



rated. But even those who found him more irascible than inspired had to admit he gave splendid parties. These were held at his home: Number One Dorset Street. This is close to Manchester Square in the London district of Marylebone. Babbage's soirées took place on Saturdays during the 'season', the time of the year when fashionable society would attend a whole range of gatherings, dinners, and balls. The season usually lasted from late March until the end of July.

Babbage had moved to Dorset Street in 1828. For the first few years his parties there were private functions for family and close friends. But in the early 1830s he broadened the list of guests to include many of the leading luminaries of British intellectual life. During the next decade his social events became renowned throughout the capital. They frequently lasted until well after midnight, under the glow of thousands of candles. Three hundred guests, or even more, might attend. Invitations were so prized that many of the most famous people in London used to write begging letters to Babbage to try to secure an invitation for themselves, their family, or friends.

The soirées eventually became one of the great rendezvous points for liberal intellectuals in Victorian London. Charles Dickens, Charles Darwin, Lord Byron's daughter Ada Lovelace, the actor William Macready, the scientist Henry Fitton and his wife, the geologist Charles Lyell, the self-taught mathematician Mary Somerville and her family, the anatomist Richard Owen, the magistrate William Broderip, the astronomer Sir John Herschel; these are just a few of the 'names' who were often to be found at Babbage's parties. An account by the American man of letters George Ticknor of a visit to one of Babbage's parties on 26 May 1838 gives us a glimpse of what they were like:

About eleven o'clock we got away from Lord Fitzwilliam's and went to Mr Babbage's. It was very crowded tonight, and very brilliant; for among the people there were Hallam, Milman and his pretty wife; the Bishop of Norwich, Stanley, the

Bishop of Hereford, Musgrave, both the Hellenists; Rogers, Sir J. Herschel and his beautiful wife, Sedgwick, Mrs Somerville and her daughters, Senior, the Taylors, Sir F. Chantrey, Jane Porter, Lady Morgan, and I know not how many others. We seemed really to know as many people as we should in a party at home, which is a rare thing in a strange capital, and rarest of all in this vast overgrown London. Notwithstanding, therefore, our fatiguing day, we enjoyed it very much.

Babbage delighted in entertaining the guests who came to his soirées with ingenious devices and gimmicks. In 1832, having after a decade's struggle finally managed to build one-seventh of the mechanism of the Difference Engine, Babbage proudly mounted the completed portion of the machine in a case of mahogany and glass. For eight years it was the most prominent conversation piece at his glittering events.

Then, in the spring of 1840, Babbage started exhibiting something else.

On the face of it, this new exhibit was nothing more than an unassuming portrait of an inventor in his workshop. The portrait shows the inventor sitting in a luxurious cushioned chair at his work bench. He is holding a pair of callipers against long strips of cardboard that have tiny holes punched in them. The bench also accommodates a model of a loom. Hanging upon a rack on a wall behind the inventor are chisels and other tools in a variety of shapes and sizes. Rolled-up plans are poking out of a drawer on a table beneath the rack.

The portrait gives the impression of being an informal snapshot of the inventor as he momentarily turns away from his work and glances at the artist. He has a thoughtful, frowning air about him, and his well-cut coat and general air of prosperity suggest that this is an inventor who has enjoyed some success.

Anybody giving the portrait a cursory inspection would assume that it is an engraving. This is exactly what the vast

majority of Babbage's guests thought when they first set eyes on it. Babbage, a wily old fellow who took as much delight in exposing the errors and folly of his friends as he did in advancing the cause of science, enjoyed showing the portrait to his guests. He would then ask them how they thought it had been made. When they told him they were sure it was an engraving, as they usually did, he gave a knowing smile.

One evening in 1842, two of the most distinguished people in the realm attended a *soirée*. They were the Duke of Wellington and Prince Albert, Queen Victoria's husband. The 'Iron Duke' was the hero of Waterloo and a former Prime Minister. Prince Albert was famous for his intellect and for the important, even essential, role he played in governing Britain. Officially he had no power, but in practice the Queen deferred to his judgment and opinion on almost every matter. She usually succeeded in persuading her ministers to do the same.

Almost as soon as the Duke and the Prince arrived, Babbage showed them the portrait. The Prince asked Babbage why he thought the portrait so important. Babbage replied, in characteristically enigmatic fashion, 'It will greatly assist in explaining the nature of my calculating machine, the Analytical Engine.'

Once the two guests had examined the portrait, Babbage asked them what they thought it was. The Duke of Wellington, getting things wrong for once, made the usual mistake of responding that it must be an engraving. But it turned out the Prince knew the truth, having apparently heard of the portrait before. He informed the Duke of Wellington that the portrait was not an engraving at all, but a *woven piece of fabric*.

And the Prince was absolutely right. The picture was, in fact, a woven silk image. It depicts a French inventor named Joseph-Marie Jacquard. He had died six years earlier, on 7 August 1834. It was Jacquard who had invented the very loom on which the portrait was woven. This, the Jacquard loom, was the world's first automatic machine for weaving elaborate and beautiful images into silk.

The portrait, deliberately designed to illustrate and show off the Jacquard loom's capabilities, is so complex it contains 24 000 rows of weaving. Every single row was controlled by what was in effect an early nineteenth-century programming device—a punched card. The 24 000 cards gave the loom precise instructions for weaving the portrait. These punched cards lie at the heart of Jacquard's brilliant concept of an automatic loom that weaves complex patterns and images.

The portrait was woven in Lyons in 1838 by a weaving firm named Didier Petit & Co. It was based on an oil portrait of Jacquard originally painted by a Lyons artist, Claude Bonnefond, at the time the director of the City's school of Fine Arts. Bonnefond took care to give the punched cards a prominent place in the portrait.

A few originals of the woven portrait still exist today. There is one in the reserve collection of the Science Museum in London, although unfortunately the portrait is no longer on general display, for the Museum has temporarily slimmed down its history of computing exhibition as a preparatory step to planning a major new display on computing and communications. However, you can ask for permission to view the Jacquard portrait in the reserve collection.

As you gaze into Jacquard's stern features, it is difficult to believe that this faded, rather small picture (it only measures 20 by 14 inches), can be an illustration of a technology, developed more than two centuries ago, that was to alter our world beyond recognition.

Yet who exactly *was* Joseph-Marie Jacquard? How did he come to invent a loom that could weave pictures? And how did his extraordinary idea lead to the global information revolution that is continuing to transform the world in which we live today?

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