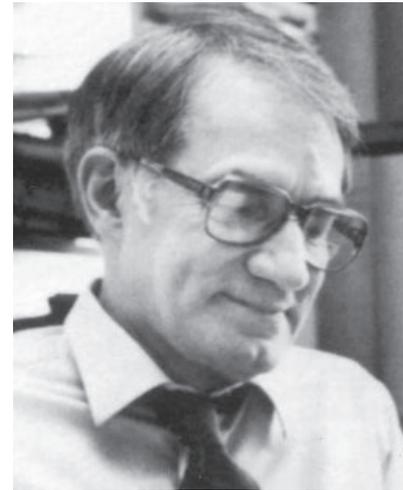


EDWARD H. LAMBERT**JASPER R. DAUBE, MD**

Department of Neurology,
Mayo Clinic and Mayo Foundation
Rochester, Minnesota, USA



Edward Howard Lambert

Dr. Edward H. Lambert died on July 27, 2003, in Rochester, Minnesota at the age of 88. He had been recognized as the “father of electromyography” by his many trainees and colleagues for his pioneering studies on the electrophysiology of neuromuscular diseases, which initiated the era of modern diagnostic clinical electromyography (EMG). His work was recognized early with a formal invitation to join the American Association of Electromyography & Electrodiagnosis in 1953 and his election as its president in 1956. He was on the Advisory Board of *Muscle & Nerve* for the first 12 years after its establishment, was Chair of the EMG Commission and a member of the Executive Committee of the International Federation of Societies for Electroencephalography and Clinical Neurophysiology from 1965 to 1969, and chaired the Medical Advisory Board of the Myasthenia Gravis Foundation between 1973 and 1975. An AAEM annual lectureship was named in his honor in 1976, and he was awarded the AAEM Lifetime Achievement Award in 1995, the highest honor that can be bestowed by the association on one of its members.

Dr. Lambert was born in Minneapolis of a second-generation Norwegian immigrant mother and a fourth-generation French-Scottish father from

Montana. He was a talented boy with many musical interests but an overriding interest in biology. During the depression, he moved with his family to Chicago, where he received BS, MS, and MD degrees from the University of Illinois. These were followed by an internship at Michael Reese Hospital in Chicago and a PhD in physiology with Dr. Ernst Gellhorn, with whom he published his first paper.

He spent the next 10 years in cardiovascular and pulmonary research, making major contributions that included development of the aviator’s “G-suit”, for which he received the Presidential Certificate of Merit in 1946. He was appointed Professor of Physiology in the Mayo Graduate School in 1958. Ongoing cardiopulmonary studies in the mid-1960s were the forerunners of modern cardiac electrophysiology and the current Combi-tube for assisted respiration.

In the late 1940s, Dr. Lambert began his studies on the electrophysiology of neuromuscular diseases, working with members of the Mayo Clinic Department of Neurology. Neurologists best know Dr. Lambert for his 1956 study with Lee Eaton and Doug Rooke that distinguished the myasthenic syndrome sometimes associated with lung carcinoma from other disorders of neuromuscular transmission. The disorder has been called the Lambert–Eaton myasthenic syndrome (LEMS) since 1968, when he and Dr. Dan Elmquist demonstrated the quantal pathophysiology of the neuromuscular transmission defect by detailed micro-electrophysiology.

Correspondence to: J.R. Daube; e-mail: daube.jasper@mayo.edu

© 2003 Wiley Periodicals, Inc.

DOI 10.1002/mus.10518

ical analysis of neuromuscular transmission in a patient's biopsied intercostal nerve–muscle preparation. Over the next 20 years, Dr. Lambert and colleagues at Mayo Clinic and in England elucidated the immunological basis of LEMS in a series of human and animal studies.

Dr. Lambert also advanced understanding of the pathophysiology, diagnostic criteria, and early therapeutic interventions for a whole range of neuromuscular diseases with his 280 other electrophysiological publications between 1950 and 1997. This work led to his appointment as Professor of Neurology at the Mayo Medical School and Mayo Graduate School of Medicine in 1975. The early studies were the pioneering steps that led to electromyography and nerve conduction becoming an integral part of the evaluation of neuromuscular diseases. Collaborative studies with Dr. Peter Dyck and others defined the nature of various neuropathies, as well as of carpal tunnel syndrome, facial neuropathy, and traumatic neuropathy. Work with his wife, Dr. Vanda Lennon, and with Dr. Andrew Engel defined the pathophysiology of immune-mediated myasthenia gravis, and congenital and infantile myasthenia. His wide-ranging investigations also included studies of myositis, periodic paralyses, muscular dystrophies, endocrine myopathies, botulism, acid maltase myopathy, myotonia, malignant hyperthermia, and toxic myopathies, as well as with another disorder sometimes associated with his name—Brody myopathy. Dr. Lambert's reports on the electrophysiology of amyotrophic lateral sclerosis have become classics of medical literature. Modern investigators will find it worthwhile to consult his publications for their insights and innovative approaches to the electrophysiology of neuromuscular diseases.

Following his retirement from the Mayo Clinic in 1985, he continued his research for another 9 years at the University of Minnesota. There he concentrated on animal models of synaptic pathophysiology and in 1996 he reported (with Dr. Christopher Gomez and colleagues) the first mouse model of a mutated muscle acetylcholine receptor (slow-channel syndrome).

Dr. Lambert's many accomplishments in defining the electrophysiological features of neuromuscular diseases was based in large part on his emphasis on quantitative data, followed by thorough and at times painstaking analysis. Such studies over 50 years allowed him to determine the optimal methods for performing standard nerve conduction studies, the normal values needed for clinical studies from childhood through 90 years of age, and the common anomalies of innervation. Papers on polyphasic po-

tentials, myokymia, hemifacial spasm, and tetanus exemplified similar analyses of the findings on needle examination. Dr. Lambert built his initial EMG equipment. Subsequently he developed a close working (non-financial) relationship with Stuart Reiner, President of the Teca Corporation. It is rumored that he never bought an EMG machine since there was always one available for his critique.

His clinical–EMG neuromuscular conferences at the Mayo Clinic were classic teaching conferences in which detailed review of individual patients led to many seminal observations, such as the first case of LEMS, which can be read today in the 1956 conference book. Dr. Lambert's success in dissecting clinical problems derived from his application of the principles of basic science to each patient. Those who worked with Dr. Lambert were intimately aware of his quiet nature, teaching by example, dedication to work, love of clinical problem-solving with EMG, and incomparable stamina.

Dr. Lambert's mentoring is exemplified in a fond recollection of Dr. Lud Gutmann, one of his 1965 fellows. "I had just presented my first paper at a national AAEM meeting describing myotonic discharges in a baby with Pompe's disease. The discussor was critical, being convinced that what I had really seen were complex repetitive discharges. When he was finished, I returned to the podium and defended my conclusions. It was an unpleasant interlude in describing an exciting discovery. I took my seat next to Dr. Lambert, my Mayo Clinic mentor, and grimaced. Half way through the next presentation, Ed leaned over and whispered, 'You know, of course, that you are right. We had an identical patient three weeks ago with the same myotonic discharges.' Ed, I thought, where were you when I needed you? But I remembered this was vintage Ed Lambert—quietly telling me that I was right. There had been no need to make the point publicly. He knew his boys could take care of themselves."

His many students, who themselves are now leaders in the field of neuromuscular diseases and EMG, are a living legacy of Dr. Lambert's career. They carried the principles they learned with him into their own clinical and basic research laboratories. Many of those he led into the field are now renowned for their own work.

Dr. Lambert was a man whom all students of medicine can emulate for his careful collection and analysis of all the clinical and laboratory data needed to fully test a hypothesis. "If we collect only enough clinical data to satisfy the needs of an immediate patient, we will not advance our knowledge of that disease."