Acceptance by Dr. Otto van Breemen

Coming at the end of a career, I am grateful for the recognition bestowed by the Mentorship Medal of the Canadian Federation of Earth Sciences. I have been privileged to have played a coordinating role amongst scientists unravelling the geological history of the Canadian landmass. It is not really possible to control science as good science is achieved by people who are stubborn, 'think outside the box' and are eminently capable of managing their work. Paradoxically, it is essential to plan as the elements of goals, facilities and personalities can and often will be rearranged in new efforts and research directions. It is important also to not only stick to principles but to like science, which is curiously forgiving. It was Jon Patchett, from the University of Arizona, who pointed out to me that no matter what the setback, there is always something new and exciting elsewhere, i.e. don't give up.

Radiometric dating was initiated around 1900 by Ernest Rutherford when, at McGill University, he developed the concept of half life in radioactive decay and went on to determine the first radiometric ages based on the decay of uranium to helium. The more reliable U-Pb method did not become feasible, however, until Alfred Nier perfected the mass spectrometer for the Manhattan Project. So it was that after the war George Wetherill and others launched the U-Pb technique with its two independent U decay schemes, which allowed one to go back in time without loosing precision. A little heralded discovery in Leningrad of increasing Pb emission using silica gel on ionizing filaments inspired Tom Krogh, Carnegie Institute and later the Royal Ontario Museum, to analyze increasingly tiny amounts of pristine zircon. With precisions of a few million years, it became possible to help geologists sort out Precambrian lithostratigraphy and by the eighties, young scientists at the ROM in Toronto and at the Geological Survey of Canada in Ottawa were actively involved in unravelling the Canadian Shield as well as the Appalachian and Cordilleran orogens. This was a story of two Canadian labs each with distinct approaches and offshoots, which opened up the previously inscrutable geology of the Precambrian. Significantly, both labs are close to Montreal, where radiometric dating was first proposed and implemented.

I came to the GSC lab in the spring of 1981 at the end of an era when geochronology was the purview of physicists who built mass spectrometers. We bought ours but continued the tradition of technical improvement and facility enhancement with physicist Dale Loveridge and chemist Bob Sullivan. A new recruit, Randy Parrish, succeeded with the technically challenging project of making the all important international ^{205}Pb spike. Randy also designed a multi-sample acid digestion bomb, essential for analysing young rocks, which also speeded up zircon micro-chemistry. Chris Roddick wrote advanced software for gathering, manipulating and storing isotopic data from the mass spectrometer and this database was subsequently expanded into an integrated laboratory tool and national geochronology database by Mike Villeneuve and Linda Richard. Chris Roddick enthusiastically promoted the SHRIMP ion probe acquisition, which after Chris's untimely death was expertly brought into operation by Richard Stern, with national and international collaboration extended by Mike Hamilton and Nicole Rayner. This facility enabled zircon spot analysis with 20 micron resolution, which although not as precise as the single zircon dissolution method, enabled complex histories to be unravelled. Chris Roddick further initiated the infrared laser method for Ar-Ar step heating analysis, which was brought into operation by Mike Villeneuve. A number of post-doctorate fellows also contributed significantly to the geochronology program, such as Ernst Hegner who started Nd isotope mapping of the Shield and Bernard Bingen who demonstrated the importance of

understanding the paragenesis of accessory minerals. After three decades, the GSC geochronology lab, led by Bill Davis, Vicki McNicoll and Dawn Kellett is still productive and scientifically meaningful, being increasingly involved in microbeam techniques.

Last but not least, a vital geochronological role was played by the many field geologists with whom we were privileged to collaborate. The expert geological knowledge of researchers like Tony Davidson was essential in identifying key samples to test hypotheses, in contributing fabric and textural context and in creating incentives to improve methodology.