An interpreter of early astrophysics


Agnes Mary Clerke (1842–1907) was a remarkable Victorian. She was born a generation too soon to have been eligible for the women’s university colleges, and never worked in fundamental astronomical research in her own right, but by the time of her death she was one of the most respected interpreters of the “new astronomy” of astrophysics in the world. I use the word interpreter in clear contrast with popularizer, for like Mary Somerville, her predecessor in that tradition, whose “mantle” Dr Brück sees her as inheriting, Agnes Clerke worked at the highest intellectual level. Her System of the Stars (1890) can be seen in many ways as an up-to-date version of Mary Somerville’s Connexion of the Physical Sciences (1834), and when Agnes Clerke used the word “popular” it simply meant equation-free and aimed at a well-educated and cultured audience, and not what we might today style as “popular”. As an interpreter of contemporary astronomy, therefore, Agnes Clerke was a person who, possessing as she did a thorough mastery of the scientific developments which had taken place since the days of Sir William Herschel, placed them into a historical context. She showed how the science of astrophysics had come into being and how the telescope had transformed cosmology almost beyond recognition between 1860 and 1880.

This was possible, moreover, because of Agnes’s own background and that broad literary culture which enabled her not only to read and understand the key research papers which were transforming astronomy, but also to form a network of direct contacts and friendships with the leading contemporary astrophysicists and their wives. Catholic Irishwoman brings out is the easy intermixing between Christian denominations that often took place within the gentry classes of early Victorian Ireland.

Languages, literature, and history formed the Clerke children’s education, and it seems that the training given to Agnes and to Mary Ellen was no less thorough and wide-ranging than that given to their brother Aubrey, who later came to practise at the London bar. Following the family move to Florence in 1867 (father and brother returning to Dublin and London to keep their law terms), Agnes and Mary Ellen seized the opportunity to become truly accomplished linguists in all the main European languages, and in particular they turned themselves into internationally recognized authorities in Italian history and contemporary politics – Mary Ellen especially writing articles on the contemporary unification of Italy for English and Irish papers.

Writing, indeed, became the key to Agnes’s astronomical career, and this may also have been an economic necessity for two thirty-odd-year-old intellectual sisters who showed no apparent interest in marriage. Indeed, brother Aubrey also remained a bachelor, and all three Clerke children later came to share the same house in Redcliffe Square, London. Agnes first came to prominence in the late 1870s when she was invited to produce some articles for the prestigious Edinburgh Review. As some of them were on Italy and the Scientific Revolution she rapidly emerged as the leading historian of astronomy of the late Victorian period, not only continuing to write for the Edinburgh Review to the end of her life, but also becoming the chief history-of-science contributor to the Dictionary of National Biography and the ninth edition of Encyclopaedia Britannica, where the frequent appearance of the letters “A M C” at the end of articles still indicates the range of her scholarship. By 1885, when her monumental History of Astronomy in the 19th Century appeared, her academic reputation was established. Then Agnes’s critical scholarly studies in the history of cosmology and in the still-developing science of astrophysics saw her emerge as the age’s foremost interpreter of these sciences, and a person from whom European observatory directors and American observatory directors and European professors sought opinions, and whose suggestions they seriously weighed.

What is truly remarkable was the sheer intellectual range that this domestically educated young Irishwoman acquired, spanning the classics, fluency in well over half-a-dozen languages, Renaissance and modern history and, of course, astronomy and astrophysics. Nor would we forget that as a devout Roman Catholic she – and her siblings – enjoyed close relations with the highest echelons of the British Catholic hierarchy, donating and bequeathing substantial sums of money to support both spiritual and educational projects in Catholic Christianity. Her interest in the scientific and spiritual possibility of life on other worlds and the likelihood of our having “cosmic companions”, her willingness to accept that, after an initial divine creation, life on Earth had evolved into its present species in a naturalistic way, and the published acknowledgement she received in the works of the evolutionist Alfred Russell Wallace show that she saw no conflict existing between modern science and her Christian faith. Indeed, in contradistinction to Huxley, Tyndall and Spencer, Agnes Clerke was at pains to point out that modern science and even evolution could be understood in a Christian context and did not necessarily have to stand on atheistic or agnostic predicates.

Indeed, the case of Agnes Clerke quite fails to fit many of the accepted paradigms which certain modern historians attempt to impose upon the lives of clever and aspiring women in the past. For Agnes, who was naturally shy and did not even like to be photographed, made a very good independent living, did not need a job, worked on easy and respected terms with some of the leading astronomers and intellectuals of the age, had no connections with feminist political movements, was internationally renowned by the age of 50, and was both an evolutionist and a deeply devout Christian. I feel that Mary Brück’s work brings her subject very much to life. It is based entirely on primary-source research, using Irish, English, and family records, letters in the archival collections of observatories around the world and, of course, Agnes’s own quite massive list of publications. And significantly, it is mercifully free from any of that sociological jargon or obfuscatory gobbledegook which so often mars books written by contemporary female scholars about...
their predecessors. But there again, one would not expect it from the author, whose mastery of plain English makes her work a delight to read. It is thoroughly referenced, making it possible to identify the sources consulted, while the six-page appendix reprints extracts from some of Agnes Clerk’s published papers, thus giving the reader a sense of her prose style.

My only wish is that Dr Brück could have said a little bit more about the financial aspects of Agnes Clerke’s career – assuming that the document exists. As one who is interested in how Victorian “Grand Amateur” astronomy was paid for, I would have liked to know more about Agnes’s earning capacity. What did she get paid for an article in the Edinburgh Review or the Encyclopaedia Britannica? What did her extremely successful books bring in in cash terms? It is clear, for example – as one might expect from a woman descended from bankers, lawyers and successful entrepreneurs on both sides – that Agnes was not unaware of the potential profitability of her books from the way in which she tried, in an age without international copyright law, to make sure that her British-published books were not pirated by unscrupulous American publishing houses.

But this is an incidental point. What really matters is that Dr Brück has brought Agnes Clerke before us as a truly remarkable Victorian. And from the range of Agnes’s erudition and from the nature of her individual character and temperament, Dr Brück has made us think again about many aspects of Victorian culture: about “non-feminist” intellectual women, about Ireland, about science and Roman Catholicism, and about that revolution in astrophysics upon which modern astronomy is based, which Agnes Clerke was the first to chronicle.

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Reissues and new looks

The second half of this year has seen a bumper crop of books arriving in the A&G office. There’s a range from the most straightforward of reference books to the beauties of Hubble Space Telescope images. I’ll mention just a few. A gem among them is a revised edition of Steven Weinberg’s The Discovery of Subatomic Particles (Cambridge University Press, 2003, £18.95, pbk). The first edition of this book came out in 1983, as part of the Scientific American Library. In that classic work, Weinberg set out the discoveries of modern physics in context, describing the discoveries in the past that set the scene for today’s fundamental science. In this revision he re-emphasizes the links between ancient and modern (in physics terms), and brings his treatment bang up to date. Although the focus of this book is on elementary particles, what it provides is a lively, personal and authoritative account of the way scientists found out about matter: what it is made of and how it behaves, at the most fundamental level. Thus is the basis of much of modern physics and chemistry, and so it contains the foundations of modern astronomy and geophysics. Weinberg draws together the lives of the scientists who took significant steps forward, with succinct accounts of what it was they achieved, and how the scientific culture of the times influenced both their work and its reception. It is a very good read, combining lively