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## **National Cipher Challenge 2009, part 6A**

**January 12th 1837**

My dear Mr. Babbage,

I write to tell you about the discussions I have recently held with your friend Mr. Cocking. He tells me that he has been following Pennylaine's affairs for some time on behalf of the Secretary of State. The minister has harboured suspicions himself concerning Pennylaine which may have been exacerbated by their disagreement at the gaming tables late last year. With the aid of Emily, Mr. Cocking has tried, with some success, to gain the confidence of the co-conspirators, aiming to infiltrate their circle. He was most interested in our work, and has asked if we would consider allowing him to use it as bait to trap the more senior foreign agents working on our shores. This would have the additional advantage of bringing discredit to Lord Pennylaine as a source of reliable intelligence. The intelligence officers of the European powers have evaded every trap set for them and every attempt at capture, but Mr. Cocking is of the opinion that for such a large prize he may be able to draw them into the open. He has in mind arranging a private auction at which he would offer for sale our Turning Engine, springing a trap from which none of them would escape. I confess to feeling a little uneasy at this proposal. We have worked hard to maintain strict secrecy for the last three years concerning the existence of the machine, but I must admit I found his enthusiasm infectious, and the explanation of his plans convincing. I would trust Mr. Cocking with my life, and it appears that he has entrusted his life to us. Whatever our decision concerning his proposal, we must protect him.

As to the decryption of my late father's Enigma, my research has uncovered a series of poems bearing the title Byron's Enigma, of which the most amusing begins "I am not in youth, nor manhood, nor age". These childish diversions are most entertaining, but shed little light on the nature of the more serious challenge he has set for me. Perhaps we could invent some clever way to utilise the power of the Analytic Engine and its cryptographic cousin the Turning Machine to attempt to decipher the text, but I am afraid my initial thoughts on this are not promising. Affectionately, AL

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## **National Cipher Challenge 2009, part 6B**

Fraternal Brothers, in this report I convey important news concerning the work of Miss Lovelace and Professor Babbage. Our source in the British Government continues to provide intelligence concerning the development of the Difference Engine (vive la difference, as they say), however progress on this device has been interminable and I have been most disappointed at the lack of recent news. However, a new and more promising source has appeared in our circles promising access to a new and secret device designed and built by L and B as a mechanical replacement for the Grande Chiffre and other diplomatic cyphers. The principle on which it is built is not yet known (I know of no-one who has seen the machine) though its name, the Turning Engine, and its provenance as offspring of the Difference Engine, suggest several possibilities. The earliest cypher, that attributed to the great Caesar, is itself based on a rotational mechanism, and we can reasonably assume that the new machine might also use an advanced system of rotors to implement a more sophisticated version of that cypher. Perhaps not; such a machine is unlikely to defeat the dedicated student of codes and cyphers without additional layers of complexity.

The identity of my new source must remain secret, so I will refer to him as C. C claims with good authority to have access to the hearts and minds of our opponents and I have great confidence in his value to our cause. There is every chance that he might provide us with immediate access to the Turning Engine and I would propose that we cut our ties with Lord Pennylaine in favour of a more profitable alliance with C. I must caution you that C is far shrewder than P. While P was motivated largely by fear and greed, C takes a longer and more pragmatic approach to these diplomatic affairs, and is far more aware of the value of that which he offers. It may be expensive to switch our allegiance, but given the number of other powers that might wish to bid for access to the Turning Engine, it could be far more expensive not to do so.

Yours, M