Digital daughter

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Ada, the Enchantress of Numbers: A Selection from the Letters of Lord Byron's Daughter and Her Description of the First Computer. Edited by Betty Alexandra Toole. *Strawberry (Critical Connection, PO Box 452, Sausalito, CA 94966, USA): 1992. Pp. 439. $29.95, £24.99. (Distributed in the UK by Pickering and Chatto.)*

CHILDE Harold's Pilgrimage was the poem that made Byron famous. His continuation of it in 1816 began with a reference to his daughter, Ada, born the year before:

> Is thy face like thy mother's, my fair child! Ada! sole daughter of my house and heart?

Byron was not to learn much about his daughter. His wife, whom he characterized as the "Mathematical Medea", separated from him, and he departed to Italy. Lady Byron determined that their daughter should follow her interests, not his — to the extent that William Frend, who was Lady Byron's tutor and became Ada's, warned her against over-pressurizing the child. Frend was well-acquainted with the leading English mathematicians, so it is not surprising that Ada in her teens encountered Charles Babbage It is for her friendship with him that she is remembered by historians of science.

Ada met Babbage in 1833, at a time when his difference engine was well-advanced, and she was soon invited to inspect it. Her interest in Babbage then waned for some years while she married and had a family. In the early 1840s, by which time she had become Countess of Lovelace, it waxed again. Babbage had by now moved on from the difference engine to the analytical engine. He encouraged Ada to translate an article about it from the French and to add her own extensive notes. The result has become an important source of information on Babbage's computer. It was the high point of Ada's contribution. Her health subsequently deteriorated and she died at an early age in 1852.

How historically important was Lady Lovelace? More especially, how scientifically important was she? Does she merit a volume of collected letters? She was certainly intelligent and the possessor of a lively mind. But reaching a just estimate of her abilities is made difficult by her own very high opinion of herself. For example, she reports to her mother that: "Faraday expresses himself in absolute amazement at what he (I think most happily and beautifully) designates the 'elasticity of my intellect'." Although she then comments on Faraday's modesty, she concludes: "I may be the Deborah, the Elijah of Science".

The same faith in her own abilities shines through her correspondence with Babbage about the article on the analytical engine: "I wish you were as accurate, and as much to be relied on, as I am myself.... I hope you do not take upon yourself to alter any of my corrections". This seems a rather cavalier way of writing to an eminent scientist, 25 years her senior, about one of his inventions. The surprise is not that the irascible Babbage finally exploded, but that it took him so long to do so. Ada thought all the blame was his: "I am sorry to have to come to the conclusion that he is one of the most impracticable, selfish, and intemperate persons one can have to do with.... He was furious; I imperturbable and unmoved".

It is difficult to obtain a balanced view of Ada from the selection in this book, because it includes only letters from her, not to her. The editing is also sometimes less than helpful. For example, it seems rather odd to be told: "I have deleted all mathematical formulas, except in Ada's notes, because Ada's mathematical correspondence represents what she did not know, not what she knew". Doubtless the omissions make little difference, but they reflect the defensive attitude of the editor. She clearly wishes to press the claims of Lady Lovelace as a significant thinker. This can lead to some rather Whiggish history, as, for example, in the explanations as to why it is especially appropriate for Ada to have a programming language named after her. More to the point, there is little evidence from Ada's letters that she would have successfully pioneered new developments in science had she lived longer. Her ideas on what she hoped to do were set down in a letter written not long before her final illness removed her motivation:

> I have my hopes, and very distinct ones too, of one day getting cerebral phenomena such that I can put them into mathematical equations; in short a law or laws, for the mutual actions of the molecules of brain; (equivalent to the law of gravitation for the planetary and sideral world).

Scientific knowledge of the brain remained at a low level throughout the nineteenth century. General laws, certainly laws on a par with those deduced by Newton, would have been well beyond the scope of a nineteenth-century scientist. Ada, had she continued her work, must either have changed direction or failed to make much progress.

This leads back to the original question of Ada's historical status. In terms of what she did in science, Lady Lovelace hardly ranks on a par with her contemporary, Mrs Somerville (whom she knew and admired). Nor do her

Flights of fancy — the short-winged grasshopper *Calliptamus* (left) and the spider-hunting wasp *Sceliphron destillatorium*, taken from John Brackenbury's *Insects in Flight* (Cassell, £18.99). This informative book contains over 200 of the author's striking colour photographs, which reveal the intricate and diverse techniques of flight used by moths, butterflies and other insects.