

# Scientific Instrument with a Story to Tell

*How a casual junk shop purchase for Porthcurno Telegraph Museum, Cornwall, began a historical trail leading back to India's first electrical communication with Britain.*

## John Packer

The object came to the Porthcurno Telegraph Museum from a junk shop in Bristol. At first the mystery was simply 'what is it?' A search through old manufacturers catalogues identified it as a sort of electrical switch known as a 'Swiss Commutator'. This allowed lines or equipment connected to any horizontal busbar to be connected to any vertical bar by putting ebonite-topped plugs into appropriate holes. These devices dating from the Victorian age were used in telegraph stations for selecting voltages from a battery of cells, or transposing main and spare equipments for example. Mystery solved - well not quite!

The device carries a brass plate inscribed in what looks like Arabic. I showed the label to students from the middle East who said it appeared to be archaic classical Persian

which they could not decipher. Where did the object come from? Construction details suggested 19<sup>th</sup> rather than 20<sup>th</sup> century manufacture, and almost the only telegraphy going on in Persia (now Iran) at that time was an overland Indo-European telegraph line with a chequered history.

The Indian mutiny of 1858 highlighted the lack of speedy communication between Britain and her eastern empire. Europe was in overland communication with Constantinople but no further east. By 1861 British engineers had been engaged by the Turkish government to extend the system across Turkey to Baghdad. Slowly telegraph communications were creeping closer to India. The following year the Indian government (which of course was British under the Raj) formed an Indo-European Telegraph Department to connect India with the existing system ending at Baghdad. The route was from Karachi (now in Pakistan) to Gwadur (Baluchistan), Fao (now al Fawr in Iraq) and across the desert sands near troubled Basra to Baghdad (at that time part of greater Turkey, Iraq as a nation didn't exist!). In January 1865 the first message was sent from UK to

India over this end-to-end string of different Company and Government systems, with manual deciphering and re-transmitting at countless relay stations. Operators on one segment didn't speak the language or sometimes even use the same alphabet as operators on the next. Perhaps unsurprisingly the message took nearly a week to arrive! As the main delays seemed to occur on the Turkish segment the Indian Telegraph Department built an alternative route from Fao via Teheran, Tiflis in Russia (now Tbilisi in Georgia) across Russia (a part which is now in Poland) to Germany and eventually the UK. The comments in brackets show how many changes in political geography have taken place in the last 150 years!

Unfortunately this alternative route bypassing Turkey proved hardly more reliable than the first. In 'Girdle Round the Earth' historian Barty-King writes:

low engineering standards and non-English speaking clerks (at the many manual relay stations) led to mangling of texts. It cost five pounds for every 20 words which began in your version and ended in theirs!

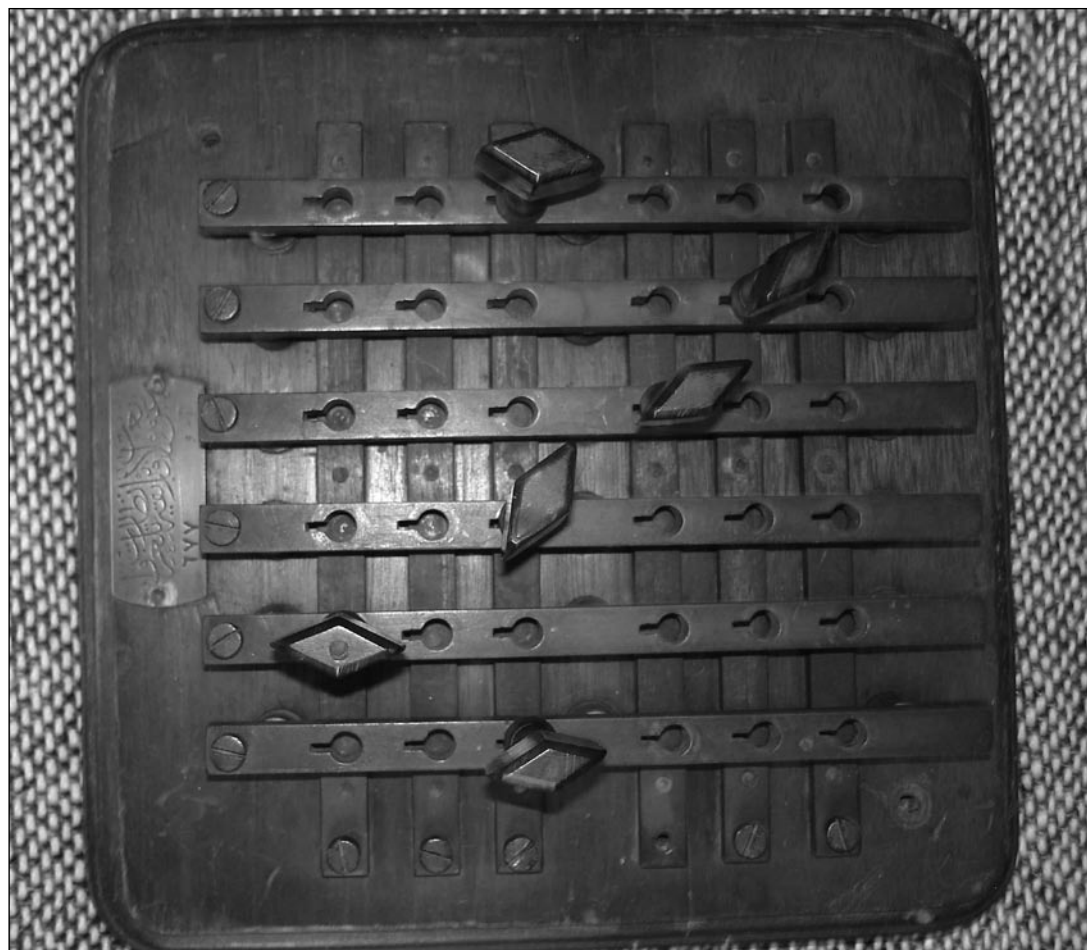


Fig. 1 *The mystery instrument found in a junk shop.*

In addition, lengths of overhead wire were stolen by tribesmen to make copper bangles for their wives. It was the unreliability of this overland telegraph that led eventually to the existence of Porthcurno cable station, and hence today's museum. The British Government, concerned to have secure communication with India, appointed a House of Commons Select Committee to advise. In 1866 they recommended the Government to encourage the laying of a direct submarine and therefore vandal-proof line from Bombay to the UK via Aden, and under the control of a single management.

The opportunity came with the Telegraph Act of 1869 which nationalized Britain's internal telegraphs, leaving telegraph entrepreneurs looking overseas for business opportunities. One was John Pender who had made a small fortune from the 1866 Atlantic cable and saw that an undersea route to India was commercially viable and would incur the blessing of H.M. Government. Porthcurno's first cable of 1870 was the UK end of this system. It went via Aden and was soon under one management, that of John Pender's Eastern Telegraph Company, meeting both of the Select Committee recommendations.

What happened to the overland route? The German firm of Siemens, aware of its inadequacies, offered to build the Indian government a second better route from the English Channel across Europe to Teheran to join the existing Teheran-India line. They formed the Indo-European Telegraph Company and completed the line in 1870. Much of the work was actually done by British sappers. This system operated until 1931 in direct competition with the Eastern Telegraph undersea route, but telegraph traffic had grown to an extent which gave both companies a share of the market. Of the two systems, the overland route with its air spaced lines could signal at a faster rate, but the submarine route proved the more reliable, for the wives of marauding tribesmen still fancied copper bangles!

Our mystery object (Fig. 3) with its curious label almost certainly came from a station on the Persian leg of the original overland route. The later Siemens route would use European made equipment unlikely to be labelled in classical Persian. The label was shown to a language expert at the British Library who commented:

the language looks like civil service type Persian, but is very peculiar. Every word but one is of Arabic origin...and the text contains one usage of a preposition and one plural noun form that I cannot find in dictionaries. The calligraphy was very professionally engraved,



Fig. 2 Detail of label inscribed in Arabic.



Fig. 3 The Swiss Commutator in use in the Porthcurno Instrument Room.

a skill probably then still in good supply. It means more or less: 'Products and Telegraph Apparatus of the Ministry of Telegraphs No. 677'.

The engraved brass plate is held in place, not by small woodscrews but nails! This suggests the item was hand made in the Victorian age somewhere in Persia, possibly in a small workshop in Teheran which was long on calligraphers but short on precision-made tiny woodscrews, and that it was made for the original Indo-European sys-

tem whose unreliability led to the laying of Porthcurno's first cable. How strange that a casual junk-shop purchase had a connection with the history of the cable station and museum where it now rests.

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