

A Tribute to Colin A. McLaurin 1922–1997

BUILD, DON'T TALK

"Death of a Quiet Giant," These words were used by James B. Reswick, Sc.D., as title to his communication announcing the death of Colin A. McLaurin, Sc.D. on August 5, 1997 at the age of 75. McLaurin was one of North America's first rehabilitation engineers and one of the founding fathers of the field of Rehabilitation Engineering. He was perhaps the most prolific, practical, and broad-based designer/innovator the field has ever known. Jim Foort, one of Colin's early collaborators, said, "We will all die, but when I heard that Colin had, I immediately said it was too soon." This sentiment sums up the feelings of all who knew the man.

Colin McLaurin died on a Virginia mountaintop, near the Appalachian Trail, west of Charlottesville, in a home he built largely with his own hands. Born Canadian, he was a citizen of the world. Jan Little said, "Colin was the image of the aristocratic Virginian—a cultural descendant of Thomas Jefferson and George Washington." And so he was; but he was more than image, he was the "real thing." He had many, many facets. They were, to mention only a few: Aeronautical Engineer; World War II Royal Canadian Air Force Pilot; Pioneer in Limb Prosthetics; Builder of Rehabilitation Engineering Centers in Toronto, Chicago, and Charlottesville; Rehabilitation Adviser; Mentor; Humanitarian; and, Lover of the Natural World.

Colin's grandparents came from Killian, in the central highlands of Scotland, and he wore the McLaurin tartan tie with much pride during his working career. The strong Scottish ancestry may explain his love of mountain living, his satisfaction with being alone, his natural penchant for practical engineering design, and his quietness. Douglas Hobson, said: "To know Colin was to know silence. He was one of the rare people who had absolutely no need to fill silence with idle talk." In many ways, McLaurin's life epitomized the aphorism of architect Mies van der Rohe, who said: "Build, don't talk."

McLaurin began building artificial hands and prostheses in 1949 at Sunnybrook Hospital in Toronto, a facility of the Canadian Department of Veterans Affairs. He was assisted by Fred Hampton and others, including James Foort who, in 1951, joined them in what Foort describes as a broom closet made available when the janitors moved to better quarters. In spite of the inadequate workspace, a number of prosthetic breakthroughs ensued. Most notable were: the Canadian Hip Disarticulation prosthesis, which was revolutionary; the introduction of plastic laminate reinforcement of wooden protheses; and, design of the Canadian Plastic Symes Prosthesis (also revolutionary), which had important influence on amputation site selection and which helped lead to development of the SACH foot. It was during this period that Foort and Hampton learned that Colin was not only a brilliant and remarkably gifted engineer, but also was "full of fun," with a subtle sense of humor and a gift for punning. It might be added that he was also a gifted walker, as friends who attempted to keep up with him can attest.

In 1957, through the influence of the United States Artificial Limb Program (later the Committee on Prosthetics Research and Development) of the National Research Council, McLaurin and Hampton were invited by Clinton L. Compere, M.D., to take charge of a new research program on Northwestern University's Chicago campus. McLaurin became the first Director of the Prosthetic Research Center (now the Prosthetics Research Laboratory), which was supported by the Veterans Administration (now the Department of Veterans Affairs) through the Prosthetics and Sensory Aid Service. The new program was located in the basement (adjacent to the janitorial quarters) of an old law book printing establishment that, in 1954, was converted into a hospital, The Rehabilitation Institute of Chicago.

It was natural for McLaurin and Hampton to continue research and development work on hip-disarticulation prostheses when they arrived at Northwestern. One of their early accomplishments in Chicago was the development of the Northwestern Hip Joint, which was designed for use with the Canadian Hip Prosthesis. The joint gave prosthetists much more flexibility in fitting the prosthesis. Other developments were the Northwestern Knee, a variable friction mechanism that had some success in North America, but which at one time was used by almost all above-knee amputees in Australia. McLaurin assisted Fred Hampton and Fred Sammons with development of the Northwestern "Ring Harness" for use by upper limb harnesses. The control cables for prostheses were very much the same as the control cables used in airplanes at that time, and McLaurin's aeronautical background and experience prepared him well for making advances in harness and control cable design for body-powered upper limb prostheses. He was also active in development of new cast-taking techniques and prosthesis alignment tools.

While at Northwestern, through collaboration with Dr. George T. Aitken at Mary Free Bed Hospital in Grand Rapids, Michigan, McLaurin developed the "Michigan Feeder Arm," an electrically powered, kinematically coupled, coordinated limb for children born without arms. It was likely one of the first electric-powered arms in the U.S. that was actually used by persons in daily activities. The design was a precursor of many other powered limbs that were to be developed around the world during the next couple of decades. This seminal work with limbless children presaged Colin's move to the Ontario Crippled Children's Center (OCCC, now Bloorview MacMillan Centre) in Toronto, as its first Director of Rehabilitation Engineering.

In Toronto, from 1963 to 1976, McLaurin was behind the development of advanced electric arms, new prehension devices, therapeutic equipment, mobility devices, and a number of aids for orthopaedic problems. One of his electric-powered prehension devices was used as an integral part of a myoelectric prosthesis system developed by Robert Scott at the University of New Brunswick in about 1965. It was the first myoelectric system to be developed on the continent. At the same time, he promoted development of the OCCC electric elbow, the first electrically powered artificial elbow joint. He was behind the development of the Variety Village Limb Center, one of the early, and one of the few really successful, ventures to transfer technology from the development laboratory to commercial enterprise. In addition, he helped to launch routine clinical services relating to prosthetics, orthotics, and seating systems, thereby establishing one of the first clinical rehabilitation engineering service programs.

Nevertheless, many people regard McLaurin's introduction of vacuum forming of sheet plastic to the field of prosthetics and orthotics as one of his most significant contributions to the field during the time he was in Toronto.

In 1976, McLaurin became director of a new Rehabilitation Engineering Center on Wheelchair Design and Development at the University of Virginia (UVA) in Charlottesville, Virginia. James B. Reswick has said that this center wakened the wheelchair industry to the potential of modern materials and engineering. In discussing their work together on wheelchairs at UVA, Cliff Brubaker said: "I doubt than many fully appreciate the extent of his influence on the many improvements to wheelchairs that are now evident. He rarely sought protection or even recognition for his intellectual contributions. It was quite enough for him to see his ideas used to improve products and thereby better serve the people who used them."

At the University of Virginia, Dr. McLaurin engaged in curriculum development for a master's program in Rehabilitation Engineering. It was a very successful program and many of the stalwarts in the practice of clinical rehabilitation engineering in this country are graduates of that degree program. It was the first formal university-based education program in rehabilitation engineering. Cliff Brubaker, noting the program's influence has said: "His influence on the science, art, and practice of rehabilitation engineering that blossomed most vibrantly at UVA during the autumn of his fabulous career has been immortalized in the extraordinary group that he trained." As Henry Adams put it, "A teacher affects eternity; no one can tell where his influence stops."

Colin McLaurin taught many associates through the years. Elaine Trefler, a young occupational therapist taking care of the child amputee clinic in Toronto in 1968, remembers that she learned a lot from "Mac." She adds, "Mac was not an easy mentor. He was quick to question every statement. He seldom agreed with an idea unless he was truly convinced of its value. Praise was rare, and was often just a twinkle in his eyes, or the continuation of a conversation related to the development of a new concept . . ." Jim Foort, a career-long colleague, put it this way, "All I can say now is, I am thankful I knew him and that we were close friends. My two years with him and Fred [Hampton] taught me so much I could use wherever I went, and we often used each other as sounding boards throughout our careers." All who dealt closely with McLaurin learned from him and can relate to Trefler's and Foort's observations. Anyone who aspires to be a successful rehabilitation engineer would do well to study McLaurin's approaches and emulate his methods.

Colin McLaurin was not an "organizational man." In fact, he was, at times, just the opposite. Nevertheless, he had considerable impact on governmental agencies and upon the formation of important societies. He was a founding member of the International Society for Prosthetics and Orthotics (ISPO) in Copenhagen in 1972. Likewise, he played an influential role in the formation of RESNA in 1980. He was a fellow of RESNA and its second president. In 1980, he instituted RESNA's "passing the hat" tradition when he used the honorarium from his E&J keynote address to purchase a new beaver hat for the Society. Each year, the 'hat' is passed to the General Chairperson for the following year's meeting. On a more pragmatic note, within RESNA and among other groups, he is often regarded as the person who got "Wheelchair Standards" development back on course.

In 1969, McLaurin was appointed Chairman of the Committee on Prosthetics Research and Development (CPRD) of NAS/NRC and served until 1975. It was during this period that CPRD recommended the development of Rehabilitation Engineering Centers (now supported by NIDRR). Colin played an important role in this process because he had already developed such a center in Toronto and knew how effective such centers can be. Throughout his career, he emphasized the need for engineers in rehabilitation to immerse themselves in clinical activities that would enable them to define and solve problems of significance to persons with disabilities. In this regard, he influenced NIDRR's priority that their Rehabilitation Engineering Research Centers be located within rehabilitation environments.

What can be said when a great man dies? What should be said? No words are adequate measure of the man, but something has to be said. Silence is not sufficient. The words here, though also not sufficient, describe part of the rich legacy Colin McLaurin left to all of us working in rehabilitation. We can stand on his shoulders. He was not big on sentimentality. In some way, with a twinkle in his eye, he's letting us know that we should get on with the work. We cannot be like him, for he was one-of-a-kind; but all of us can be doers, as he was, who build, not talk. And we can happily note that his influence is eternal. It will never die.

Prepared by D.S. Childress, a friend, a colleague, and an admirer.

Dudley S. Childress, PhD

*Director, Northwestern University
Rehabilitation Engineering Research Program
and Prosthetics Research Laboratory
Chicago, IL*

Editor's Note

Colin A. McLaurin, Sc.D. was a longtime member of the Editorial Board of this publication and its predecessor, the *Bulletin of Prosthetics Research*. Dr. McLaurin was an outstanding peer reviewer of manuscripts as recently as this past year, 1997. He also devoted many hours to working with this Editor during the development of the *Journal's* Clinical Supplement No. 2, "Choosing a Wheelchair System," which was published in March 1990 and, due to continuous demand, is currently going into its fourth printing.

Yes, Dr. McLaurin was a "giant" in the field of rehabilitation of the physically challenged and his absence will not go unnoticed.

Tamara T. Sowell
Editor