

Book Review

JAMES HUTTON: THE FOUNDER OF MODERN GEOLOGY

by Donald B. McIntyre and Alan McKirdy (1997).

xii+51 pp., The Stationery Office, Edinburgh.
ISBN 0-11-495812-2 (paperback); UK£7-99.

COINCIDENCE BEING what it is, I am starting to write this review on 23rd October, 1997. Most undergraduates taking an introductory course in geology are well aware that, based on a biblical chronology, Archbishop James Ussher calculated the Earth to have formed at 9.00 a.m. in the morning of 23rd October, 4004 B.C. Thus, using this estimate, our planet is 6,000 years old today. It would be an excellent excuse to blow out the candles, except that modern methods, based on more reliable sources such as radiometric dating, consistently show that the true age is in excess of 4,500,000,000 years. Such are the problems produced by a lost birth certificate. The first modern scientist to place such post-Ussher estimates on a firm observational basis, although some time before the discovery of radiometric dating, was another James, Hutton, the subject of this slim and most readable volume.

Hutton's contribution to geological thought is indisputable and won him the deserved reputation of being the father of modern geology. This slender and relatively inexpensive volume is a beautifully produced introduction to Hutton the geologist and the man, as well as his times and his heritage. The text is well written and highly readable; indeed, I read it from cover to cover on the short plane flight from Kingston to Miami. The many illustrations are in colour; these include paintings and a bust of Hutton, but, perhaps even more importantly for understanding his science, they show original diagrams and modern exposures of Hutton's key sections. These illustrations alone are worth the price of the book. However, I find it odd that the authors allude to certain references in the text, particularly in the last chapter, without including them in the list of 'further reading'. The index appears to be adequate.

Hutton's contributions to geology sound obvious, perhaps even dogmatic, to us in the late 20th century, such as the concept of deep time, the intrusive igneous nature of granite and his understanding of the rock cycle. Nevertheless, these were major breakthroughs in natural philosophy 200 years ago. The authors emphasise that Hutton was the first geologist to devise and pursue field tests of his theories. For example, until it was disproved by Hutton, Britain was considered to have been formed mainly of granite, precipitated from a global ocean. The authors ably emphasise Hutton's understanding of the magnitude of geological time

when compared with the fleeting lifetimes of our own species. As I suggested above, the broad outlines of Hutton's life and contributions are well-known to most geologists, but the authors do provide many facts and pieces of supporting information that were new to me. For example, it gave me great pleasure to discover that I share his birthday, although I am 228 years younger! Hutton also had an illegitimate child, paralleling the father of Jamaican geology, Sir Henry De la Beche.

However, this book, like so many textbooks (see, for example, Donovan, 1997, p. 65), perpetuates the 'Huttonian myth'. In his foreword, Professor T.C. Smout intimates what Gould (1987) demonstrated, that Hutton formulated his theories and then sought field evidence to test his ideas. While Hutton was undoubtedly the first great, modern field geologist, he was nevertheless also a theoretician, as is apparent from the chronology of McIntyre and McKirdy. Indeed, on p. 30, the authors' note that "Before writing his *Theory of the Earth*, Hutton had only seen granite outcrops in Aberdeenshire, where the evidence as to its origin was inconclusive." It is perhaps not surprising that Gould's book does not appear in the brief list of 'further reading'; his thesis is somewhat at odds with the monument that the authors are seeking to erect. While they are correct to "[emphasise] that his knowledge was based on extensive observation of natural features and especially rock outcrops", Hutton was quite capable of speculating before supporting data became available. Perhaps his greatest contribution was in his pursuit of this evidence - "Hutton showed that geological conjectures can be tested by further field observations" (p. 33).

I recommend this most readable volume to anyone with an interest in geology, its history and its methodology. Hutton wasn't the superman of legend, whose ideas were driven by observation alone, but his contribution was pivotal in founding geology as a science. The way that we use fieldwork as a basis for our geological investigations has changed little in 200 years - may it long continue as such.

REFERENCES

- Donovan, S.K. 1997. "Physical Geology" by Anatole Dolgoff with Mary Falcon. *Journal of the Geological Society of Jamaica*, **32**, 64-66. [Book review.]
- Gould, S.J. 1987. *Time's Arrow, Time's Cycle*. Harvard University Press, Cambridge, Massachusetts, xiii+222 pp.

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