

Professor Sydney Ross

Glasgow-born chemist, bibliophile and founder of the James Clerk Maxwell Foundation

Appreciation

■ Professor Sydney Ross, chemist.

Born: 6 July, 1915, in Glasgow. Died: 4 December, 2013, in Troy, New York, aged 98.

SYDNEY Ross, leading chemist and bibliophile, was a former Professor of Colloid Science at Rensselaer Polytechnic Institute, Troy, New York, and founder, and until his death, and president of the James Clerk Maxwell Foundation. He was born in Glasgow in 1915 and died peacefully in his apartment in Troy, aged 98.

He was the only son of Jack and Lia Blint Ross and had an elder sister, Betty, who predeceased him. He never married.

In 1933 his father, senior partner in the family whisky distillery Ross, Campbell Ltd of Glasgow, decided to extend the business to North America.

In the same year, after being educated at the High School of Glasgow, Ross emigrated to Montreal, where he attended McGill University and in 1936 graduated BSc with first class honours, concentrating on analytical chemistry.

He then went on to the University of Illinois, where he studied X-ray diffraction under George Clark and completed a dissertation on foams and brewing, graduating with a PhD in chemistry in 1940.

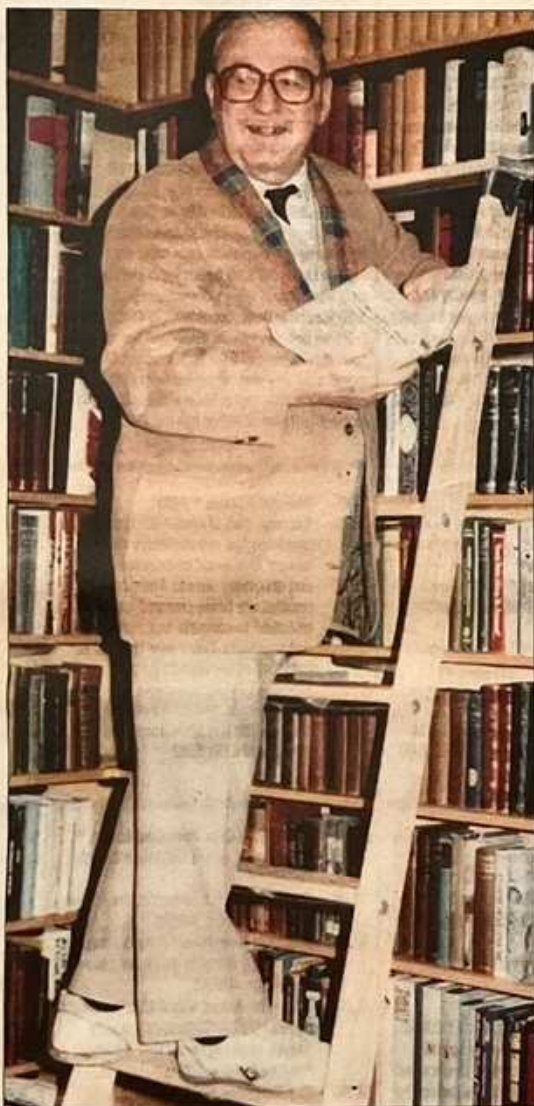
Following a faculty appointment at Monmouth College, Illinois, Ross undertook post-doctoral study under James McBain at Stanford University, California, into the foaming of aircraft lubricating oil and other military subjects.

He soon specialised as a colloidal chemist and in 1945 took up an appointment at the University of Alabama where, with his high standards, he is reputed to have been a source of terror to undergraduates.

In 1946 Ross moved to Clinton Laboratory, Oak Ridge (National Laboratory of the Atomic Energy Commission), where he made fundamental advances in the science of gas adsorption – how molecules of gas became adsorbed into a solid substance – demonstrating that the foaming and de-foaming of some liquid systems correlate with and can be predicted from their phase diagrams.

In notable pieces of work he showed that the contact angle against a solid in the two-phase region as the system approaches its critical point tends to 90 degrees, and he demonstrated that a gas adsorbed on a solid uniform crystalline surface has a two-dimensional critical temperature.

His findings were at variance with the then accepted theory



and remained unappreciated for several decades until the publication of his standard works.

In 1948 Ross became an associate professor of chemistry at Rensselaer Polytechnic Institute (RPI), becoming a full professor in 1952, an active emeritus in 1980 and a retired Emeritus Professor of Physical Chemistry in 1994. He was also a Visiting Professor at Strathclyde University.

During his tenure at RPI he wrote four books, edited three more, published more than 150 papers and mentored more than 30 doctoral students.

He was lead co-author with Ian D Morrison of *Colloidal Systems and Interfaces* (Wiley, 1988). Now updated, it is still a standard textbook for industrial chemists and chemical engineers.

Industries benefiting from Ross's expertise include oil, paper, clay-mining, chemicals, cosmetics, distillation, detergents, pharmaceuticals, precious metals, soaps, and food science.

Firms consulting him included Colgate-Palmolive, Allied Chemical, Eastman Kodak, Exxon, 3-M Campus, DuPont, Scott Paper and Union Carbide. He also gave evidence as an expert witness in patent infringement law suits.

From early in life Ross had developed a deep interest in the history of science, a notable publication being *Nineteenth-Century Attitudes: Men of Science* (Kluwer, 1991).

This comprised erudite essays on the word "scientist", Volta potential, electro-magnetic induction, electro-chemistry, and work of Faraday and Herschel.

Using their example, also that of Babbage, Davy, Dalton, Darwin, Cavendish, Leslie, Whewell, Maxwell and others, Ross added knowledge and provided a masterly demonstration of the transition to professionalism in science.

Another history publication in 2001, one that evoked an inspiring lecture to the Edinburgh

Bibliographical Society, was his 590-page annotated *Catalogue of the Herschel Library of astronomers William and John Herschel*, many of the books which he had bought at auction in 1958.

In early life Ross was influenced by the writings of Ruskin to form over time collections of rare books and manuscripts, the Ruskin letters element of which he donated to the Rush Rhees Library, University of Rochester, in 1981. At one stage he also had a major collection of Darwin letters, although this was subsequently dispersed.

Many of his books came from Europe, including Scotland, where he often stayed in Glasgow with his sister.

Ross's main interest latterly was in promoting the life and work of James Clerk Maxwell and in 1977 he became founder chairman of the James Clerk Maxwell Foundation which in 1987 acquired and developed Maxwell's birthplace at 14 India Street, Edinburgh, as a mathematical study centre.

This successful venture which has gone from strength to strength and for which scientists and society worldwide owe Ross a great debt of gratitude, was recognised in 2001 with his award by Heriot-Watt University of an honorary DSc and in 2002 by his Corresponding Fellowship of the Royal Society of Edinburgh.

In addition to significantly funding the foundation, he also donated to it his valuable Maxwell library and collection of portraits of scientists.

I enjoyed a close friendship with Sydney Ross for the last 30 years, in a context of history of science, bibliography and advising on the acquisition of 14 India Street and its change of use. Ross lived alone in Troy, of which I have indelible memories from several stays.

There were books from basement to attic, including early editions of Euclid, Bacon, Newton (*Principia*, 1687), Locke, Boyle (*Sceptical Chymist* – of which Ross was arguably a modern manifestation!) and many 19th-century scientists.

Its ambience was enhanced by Cristiano Banti's painting of Galileo facing the Roman Inquisition (1857), overlooked by a bust of Sir Walter Scott and, more curiously, a top-hat sported on occasion by its owner.

Recognition of Ross's bibliographical interest is noted in a plaque tribute by the Friends of the Folsom Library at RPI, worded by his colleague, executor and friend Dr P Thomas Carroll, which reads: "Professor Sydney Ross, scholar, scientist, teacher, bibliophile extraordinaire and generous benefactor. April 1997."

PROFESSOR ROLAND PAXTON FICE FRSE