

Elizabeth Graham Cutter



Emeritus Professor Elizabeth Graham Cutter, who died of cancer aged 81, had an international reputation for her extraordinarily precise microsurgical approach to studies of the anatomy and development of lower and higher plants. She employed this approach to understand how various types of plant cells and organs originate, are modified, and function. For example, in one important paper, Lewis Feldman and Elizabeth described how an aquatic plant, *Hydrocharis morsus-ranae* (Frogbit) formed root hairs. In this differentiation process a certain type of cell in the root tip divides unequally to form larger and smaller daughter cells. The larger cell type differentiates to form diploid epidermal cells that eventually cover and protect the surface of the root, and the smaller cell type differentiates into root hairs. In the first part of this process the chromosomes and cytoplasm of the smaller cell undergo successive duplications without the nucleus or the cell dividing. This results in the production of a large, vacuolated, octoploid cell that then differentiates into a root hair.

Elizabeth was the only daughter of Roy and Alix Cutter, who first met in 1928 whilst travelling by boat to the Sudan, where Roy was a judge in the colonial civil service. Until her parents returned from the Sudan in 1936, Elizabeth lived with three maiden aunts in Edinburgh before going to Rothesay House, a girl's boarding school, where she eventually became Head Girl. This school was evacuated to Paxton House near Coldstream during the Second World War, but even there the pupils regularly had to shelter in the basement as German planes passed directly overhead. Subsequently, Elizabeth obtained a First Class Honours B.Sc in Botany from the University of St Andrew's (1951) and a Ph.D in Botany from the University of Manchester (1954). Professor Claude Wardlaw was her Ph.D supervisor and their research relationship led to a life-long friendship. Indeed, when Elizabeth returned to Manchester in 1972 she bought a house in Bramhall (Stockport) very close to where Wardlaw had retired. However, despite their forty-year friendship, Elizabeth always referred to him as "Prof", never as Claude. Within ten years of obtaining her Ph.D, Elizabeth was awarded a D.Sc by the University of St. Andrew's.

After a period (1955-1964) in the Department of Botany in Manchester, Elizabeth was, in the modern idiom, 'head-hunted' by the University of California at Davis to replace Katherine Esau, an eminent plant anatomist, who was a recipient of America's National Medal of Science. Four years later Elizabeth was promoted to a full Professorship. Elizabeth's reputation was further enhanced by the publication in 1969 and 1971 of a two-volume work on Plant Anatomy that was widely adopted as an undergraduate text in the UK and North America. One reviewer wrote, 'At last, a first-rate comprehensive physiological-developmental plant anatomy book'.

In order to care for her mother in the UK, she resigned her Davis Professorship in 1972 and moved to a Senior Lectureship in Manchester, where seven years later she was promoted to the George Harrison Chair of Botany. At the time Manchester (including the Faculty of Technology) had well over 225 Professors, but only six were women. Perhaps this was the reason that when Elizabeth arrived in her office as the new professor the cleaner greeted her with "Good morning, sir". Thus, although in the 1970s it was very difficult for a woman to reach the topmost rung of UK academia, Elizabeth achieved this feat.

On becoming Head of Botany in 1979 Elizabeth knew that a great deal of work needed to be done if the Department was to regain its former reputation for research. Unfortunately, various factors made this task difficult. In particular, the drastic reduction in university funding that followed the election of the Conservative Government in 1979 meant that she was unable to reinvigorate the Department by recruiting new staff. In 1986, following a long period of anxiety and uncertainty, Botany and ten other Departments in Science and Medicine merged to form Manchester's School of Biological Sciences containing more than 125 academics. Because of her integrity and the confidence that staff had in her, Elizabeth was able to successfully guide the Botanists through this difficult period. In doing so she worked hard to ensure that Plant Sciences established a secure position in the new School. Characteristically, despite her justified concern that the re-organisation might disadvantage Botany, she loyally supported those leading the School. Indeed, she led a root and branch revision of the undergraduate curriculum, which eventually resulted in the foundation of eighteen, modular-based B.Sc degrees in biological sciences. Thus, although the creation of the School had been driven primarily by the wish of the University to improve research, Elizabeth's leadership ensured that its first benefits were improved undergraduate provision and increased student choice. Indeed Elizabeth was an excellent teacher and field botanist. As a Lecturer she had led undergraduate field courses and she continued to participate in them in Manchester even after becoming Head of Department.

Elizabeth published over fifty papers and her research reputation was a magnet for graduate students from around the world, eight of whom subsequently rose to the rank of full Professor in the USA, Canada and New Zealand. Her graduate students included Patrick von Aderkas, Kevin Gould and Les Nyman in Manchester, and John Caruso, Jack Fisher and Larry Peterson in the University of California at Davis. Elizabeth was an enthusiastic supervisor of research students, encouraging innovation and gaining loyalty.

She became a Fellow of the Royal Society of Edinburgh in 1971 and was an office holder in several Learned Societies, including the Botanical Society of America, the Linnean Society of London, the International Society of Plant Morphologists, and the Society for Experimental Biology. In retirement, Elizabeth became President of the Botanical Society of Scotland.

Elizabeth retired to Gattonside in the Scottish Borders and pursued her lifelong hobbies of angling (often travelling to the Isle of Skye) and photography (she was as an Associate Member of the Royal Photographic Society). These are activities that require the kind of patience and attention to detail that she had always displayed as an academic. She embarked on many botanical and photographic expeditions to Europe, Australia and Southern Africa and particularly enjoyed her annual trips with friends to the alpine meadows around Wengen in Switzerland.

Although Elizabeth Cutter had no living relative, she has a devoted 'family' of former graduate students and colleagues. This 'family' will miss her delightful 'Twelve days of Christmas' cards: how did she find a new design each year? Elizabeth will be remembered for her science, for her integrity, for her loyalty, and above all for her great kindness. She had a great influence on the lives and careers of many Botanists.

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Elizabeth Graham Cutter B.Sc (St Andrews), Ph.D (Manchester), D.Sc (St Andrews). Born 9th August 1929; elected FRSE 1st March 1971, died 23rd October 2010.