

# Theodore Rasmussen, 1910-2002

"T.R." left this world on January 23, 2002. Those left to mourn him were not only his loving family, but also hundreds of epileptics to whom he gave a seizure-free existence, and dozens of neurosurgeons for whom he was both mentor and exemplar.

Dr. Rasmussen was born in Provo, Utah in 1910. His father, Andrew Theodore Rasmussen, was a distinguished anatomist. His roots were in the American Midwest. He obtained both his medical degree in 1935 and a Master of Science degree in neurology in 1939 from the University of Minnesota. Following an internship at King's County Hospital in Brooklyn, he spent three years as a fellow in neurology at the Mayo Clinic. In 1939, he began his neurosurgical training at the Montreal Neurological Institute and was a fellow in neurosurgery between 1939 and 1942.

During the dark days of the Second World War, he chose to serve in the United States Army. He was chief of the neurosurgical section of the 14th Evacuation Hospital on the Stillwell Road, the scene of fierce fighting and great heroism in the China-Burma-India Theatre of Operations. He served not only the Allied military, but also the local inhabitants. One of his most prized possessions was a chieftain's knife, possibly used for headhunting, which was given to him in gratitude for an operation on a tribesman's son. During the war, T.R. acquired a large experience in the treatment of causalgia from gunshot wounds. After serving with distinction, he was discharged with the rank of Lt. Colonel. Attracted again by the magnetic personality of his hero, Wilder Penfield, he returned to the Montreal Neurological Institute where he was appointed Assistant Neurosurgeon and Lecturer in Neurology and Neurosurgery at McGill University between 1946-47. As was usual for Dr. Penfield's trainees during that era, he went from being a junior staff man at the Montreal Neurological Institute to become the Professor of Neurological Surgery elsewhere. In his case, that "elsewhere" was the University of Chicago. Beginning in 1947, he practiced for seven years at that great institution, following in the footsteps of Percival Bailey, Paul Bucey, Ralph Cloward and Earl Walker.

In 1954, he was invited to return to McGill University as Professor of Neurosurgery and Neurology. He became Director

of the Institute in 1960, at the age of 50, and held the position with distinction for 12 years through politically turbulent and fiscally challenging times.

Dr. Rasmussen received Outstanding Achievement Awards from both the University of Minnesota and the University of Chicago. He was awarded honorary doctorates in medicine from Edinburgh University and Umeo University, Sweden. He was President of the American Association of Neurological Surgeons in 1963, the American Academy of Neurological Surgeons in 1964, and the American Epilepsy Society in 1962. He also served as Vice President of the American Neurological Association in 1967 and was chairman of the Canadian Neurosurgical Society in 1961.

In the early 1950s he made important scientific contributions

using primates to establish the brain's tolerance of focal ischemia. He found that a temporary middle cerebral artery occlusion of more than fifty minutes could produce an infarction equal in size to that of a permanent occlusion. He showed that temporary occlusion of less than 30 minutes could result in no gross infarction. This seminal work is important in view of today's controversies regarding thrombolysis.

He was a meticulous neurosurgical technician and a keen and scrupulously honest scientific observer. Dr. Rasmussen became Dr. Penfield's heir-apparent and remained one of his greatest admirers. Generations of clinicians and investigators at the Montreal Neurological Institute came to realize that the acceptance of the tremendous therapeutic potential of surgical excision of epileptogenic brain tissue was in no small measure due to Dr. Rasmussen's refinements in technique and long-term follow-up of patients. He was able to report

on more than 1,100 cortical resections for medically refractory temporal lobe seizures in the late 1970s. Approximately two-thirds of these epileptics became seizure-free or had a marked reduction in seizure tendency.

In 1962, despite his not utilizing a prospective double-blind clinical trial methodology, he provided near-conclusive evidence on the efficacy of cortisone in reducing the frequency, severity, and duration of post-operative symptoms and complications by



careful study with dose escalation of a sequential series using a standard operation performed by the same surgeon.

Another of his great personal achievements was to carry on studies of chronic encephalitis throughout his professional lifetime. Every few years, his observations became more refined and this entity became generally recognized. This culminated in a symposium published in 1999, in which the term “Rasmussen’s Syndrome” was rightfully brought into everyday neurological usage. T.R. demonstrated that radical surgical treatment was sometimes of great benefit for the young people so afflicted.

In the 1960s he and co-workers recognized that success in seizure surgery was linked to an earlier age at operation, clinical and psychological features attributable to the temporal lobe, the presence of only focal seizures, and localized and lateralized EEG abnormalities. The completeness of hippocampal removal and the presence of pathological gliosis also differentiated between patients with good and poor outcomes.

His most widely cited works have to do with the introduction of the “Wada Test”. Dr. Wada had come from Japan, where he first performed this test, to learn from Dr. Rasmussen, who had him perform the procedure in monkeys, testing the safety of different dosages. The “Wada Test” was then applied to the study of patients in Montreal. The ability of sodium amytal to predict the lateralization of cerebral speech dominance was a huge clinical advance. Rasmussen’s studies on early brain injury, handedness and speech localization were similarly landmark. He also teamed with Brenda Miller and her students to make observations on the extent of amygdalar-hippocampal resection in relation to learning and memory in monkeys. Rasmussen and colleagues in the early 1970s published groundbreaking data on the amino acid content of an epileptic human brain and the differential expression in focal and peri-lesional tissue.

He recognized, in the 1960s and 1970s the fact that one-quarter to one-third of patients treated by hemispherectomy developed the delayed, catastrophic complication of superficial cerebral hemosiderosis. T.R. refined the operation by restricting the excision to central and temporal cerebrum with preservation of the functionally detached frontal and occipital poles, which prevented this complication.

When I last talked with Dr. Rasmussen a few months before his death, he reminisced about his Chicago days. One of the observations of which he was particularly proud was based on the autopsy of the huge gorilla “Bushman”, which was kept in the Lincoln Park Zoo in Chicago. T.R. found histological evidence of hypovitaminosis-B. Until that point, gorillas had not successfully reproduced in zoos. Apparently it became a standard practice to give nutritional supplements thereafter, and breeding has been successfully achieved.

Theodore Rasmussen did not wear his heart on his sleeve. He was always precise and deliberate; rounds were conducted at a half-trot. His aphorisms became part of the mental fabric of all his trainees. “Mustn’t do that. Don’t jiggle the brain”, and “Put up the side rails: the bed is high and the floor is hard”, spring to mind. While not effusive in manner, he was never unkind or sarcastic. He had a quiet sense of humor; as osteoporosis took hold in late life, he told me he was turning into a capital “C”. Unlike many in the early generations of neurosurgeons, he was no megalomaniac and never sought to increase his own status by belittling others. There was no overt sentimentality in his interactions with patients but they all sensed his intense commitment to their well-being and his desire to ease their suffering.

In his student days, T.R. played professional jazz clarinet and saxophone. He was an outstanding long-distance runner and an excellent skier and golfer. He maintained those interests. As his death approached, he listened to a series of tapes on the history of jazz and pronounced himself ready to take a test on the subject!

Apart from work he was a vivacious and charming companion. The love of his life was the beautiful Catherine Archibald, whom he married in 1947. She was a daughter of the Maritimes, and it was on the shores of Nova Scotia at Toney River that Ted found his greatest happiness in over forty summers spent amongst family and friends.

Like all whose lives were enriched by knowing this wise and gentle man, I will always remember him. I will always miss him.

*Bryce Weir,  
Chicago, Illinois*