

## Biography

George Mackie was born in Lincolnshire, England on Oct 20 1929. His father was a doctor in the Indian Medical Service and a specialist of tropical diseases. George and his brother Richard lived in India and England as children but during World War II they were sent to live with relatives in Vernon, British Columbia. Their uncle Augustine C. Mackie was an Anglican clergyman, headmaster of Vernon Preparatory School and famous locally as a rattlesnake hunter. The boys went snake hunting with their uncle, roamed the Coldstream ranch and Monashee lakes and mountains and started to talk and think like Canadians. George went back to England in 1944, when the U-boat threat to shipping had diminished enough to allow evacuees to return safely. He went to school in Tiverton, Devon, lost his Canadian accent and, at the age of 18, started two years of national service first as a private soldier, then after officer training, a 2<sup>nd</sup> Lieutenant. The last year of this was spent as Motor Transport Officer in the 54<sup>th</sup> Anti-Aircraft Regiment in Gibraltar. George's visits to Spain and North Africa left him with an enduring delight in the sights, sounds, smells, music, food and wine of the countries around the Mediterranean. He journeyed to France and Italy frequently in later life, often with his family on study leaves.

On leaving the army George entered St Johns College, Oxford, where he held a Casberd Scholarship. He did his bachelors (1953) and doctoral (1956) degrees under the supervision of W.H. Holmes. His doctoral work on siphonophores took him to Naples and to the Canary Islands. At Naples, he played the guitar and learned how to cook octopuses left over from experiments by M. J. Wells and J.Z. Young. He was visited there by his friend Gillian Faulkner, a fellow graduate student at Oxford, who was then working on speciation of flatworms in streams around Lake Ohrid in Macedonia.

George and Gillian married in 1955. Among their friends at Oxford were a Canadian couple from McGill, Arthur and Marion Fontaine. When it came time to look for a job, Arthur took an appointment at Victoria College but he passed news on to George from Max Dunbar mentioning that there was a vacancy at the University of Alberta, created by the retirement of William Rowan. The idea of returning to Canada had strong appeal, particularly given the bleak state of post-war Britain. He applied and was appointed as

Lecturer. George, Gillian and their two children Alexander and Christina emigrated to Canada in 1956 on the *Saxonia*

Edmonton in the 60's, and its University, were in a phase of rapid expansion. Courses taught one year had to be completely revamped the next, as enrollments skyrocketed. From a small department with four faculty members in 1956, Zoology grew to 22 by 1968. Promotion was rapid. George and Gillian spent 12 busy years in Edmonton and had three more children, Richard, Rachel and Quentin.

The only thing problem with Edmonton was that it was three to four days drive from the coast, where George wanted to pursue his research interests in marine invertebrates, so when a vacancy came up at the University of Victoria he jumped at it and the family moved to Victoria in 1968, and lived there happily ever after. Once the children had fled the nest, Gillian enrolled as a part-time student in Art History, completed bachelors, masters and doctoral degrees. The PhD thesis was awarded the Governor General's gold medal. Supported by a SSHRC postdoctoral fellowship she spent productive years working in Italy and teaching in the Department of History in Art in Victoria. Her book *Early Christian Chapels in the West* was published by the University of Toronto Press in 2002.

Prior to moving to Victoria, George was President of the Faculty Association at the University of Alberta. In Victoria he did a stint as Chairman of the Biology Department in the early 1970's and served on numerous federal and university committees, including five different NSERC grant selection committees. He was a member of the Management Council of the Western Canadian Universities Marine Biological Society, serving as President from 1991-1994. In general, however, he preferred to stick to teaching and research and working with his graduate and postdoctoral students.

George Mackie worked in the field of invertebrate behavioural physiology. He was interested in how nerves, muscles and excitable epithelia interact to produce behaviour. He focused chiefly on three animal groups- glass sponges, hydromedusae and tunicates- where these questions are of special interest from the evolutionary point of view.

In sponges he and his co-workers found that electrical signals propagated through the body triggering arrests of the feeding currents. Sponges have no nervous systems, so this work was significant in terms of the evolution of behaviour at the pre-nervous level.

Jellyfish and siphonophores (hydromedusae) have nervous systems but no single, central brain. Their nerves are spread out over the body in tracts and networks. George's work showed that these seemingly primitive nervous systems work on the same principles as those of higher animals and can achieve astonishing complexity. With Robert Meech, he found that some nerves can conduct two different sorts of impulses, one based on influx of sodium ions and one on calcium. The two impulses evoke different responses in the swimming muscles, enabling it to swim in two different ways - slowly during swimming and fast during escape.

Siphonophores are colonial animals and the interesting question here is how a community of 'individuals' can act together as a single well-integrated unit, with its own higher-order of individuality, essentially a "superorganism".

Tunicates are an offshoot from the evolutionary line leading to vertebrates, and their nervous systems foreshadow ours. Much of George's work on this group was done with Quentin Bone, a friend from Oxford days. Some pelagic tunicates turned out to have excitable epithelia, like sponges and hydromedusae and some are colonial, offering problems in the area of colonial integration similar to those addressed in siphonophores.

George Mackie published some 150 original research papers including three in *Science* and four in *Nature*. He was honoured by election to Fellowship in the Royal Society of Canada in 1982 and to Fellowship in the Royal Society of London in 1991. He was a Killam Research Fellow in 1986-88. and received the Fry Medal of the Canadian Society of Zoologists in 1989. He served on the editorial boards of many research journals and was Editor of the Canadian Journal of Zoology from 1981 to 1989.

Following his retirement in 1995, the Western Nerve Net held a Festschrift in his honour at the Bamfield Marine Station where A.N. Spencer, a former student, was Director.

George had excellent graduate students and post-docs but he liked to work at the bench himself and by keeping his hand in, he was able to go on working for many years after retirement and did some of his best work in his 70's and early 80s, supported throughout by NSERC. He went on working until he was 84. A fuller account of his scientific work will appear in Biographical Memoirs of Fellows of the Royal Society of London.

George loved music and learned to play the recorder and read music in the 1960s and 70s, chiefly in early music groups. Such ensembles were often top heavy, so when he was 50 he bought a cello to provide a stronger bass. This led him into playing continuo parts in baroque trio sonatas and eventually to the much more demanding but magical world of the classical string quartet. He was still playing regularly in his 90<sup>th</sup> year. He and Gillian were both potters. Some of Gillian's stoneware and porcelain pieces are in the permanent collections at the Art Gallery of Greater Victoria and the Maltwood Museum. George made earthenware in the English slipware tradition and experimented with transferring images to clay. Two of the Mackie children (Alexander and Quentin) became archaeologists, Christina is an artist, Richard an editor, writer and historian, and Rachel teaches English at the Université Aix-Marseille. Altogether, at the last count, Gillian and George had ten grandchildren.