

## Obituary



George Szekeres FAA OM  
29/5/1911 – 28/8/2005

Esther Szekeres-Klein  
20/2/1910 – 28/8/2005

George and Esther Szekeres passed away on Sunday August 28 within an hour of each other, after nearly seventy years of marriage. George was ninety-four years old, and Esther ninety-five. Esther had been in Wynwood Nursing Home in Adelaide for the previous year, and George moved into the same room with her seven weeks before their deaths. With them passes an era for their many friends.

George came from a wealthy Hungarian family, and trained as a chemical engineer to enter the family leather business, but he was also part of a group of brilliant young mathematicians in Budapest. This group included Paul Erdős, who became the most prolific mathematician of all time, Paul Turán, who also became a famous mathematician, and Esther Klein. One of the problems the group considered was proposed by Esther and solved by George to declare his suit. Erdős called it the “Happy Ending Problem”, as it led to George and Esther marrying in 1936.

After six years working in Budapest as an analytical chemist, George took a post as a leather chemist in Shanghai to escape the threat of Nazi persecution. The factory closed a year later, and the Szekeres family were part of the community of 15,000 Jewish refugees from Central Europe in Shanghai. There they lived through the rigours of WWII, the Japanese occupation, and the beginnings of the Chinese Communist revolution. These were desperate times and they were lucky to survive: their son Peter, who was born in Shanghai, tells of being whisked up by George as they ran for their lives to escape Japanese bombing. On another occasion they were saved from starvation when George bartered his bicycle for a sack of rice. Perhaps because of these experiences, George turned his back on material goods; as a colleague recently said, George didn’t ever seem to eat.

Offered a post as Lecturer at the University of Adelaide, George arrived in Australia in June 1948 with Esther and Peter. For the first three years they shared a small flat with Hungarian friends, George and Marta Sved and their two children. Judy was born some years after their arrival. Adelaide in the 1950s was very different from Budapest, or Shanghai, but they quickly fell in love with the Australian bush and were happy to make their home here. In Australia, George flourished as a professional mathematician, free of the troubles of the war and pre-war years.

In 1964, the Szekeres family moved to Sydney, when George took up the post of Foundation Professor of Pure Mathematics at the University of NSW. This was the time of the notorious Bogle–Chandler murders, and the Turrumurra house of one of the victims was for sale. It was almost unsaleable, because of the publicity surrounding the murders. But the association meant nothing to George and Esther, and they purchased the house, and lived there until 2004. The block was very large with many native trees, a cliff and a small creek, and was a haven for native birds and animals. George wrote to a friend that he had found paradise!

A year ago, George lost his driving licence, and as they were three kilometres from the nearest shops, they decided to move back to Adelaide to be close to their family. Paradise had become a little too isolated.

George Szekeres published mathematical papers of great originality and impact, starting as an undergraduate in Budapest, through the Shanghai years, and on to quite recently. His work broke new ground in an unusually broad range of fields of mathematics, from algebra, combinatorics and number theory, to mathematical analysis, numerical analysis, relativity and cosmology. One of his most famous and far-sighted papers provided a key mathematical tool for understanding “black holes” in cosmology theory. An idea of the importance of the so-called “Kruskal–Szekeres coordinate system” (the technique was independently discovered by Kruskal) can be gleaned from Carl Sagan’s book *Contact*, where it is featured. George is also very well known for his deep work in combinatorics, where he laid the foundations of what is now known as Ramsey Theory. He went on to become the leading Australian mathematician of his day. This is all the more remarkable because he had studied at the Technical University of Budapest, which specialised in Engineering, and as a result, he attended only one undergraduate mathematics course in his life, on Calculus. This turned out to be an impediment later when his employers wanted him to take out a Doctorate of Philosophy in Mathematics.

Under George’s leadership, the new Department of Pure Mathematics at the University of New South Wales earned national and international recognition. In large measure through his example and influence, the School of Mathematics there became one of the top Schools of Mathematics in Australia. After he retired in 1975, Emeritus Professor George Szekeres continued to work at the University most of the week well into his nineties. He published over twenty scientific papers in his “retirement”, and was seen regularly around the corridors and in the Common Room talking about the latest problems of mutual interest to young students and academic staff.

He was a foundation member of the Australian Mathematical Society in 1956, served on its Council for many years, and was President from 1972 to 1974. As a mark of respect, the Australian Mathematical Society devoted a volume of its *Journal* to papers written in honour of his sixty-fifth birthday, and later named its most prestigious award, the George Szekeres Medal, in his honour. George was elected a Fellow of the Australian Academy of Science in 1963 and was awarded the Academy’s Thomas Rankin Lyle Medal in 1968. Other recognition of his career included an Honorary Doctorate from the University of New South Wales in 1976, and membership of the Order of Australia in 2002, but perhaps he was proudest of being one of the very few foreign members of the Hungarian Academy of Science.

George Szekeres was an inspiring leader for generations of talented young Australians. At the University of NSW he established the high school journal *Parabola*, and he was the source of many problems for both the University of NSW Schools Mathematics Competition and SUMS, the Sydney University Mathematics Society competition, which continue to challenge able high school and undergraduate students. He helped establish a training program for the first Australian team to compete in the International Mathematical Olympiad and was a key member of the Australian Mathematical Olympiad program during the 1980s. Australia is now one of the Western world's strongest performers in the Mathematical Olympiads, especially relative to size. George took a friendly interest in a number of Olympians during their subsequent lives and careers, including the young Australian mathematician Terence Tao, who was the youngest winner ever of an Olympiad Gold Medal, at the age of 12.

George Szekeres was a lifelong, passionate, active and very able musician. He played the violin and the viola in the Ku-ring-gai Philharmonic Orchestra and the North Sydney Symphony Orchestra. He has contributed to the public enjoyment of music in Sydney for more than thirty years. He was Treasurer of the Ku-ring-gai Orchestra from its inception until 2000; as he said, "They thought that I was good at sums". Many visitors to Sydney, and to the University of New South Wales, carried away happy memories of playing chamber music with George and his friends during their time here.

George was a very keen bushwalker. He climbed Pigeonhouse Mountain near Ulladulla in his seventies, and even well into his eighties, he and his daughter Judith managed to walk substantial sections, one each week, of the Great North Walk from Sydney to Newcastle. Throughout his life, in company with his wife and family, he undertook long and demanding walks in both Europe and Australia.

Esther Szekeres was an extraordinary woman. Also born in Budapest, she exhibited outstanding ability in mathematics and physics from an early age. She attended school with her classmate and life-long friend Marta Sved, who has lived in Adelaide since 1939. In 1927, it was difficult for girls to go to university, let alone study mathematics or physics. In Hungary there were severe restrictions on the number of places open to minority groups and only two places were open to the Jewish students from her school; as a result, Marta went to study mathematics and Esther to study physics. At university, Esther met her future husband George.

During their 16 years in South Australia, Esther's time was taken up with raising their young family, though she tutored Mathematics at the University of Adelaide. After the move to Sydney, she worked in the Mathematics Department of Macquarie University for many years. She was an excellent teacher and she was awarded an Honorary DSc from Macquarie University. The mathematical love of her life was always geometry, and in that field she even outshone George.

In 1983, both George and Esther attended an organisational meeting to arrange weekly mathematics problems sessions for talented high school students in Sydney. As a result, in May 1984, weekly mathematics enrichment classes commenced at Mercy College in Chatswood. These classes were free and open to any student from any school system. Esther supplied geometry problems for the first session and continued to do so for twenty-one years, supplying about one thousand problems during that

time. She also attended the classes each week in Chatswood until 2002, when it became too difficult for her to get there. But she was involved until the very last, coming one last time at the end of 2003 for the annual party to celebrate the end of the year. George and Esther both loved art as well as music, and have passed this love on to their friends and family.

George and Esther are survived by their children Peter and Judith, Peter's wife Angela and his step-daughter Jorji from a previous marriage. George and Esther Szekeres were a wonderful and unpretentious couple who contributed richly to Australia for over fifty years. We are diminished by their passing.

Michael Cowling

School of Mathematics, University of New South Wales, Sydney 2052

The great bulk of this document was contributed, in writing or orally, by Garth Gaudry, Terry Gagen, Peter Szekeres and David Tacon. Some of the dates are based on guesses and recollections rather than written evidence.