MAGNIFICENT WOMEN:

Ada Lovelace

Ada Lovelace wrote the first complete and elaborate computer program, which she published in 1843. She was also the first person to realise that a general purpose computer could create music and art.

10 Dec 1815– 27 Nov 1852

Victorian Visionary

Augusta Ada King, Countess of Lovelace, was the daughter of Lord Byron and Anne Isabella Milbanke. Unusually for a Victorian girl, her mother had her schooled in mathematics and logic by some of the finest minds of the era.

Lovelace was just 18 when she first met mathematician and inventor Charles Babbage. She was fascinated by his prototype Difference Engine, a mechanical calculator, and when he began designing the more complex Analytical Engine, she studied his plans in depth.

Towards the end of 1842, Lovelace began to translate from French a paper about the Analytical Engine by Italian mathematician Luigi Menabrea. Babbage encouraged her to add her own notes "as she understood the machine so well".

It is in these notes that Lovelace wrote her seminal computer program. She broke down the formulae to calculate Bernoulli Numbers into simple calculations that could be programmed, via punched cards, into the Analytical Engine.

Lovelace's program proved that the Engine could produce an answer without it "having been worked out by human head and hands first".

Weaving Flowers and Leaves

Lovelace did much more than just write the first computer program. She also understood that a general purpose computing machine would have the capacity to do very human things, given the right data and instructions.

She realised that by using symbols instead of numbers, the Analytical Engine would be capable of a great deal more than mere arithmetic.

If music, for example, followed rules that could be expressed mathematically, then the Analytical Engine would be able to create "pieces of music of any degree of complexity or extent".

She also suggested that a similar method would make it possible to create graphics too.

> *"The Analytical Engine weaves algebraic patterns just as the Jacquard loom weaves flowers and leaves."* — Ada Lovelace

Further information

- Wikipedia: Ada Lovelace
- Ada Lovelace: Victorian Computing Visionary
- Thrilling Adventures of Lovelace & Babbage

A Century Ahead of Her Time

Babbage never built his Analytical Engine, so Lovelace never had the opportunity to run her program to calculate Bernoulli Numbers. Indeed, it would be a century before the modern computer age took off in earnest and Lovelace's important work was recognised by Alan Turing.

Lovelace died at 36, the same age as her tragic father next to whom she asked to be buried, in Hucknall, Nottinghamshire.