Alan M. Goodwin
1924-2008

"One of the greatest geologists this country has ever been blessed to have, and a real gentleman to boot…" is how Alan M. Goodwin was described by one of his friends and colleagues. 'Smiley Al' – as he was affectionately nicknamed – passed away, peacefully but quite unexpectedly, while at his family cottage on June 10, 2008. Al was just ten days short of his 84th birthday. Alan Goodwin had been professor in the Department of Geology at the University of Toronto for twenty years, retiring in 1989. He was a part of the department until the very end, still visiting us every few weeks, describing the latest paper on Precambrian geology and ore deposits that had caught his attention, or recounting his most recent 'Wagnerian' trip to Bayreuth or musical vacations in Paris with his wife Marion.

After an undergraduate education at Queen's University, Al Goodwin joined Professor Stanley A. Tyler at the University of Wisconsin. Stan Tyler was interested in then enigmatic Banded Iron Formations (BIF) and Al wrote a thesis on the Stratigraphy and origin of the Gunflint Iron Formation. Al was still in Madison when Stan Tyler and Harvard paleontologist Elso Bargoorn first convinced themselves – and later the world – that silicified stromatolites in the 2- billion-year-old Gunflint had retained a remarkable variety of organic-rich unicellular fossil organisms. Al Goodwin's maps of the Gunflint Iron Formation, published by the Ontario Department of Mines (now the Ontario Geological Survey) has stood the test of time and are still used today. After his Ph.D. graduation, Al Goodwin became Research Geologist with Algoma Steel, where he did more ground-breaking geochemical work on the Gunflint, with an early isotope study of the genesis of these BIFs.

While at Algoma, Al also began to turn his attention to older rocks, namely the 2.9 to 2.7 billion-year-old Michipicoten Greenstone Belt. Using his expertise, Al recognized that some major BIFs existed there and could be used as marker horizons; in combination with younging information from basaltic pillow tops, Al was able to unravel the complex folding within that belt, a first in Archean geology. Studying the geology of Algoma's New Helen Mine in Wawa, then Canada's largest source of iron, Al also recognized carbonate-facies iron formations in what had been previously interpreted as replaced rhyolite flows, and described the intense exhalative processes active near volcanic centres that have since become common interpretations of volcanogenic ore deposits.

In 1961, Al Goodwin joined the Ontario Department of Mines as Field Geologist and decidedly switched his focus to Archean volcanic rocks. He pioneered work on their stratigraphy and geochemistry and recognized that they generally could be classified into tholeiitic and calc-alkalic compositions, the two classes respectively resembling modern ocean-floor basalts and island arc assemblages. In collaboration with Roly Ridler, Al continued that work with the Geological Survey of Canada where he became Research Scientist in 1965. Alan Goodwin joined the University of Toronto in 1969. Soon after his arrival, Al began promoting what was then a novel concept in university-based geological research – a collaborative, field-based study focused on a common large theme and knitted together by regular workshops where participants with differing expertise would help educate and stimulate each other.

The result, in collaboration with Professor Gordon West and others, was the "Western Superior Province Geotraverse", a six-year study of Archean terrains that involved researchers and students (mainly) from Ontario universities and the Ontario Geological Survey. (It was hoped

that the process would also assist with procuring steady research funding, especially support for graduate students, but this dream was short-lived.) With Geotraverse, Al wanted to look at what lay underneath the greenstone belts and understand what processes were responsible for their formation.

Starting ca. 1965, thanks in no small part to U of T Professor John Tuzo Wilson, Plate Tectonics (PT) had quickly become the accepted model of terrestrial evolution by geophysicists, geochemists and many students of Phanerozoic geology but Precambrian geologists were still reluctant to embrace it in the early 70s. Al, however, did want to explore how PT applied to the earliest half of Earth's history. Ten years later, Plate Tectonics in the Archean had gained the enthusiastic support of many Precambrian geologists, while Al, on the contrary, and as expressed in his landmark text book, *Principles of Precambrian Geology* (Academic Press, 1996), emphasized its limitations. It is only in the current decade that it has become quite accepted that Earth's evolution from 'Magma Ocean' to the present tectonic style must have been gradual as its heat content was decreasing.

Professor Goodwin was a wonderful teacher in the field. He took time to point things out but was always very careful to let students experience the thrill of their own discoveries. "Well… what do you think?" was his famous phrase. Although generally easy going, loose terminology, and correspondingly loose thinking, did get to him. He once chided a graduate student who claimed that a certain terrain had been stuffed up there". Alan remonstrated in his most grandfatherly way, saying: "Mr. …., you can subduct it, or you can obduct it, but you most certainly cannot just stuff it up there. …".

While he was invited all over the world for his expertise, and was made honorary member of many national geological societies, Al Goodwin remained very modest in all his contacts with colleagues. He was always interested in them as people, as family members, and generally as human beings, rather than just as listeners or as sources of useful information. Alan was a great friend to many colleagues and they will miss him.

Credits to the University of Toronto