

Henry Sutton

the Eureka man

BY ANNE BEGGS SUNTER

Henry Sutton is not a name that resonates amongst the world's great inventors, but perhaps it should. Australian-born and self-taught, Sutton invented the world's first television, 23 different types of telephone, a prototype helicopter, the world's first portable wireless radio, a colour-printing process, and a carbon-filament light bulb just 16 days after Edison. He also built and drove the first motor car in Australia and conceived and built what is thought to be the world's first four-wheel drive.

HENRY SUTTON'S BIRTH and circumstances did not bode well for an inventor. He was born in a tent on the Ballarat goldfield on 3 September 1856, the first Australian-born child of his English emigrant parents.

Richard and Mary Sutton had been drawn to Australia by news of the fabulous gold discoveries in the colony of Victoria and they arrived at the bustling port of Melbourne in 1853 with their baby daughter. Richard was a trained musician and, when the diggers applauded his harmonica performances around the camp fire, he decided to give up gold-digging and return to his musical profession. He set up a small music shop, bringing musical instruments and sheet music to the developing city of Ballarat. His business prospered, eventually employing his four sons and two daughters as well as his wife, who became the business manager.

Young Henry was a curious and scholarly lad. His mother supervised his early education, then left him to read widely in the well-stocked Ballarat Mechanics Institute Library which had been founded in 1859. Here he found scientific and technical journals from England, Europe and America where he read of the latest discoveries and inventions. At the tender age of 10, he developed his own theory of flight, based on careful observation of the fluttering of butterflies' wings against smoked glass.

The Mechanics Institute gave him his one and only opportunity for a formal



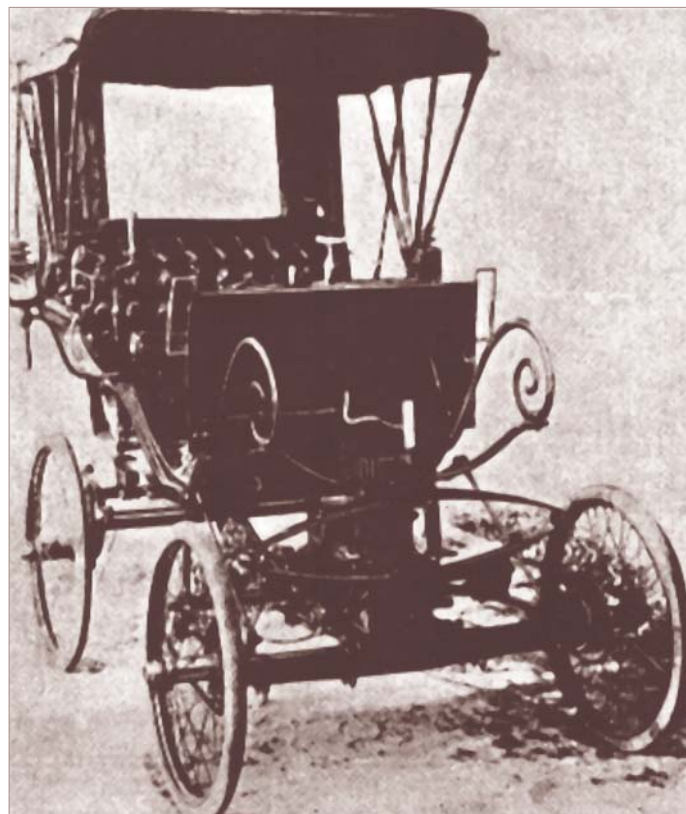
education. When it opened a School of Design in 1870, Henry was one of the target audience – young artisans and apprentices who needed to develop their drafting and technical drawing skills. Henry, a talented artist, won many prizes for his drawings and watercolours. But instead of applying his drawing skills to the design of musical instruments for the family's Music Emporium, he spent his time in the musical workshop conducting experiments and inventing new machines and processes.

In 1876, Henry, then 20, read about Alexander Graham Bell's discovery of the telephone in the *Scientific American*. He immediately understood the invention and rapidly developed twenty telephones of his own design. He put his improved version of the telephone to good effect, installing Australia's first telephone line between his father's music shop and the warehouse, greatly assisting the

economies of the family business. Later, when Bell was visiting Australia, he came to Ballarat to meet Sutton and inspect his telephone installation.

Two years later, Henry perfected his ornithopter, based on his observations of the flight of birds and insects. His paper on flight and his clockwork-driven ornithopter was published in the Aeronautical Society of Great Britain's *Annual Report* of 1878. This prototype of the helicopter, powered by rubber bands, flew in a 15-metre arc and was admired by Lawrence Hargrave, who was to become the father of flight in Australia.

However, Henry did not bother to patent many of his



The Sutton Autocar.

inventions. This was typical of Australian inventors, working in isolation, who thought of the national good rather than their own commercial gain, and were happy to share their ideas through publishing in the journals of learned societies. As Geoffrey Blainey commented, Henry would have been a world figure at the age of 25 had he possessed an able business manager and a publicity consultant. As it happened, others later patented 16 of his telephones.

In April 1883, Henry Sutton was invited to lecture in Applied Electricity and Magnetism at the Ballarat School of Mines, Australia's oldest technical institution. His appointment was the first in this field, and Henry, still in his twenties, must have been one of the youngest appointments. But such was his renown that he was offered responsibility for a senior class, and the trustees, who supported his inventions, allowed him to install a telephone system around the School.

Just before his appointment, he had invented a vacuum pump operated by a column of mercury that made possible that ubiquitous domestic device, the electric light globe. This was described in an article in the *English Mechanic and World of Science* of 21 July 1882, and the Swan Edison Company, newly formed in England, used the principle for creating vacuums in electric light bulbs.

Sutton continued lecturing until 1887, acclaimed by the Victorian government astronomer R.L.J. Ellery as one of the School's best lecturers.

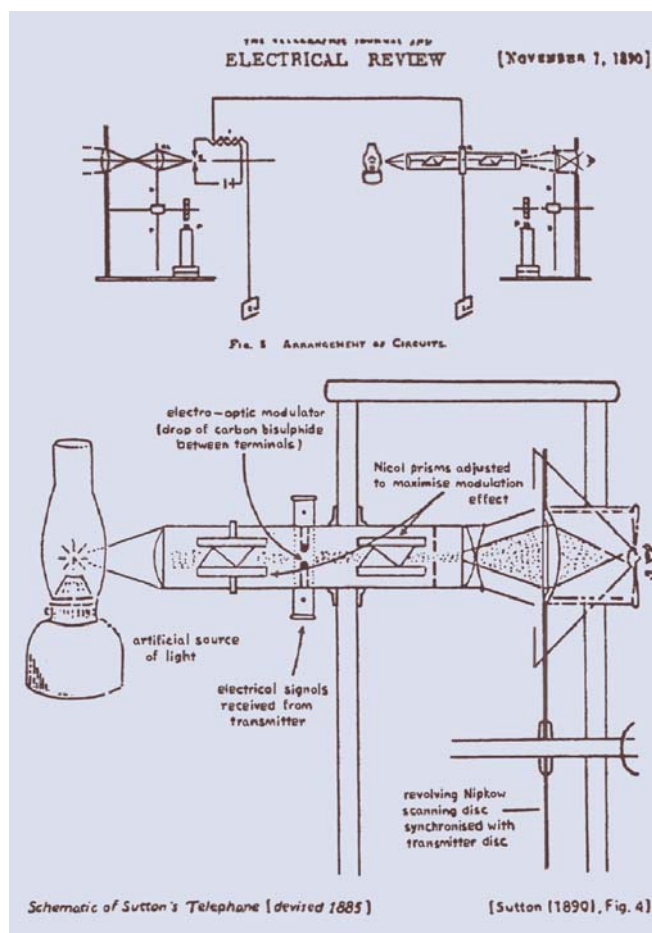
It was while working at the School of Mines that Henry Sutton developed his astounding theory of television, and published his theory in scholarly journals in England, France and the United States.

His 'telephane' system was described by his friend, W. B. Withers, writing in his *History of Ballarat* published in 1887. Withers refers to a number of Sutton's inventions, but "the greatest marvel...is an apparatus by which he hopes to be able to see here in Ballarat, by the aid of electricity, the race for the Melbourne Cup."

The idea of television was born in Ballarat! Sutton had to rely on the telegraph wire to transmit his picture. This was the weak link in the design, for radio had not yet been invented, and the telegraph line could not handle the large amount of data needed to transmit pictures. But John Logie Baird, a Scottish inventor, probably read Sutton's account of his telephane published in the *Telegraphic Journal and Electrical Register* of 7 November 1890, later republished in the *Scientific American* in 1905. Using Sutton's ideas on the synchronisation of transmission and reception, he was able to patent his invention of television in 1926 and thus earn a prominent place in the history of invention.

There were elements of the 'mad scientist' about Sutton. His friend Withers described him as 'a benedict', who was so enthusiastic about science that he worked deep into the night, seldom retiring before 2.00 a.m. He was "proof that genius is above the restrictions of relatively narrow circumstances, and does not wait upon universities or professorial chairs for leave to conquer the recondite secrets of science."

However, Sutton did find time to marry twice, and raise a family of five sons. His first wife was Elizabeth Wyatt, whom he married in Ballarat in 1881. Three sons were born of this union, and after Elizabeth's death he married Annie May Patti at Malvern in 1902, and they had two sons. Withers remarked in 1887 that he "devoutly hoped" that Sutton's



Henry Sutton's Telephane System of 1885, *The Telegraphic Journal and Electrical Review*, November 7, 1890.

wife shared his passion for scientific research; otherwise she was destined for many lonely nights.

Henry had a strong artistic sense, and was a member of the Ballarat Fine Art Gallery, formed in 1884. He was an excellent photographer, and also interested in printmaking and lithography. He turned his mind to the means of making high-quality colour prints of artistic subjects, and received permission for the Gallery to make a copy of the large oil painting *Ajax and Cassandra* by his new engraving process. The idea was to take a photograph through a screen onto the gelatine of a photographic plate for an engraved block. This was one of only two inventions that he patented, but Miessenbach had just patented a similar process in Europe, which came to dominate the printing market, although companies in the USA used Henry's process.

Meanwhile the Sutton Music business was expanding rapidly. Richard Sutton, the founder, died in 1876 at the age of 46. His wife took over the management of the business, and the children became involved in marketing and selling. A branch opened in Melbourne in 1884 and, in 1891, a grand new emporium was opened in Sturt Street Ballarat, large enough to display a huge range of pianos, organs, brass instruments and sheet music. This was the first building in the city to have an elevator and undoubtedly Henry ensured that it operated efficiently. A branch was established in Bendigo in 1892 and, when Mary Sutton died in 1894, the family firm incorporated as Suttons Pty Ltd and Henry moved to Melbourne to take charge of the new Sutton's Music House in Bourke St. Later, branches were opened in

Illuminated Address (right) presented to Henry Sutton by Citizens of Ballarat, 1890.

Geelong (1903), Sydney (1926) and Newcastle (1945). Sutton's was finally taken over by Brash's in 1963.

After Henry became directly involved with the management of the family business in 1894, his work days were absorbed in the economics of music, but after hours he found diversion in his scientific experiments, designs and communication with other scientists and inventors. He must have been fascinated by the invention of moving pictures in 1894, and radio in 1906. In fact he had experimented with radio and invented his own portable radio with a range of 500 yards.

The bicycle captured his interest, and he patented a number of improvements for bicycles that brought him in a steady royalty. The invention of the internal combustion engine fired his imagination and Henry built Australia's first motorcar, run very efficiently on kerosene, with a carburettor of his own invention. On December 9, 1903 he moved the motion to establish the Royal Automobile Club of Victoria, at a time when there were only thirty motorcars in the state. He was the first person to drive from Melbourne to Ballarat.

In later years Sutton travelled to England and met with his scientific peers, and had the satisfaction in London of seeing Tesla transmit the first picture by wire actually using his process. He spent much of his leisure time working on improvements to telegraphic reception, and the Commonwealth government gave him a licence to install a transmitter at his home in Malvern. He patented what became the most effective long-distance receiver for wireless telegraph messages. The Commonwealth government used this receiver, and the visiting US Navy sought him out in 1908 after they picked up his telegraphic messages in the Pacific Ocean.

When he died on 28 July 1912 from heart failure at the age of 56, Henry Sutton was experimenting with top-secret communication devices for the Australian government. His work had attracted the attention of the British, French, USA and Japanese governments. But as a native-born son, his first



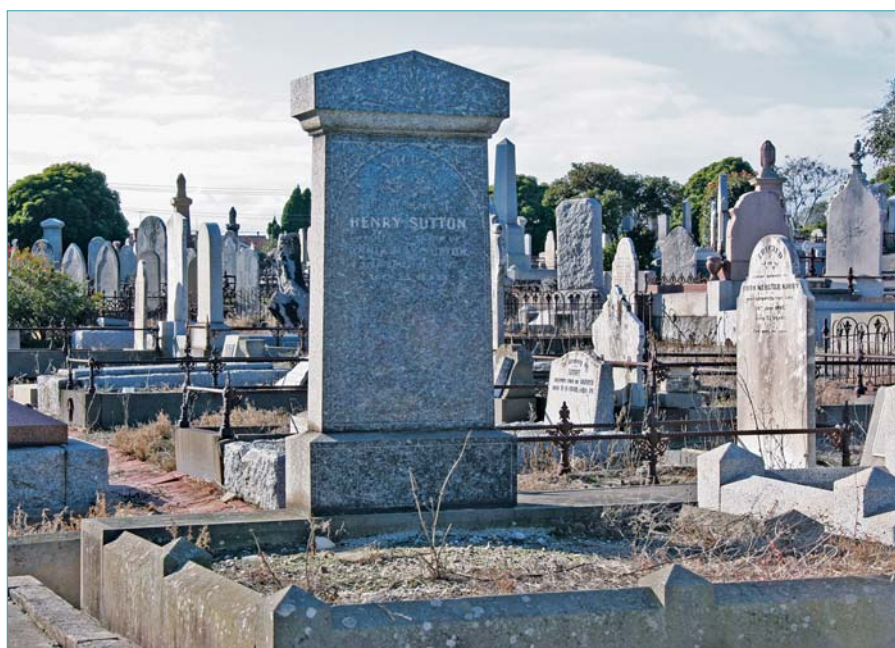
loyalty was to Australia, and to improving Australian science and technology.

Today there is no memorial to Henry Sutton. Even the great music empire of Sutton Brothers has disappeared. Yet his name lives in the annals of Australian science, and in the proceedings of many late nineteenth-century scientific journals, where he generously shared his discoveries with scientists from around the world.

He worked alone, 'tinkering at the edge', without guidance or consultation from scientific peers. Relying entirely on his own deductive logic and his ability to design and produce models, he became Australia's most fertile and prolific inventor of the nineteenth century.

The Author

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Henry Sutton's grave at the Brighton Cemetery, Victoria.