

Alexander von Muralt 1903–1990

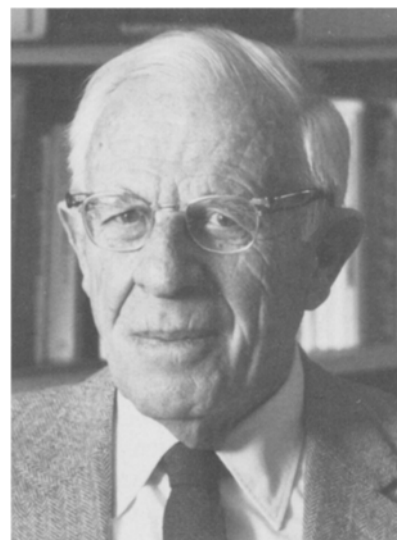
A memorable physiologist, promotor of science in Switzerland and co-founder of EXPERIENTIA died at the age of 87, on May 28, 1990.

EXPERIENTIA's Founding Editor and former Managing Editor, Professor Hans Mislin, reflects briefly on the unique political circumstances that gave rise to the journal in 1945 and the foresight of the original editors who helped shape its character.

The Second World War was over, leaving Europe fragmented and the German Reich crushed.

Natural science publication in Germany had come to a halt. One looked expectantly towards that small land in the heart of Europe, Switzerland, hoping that it would provide a focus for the European scientific community which had been deeply split and scattered worldwide as a consequence of the war. Would this tiny country accept the challenge and attempt to fill the critical science publication gap by fashioning a multi-national journal infused with a new European 'Geist'? The doubters proved to be wrong. In the end, scientists from all over Europe transcended national prejudices in the spirit of Paracelsus' 'true experience derives from sound experimentation', or as he also put it, 'scientia est experientia'. This key phrase would be adopted as EXPERIENTIA's cover aphorism by the journal's first editorial board: the microbiologist Jean Weigle in Geneva, the chemist Leopold Ruzicka in Zürich, and the physiologist Alexander von Muralt in Bern.

Supranational thinking and the desire for interdisciplinarity prevailed from the very start, and for this we owe our lasting gratitude to the early founders.



Alexander von Muralt – An appreciation

In the 16th century the ancestors of Alex von Muralt had to leave the village of Muralto on Lago Maggiore for religious reasons. They found shelter in protestant Zürich. The parents of Alex von Muralt both had a medical background. His father, Ludwig von Muralt, was a lung specialist in Davos and taught forensic medicine at the University of Zürich, and his mother, Florence Watson from Philadelphia, was a psychiatrist whose father, Doctor John Watson, had been one of the early presidents of the New York Academy of Medicine. Alex von Muralt mentions in a short autobiography (*Ann. Rev. Physiol.* 46 (1984) 1–13): 'I had the great fortune to be in the right place, when original steps in scientific research were made, three times in my early life'. The first experience was in 1926/27 at the University of Zürich where, as a senior student of physics, he was in close contact with Erwin Schrödinger, the father of the theory of wave mechanics. The second experience came along at Harvard Medical School, 1928–1930. John Edsall and Alex von Muralt discovered the optical anisotropy of a flowing solution of 'a muscle globulin'. They concluded that this solution contained particles of uniform size and shape (in retrospect: probably actomyosin) which became oriented by shearing forces. The third 'right place' was the Kaiser Wilhelm Institute in Heidelberg, during von Muralt's stay with Otto Meyer-

hof from 1930–1935. In this exciting atmosphere Alex von Muralt witnessed the great changes in muscle biochemistry: acceptance of lactic acid production as the main pathway of energy supply had to be abandoned in favor of creatine phosphate breakdown. This was a consequence of work by Karl Lohmann, who discovered ATP and creatine phosphate in Meyerhof's laboratory, and by Einar Lundsgaard from Denmark, who had made the discovery that a muscle could still contract when lactic acid formation had been blocked by iodoacetate. The personal contribution by von Muralt was the recording of a 'negative wave of birefringence' in the course of an isometric muscle twitch. At the University of Heidelberg he obtained his medical degree (1932) and became 'Privatdozent' of physiology. His election to the Chair of Physiology at the University of Bern, 1935, relieved him of the growing political pressure against the group of Otto Meyerhof.

His predecessor in Bern, Leon Asher, was to retire in the spring of 1936. von Muralt made good use of the interim to visit several laboratories in England. A. V. Hill in London as well as E. D. Adrian and Bryan Matthews, both in Cambridge, must have made major impressions on him.

When Alex von Muralt – at the age of 33 – started his work in Bern, he had already made personal friendships

in the United States, in Germany and in England, and these were to outlast the Second World War.

One of his first concerns in Bern was the reorganization of the student laboratory. With the help of the Rockefeller Foundation he brought in modern equipment. Walter Wilbrandt was von Muralt's assistant from the beginning. Robert Stämpfli, Hans Mislin and Franz Wyss are but a few of those who worked with him during the war. The lectures of Alex von Muralt included many demonstrations, and practically all of them took the risk of being unsuccessful. Recognition of this risk, so he thought, was part of teaching physiology to medical students. The students might as well get used to failures.

For most male Swiss citizens, one's career in the militia army is an integral part of life, and here Alex von Muralt was no exception. He went through his basic training in 1923, becoming a lieutenant in the artillery in 1925. At the outbreak of World War II he commanded a battery of field artillery, and gradually moved up the ranks and left the army as chief of artillery of one of 4 army corps (1961). It is perhaps unique for Switzerland that a person's standing in the militia army and the relationships he develops as a citizen soldier while wearing the uniform every year should interweave so considerably with civilian life.

By the middle of World War II, Alex von Muralt clearly saw the danger of geographical isolation for research in Switzerland. In 1942 he took the initiative to create a foundation for fellowships in biology and medicine. The leading people in our drug and nutrition industries were sufficiently aware of the problem and provided their long-term financial assistance. Starting right after the end of the war, this foundation made it possible for Swiss graduates to be trained for 2–3 years in laboratories where outstanding work was going on abroad. Many of these graduates have since returned and most of them now hold leading positions in their fields.

There can be no doubt that Alexander von Muralt's greatest achievement was the establishment of the Swiss National Science Foundation (Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung). It had become evident after the end of the war that our universities, most of them run by their respective cantons, would not be able to finance research in an optimal way. He envisaged a central organization charged with the task of judging and funding projects. Overcoming the hesitations of some of the cantons and universities against a 'central power' required all his skills of persua-

sion; getting the message across to politicians challenged his talent at yet another level. August 1, 1952, became the Foundation's birthday. It was determined that a council, composed of scientists from all branches of research, should decide on most applications; Alex von Muralt presided over this council from 1952 to 1968. The status of the foundation as a private organization had to be defended more than once. Alex von Muralt was the personality to argue with the politicians and gain the cooperation of the central government.

In 1931, a high-altitude research station was created on the initiative of Walter Rudolf Hess, physiologist at the University of Zürich. Located at the Jungfraujoch, at an altitude of 3475 m (11,389 feet), the station with its laboratories and living quarters was – and still is – a joint enterprise by scientific organizations of Austria, Belgium, Germany, Great Britain and Switzerland, and later on Holland and Italy. von Muralt succeeded Hess as president of the international council in 1937 and held this position until 1973. In its early years, especially during World War II, much high-altitude physiology was done. Physicists and astronomers are presently the principal researchers there.

In view of his contributions to research in Switzerland and his international reputation, Alexander von Muralt was granted numerous honorary degrees and was a member of a great number of academies worldwide.

At the time of his retirement (1968), Alex von Muralt went back to his well-equipped but modest one-room laboratory named 'Peaceville'. He had not lost his curiosity as a scientist and his skills in building complicated optical equipment. He was fascinated by recording signals from the olfactory nerve of the pike. This nerve, as shown by Ewald Weibel, contains about 4 million unmyelinated fibers of almost uniform thickness (2 μ m) providing for much surface per fiber volume, and thereby rendering it eminently suited for seeing optical correlates of electrical activity. During these later years occasional visitors shared with him hard work and satisfaction, among them Richard Keynes from Cambridge (England), Murdoch Ritchie from Yale University and Victor Howarth from the Marine Biological Laboratory, Plymouth (England). Many of the visitors were privileged to enjoy the beautiful home of Alice and Alex von Muralt on Arniberg, a 30 minutes' drive from Bern, which had traditionally been open to all their many friends.

Silvio Weidmann