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Colonel Crompton – Victorian engineering pioneer

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A B S T R A C T

Col. R E B Crompton was not only one of the pioneers of the GB electrical power/distribution industry who founded the innovative company bearing his name but also a distinguished mechanical engineer with a particular influence on heavy road vehicles and the development of tanks in the First World War. A prolific patentee, he had an outstanding record of technical achievement over a wide range of fields.

1. Early life

Rookes Evelyn Bell Crompton (1845–1940) was born into a wealthy Yorkshire landed family with strong military connections but was fascinated by machinery from a very early age.

Colonel Crompton[1]

When he visited the 1851 Great Exhibition in London it proved impossible to tear him away from the machinery hall. His Father assuming a military post in Gibraltar, young Crompton asked to visit his elder brother then serving in the British Army in the Crimean War. His Father signed him on as a naval cadet in a relation's ship and he claimed to have visited his brother in the trenches during a lull in the fighting, earning himself the Crimean war medal with the Sebastopol clasp [1]. He was 11 years old at the time-precocious indeed! He then returned to school, later going to Harrow. Victorian public schools have the reputation for studying classics to the exclusion of all else but exceptions were made, especially for those intending to join the Army, and he studied science and mathematics. In the holidays he made a frictional electrical machine and started making a full size steam driven road engine *Blue Belle* in the workshops on his father's estate aged 16. For the next three years he divided his time between Paris, running his father's estate and training in the engineering workshops of the Great Northern Railway in England [2].

2. India

Rather than be trained for entry into the army's engineers he surprisingly entered as an infantry officer and was posted to India in 1864. The Army had not yet undergone its Victorian reforms and essentially comprised a loose collection of regiments owing loyalty to the British Crown but having widely different characters and conditions of service in which all sorts of eccentrics could survive and flourish. It was run on the cheap, purchase of officer commissions and promotions were widespread (though he entered by competitive examination), and many of the rank and file were recruited from the misfits of the civilian population and kept in order by savage discipline. All quite unacceptable by modern standards but extremely effective at winning wars. Junior officers like Crompton usually required a private income to survive but, in compensation, had large amounts of leisure time which Crompton used on engineering.

3. Road vehicles

Although railways had just been introduced to India, heavy military transport was still mainly by bullock cart or elephant so armies moved at the same speed as 3000 years previously. He envisaged armies and their heavy equipment moving fast by

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stream driven road vehicles so had *Blue Belle* and his tools shipped over from England and recruited local staff. He was also in contact with R.W. Thomson (1822–1873) a Scottish engineer who had developed steam driven road engines and patented rubber tyred wheels (his earliest was GB10990-1845). Crompton managed to interest senior officers in his ideas, especially the Viceroy Lord Mayo, and in 1869 was appointed "Superintendant of the Government Steam Train". His Thompson based road engine, equipped with rubber tyres, successfully ran between Ambala in the Punjab and Kalka in the Himalayan foothills and was widely praised. Afflicted by malaria he was sent back to England and authorized to spend considerable sums developing his ideas in cooperation with Thomson. In 1871 their improved engine *Ravee* was finished and completed the journey from Ipswich to Edinburgh (where the invalid Thomson lived) at speeds which often exceeded 20 mph—he needed special dispensation for this as a Parliamentary Act of 1865 made engined road vehicles travel at no more than 4 mph preceded by a man holding a red flag!. Crompton had just married and took his bride and her entourage with him on this honeymoon trip. His wife was always very supportive of his work and often followed him on his travels despite having five children. He returned to India in 1872 with 2 engines and they were very successful. Alas his sponsor Lord Mayo unwisely visited the Andaman Islands penal colony in 1872 and was assassinated by a convict, while the railway lobby preferred narrow gauge railways to road vehicles. Crompton was ordered back to regimental duty and left the Army in 1876 [3].

4. Engineering in England

Seeing no immediate future for road vehicles in India or England he bought a partnership in an engineering firm in Chelmsford near London where he was in charge of a new valve for heaters, filing his first patents in 1878. That year a relation also appointed him engineer in charge of a new foundry for pipes. To optimize efficiency it was decided to run it 24 h a day which was effected by Crompton importing Gramme arc lamps from France. Seeing the potential he then decided to begin manufacturing electrical equipment himself at Chelmsford under the name of Crompton and Co. [4].

5. Electrical pioneer

A great many people looked upon me as a dangerous lunatic when I introduced the electric lamp into London [5]

Beginning with arc lamps and their installation (he illuminated the Henley Rowing regatta in 1879 and went on to railway stations, ships, coal mines, searchlights exhibitions etc) he started making electrical generators in 1880. The development of arc lighting, followed by the independent development of effective incandescent lamps by Edison and Swan in 1880, led to a surge in demand for electrical engineering equipment and Crompton, now a leading expert, was in an ideal position to ride the boom. Swan approached Crompton in 1880 and they decided to cooperate, Crompton being a director of Swan's company and making lamp fittings etc for him. He also started providing lighting installations for private houses and from 1885 to 89 he spent much time in Vienna, Austria, installing electric lighting for the Opera House and other nearby buildings. In 1886 he also started The Kensington Court Company which provided a large scale domestic lighting system in London. His own house (with research laboratories) backed onto the generating station! In the 1890's he also branched out into electric heating and cooking and his company produced numerous appliances [6].

6. Battle of the systems

The question as to whether power generation/distribution was to use Direct current (DC) or alternating current (AC) was a burning issue for many years and known as the "Battle of the Systems". Crompton was the main GB advocate for DC in opposition to Sebastian de Ferranti who strongly supported AC. Despite their technical differences they always remained on friendly terms [7]. In the long term AC largely prevailed but, in the early days, DC had many advantages. At the same time he was also heavily involved in Parliamentary business concerned with the rapidly expanding electricity supply industry.

7. Patents

Needless to say Crompton was very patent active and his GB patents from 1878 to 1918 (see Annex) testify to the eclectic range of his interests. He was also on the receiving end of patent actions in the early 1890's which he successfully fought off and also appeared as an "expert witness" in other cases so was clearly fully cognizant of the value of the patent system [8].

8. Road vehicles again

A keen cyclist during the craze of the late 1890's, he became an advocate of the "long crank" and patents followed. Following the repeal of the Red Flag Act in 1896 there was a boom in motor vehicles driven by the internal combustion engine and he was a founder member of the Royal Automobile Club (RAC) in 1896 and joined the Institute of Cycle Engineers, becoming their first president in 1907 when they became the Institute of Automobile Engineers [9].

9. Return to India

In 1896 the Indian government invited him back to assist in the preparation of electric lighting legislation and he was heavily involved in the electrification of Calcutta and many other places. He also" tropicalised" various existing products including a low speed ceiling fan and bitumenised cables, was involved with a successful automatic printing press, and surveying for an abortive railway scheme in Kashmir. The name lives on as Crompton Greaves, a major Indian based multinational company [10].

10. South African interlude

Crompton was also involved in setting up an army reserve of electrical engineers and, when war broke out in 1899, he led his volunteer corps out to South Africa in 1900 where they performed with distinction. Crompton was in action several times, promoted to Lt. Colonel (a title he used for the rest of his life), and returned to London after 9 months to deal with the development of military vehicles [11].

11. Post 1900

He continued to combine both vehicle and electrical interests. Apart from his Army work he was heavily concerned with the upgrading of GB's intercity roads which had been largely neglected since the expansion of the railways 60 years previously. He was involved with the Institute of Civil Engineers, the National Physical Laboratory and the improvement of standard screw threads. Before the First World War he was effectively a consultant for road improvement schemes, both in GB and the rest of Europe [12].