

A marvel of the age

One of the marvels of the mid-nineteenth century was the electric telegraph, an invention which dramatically changed the nature of communications throughout the world.

Experimentation earlier in the century had paved the way for major technological developments: the invention of a simple form of electric telegraph equipment by the Russian, Baron Schilling; the development of the five-needle electromagnetic telegraphic system by the English partners William Fothergill Cooke and Charles Wheatstone; and the creation of a standard code by the American, Samuel Morse.

The effect of these developments was to rapidly expand communications systems throughout the world. Soon, telegraph wires were slung over the length and breadth of America, Britain and Europe.



As inland telegraph systems burgeoned, the urge to forge international links grew and British, American and German companies experimented to find a suitable form of insulation for cables which could be laid on the sea bed.

In 1849, a successful trial was held using a ship-to-shore wire over which messages were exchanged from London to a vessel in the English Channel. The wire was insulated with gutta percha, a latex substance from trees in the Malay Peninsula.

The following year, Jacob and Joseph Watkins-Brett laid the first submarine cable from Dover to Cape Gris Nez in France. Messages were garbled and the wire failed within twenty-four hours, but a second successful cable was laid in 1851. This was insulated by tarred hemp and galvanised iron wires with a covering of gutta percha.

Soon there was a boom in cable production and British companies were formed to lay cables to all parts of the globe.

By 1870, there were cables linking Suez to Bombay and on to Madras, Penang and Singapore; but perhaps the greatest feat was the laying of the trans-Atlantic cable by the vessel *The Great Eastern* in 1866. Several previous attempts to lay the cable had failed, at a cost of hundreds of thousands of pounds. A great and wondrous event ...

Australia's first telegraph line was opened between Melbourne and Williamstown, Victoria in 1854, and others followed in rapid succession. In 1859, the continent's first submarine cable was laid across Bass Strait, laying the telegraph system of Tasmania to that of the mainland.

Eleven years later, the British Australian Telegraph Company (BAT) was formed to link Australia direct to British telegraph cables, by extending the cable from Singapore via Java to Port Darwin.

South Australia was awarded the contract to lay the overland telegraph from Port Augusta to Port Darwin, the agreement being that the landline would be completed no later than 1 January 1872.

Charles Todd was chosen to supervise the project and divided the work into northern, central and southern sections; the central section he supervised himself. However, the wet season, disease and transport problems delayed construction on the northern section, and it was not until 22 August 1872 that the overland telegraph was completed.

Meanwhile, the cable laying vessels *Hibernia* and *Edinburgh* were paying out cable towards Banjoewangi in Java; on 20 November 1871, the task was completed.

But due to the failure of the Port Darwin-Java cable just before the overland section was completed, and the problems with the overland telegraph, it was not until 22 October 1872 that messages could be sent direct from London to Adelaide.

The following month, the cable was extended to Sydney.

The impact on Australia's social, economic and political future was enormous. No longer did news have to come by sea, often taking a year or more to exchange letters.

Direct international trade was more than possible, and Australia could take its place on the world political stage.

In 1873, three British companies, The British India Extension Telegraph Company, The British Australian Telegraph Company and The China Submarine Telegraph Company were amalgamated to form the Eastern Extension Australasia and China Telegraph Company (Eastern Extension).

This company's first major work was to lay a cable between Australia and New Zealand. The cable, from La Perouse to Wakapauka, opened for traffic on 21 February 1876.

By the turn of the century, the Banjoewangi-Port Darwin cable had been duplicated (1880), a third cable had been laid between Banjoewangi and Roebuck Bay (1889), the New Zealand-Australia cable was duplicated (1890), and Australia was linked to New Caledonia by a cable which was laid from Bundaberg to Mon Repos (1893) by a French company.

In 1902, the Eastern Extension Company lost its monopoly on international telegraph systems in Australia, although moves to set up a second cable company had been made as early as 1879, under a plan to link Great Britain to all its greater colonies. It was proposed that this cable would only pass through British territory; the concept became known as the All Red Route.

In 1896, a Pacific Cable Committee was appointed to consider all aspects of the proposal, and in 1901 the Pacific Cable Board was established with eight members: three from England, two from Canada, two from Australia and one from New Zealand.

The Board was responsible for management of the Pacific Cable and was empowered to obtain tenders for surveying and laying a cable from

Vancouver to Fanning Island, Norfolk Island, New Zealand and Queensland.

Funding and ownership of the cable was shared between the British, Canadian, New Zealand, New South Wales, Victorian and Queensland governments, and cable laying commenced in 1902.

A new cable vessel, the *Colonia*, was built; it was capable of holding the 8000 tonnes of cable required for the Bamfield to Fanning Island section. By the end of the year, the cable was open to traffic, having cost about two million pounds to complete.

In reply, the Eastern Extension Company lowered its rates and began laying a cable across the Indian Ocean to rival the Pacific Cable Board's service. This cable would travel from Mauritius to the Cocos Islands, on to Perth and finally to Adelaide. Construction of the Cocos to Perth section was completed in 1901, and the Perth to Adelaide section opened a year later.



By the 1920s, increased traffic slowed cable operation, and in 1926, to compete with the newly introduced beam wireless system, both companies duplicated their cables with new loaded cable. This had a thin wire permalloy wound spirally around a copper core to increase its inductance. The duplicate Pacific Cable was laid by the *CS Dominia* which had been specially built for the purpose.

Colonial governments, which had subsidised the construction and maintenance of the Pacific Cable, became alarmed when their revenue fell dramatically in 1927 after the introduction of beam wireless.

An Imperial Wireless and Cable Conference was held in London in 1928, and it was decided to recommend to the British Parliament that the overseas cable and wireless services be merged into one system.

The Pacific Cable Board and Eastern Extension Company became part of Imperial and International Communications Ltd in 1929, which in turn was operated by Cable and Wireless Ltd from 1934.

All in a day's work

MANY EMPLOYEES of both the Eastern Extension Company and the Pacific Cable Board entered the service at a young age and continued for the rest of their working lives. Recruits were accepted at about 15 or 16 years of age and then had to undergo a period of intensive training lasting one or two years.

During training, they were given books, stationery materials and tools free of charge, accommodation was provided for those requiring it, and a small salary was paid amounting to little more than pocket money.

Training was rigorous and examinations were frequently held to test the boys' proficiency. Repeated failure often meant dismissal.

On graduating as probationary officers, the fledgling operators were presented with a copy of their employer's rules and regulations which detailed terms of employment, mandatory life assurance schemes, salaries and methods of obtaining promotion. Allowances for foreign service, housing, sickness benefits, leave and payment of passages between postings were also detailed, but many of these benefits could be withdrawn if set standards of proficiency were not maintained or an employee's conduct did not warrant them. In addition, elevation in rank could be denied regardless of the number of years served. Some infringements of the rules meant instant dismissal, especially in matters of secrecy. Insobriety and insubordination, the use of improper language or 'quarrelling on the instrument' were not tolerated.

The companies discouraged their younger staff from marriage even to the point of threatening to terminate their employment if certain age, rank or salary had not been attained when the marriage was announced.

On completing his probationary period, an operator was liable for transfer to any of his employer's cable stations or to serve abroad on one of the cable repair ships. Station managers maintained a file on each employee's performance; in particular, the number of errors made by each operator in his job.

Operators not only had to keep up a certain speed, they also had to be accurate. If they accumulated more than a designated percentage of errors in a month, and continued to do so, their annual increment was not recommended. This meant a permanent loss of seniority.

Normal hours of duty were six- or seven-hour shifts, six days a week; Sundays and certain public holidays were paid at the overtime rate.

Operators were also called on to perform tasks over and above the line of duty, as a crisis could occur at any time. Men often worked to the point of exhaustion to ensure the service was not interrupted.

But no matter how difficult the conditions, many operators stayed with the cable service for the whole of their working lives.