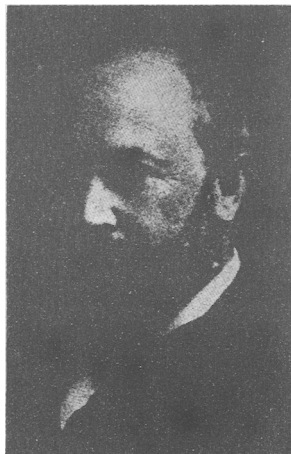
ROCCATI (Alessandro) [1872-1928] was born in Paris on August 1, 1872, of Piedmontese parents, and died on August 14, 1928 at Carmagnola in Piemonte, of which town he was mayor for several years. He studied in France and graduated at Torino, where in the Mineralogical Institute of the University he acted as voluntary assistant to G. Spezia. He was also assistant in applied geology in the Royal School of Engineering at Torino, and in 1908 was placed in charge of the laboratory of mineralogy, lithology, and constructional materials. He made an exhaustive study of the crystalline rocks of the Italian Alps, and in this connexion described various mineral occurrences. As geologist and mineralogist he accompanied the Duke of Abruzzi's expedition in 1906 to Uganda and Mt. Ruwenzori, and he also described the rocks collected on the duke's expedition to the Himalayas and the Karakoram Mts. In Brazil he examined the zirconia deposits, and he edited and published J. B. de Araujo Ferraz's fragmentary notes for a mineralogy of Brazil [*Min. Abstr.* 3-446]. (A. Pelloux, *Bull. Soc. Franç. Min.*, 1929, vol. 52, pp. 71-73.)

SCACCHI (Eugenio) [1854-1929], Professor of Mineralogy and Director of the Mineralogical Museum in the University of Napoli, was born on October 8, 1854 and died on February 8, 1929. He was the son of Arcangelo Scacchi (1810-1893), who was professor at Napoli since 1842. After acting as assistant in mineralogy at Napoli from 1880, he was assistant professor at Genoa in 1890, returning to Napoli in 1891, where he was appointed full professor in 1895.

Compared with the large amount of important work done by his father, his published work was small in amount, his few papers, published mostly during the eighties of last century, dealing mainly with Vesuvian and other Italian minerals and the crystallography of organic compounds and fluomolybdates. (F. Zambonini, *Rend. R. Accad. Sci. Fis. Mat. Napoli*, 1930, ser. 3, vol. 35 (for 1929), reprint 3 pp., with portrait.)

SCHAFARZIK (Ferenc = Franz) [1854–1927], for many years Professor of Mineralogy and Geology in the Polytechnic at Budapest, was born at Debreczen in Hungary on March 20, 1854, and died on September 5, 1927. After studying in the University of Budapest, he was assistant there (1876–1882) to J. Szabó, and from 1882 he worked for twenty-two years on the staff of the Geological Survey of Hungary. From 1891 he was also privat-docent in the Polytechnic where in 1904 he succeeded S. Schmidt as professor, retiring in 1926. He wrote many papers on the geology and petrography of Hungary, especially of the southern Carpathians, and also a few on minerals. The mineral schafarzikite was named after him by J. S. Krenner in 1921. (A. Vendl, *Math. Naturwiss. Ber. aus Ungarn*, 1928, vol. 34 (for 1926–1927), pp. 5–6. K. Roth von Telegd, *Földtani Közlöny*, Budapest, 1929, vol. 58 (for 1928), pp. 16–23, 152–160, with portrait.)

SCHOENFLIES¹ (Arthur Moritz) [1853–1928], mathematician, was born at Landsberg on the Warthe in Preussen on April 17, 1853, and died at Frankfurt am Main on May 27, 1928. He graduated at Berlin in 1877 and after some years of school teaching he was Professor of Mathematics successively at Göttingen, Königsberg, and since 1911 at Frankfurt am Main. At the last place he was Rector of the new University during the difficult years of the war. His many mathematical papers dealt mainly with geometrical problems,



A. SCHOENFLIES.

¹ The name has sometimes been written Schönflies, and incorrectly as Schönfliess, but he himself always used the form Schoenflies.

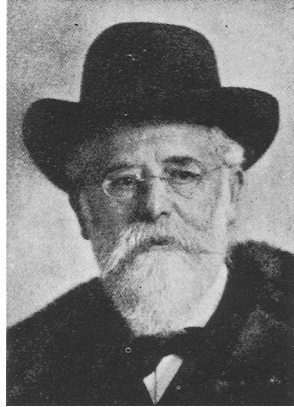
and in 1887 he published one on groups of movements. In his classic book 'Krystallsysteme und Krystallstruktur' (1891) he established independently of E. S. Fedorov (1890) and W. Barlow (1894) the 230 space-groups. The notation for the space-groups which he then proposed is now universally used in connexion with the intensive work that is being done on crystal-structure by the aid of X-ray methods. What is really a second edition of his earlier book appeared in 1923 under the title 'Theorie der Kristallstruktur' [Min. Abstr. vol. 2, p. 145].

SCHULZ (Karl) [1885-1928] was born at Berlin on September 17, 1885, and died on May 11, 1928. He studied at Berlin under C. Klein and graduated in 1909 with a dissertation on the petrography of Korea. After acting for a short time as assistant to T. Liebisch in the Mineralogical Institute of the University of Berlin, he spent some years as a schoolmaster, returning again in 1924 as a voluntary assistant in the Mineralogical Institute. His elaborate compilations of the thermal constants of minerals and rocks were published in the Fortschr. Min. Krist. Petr., vols. 2-9 (1912-1924). The section on phosphates, &c., in C. Hintze's 'Handbuch der Mineralogie' was contributed by him, and he wrote on educational methods in mineralogy. (W. Hartwig, Fortschr. Min. Krist. Petr., 1929, vol. 13, pp. 313-320, with bibliography.)

TOBORFFY (Zoltán) [1883-1927], privat-docent in the University and teacher in the City High School at Budapest, was born on March 31, 1883, and died on May 18, 1927. Between 1903 and 1912 he produced a number of good mineralogical papers, and in 1916 presented a prize essay on the micas before the Hungarian Society of Natural Sciences [Min. Abstr. vol. 1, p. 392]. (Földtani Közlöny, Budapest, 1927, vol. 57, pp. 2, 93.)

TSCHERMAK (Gustav von) [1836-1927], the veteran Austrian mineralogist, was born at Litovel (= Littau) near Olomouc (= Olmütz) in Moravia (= Morava = Mähren) on April 19, 1836, and died at Wien (= Vienna) on May 4, 1927, at the advanced age of 91. His father Ignaz Czermak (or rather Čermák, meaning in Czech, redbreast, robin) was a tax-collector. As a schoolboy at Olomouc he was marked by his independence and enterprise, and he there started a German students' union against the threatened Slav agitation and also a natural history society. It was at that time

that he adopted the German form of spelling of his name. In 1856 he went to the University of Wien, where he later became assistant to F. X. M. Zippe. Graduating at Tübingen in 1860, he returned to Wien as *privat-docent* in chemistry and mineralogy. In 1862 he was appointed second curator, and in 1868 director, of the Hof-mineralien-Kabinet in Wien, from which position he retired in 1877 when the collection became part of the Royal Natural History Museum. During that period he made important additions to the famous mineral and meteorite collections. In 1868 he was extra Professor of Petrography and from 1873 ordinary Professor of Mineralogy and Petrography in the University of Wien. On the occasion of his retirement from active teaching in 1906 he was raised to the rank of the nobility with the hereditary title Edler von Seysenegg, and his name sometimes appears in the form Tschermak-Seysenegg. But after his retirement he still continued to work almost every day in the Mineralogical Institute. The war left him in straitened



G. TSCHERMAK (in 1906).

circumstances, and help was very generously given to him until the end by American mineralogists through Prof. E. S. Dana, who had studied at Wien in 1873–1874.

Tschermak's earlier papers were petrographical, the first, in 1856, on trachytes from Moravia, and a monograph in 1867 (published afterwards as a book in 1869) on the porphyritic rocks of Austria. In the Royal Society's 'Catalogue of Scientific Papers' he is credited with 130 titles up to the year 1900, these dealing mainly with minerals and meteorites. He produced a number of classic papers on the chemical constitution of various groups of silicate minerals, the results of which have been familiar in the text-books for more than a generation past. These include the plagioclase feldspars (1865), the pyroxene and amphibole groups (1871), the micas (1877, 1878), zoisite-epidote group (1880), scapolites (1884, 1886), brittle micas (1889), chlorites (1890), vermiculites (1891), tourmaline (1899), zeolites (1917, 1918), and idocrase (1918). In later years, with the help of his pupils (including his daughter Silvia Hillebrand) he

endeavoured to determine the composition of silicic acids isolated from natural silicates. He is also well known through the important journal he founded, which as 'Mineralogische Mittheilungen' was first issued (1872-1877) in quarto form as a supplement to the 'Jahrbuch' of the Austrian Geological Survey, followed by the new series 'Mineralogische und Petrographische Mittheilungen' in octavo form from 1878 till 1889, since when it was continued under the editorship of F. Becke as 'Tscherma's Mineralogische und Petrographische Mittheilungen'. His 'Grundriss der Mineralogie' for schools was published in 1863, and his well-known 'Lehrbuch der Mineralogie' first appeared in parts during 1881-1884, reaching a sixth edition in 1905, and a ninth edition by F. Becke in 1923.

Tschermak was an honorary member of many academies and scientific societies; of our Society since 1879, and of the Geological Society of London since 1875. He was Rector of the University of Wien in 1893. In 1901 he was one of the founders of the Wien Mineralogical Society and its first President. The mineral named after him 'tschermakite' by F. von Kobell in 1873 was afterwards proved to be identical with albite. Of the minerals named by Tschermak himself mention may be made of ludwigite and the meteoritic feldspar maskelynite.

A 'Tschermak-Heft' with portrait was issued in 1906 (Tsch. Min. Petr. Mitt., vol. 25) on the occasion of his seventieth birthday. (Obituary notices by F. Becke, Tsch. Min. Petr. Mitt., 1928, vol. 39, pp. i-x; Almanach Akad. Wiss. Wien, 1927, pp. 187-195. J. W. Evans, Nature, London, 1927, vol. 120, pp. 195-196. A. Himmelsbauer, Verh. Geol. Bundesanstalt, Wien, 1927, pp. 149-151. B. Mauritz, Földtani Közlöny, Budapest, 1929, vol. 58 (for 1928), pp. 27-28, 161-162. E. S. Dana, Amer. Journ. Sci., 1927, ser. 5, vol. 14, p. 87; Amer. Min., 1927, vol. 12, p. 293, with portrait.)

TULLY (Bristow John) [1879-1929], gem expert and jeweller, was a member of our Society since 1921 and of the Geological Society of London since 1906. He was born in London on March 2, 1879, and died suddenly on February 12, 1929. Educated at Barker's School, Windsor, and at King's College, London, he early entered the jewellery trade and attended evening classes at the London County Council School of Arts and Crafts, where in 1901 he was awarded a bronze medal for goldsmith's work. He took an active interest in the scientific aspects of gem-stones, and under the auspices of the

National Association of Goldsmiths he gave instruction classes on gemmology, acting later as examiner for giving certificates and diplomas to working jewellers. A very useful form of refractometer especially suitable for determining gem-stones was designed by him and described in this Magazine (vol. 21, p. 324).

VAUX (George, *Junior*) [1863–1927], lawyer and mineral collector, was born at Philadelphia on December 18, 1863, and died at Bryn Mawr, Pennsylvania, on October 24, 1927. He was the ninth George Vaux of an old Quaker family. The first George was deprived of his property in 1661 after the restoration of Charles II, and three later Georges were physicians in Reigate and London. A branch of the family went to Philadelphia in 1771, where later the seventh George became a prominent lawyer. George Vaux, Jr., was distinguished by his many legal, religious, educational, scientific, and philanthropic activities. Since 1907 he was chairman of the Board of Indian



GEORGE VAUX JR.

Commissioners and he had an intimate knowledge of the American Indians. Since 1894 he was treasurer and later a trustee of the Academy of Natural Sciences of Philadelphia. He collected minerals as a boy, following the example of his uncle William S. Vaux, whose fine collection was bequeathed to the Philadelphia Academy in 1882, where the mineral collection is still known as the William S. Vaux collection. This has been considerably added to through the influence of George Vaux, Jr., especially during recent years by the collecting expeditions of S. G. Gordon to Bolivia, Peru, Chile, and Greenland. His own private collection was housed in a special wing of his beautiful home at Bryn Mawr, Pennsylvania, where it is still kept in order by Mrs. Vaux for the benefit of her two sons (one of them the tenth George Vaux). The writer was privileged in 1924 to enjoy the kind hospitality of the Vaux family and was much impressed with the orderly arrangement of the large collection and the fine display made by suites of specimens. Specially noteworthy is the fine series of proustites from Chañarcillo, Chile,

which are no doubt the finest in existence. They were acquired by William S. Vaux after the Philadelphia Exhibition of 1876, and include a single crystal six inches in length and a twin group resembling a cross. Mr. Vaux was for several years President of the Philadelphia Mineralogical Society, and he was a member of our Society since 1922. He published only three short mineralogical papers and a few on the glaciers of British Columbia, but his name is perpetuated in mineralogical literature by the Bolivian minerals vauxite, paravauxite, and metavauxite. (S. G. Gordon, *Amer. Min.*, 1928, vol. 13, pp. 97-102, with portrait and bibliography.)

WAGNER (Percy Albert) [1885-1929], South African geologist, was born at Richmond, Cape Province, on October 18, 1885, and died at



PERCY A. WAGNER.

Johannesburg on November 11, 1929, after a short illness from enteric fever followed by pleurisy and pneumonia. He was educated at the South African College in Cape Town and the School of Mines and Technology in Johannesburg, taking the Diploma in Mining Engineering in 1906. He then went to the Mining Academy at Freiberg, Saxony, where he studied under R. Beck, and he also studied under H. Rosenbusch at Heidelberg. His dissertation for the degree of Doctor of Engineering was republished during the same year in an enlarged form as a book 'Die Diamant-führenden Gesteine Südafrikas' (Berlin, 1909). He also wrote early papers on

the diamond fields of South-West Africa, and in 1914 produced a classic work 'The diamond fields of Southern Africa'. His last work 'The platinum deposits and mines of South Africa', issued just before his death, will also remain a classic. On his return to South Africa he acted for a short time as Professor of Geology in the Transvaal University College, and was then engaged by the De Beers Consolidated Diamond Mines to carry out special investigations in South-West Africa and Southern Rhodesia. Afterwards he practised as a consulting geologist in Johannesburg and Pretoria.

In 1919 he was appointed for economic work on the Geological

Survey of the Union of South Africa, from which he resigned in 1927 to become consulting geologist to the Union Minerals Exploration Syndicate. Besides many original geological papers and memoirs he produced a large number of reports on economic minerals, and in 1916 a useful summary of the geology of South-West Africa. Several of the guide-books issued for the meeting of the International Geological Congress in South Africa in 1929 were prepared by him, and he will be remembered by many of the visitors for the energy and enthusiasm with which he led several of the excursions. By his untimely death at the age of forty-four South Africa has lost an energetic and brilliant worker. (A. W. Rogers, *Trans. Geol. Soc. South Africa*, vol. 33, for 1930. A. L. du Toit, *Geol. Mag. London*, 1930, vol. 67, pp. 191-192. A. M. Bateman, *Econ. Geol.*, 1930, vol. 25, pp. 88-90.)

WHITE (Franklin) [1849-1928], Mining Engineer, and since 1920 a member of our Society, was born at Cowes in the Isle of Wight and died on October 18, 1928. He had been manager of gold mines in Colombia, South America, and he went in the early days (1889) to Rhodesia. At Bulawayo he took part in the foundation of the Rhodesia Scientific Association (1899) and of the Rhodesia Museum (1901), being several times President of the Association and on the committee of the Museum. He wrote early accounts of the ruins at Zimbabwe and other places in Rhodesia, the human remains in the caves at Broken Hill, and on stone implements. For many years he had been a generous donor to the mineral collection of the British Museum of specimens that he had collected in many parts of the world in connexion with his mining work.

WICHMANN (Carl Ernest Arthur) [1851-1927] was born at Hamburg on April 9, 1851, and died there on November 28, 1927. He graduated at Leipzig with a dissertation on pseudomorphs of cordierite, and was assistant in the Mineralogical Institute there from 1873 to 1879. In 1879 he was appointed Professor of Mineralogy and Geology in the University of Utrecht, Holland, retiring in 1922. A. Wichmann led several expeditions to the Dutch East Indies, and wrote papers on the geology and petrography of many of the islands. In 1875 he described nepheline-basalt from the Sandwich Islands and in 1893 leucite-rocks from Celebes. (*Verslag Afd. Natuurk. K. Akad. Wetensch. Amsterdam*, 1927, vol. 36, pp. 1193-1196.)

WILLS (Joseph Lainson) [-1929], the last original (1876) member of this Society, died in New York City on February 28, 1929. He was a consulting chemist practising since before 1898 in New York, and previous to that time he had lived for some years in France. He was a Fellow of the Chemical Society of London since 1872. His only paper appears to be one on the commercial aspects of 'Natural phosphates' which appeared in the 'Ottawa Naturalist' in 1892 and was reprinted in the 'Chemical News' in the same year.

Later deaths are those of :

BUSZ (Karl) [1863-1930].

ELSDEN (James Vincent) [1856-1930].

EVANS (John William) [1857-1930.]

TERMIER (Pierre) [1859-1930].
