

ARTHUR HOLMES, FATHER OF THE GEOLOGICAL TIME SCALE

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At the turn of the twentieth century, history told the story of people and geology the story of the Earth. But, unlike history, geology had no dates. While the order of geological events was known, the question was: how long had they lasted? Two thousand, two million or even two hundred million years? No-one really knew. In August 1911, Arthur Holmes (1890-1965) lay in his tent in Mozambique, wracked with malarial fever, and dreamt of building a geological time scale. For nearly fifty years he searched for a technique that could be routinely applied to common rocks; a method that would date them in absolute terms, and unravel the unfathomable Precambrian. Uranium-lead chemical methods proved slow and laborious, made even more so by the discovery of isotopes and the need to measure atomic weights. Helium, ubiquitous in common igneous rocks, escaped through the smallest crystal lattice. Thus theory remained ahead of technology, and the time scale advanced only slowly. Eventually, in the 1940s, progress in mass spectrometry enabled Holmes to publish his famous 'B scale' that finally reconciled radiometric dating with the older methods of measuring time. Despite considerable errors, it was widely used for over a decade. Work on the Manhattan Project during the Second World War further honed the mass spectrometer's precision and by 1959 new dates allowed Holmes to refine his scale to within five percent of current values. The father of the geological time scale had fulfilled his dream. Where would geology be today without it?