



# From Abacus To Apple

## The modern microchip owes its existence to the genius of inventors whose work spans three centuries

When you're in love you think you can do anything — at least that's what Charles Babbage thought in 1830. As a result he almost built the world's first working computer 100 years before its time.

There were several drawbacks in Babbage's design: one was the fact that the computer had to be mechanical; and another was the shortcomings of engineering at the time. But despite these problems, Charles Babbage built a machine that so impressed the government of his day that they promptly gave him a grant of £1,500, a sum which later grew to £17,000. (Equivalent to £1,700,000 today.)

The story of computing, however, begins much earlier. A computer is a machine that can be told how to compute a group of numbers, will remember what it has computed and can be adapted to compute another set of numbers. The

earliest example was the abacus, in use in 2,000 BC and still found today in Japan and Eastern Europe. It is a very useful type of computer because you can physically see the sum on the wires — the position of the beads forms a 'memory' of the sum. But they're not automatic, and they're not useful for large numbers.

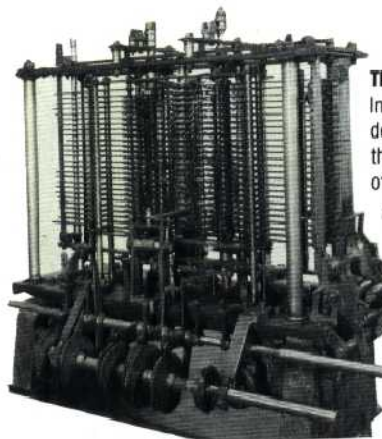
Blaise Pascal, a Frenchman, invented the world's first mechanical calculator in 1642 — possibly to please his father who was the local tax inspector. It worked perfectly: carrying numbers from the 'units' column to the 'tens' column by a trip device, in much the same way as a car speedometer carries numbers, and it was totally functional. Modestly, Blaise called it a 'Pascaline'.

Although the Pascaline did not sell well, it sparked off great scientific interest and over the next few years many improvements on the first calculator were made. Nothing of significance emerged, however, until Charles Babbage and Ada Lovelace started to think about the problem.

### Blaise Pascal

The Pascaline was the world's first mechanical calculator, designed by the Frenchman Blaise Pascal in 1642. He originally wanted to build a machine that could divide and multiply, as well as just add and subtract. The Pascaline used a stylus to move the wheels, and had a special mechanism that carried digits from one column to the next. Pascal was granted

a patent by the king of France so he could market his calculator, but it was never a financial success



### The Analytical Engine

In 1834 Charles Babbage designed an Analytical Engine that could handle computations of up to 80 digits. This included many of the features of the modern computer. The 'programs' were controlled from punched cards and the results were printed automatically. It also had an arithmetical 'mill' and separate storage devices



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## Countdown To Computing

