

J. Tuzo Wilson
On The 25th Anniversary Of The Discovery Of The Avalon Peninsula's Roots

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Dr. John Tuzo Wilson, arguably the pre-eminent Canadian scientist of the century, and long recognized as one of the world's great geoscientists, is most remarkable for the way in which he has shared his knowledge, wit and wisdom with his fellow citizens. His openness and cordiality have made him an unofficial ambassador of goodwill in the hundred countries that he has visited; his concern has led him to offer advice on topics perceived as far removed from science; his generosity has involved him in free and frank exchanges which have inspired colleagues. One such exchange, and the paper that followed it on the closing and re-opening of the Atlantic, provided a logical explanation of the "symmetry" of Newfoundland geology that had been recognized by Harold Williams. It served as a catalyst to the extraordinary development of Newfoundland geoscience over the past quarter century. As we celebrate the anniversary of this particular conceptual gemstone, it is appropriate that we briefly review Tuzo Wilson's career which, not surprisingly, sparkles with several such gems.

Born in Ottawa in 1908 of Scots and Huguenot ancestry, his childhood was privileged in that it involved much travel and the opportunity to meet some of the most interesting explorers and pioneers of the era. During vacations, he worked in remote areas as a field assistant for some of these people. In 1930, he was the first to graduate from a new physics and geology program at the University of Toronto. This was followed by two years as a Massey Fellow at Cambridge with Sir Harold Jeffreys and the young Edward Bullard. Finally, he obtained a doctorate from Princeton, where he worked with the young Harry Hess, Maurice Ewing (at nearby Lehigh) and the fabled Professor Richard M. Field, one of the first to recognize the importance of the oceans for understanding Earth history.

Tuzo joined the Geological Survey of Canada in 1936 and mapped in Nova Scotia, Quebec and the Northwest Territories. During World War II, he spent 1940-43 overseas with the Army before ending up as a colonel in charge of operational research. Following the war, Colonel Wilson was Deputy Director of Operation Muskox, an exercise which attracted much public attention and introduced snowmobiles to Arctic travel. Upon leaving the Army, he was asked to head up the geophysics group at the University of Toronto where he remained as professor and, later, as Principal of Erindale College until he retired in 1974. Then he assumed a major post, Director General of the Ontario Science Centre, from 1974-85, followed by the less onerous chancellorship of York University, from 1984-87. For the last few years, he has been Professor Emeritus at Toronto, attending meetings, giving talks and writing papers. What did he do during all those years in and (mainly) out of Toronto?

Tuzo Wilson's first fireball tossed into geoscience thinking circles was a subdivision of the Canadian Shield into

provinces which appeared in a CIM Bulletin of 1949. It was based on structural trends, partly taken from early airphotos, and on a handful of radiometric dates. Together with a somewhat similar structural division of the Shield by J.E. Gill, it was ignored by most Precambrian workers for over 15 years, until it miraculously reappeared as the keystone of our present, widely accepted subdivision of the Canadian Shield. At the other end of the time scale, he compiled (under GAC auspices) the first Pleistocene map of Canada in 1958. Tuzo was a "Fixist" in his early days, creating models of stable, continental nuclei from which continents grew by accretion. Later, he compiled information on island arcs and championed contracting Earth theories. Then he reinterpreted these data in terms of an expanding Earth hypothesis. Finally, he unabashedly abandoned both views to accept the evidence of Hess (1962) and Dietz (1961) for a mobile Earth. On a sabbatical at Cambridge in 1965, with some of the young Turks who linked seafloor spreading with geomagnetic reversals, he proposed the concept of transform faults and laid the groundwork for much of plate tectonics. In 1966, he applied this new theory of plates to continental geology by pointing out evidence for the successive closing and opening of ocean basins (now called the Wilson Cycle). That now-classic reinterpretation of Atlantic and Appalachian history, which recognized the Afro-European parenthood of the Avalon Peninsula, is being celebrated at this symposium. Another landmark paper, in 1968, first used the "suspect terrane" concept in analyzing the Cordilleran orogenic belt.

He went on to other aspects of plate theory and showed the potential usefulness of linear chains of oceanic volcanic islands as the fossil tracks of hot spots which record the motions of lithospheric plates. He continues today, intrigued by the new methods of seismic tomography and a continuing curiosity about the behaviour of the Earth's mantle. Tuzo Wilson, the scientist, received in 1978 the Vetlesen Prize - the earth science equivalent of the Nobel. Earlier, he had been elected Fellow of the Royal Society (of London) and made a Companion of the Order of Canada. He has been awarded a plethora of medals including the Alfred Wegener, the Logan, the Wollaston, the Penrose and (believe it or not) the J.T. Wilson! He has been granted innumerable honorary degrees from great bastions of learning such as Yale and, of course, Memorial.

Tuzo the scientist has also been a leader of science. He was president of the International Union of Geodesy and Geophysics (1957-60) during the momentous International Geophysical Year, the year of the two moons. He first visited China during this period and achieved a Norman Bethune-like aura within its scientific circles. He has also served as President of the American Geophysical Union (1980-82) and of the Royal Society of Canada (1972-73). In the latter role, he strove to make that Society the national academy that

Canada lacked - he firmly planted the seed, although it took nearly two decades and another earth scientist hoeing the intellectual garden before it came about.

Tuzo Wilson's example and leadership have inspired two or more generations of earth scientists to look beyond their laboratory benches and map-areas to contemplate the significance of their work in its broadest contexts. But, on another front, where again he has set a superb example, he was for a long time less successful in attracting followers. This is the realm of public awareness of science. Since 1946, when events from Operation MuskoX made daily front page news across the land, he has maintained exceedingly close relationships with the press and the public. His 1958 visit to China resulted in three popular books, the first of which, "One Chinese Moon", was a best seller in Canada, which was then starved for news of the world's most populous country. During the plate tectonic revolution, many intelligent laypersons were better informed and more abreast of progress, thanks to Tuzo's popular articles and TV appearances, than were many of his fellow scientists. At normal retirement age, he leapt at the opportunity to head up the Ontario Science Centre, which rapidly became a model of effective science communication for Canada and other places in the world. Visits and exchanges with China resumed, and many of the 117 science centres developed in that country bear the imprint of OSC and its itinerant director-general. As the first winner (1968) of the Royal Society of Canada's Bancroft Award for public communication of science, Tuzo's example over the last half century has finally convinced many other scientists that they can tell about the excitement of their work without losing face or arousing the suspicions of their peers!

If talking about science to the masses requires resolve, venturing public opinions on non-scientific issues requires

courage verging on foolhardiness. A case in point was the Memorial University convocation of 1968 when the honorary graduate, instead of talking about moving plates, had the temerity to discuss the physical care and intellectual feeding of undergraduates. Many faculty members were deeply offended by this unsolicited advice from the upstart, newly appointed principal of Erindale College. The wiser ones slowly came around to following his guidelines - 10 or 15 years later (the average incubation time for a new Tuzo Wilson idea!). He has also been free with his advice in the pages of magazines, such as "Maclean's", and in public broadcasts such as the CBC Massey Lecture series. Subjects have included energy and conservation, economics and economists, the nuclear threat, the global population problem, the need for government agencies to seek unpaid outside advice, and many, many more. His views have not always pleased industrial tycoons, civil service mandarins, economists and religious zealots, but newspaper editorial writers and thoughtful members of the public have welcomed his fresh perspectives.

Tuzo Wilson, our best known scientist, has made vast contributions to our understanding of the Earth and made many informed suggestions on how mankind can live in harmony with it. In the course of advancing knowledge, he has fearlessly discarded hypotheses in the face of new facts concerning this mobile planet and the people upon it. But in one regard he remains a Fixist; his devoted wife is the same Isabel Dickson whom he married in 1938, who accompanied him to China, who has shared in his several visits to Newfoundland and who is again present at this nostalgic 25th Anniversary. We hope to see them back here many times before the 50th Anniversary arrives.