REPORT

Additions to the Babbage bibliography

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When the mathematician Charles Babbage (1791–1871) published *Passages from the life of a philosopher* in 1864, he included a chronological list of 80 numbered ‘Papers which he has from time to time printed . . .’.1 The authors propose two, as yet unattributed, important additions to the Babbage bibliography. These papers, ‘Observations on the present State of the Mathematical Sciences in Great Britain’ initialled ‘B’ and ‘A New Cypher proposed’ initialled ‘C.B.’, appeared, anonymously, in *Annals of Philosophy* in February 1816.2 The use of initials by Babbage is not unknown. In 1829 he used ‘C.B.’ in correspondence to *Edinburgh Journal of Science*, and wrote letters under the pseudonym ‘C’ in *Journal of the Society of Arts* (1854).3

A controversy

In the 1810s, a group of Cambridge men, including Babbage and John Frederick William Herschel, formed the Analytical Society. Disappointed in the mathematical instruction provided at Cambridge and convinced that English mathematics lagged behind experience and practice in mainland Europe, and particularly in France, they set their sights on reform. When John Playfair, professor of mathematics at the University of Edinburgh, also criticized the mathematics curriculum at Cambridge, the traditionalists fielded a champion—Latham Wainewright, a clergyman of Emmanuel College—who, in *The Literary and Scientific Pursuits . . . encouraged and enforced in the University of Cambridge . . . vindicated* (1815), argued against Playfair’s opinion. Thomas Thomson, editor of *Annals of Philosophy*, reviewed Wainewright’s book in October 1815 and reiterated Playfair’s view that the dearth of eminent mathematicians in England was partly attributable to the Cambridge curriculum.4 Shortly afterwards, Babbage suggested to Herschel the possibility of one or other of them publishing an anonymous paper on ‘analytics’.5 Herschel informed Babbage that he would ‘be prepared to write (an) anonymous article’.6

‘B’ for Babbage

An anonymous article signed ‘B’ appeared in *Annals of Philosophy* in February 1816. Entitled ‘Observations on . . .’ (a stylistic form of title often used by Babbage), it responded to Thomson’s remarks of October 1815, because ‘. . . more might be said, and

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ought to be said, on the subject'. Opinions that Babbage was known to espouse were forthrightly expressed, together with his perceived shortcomings of the mathematical sciences in Britain, the Royal Society, the Cambridge curriculum and contemporary academic publishing. A comparison was drawn with France and other European states ‘...not to depreciate English talents, but to prove that talents of the first order are kept here in a dormant state, for want of due encouragement.’

Also strongly identifying ‘B’ as Babbage are the remarks on the Cambridge mathematical examination. Babbage had left Cambridge with an ordinary degree without examination. In ‘Observations’, ‘B’ directed his most disparaging remarks towards the Cambridge Wrangler and the 1st Smith’s Prizeman (Herschel had achieved both), maintaining that

He reads books of all kinds...to hunt up short solutions, rapid investigations, and comprehensive formulae; his memory thus becomes an immense portfolio of problems and solutions, which is poured upon the senate-house tables during the week of examination. He...becomes a senior or second wrangler, perhaps a ‘Smith’s prize man’, and then bids farewell...to alma mater and mathematics.

‘Observations’ also reflects the experiences of Babbage in the timely publication of his work. In 1815 his ‘An Essay towards the Calculus of Functions’ was published in Philosophical Transactions, part II, volume 105. He had expected that his second paper on the subject would appear in part I of volume 106. However, at 78 pages it presented a dilemma, because space was at a premium. It also coincided with Sir Humphry Davy’s invention of the miner’s safety lamp, whose priority the metropolitan scientific establishment hoped to establish through swift publication. When the Council of the Royal Society agreed that Davy’s safety lamp papers should take precedence, it had a knock-on effect on other journal contributors, most notably Babbage. Herschel’s paper on the exponential of functions, praised for its brevity by Sir Joseph Banks, was published in part I of volume 106. That of Babbage was delayed and later published in part II of volume 106 (November 1816). ‘B’ wrote in ‘Observations’:

It is the undoubted duty of the editors of these publications to protect every branch of literature and science with an equal hand;...but this is very far from being the case. When any article of this kind does appear, it is generally so contracted that one cannot help reading in the pages the directions that the writers have received from the editor, ‘not to make the article too long’.

Excused from such strictures was Annals of Philosophy, the journal in which ‘Observations’ appeared, ‘B’ acknowledging Thomson’s objective ‘to stimulate our mathematicians to action’.

Repercussions?

In his attempts in 1816 to obtain the professorship in mathematics at Haileybury, the East India College, Babbage sought testimonials from John and William Herschel, who had long assisted his career and recently supported his application for election to the Royal Society. On 13 March 1816, two weeks after the publication of ‘Observations’, John Herschel informed Babbage that he ‘regrets he cannot assist...over the position at East India College’. To the Herschels, who were almost certainly aware of the content of ‘Observations’ and the identity of ‘B’, Babbage must have seemed both reckless and ungrateful.
A NEW CYPHER PROPOSED

From his early years Babbage had a keen interest in cyphers and code-breaking, maintaining that ‘Deciphering is, in my opinion, one of the most fascinating of arts’. \(^1\) Acceptance that ‘C. B.’ was Babbage would mark ‘A New Cypher proposed’ as his first published paper in a field that would occupy much of his attention from the 1840s.

The proximity of two, differently initialled, articles in the same journal might have allowed the short cypher piece (‘C.B.’) to serve as a ‘distracter’ in identifying the authorship of ‘Observations’ (‘B’). Although it is possible that the ‘B’ initial was introduced by Thomson at editorial stage, it is equally plausible that Babbage, for reasons of anonymity, deliberately used two pseudonyms.

An absence of any reference to the papers in Babbage’s listing of 1864 could have been an oversight. More probably, he may have considered that an anonymous hasty response to personal frustrations, almost half a century earlier, together with a ‘distracter’, was best left unacknowledged.

NOTES

7 ‘B’, *op. cit.* (note 2).
10 J. F. W. Herschel, ‘On the developement of exponential functions; together with several new theorems relating to finite differences’, *Phil. Trans. R. Soc. Lond.* 106, 25–45 (1816).
11 ‘B’, *op. cit.* (note 2).
13 Babbage, *op. cit.* (note 1), ch. 18.