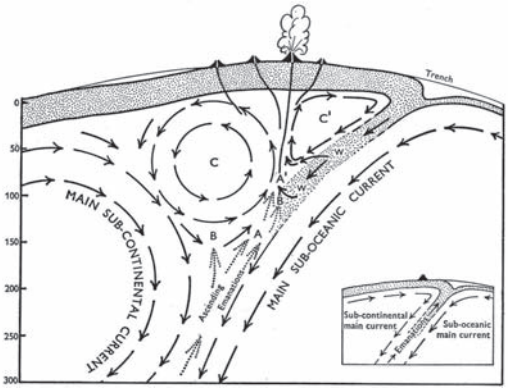
A RECORD BRIMFUL OF PROMISE

Arthur Holmes is mentioned in several articles in this issue, by John Valley in his editorial, by Condon and Schmitz in their introductory article, and by Mattinson in his review of the U–Pb method. Google 'Arthur Holmes' and you will find a lot of articles about his scientific work, and there is a very readable biography by Cherry Lewis which strikes a nice balance between his scientific and personal life. There is no question that he was a giant of 20th-century Earth science. The U–Pb age of 370 Ma that he obtained for accessory minerals separated from a nepheline syenite from the Christiania region of Norway (Holmes 1911) is a milestone not just for geology but for other sciences. Without an Earth of great antiquity, biological evolution by natural selection is impossible. For astronomers, it gave some local ground truth to the sort of timescale on which the universe has existed. For physics it provided insights into the character of radioactive decay, and it is fascinating that Holmes discusses the possibility that the rate of decay might depend on pressure and temperature. His paper and his 1913 booklet *The Age of the Earth* are beautifully written and constructed. Geological relationships, petrology, mineralogy and the new geochemistry of isotopes all come magically together. And in 1911 he was only 21, for heaven's sake!

I never met Holmes (he died in 1965, a couple of years after I got my PhD), but I've always felt his presence. He was born in Gateshead, south of Newcastle-upon-Tyne in north-east England, not far from where my wife grew up. The Tyne was at the heart of the industrial revolution, and Holmes lived in a terrace house at 19 Primrose Hill, in one of those endless, unbroken rows of little brick shoebox homes built for the workers who helped turn Victorian Britain into the world's economic powerhouse. His father was a cabinet maker and worked as an assistant in an ironmonger's shop. James Mattinson gives an account of his early scientific work at what we now call Imperial College, in London, and Cherry Lewis gives a detailed account of his troubled work with the minerals industry in Mozambique and the petroleum industry in Burma. His main academic career began in 1924 when he was given the job of starting a department of geology at Durham University, where 40 years later I obtained both my degrees. The student geological society in Durham is still called 'The Arthur Holmes Geological Society'. In 1943 he took up the Chair of Geology at Edinburgh where I'm writing now. I pass his picture every time I go up the main stairs in the Grant Institute (my first picture). He remained there until he retired in 1956.

Holmes was a quiet, rather retiring person, but nevertheless had the power to inspire others with the thrill of the geological chase. One of his earliest students in Durham was Kingsley Dunham, who was professor there when I was an undergraduate in the late 1950s. Dunham went on to become director of the British Geological Survey. My close friend and long-time collaborator, W. L. (Bill) Brown, who was older than me, obtained a first-class honours degree in chemistry at Edinburgh, but he decided chemistry was dull, and went to some lectures by Holmes. Perhaps because Bill loved mountaineering, geology seemed a lot less dull, and Holmes arranged for him to take a second degree, in geology, which Bill obtained in two years, again getting a first. For some weird reason, the university regulations did not allow anyone to hold two honours degrees. Perhaps they thought an honours degree was a whole brain-full of knowledge, and that allowing someone to hold two would debase their value. Disarmingly, Bill found crystallography, which (rightly!) took up a lot of course time in those days, very easy. Holmes spotted this and suggested he do a post-doc at the ETH in Zurich, where Fritz Laves was unravelling the structural relationships of the feldspars.

The Grant Institute of Geology in the University of Edinburgh, where Holmes was Regius Professor from 1943 to 1956



"Figure 744: Diagrammatic section across the Andesite Line and a typical island arc (e.g. Japan or Kamchatka) to illustrate a speculative arrangement of convection currents which might account for the origin of andesitic lavas and their associates, and for the concentration of volcanoes over the region of intermediate earthquakes."

Holmes' second wife, Doris Reynolds, was a research fellow in Edinburgh from 1943 to 1962. Holmes installed her in a large and comfortable office, with lots of bookshelves and drawers for rock specimens. I occupied it for many years towards the end of my paid career. Women were a rarity in geological circles in the 1950s, and Doris was famously outspoken. She was a believer in the 'granitization' hypothesis, at a time when a magmatic origin for granite was becoming the prevailing view. I heard her contribute to discussions on a number of occasions, often rummaging in her handbag for a lantern slide. Bill recalled a talk when a nervous young lecturer was giving a conventional magmatic viewpoint. 'Bollocks!' said Doris, loudly, from the darkness. That was very progressive language for a lady in the 1950s!

Holmes made many contributions in addition to his isotopic work, and was well ahead of his time on continental drift and mantle convection. His book *Principles of Physical Geology*, first published in 1944 and reprinted 18 times before a second edition was produced in 1965, influenced me and thousands of others. It was stimulating to read because he was prepared to speculate and put forward entirely new ideas, even though it was a book for students. My second picture is an illustration from the 1965 edition, along with the first paragraph of Holmes' original long caption; the diagram presents ideas that were, a few years later, to become an essential part of the 'new global tectonics'.

Ian Parsons
University of Edinburgh

Holmes A (1911) The association of lead with uranium in rock-minerals, and its application to the measurement of geological time. Proceedings of the Royal Society of London A 85: 248-256

Holmes A (1965) Principles of Physical Geology. Ronald Press Co., 1288 pp

Lewis C (2000) The Dating Game. Cambridge University Press, Cambridge, UK, 253 pp, ISBN 0 521 79051

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For further information, please contact Dr. Philip Fralick, acting Chair of the Department of Geology, at (807) 343-8288 or pfralick@lakeheadu.ca.

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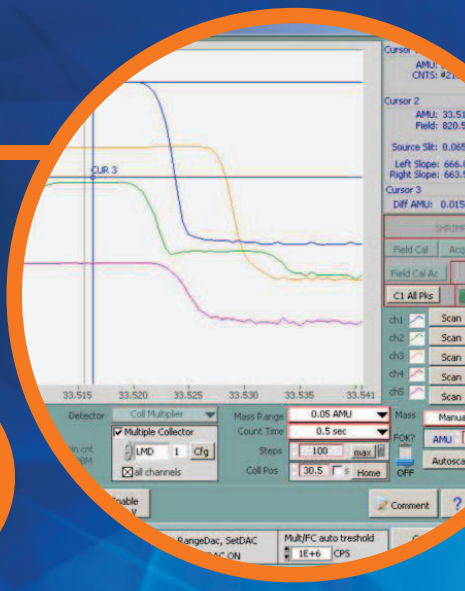

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