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(*b.* Mill of Kingoodie, near Old Meldrum, Aberdeenshire, Scotland, 8 March 1851; *d.* Edinburgh, Scotland, 3 November 1911),

education, mathematics, physics.

Chrystal's father, William, a self-made man, was successively a grain merchant, a farmer, and a landed proprietor. His mother was the daughter of James Burr of Mains of Glack, Aberdeenshire. Chrystal attended the local parish school and later Aberdeen [Grammar School](#), from which he won a scholarship to Aberdeen University in 1867. By the time he graduated in 1871, he had won all the available mathematical distinctions and an open scholarship to Peterhouse, Cambridge. Entering Peterhouse in 1872, Chrystal came under the influence of Clerk Maxwell, and when the Cavendish Laboratory was opened in 1874 he carried out experimental work there. In the mathematical tripos examination of 1875 he was bracketed (with William Burnside) second wrangler and Smith's prizeman and was immediately elected to a fellowship at [Corpus Christi](#) College, Cambridge. In 1877 he was appointed to the Regius chair of mathematics at Edinburgh University; in the same year he married a childhood friend, Margaret Ann Balfour.

Chrystal's thirty-two-year tenure of the Edinburgh chair saw a progressive and substantial rise in the standard of the mathematical syllabus and teaching at the university, especially after the institution of specialized honors degrees by the Universities (Scotland) Act of 1899. The main burden of formulating policies and drafting regulations under the act fell on Chrystal as dean of the Faculty of Arts, an office he held from 1890 until his death. He was an outstanding administrator, with an exceptionally quick grasp of detail, tactful, fair-minded, and forward-looking. He also contributed much to preuniversity education throughout Scotland, acting as inspector of secondary schools, initiating a scheme for a standard school-leaving-certificate examination, and negotiating the transfer of the teacher-training college from control by the Presbyterian churches to a new provincial committee, of which he was the first chairman.

Notwithstanding his administrative and teaching burdens, Chrystal found time for scientific work. His wide-ranging textbook on algebra, with its clear, rigorous and original treatment of such topics as inequalities, limits, convergence, and the use of the complex variable, profoundly influenced mathematical education throughout [Great Britain](#) and beyond its borders. He published some seventy articles, about equally divided between scientific biography, mathematics, and physics. Many of the biographies, written for the *Encyclopaedia Britannica*, are still of considerable value. In the mathematical papers his strength lay particularly in lucid exposition and consolidation. Of the physics papers the most important are two long survey articles, "Electricity" and "Magnetism," in the ninth edition of the encyclopaedia, and his later hydrodynamic and experimental investigations of the free oscillations (known as seiches) in lakes particularly the Scottish lochs, using the results of a recent bathymetric survey.

Chrystal held honorary doctorates from Aberdeen and Glasgow and was awarded a Royal Medal of the [Royal Society](#) of London just before his death. He was buried at Foveran, Aberdeenshire, and was survived by four sons and two daughters.

BIBLIOGRAPHY

I. Original Works. A full list of Chrystal's publications is appended to the obituary notice in *Proceedings of the [Royal Society of Edinburgh](#)*, **32** (1911–1912), 477. The following items are important: *Algebra. An Elementary Textbook for the Higher Classes of Secondary Schools and for Colleges*, I (Edinburgh, 1886; 5th ed., London, 1904), II (Edinburgh, 1889; 2nd ed., London, 1920); *Introduction to Algebra for the Use of Secondary Schools and Technical Colleges* (London, 1898; 4th ed., London, 1920); the contributions (mentioned in the text) to the ninth edition of the *Encyclopaedia Britannica*; and the papers on seiches, in *Proceedings of the Royal Society of Edinburgh*, **25** (1904–1905), and *Transactions of the Royal Society of Edinburgh*, **41** (1905), **45** (1906), and **46** (1909).

II. Secondary Literature. Besides the obituary notice referred to above, there is an excellent notice in *The Scotsman* (4 Nov. 1911), p. 9. See also A. Logan Turner, ed., *History of the University of Edinburgh 1883–1933* (Edinburgh, 1933), *passim*.

Robert Schlapp