

M.E. EVANS, FRSC

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**Denis Ian Gough**  
**1922-2011**



Ian Gough was born on 20 June 1922 at Port Elizabeth, South Africa. He received a BSc and MSc from Rhodes University (in 1943 and 1947, respectively), and a PhD from the University of Witwatersrand in 1953. From 1947 to 1958 he worked as a Research Officer at the South African Council for Scientific and Industrial Research, before moving to academe where he spent the rest of his career. In the years 1958-63 he was at the University College of Rhodesia and Nyasaland (in what is now Harare, Zimbabwe), followed by a short period (1964-66) at the Southwest Center for Advanced Studies in Dallas, Texas. Thereafter, he moved to the University of Alberta in Edmonton, Canada, where he remained on the faculty until his retirement in 1988.

Ian had a rich and productive research career in his chosen field of geophysics. He published more than 100 papers in first-class international scientific journals and made seminal contributions to a remarkable range of topics in the earth sciences, from small-scale seismic exploration to intercontinental gravity networks. He belonged to a generation of scientists who approached scientific work very much from first principles. Given a need to bring observations to bear on a particular problem, he set about designing, constructing, and operating the necessary apparatus. I well remember him preparing the unique Gough-Reitzel magnetometers for an upcoming field season—rows of vertical metal tubes standing to attention like a squadron of soldiers on parade. And each one containing a sensitive magnet system and an ingenious home-made camera. He was simultaneously commanding officer, quartermaster, and chief mechanic. One thinks of Newton polishing mirrors for his own telescope, or of Faraday co-opting a giant link from an anchor chain to construct his electromagnet. Deployed as arrays across wide stretches of North America, South Africa, and Australia, Ian's magnetometers revealed hitherto unknown structures in the earth's crust, such as an ancient plate-tectonic boundary stretching more than 1000 km through the Canadian Shield and down into Wyoming.

Another example of this hands-on way of doing science was the Gough spinner magnetometer, built in the days when nothing was available off-the-shelf, but at a time when the ability to measure the weak "fossil" magnetism in rock samples was crucial to establishing the reality of the way in which the Earth's magnetic poles, and the continents themselves, have drifted about over huge distances; the sort of data which would ultimately underpin the modern theory of plate tectonics. These examples are but two from a long list that includes the accurate determination of the amount of thermal energy flowing out of the Earth, the seismic activity induced by the filling of large reservoirs, and the speculation that the supercontinent *Gondwanaland* was cracked apart by the weight of an ice cap hundreds of millions of years ago.

Dedicated as he was to his own research, Ian was also committed to playing a leadership role in the scientific community at large. He served as President of the International Association of Geomagnetism and Aeronomy (1983-87), President of the Canadian Geophysical Union (1975-77), and as Director of the Institute of Earth and Planetary Physics (now the Institute for Geophysical Research) at the University of Alberta. He was also instrumental in setting up Canada's highly-acclaimed national geosciences program *Lithoprobe*.

Ian Gough's contributions to geoscience were recognized nationally and internationally. In 1972, he was elected Fellow of the Royal Society of Canada. He was also a Fellow of the Royal Astronomical Society (1959), the American Geophysical Union (1980), and the Geological Association of Canada (1982). He was awarded the Canadian Geophysical Union's J. Tuzo Wilson Medal (1983), the Royal Astronomical Society's Chapman Medal (1988), and the South African Geophysical Association's Rudolf Krahmann Medal (1989). In 1990, Rhodes University awarded him a DSc *honoris causa*.

During his last field work in South Africa Ian discovered a taste for writing poetry and after his retirement turned to that. He remarked more than once that doing this was more difficult than geophysical research! Nevertheless, in 2006 he published *Signing the Light*, a book of poetry that reveals a sensitive and caring nature.

Ian was always a thoughtful and courteous colleague, mentor, and friend. He inspired and unfailingly supported generations of students, post-doctoral fellows, and younger faculty members. He passed away in Edmonton on 21 March 2011, and is survived by his wife, Winifred Irving Nelson, their children Catherine Veronica and Stephen William Cyprian, six grandchildren and three great-grandchildren. His example of a life well lived, of commitment and service, is a legacy of which we are all the beneficiaries.

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*(Author's title given as of the time of writing)*