Authors Accepted Manuscript: please cite as Falconer, Isobel. 2017. "John W. Arthur, Brilliant Lives: The Clerk Maxwells and the Scottish Enlightenment." *The Innes Review* 68 (2): 197–99. https://doi.org/10.3366/inr.2017.0154.

John W. Arthur, *Brilliant Lives: the Clerk Maxwells and the Scottish Enlightenment*. John Donald: Edinburgh, 2016. 320 pp. £25.00 paperback. ISBN 9781906566975.

James Clerk Maxwell (1831-1879) is generally counted as one of the three greatest physicists ever, bracketed with Newton and Einstein. He is known for his fundamental contributions to the science of colour vision, thermodynamics, and the kinetic theory of gases, but above all for his conception of the electromagnetic field and realisation that light is an electromagnetic wave. He is also known as a deeply religious man and a strong opponent of the scientific naturalism promoted by Tyndall, Huxley and others. Maxwell was born in Edinburgh, and lived in Scotland for the major part of his life. Yet hitherto his Scottish background has not been thoroughly explored. Now John Arthur has filled this gap, with an exhaustive enquiry into Maxwell's family history, particularly as it pertains to Edinburgh and the Scottish lowlands.

The book is born out of the author's fascination with tracing Maxwell's family, its collateral branches, their network of connections and friends, and the places associated with them, from the sixteenth century. Arthur is well placed to undertake this work, being a trustee of the James Clerk Maxwell Foundation in Edinburgh and close to the National Library, Archives, and Records of Scotland. His sources reflect this proximity: sasines; wills; birth, marriage and death certificates; and directories, and the book contents correspondingly emphasises blood kinship and property ownership. Where possible this focus is enlivened by personal memoirs, notably those of John Clerk, 2nd Baronet of Penicuik (1676-1755).

A brief introduction to eighteenth century Scotland provides the most sustained discussion of the Scottish Enlightenment in the book, and sets the scene for the chapter on James Clerk Maxwell's life that follows. Maxwell's contributions to science have been extensively analysed elsewhere, and Arthur provides only an overview; instead he places Maxwell's scientific activity within the context of his personal life, which is the main focus of the chapter. Most accounts of Maxwell's life are ultimately based on a single source, the biography by his friends Lewis Campbell and William Garnett. While he draws extensively on Campbell and Garnett, Arthur has meticulously cross-checked these accounts with other available evidence, and has added some new and hitherto untapped sources. Thus he corrects some earlier factual errors, although he adds a few new errors in his own interpretations, for example that editing Henry Cavendish's papers was a string attached to the founding of the Cavendish Physical Laboratory in Cambridge where Maxwell became the first professor. But such blemishes are minor compared to the new insights we gain into Maxwell's schooling, his familial relationship with his mentor James Forbes, and the reaction of his family to his marriage.

The book proceeds to chronicle the records of the lives of Maxwell's extended family. It is organised roughly by family branch: the intermarried Clerks, Maxwells and Clerk Maxwells of his paternal grandfather's side are followed by the Weirs and Irvings of his paternal grandmother's family; the Cays and Hodshons of his mother's line come last and are slightly dealt with in comparison – whether because of lack of documentary record, or lack of close association with Edinburgh, is not clear. Genealogical tables help to keep track of the multifarious characters and their connections, and the narrative is enlivened where possible by more detailed accounts of the many colourful characters that the family produced – such as William Clerk, John Weir, and Mary Dacre.

That Arthur has been able to discover so much about these families says, in itself, much about their status as members of the 200 or so men who controlled Scotland during the period; they owned property and were literate in English (or occasionally Scots). His investigations reveal much about the ties of kinship, marriage, business and patronage between these families, through which they maintained their positions of power and comparative affluence, surviving economic and political vicissitudes. The family as a whole had a degree of wealth from land ownership and mining, a strong kinship network with an evident expectation of financial support when necessary, and access to education. Never supremely wealthy, all males except the head of the Clerk family required some other occupation to bring in a regular income – law, army, navy, medicine, business, and occasionally church. There are Presbyterians, Episcopalians, and closet Roman Catholics here, but the drive to protect family wealth and interests seems to have come before strong religious allegiance. Lawyers feature especially largely – is this because it is the occupation that kept them most firmly tied to Edinburgh and the Scottish Enlightenment?

The reader already familiar with the Scottish Enlightenment will recognise that the Clerks, Maxwells, Irvings and Cays lived lives that were exemplars of the period. They were improving landlords, surveyors of roads, collectors of Italian art, interested in science and members of the Royal Society of Edinburgh or its predecessor the Philosophical Society. But the reader looking for explicit analysis of the influence of the Scottish Enlightenment on Maxwell, or of the interactions between his family and Enlightenment ideas, will be disappointed. The Enlightenment as such figures only in a list or two of great men who were contemporaneous with the Clerks and Maxwells, and in accounts of the building of Edinburgh's New Town and southward expansion around George Square, where many of the family lived (detailed maps locate their residences). Of the lowland land reformation in which they partook, or the intellectual ideas that flourished, we get only oblique hints. A brief discussion of the Easy Club, with which William Clerk was associated, gives an idea of the rich associational culture through which Enlightenment ideas were fostered, but is unfortunately not sustained.

The book contains a wealth of scholarship on the Clerk Maxwell family that would provide a rich source for studying the reciprocity of service between people with multiple social, biological and residential connections through female as well as male lines, extending our understanding of kinship and the mechanisms that upheld local elites. It deepens our appreciation of James Clerk Maxwell's background, helping to explain in particular his denominational tolerance and his easy access to Scottish associational culture.

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