

# ROOKES EVELYN BELL CROMPTON THE KING OF ELECTRICITY

by Brian Roberts, CIBSE Heritage Group

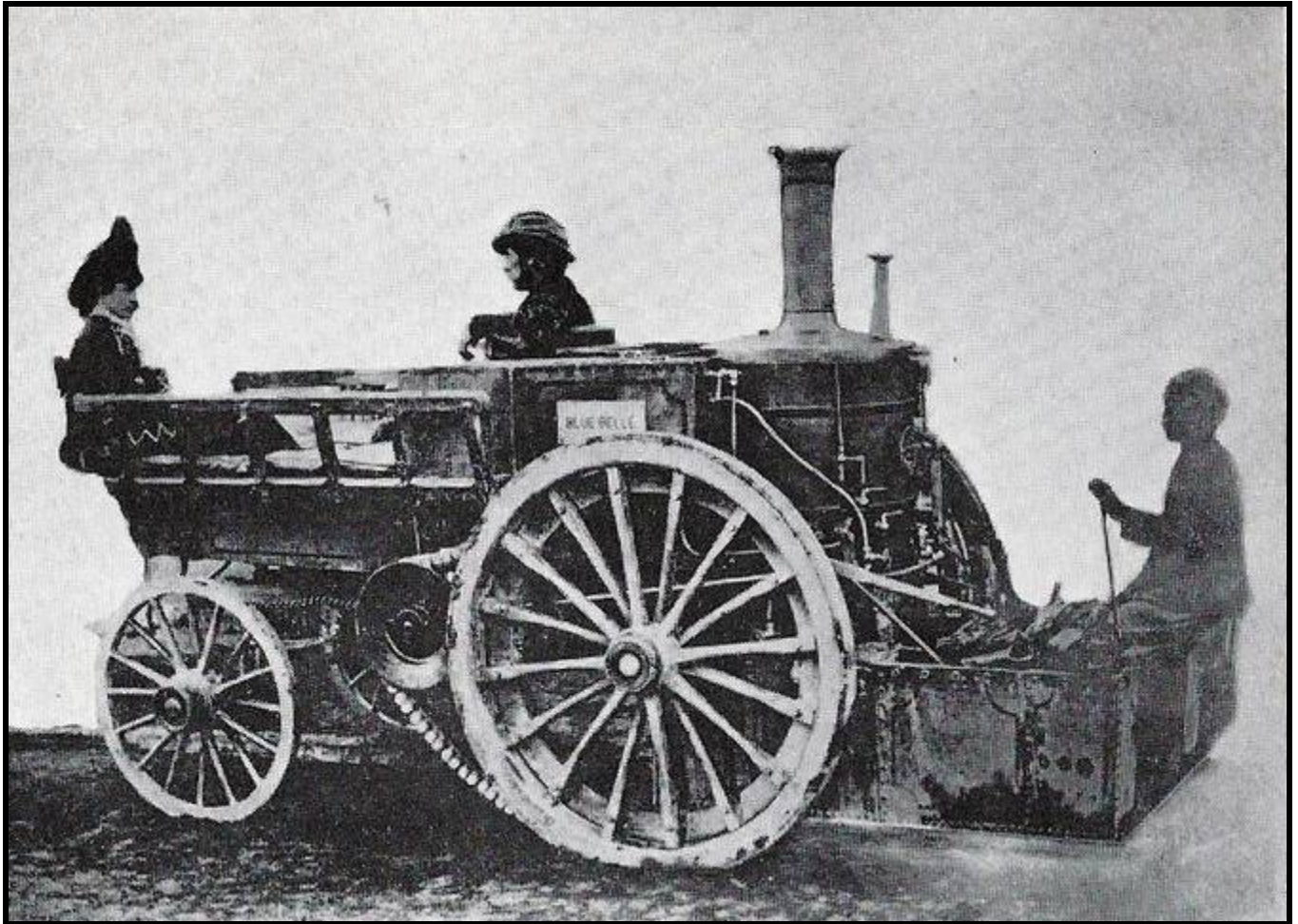


*Colonel R E B Crompton, 1845-1940*

Rookes Crompton was born at Sion Hill, near Thirsk in Yorkshire, on 31<sup>st</sup> May, 1845. He was one of five children. He went to school at Sharow, near Ripon. He developed an early passion for engineering and in his autobiography he tells of a trip to London's 1851 Crystal Palace Great Exhibition where he thought the best part was the Machinery Hall and the locomotives which were on display.

In 1854 Crompton's education was interrupted by the outbreak of the Crimean War. He was eager to see action and, in spite of his young age, accompanied his family to Gibraltar when his father, an officer in the West Yorkshire Militia, was posted there. He persuaded his parents to let him enrol in the Royal navy as a cadet and at the age of eleven he visited his brother in Sebastopol and gained the Crimea Medal.

In 1856, back in England, Crompton resumed his school studies, first at Elstree and then going to Harrow where he took extra mathematics and particularly enjoyed carrying out electrical experiments. During summer holidays, his pet project was working on and driving *Blue Belle*, a steam-driven road machine which he had built from scratch.



*Crompton had his Blue Belle machine shipped to India*

On leaving school, Crompton trained for a while in the engineering shops of the Great Northern Railway in Doncaster. In April 1864, he enlisted as an ensign in the 3<sup>rd</sup> Battalion of the Rifle Brigade and was sent to India. At this time, the sub-continent had only a limited railway system, relying on bullock-drawn carriages. Crompton seized his opportunity to train local workmen in redesigning rail transportation. He even had a steam engine, made by R W Thompson of Edinburgh, which ran on the road on rubber tyres. His efforts were rewarded with the title of Superintendent of the Government Steam Train. Crompton took time out from his posting to marry Elizabeth Clarke before returning to India rising to the rank of Colonel.

Crompton left the army in 1875 and entered into a partnership with the agricultural and heating firm of T H P Dennis of Chelmsford where he demonstrated the advantages of standardisation methods in manufacturing. Relatives of Crompton owned the Stanton Ironworks in Derbyshire, which for economic reasons needed to operate 24 hours a day. So he took it upon himself to study electric lighting and visited Gramme in Paris, then setting up an import business to supply Gramme generators and arc lamps.



## ZENOBE GRAMME, THE FOUNDATION OF CROMPTON'S BUSINESS

Gramme was a Belgian engineer (1826-1901) who worked in Paris and developed a DC dynamo and arc lamps. He was visited by Crompton, who set up a business arrangement to import Gramme equipment. This eventually led to Crompton setting up his own factory to manufacture dynamos and arc lamps.



*Zenobe Gramme*

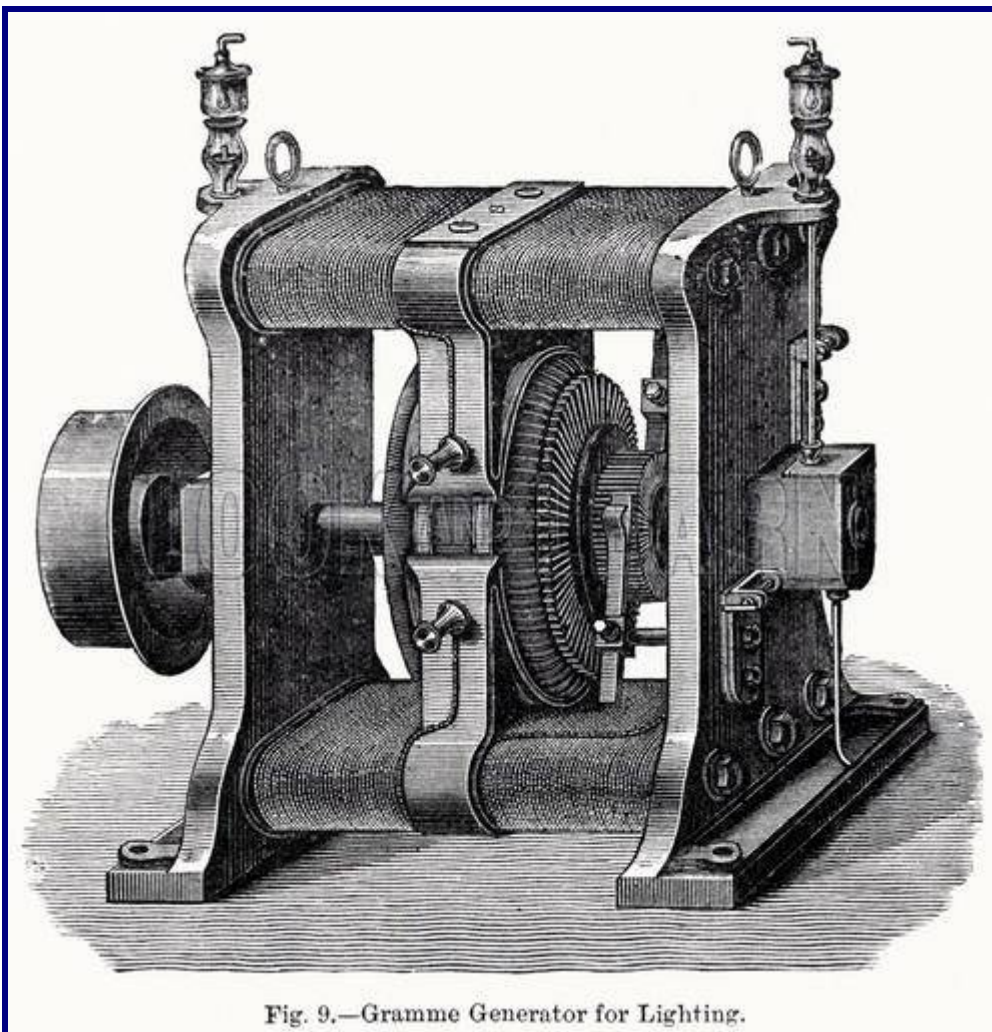


Fig. 9.—Gramme Generator for Lighting.



*Memorial to Gramme and his dynamo*

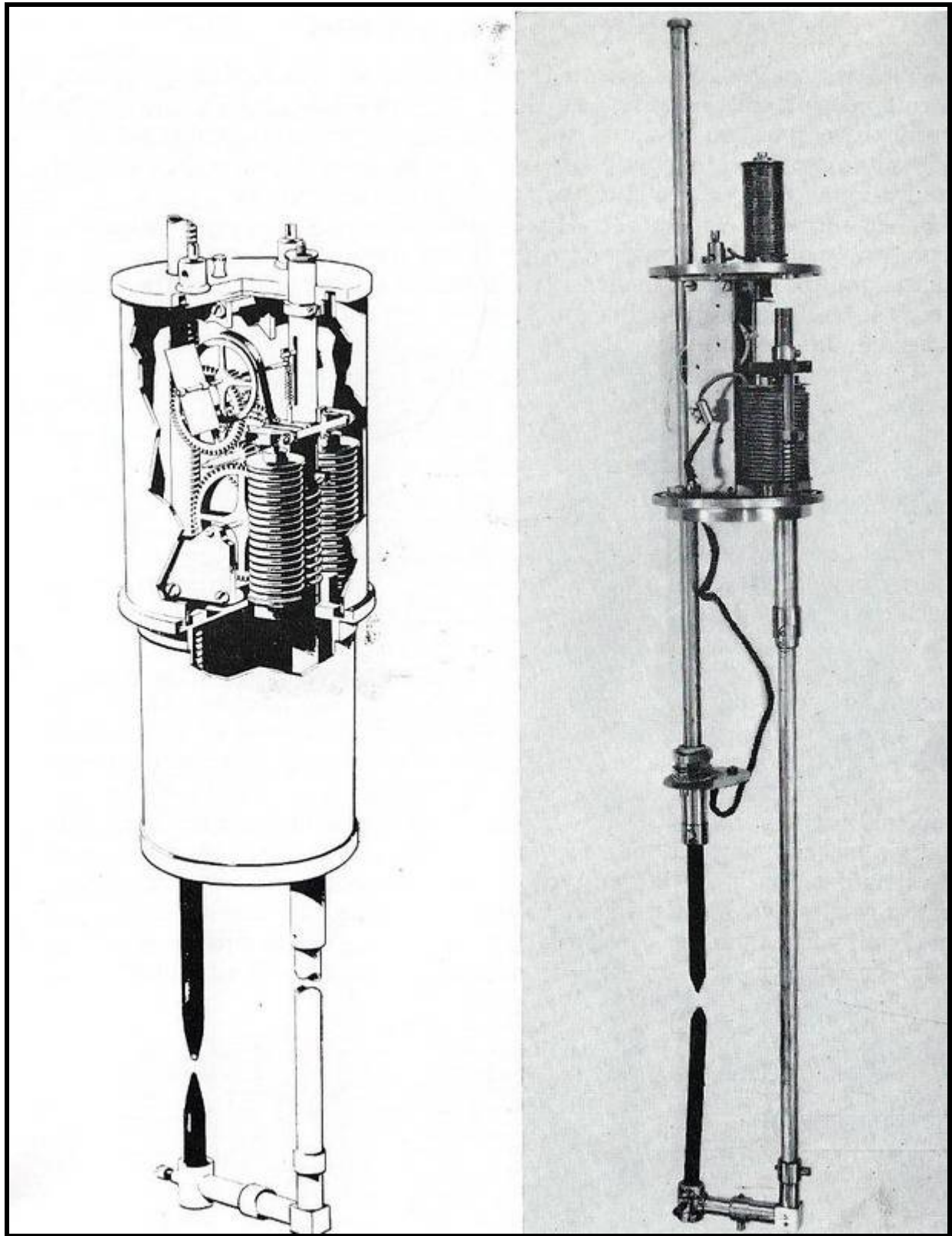




Crompton next patented his own design of arc lamp and commenced its manufacture in part of the Dennis Company's factory. This proved extremely successful and in 1878 he took over the whole of their Anchor works renaming it the Arc Works and, in due course, began to manufacture generators, instruments, domestic appliances and other electrical equipment.

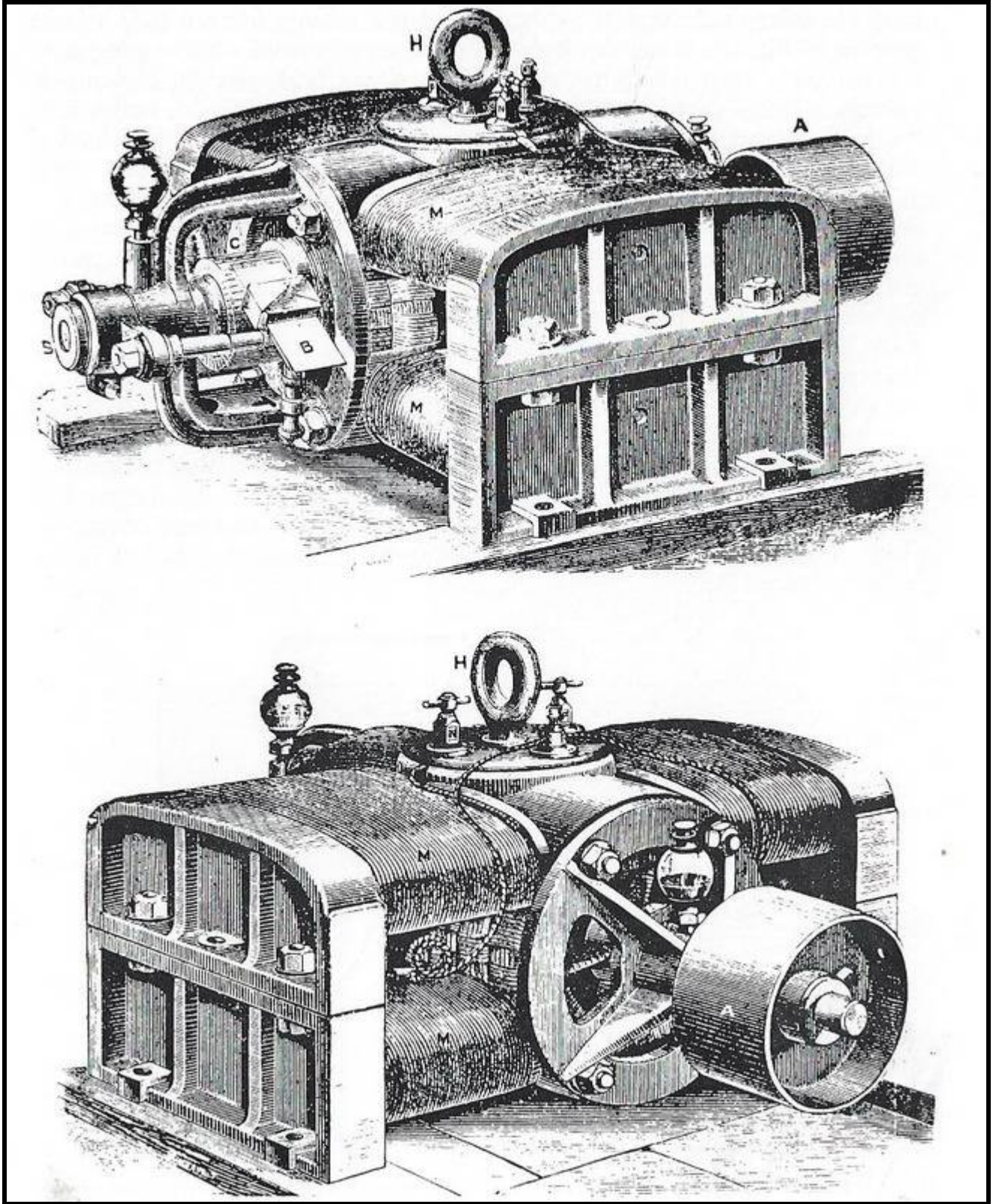


*The Chelmsford Arc Works*

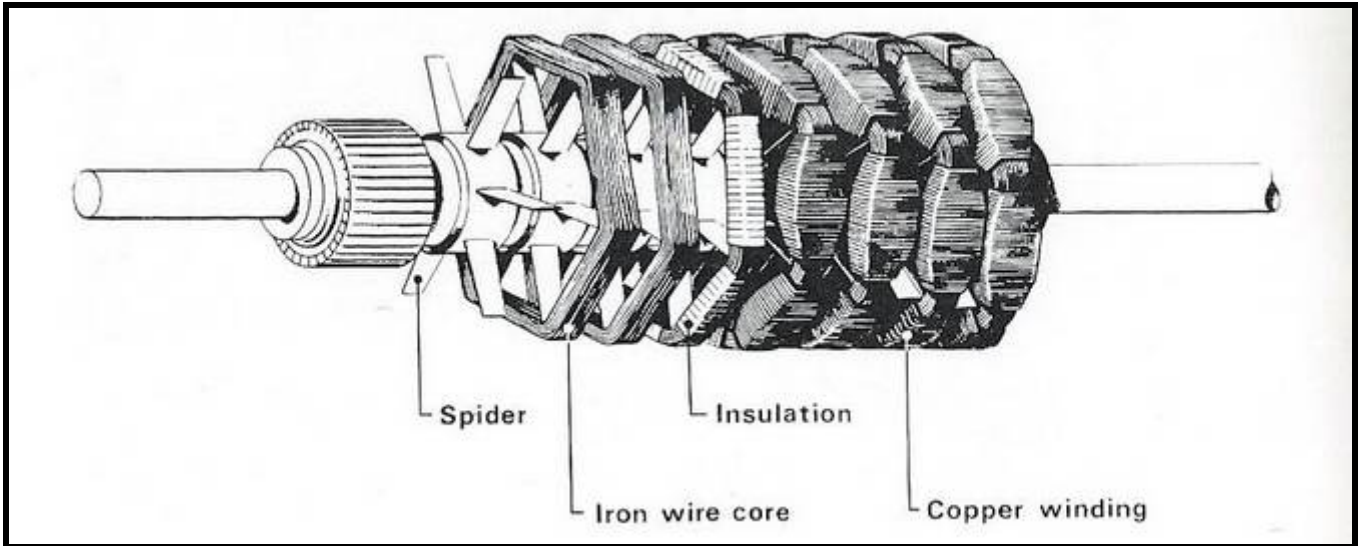


*(Left): Artists's reconstruction of an early Crompton lamp  
(Right): The earliest surviving Crompton lamp*

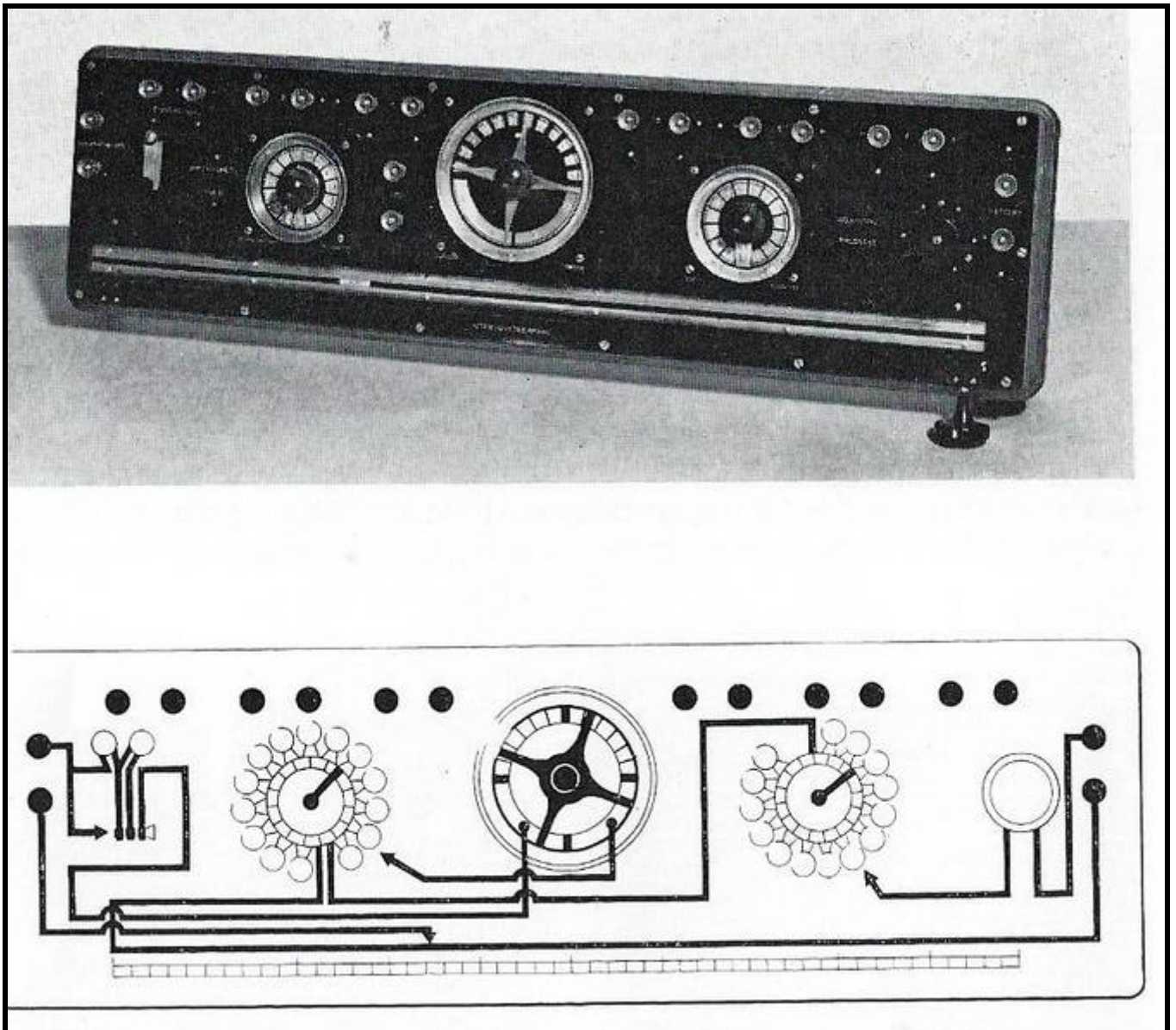




*Crompton-Burgin generator*

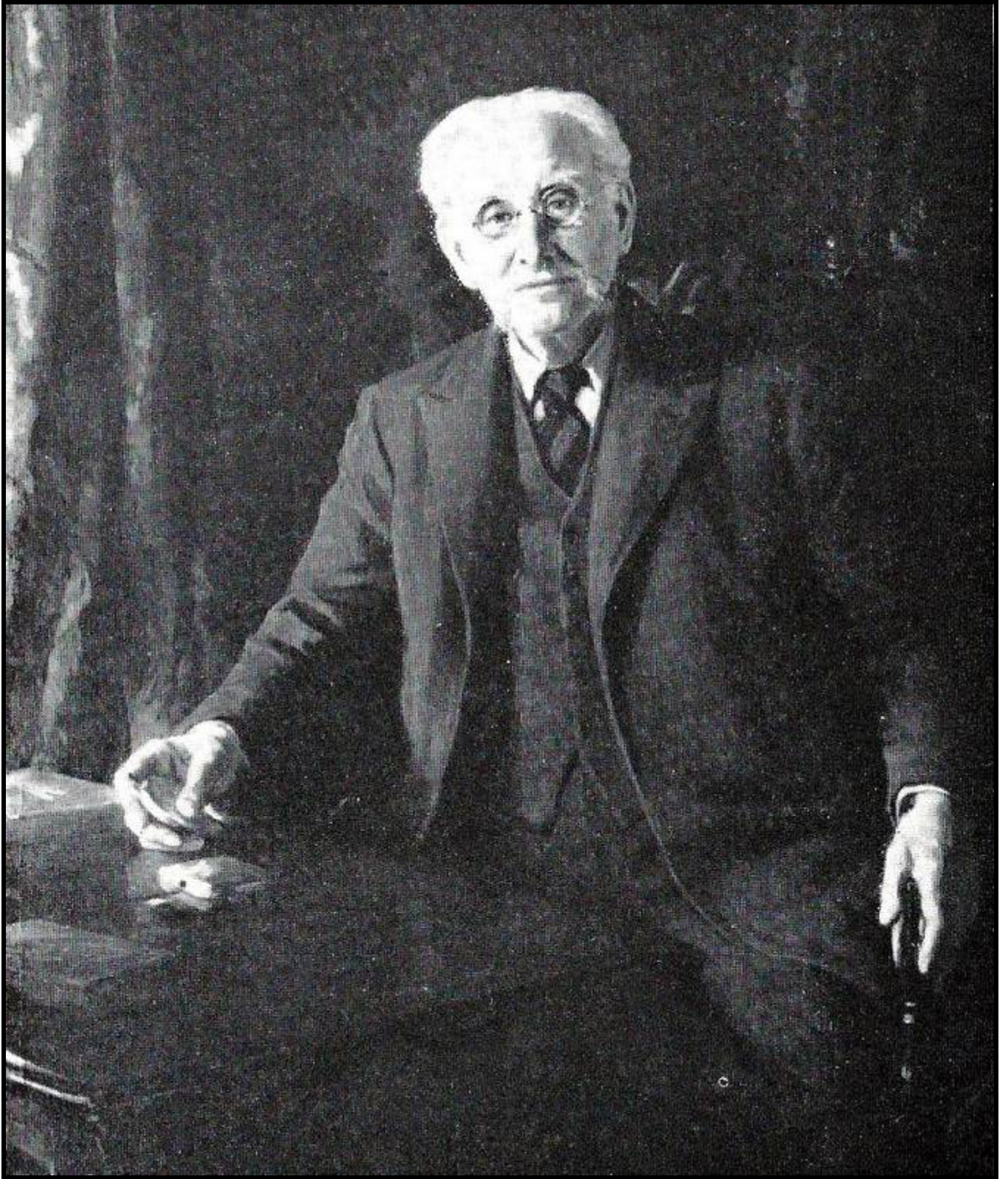


*Internal construction of the Crompton-Burgin armature*



*Crompton Potentiometer*

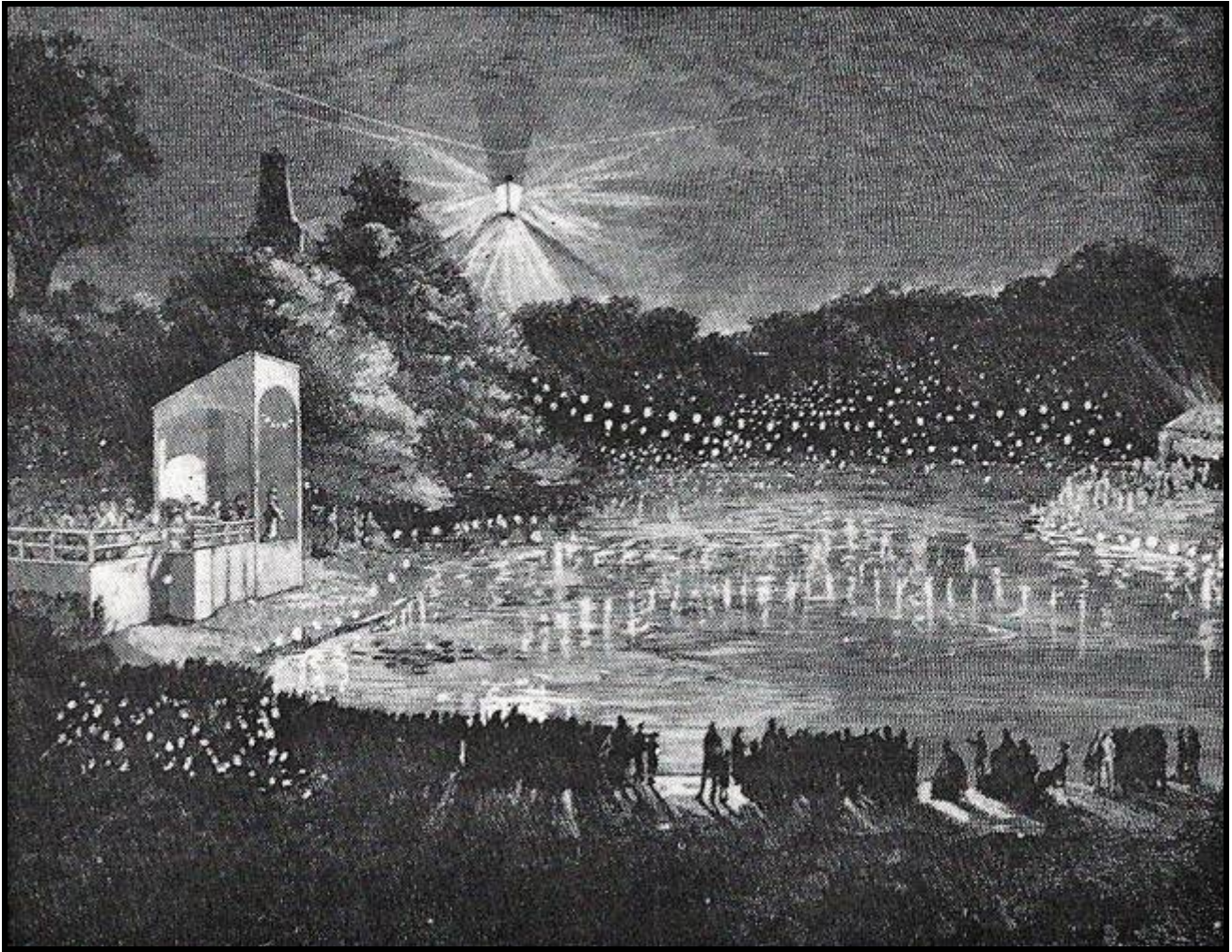




*Colonel Crompton*



## INSTALLATIONS OF THE CROMPTON ARC LAMP



*The Crompton Light on the Lakes at Alexandra Palace*

One of the first events to be lit by Crompton was the Henley Regatta in July 1879 “when crowds of people gathered at night to see the lighting on the river by the bridge.” Then the Butchers’ Provident Institution fete at Waltham Green “was lighted by two Crompton lamps suspended thirty feet above the ground.” Next “Fifty acres of grounds and lakes at Alexandra Palace were lit by four Crompton lamps supplied from four Gramme generators.” Around Christmas 1879, Crompton lit his own house in London’s Porchester Gardens using one of his portable generating sets supplying small arc lamps in the drawing and dining rooms.

An important meeting took place in Newcastle early in 1880 when, by invitation, Crompton visited Joseph Swan to see and discuss Swan’s progress in the development of a filament for the incandescent lamp. Crompton saw the advantages of the Swan lamp over his arc lamp for domestic use and as a result the two men decided to co-operate. Crompton became a director of the Swan United Electric Light Company, which made Swan lamps, while Crompton & Company manufactured lamp fittings and generators to supply them.





*St Enoch's Hotel in Glasgow*

When the British Electric Company was awarded the contract for lighting St Enoch's Station in Glasgow they decided to use Crompton arc lamps using so "six lamps of 4000 candle power supplied from six Gramme machines replaced 464 gas jets." (It was reported that the running costs were similar but the lighting much better."



Crompton was then invited to provide a similar installation for the North British Railway Station at Queen Street in Glasgow and to light their Goods Yard with Swan lamps.



*The General Post Office in Glasgow*

The first large indoor lighting scheme by Crompton was at the General Post Office in Glasgow where the Sorting Room (114 ft x 54 ft x 25 ft high) was lit experimentally by two Crompton arc lamps supplied from two steam-driven portable generating sets, replacing 180 gas jets. A similar installation was provided for the Telegraph Instrument Office. Later, a permanent arrangement employed a Crompton-Burgin generator.



In the autumn of 1880, Crompton was awarded the First Class Medal of the Glasgow Philosophical Society for his “Engine for Electric Lamps.”





*King's Cross Great Northern Railway Station in London, probably c. 1880*

In 1882, at King's Cross Railway Station, "twelve arc lamps of about 4000 candle power were suspended in two lines of six, 30 feet above the platforms." Crompton employed four Crompton-Burgin generators with a fifth feeding larger arc lamps in the Station Forecourt. He also used two Gramme generators for Swan lamps in the Engine Room. All generators were driven initially from a single steam engine.



*The Mansion House, London, 1894*

In 1882, Crompton installed a mixture of his arc lamps and Swan lamps for lighting at the Mansion House.



*The London Law Courts*

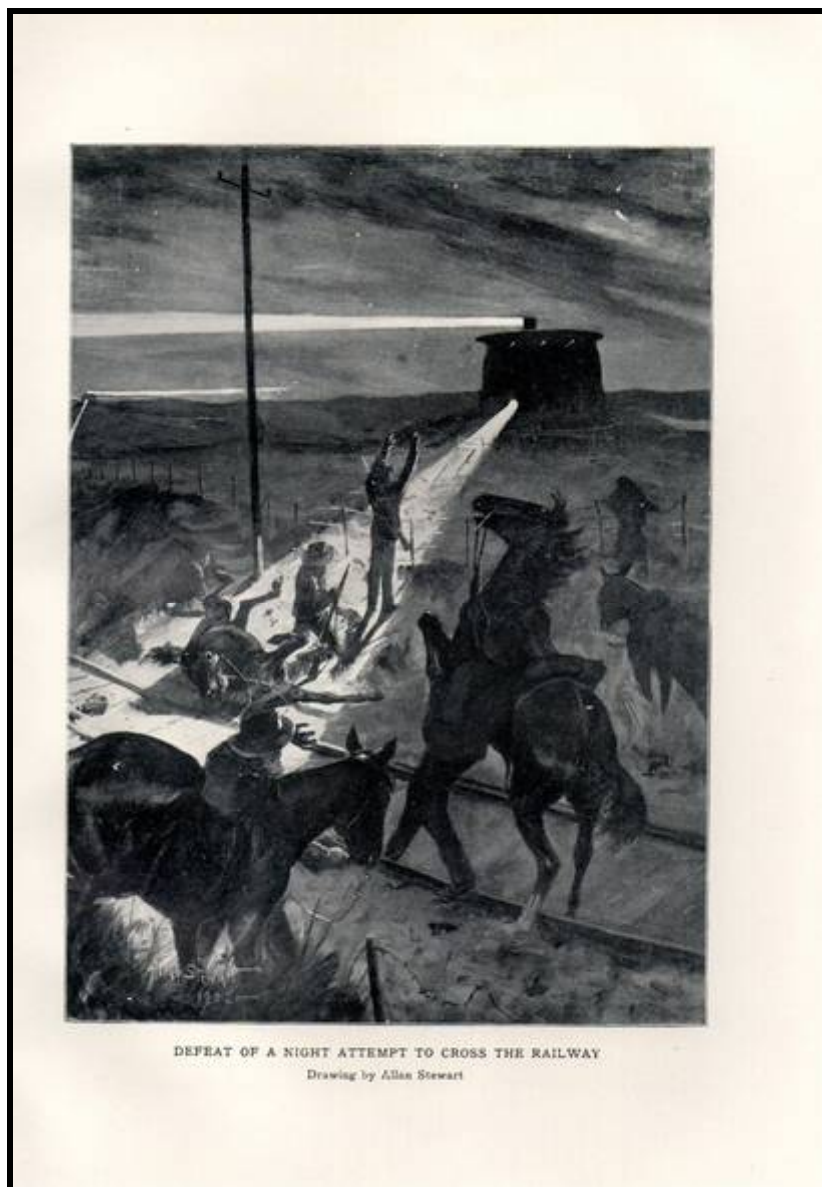
Crompton also provided electric lighting for the new Law Courts in the Strand in London.



When the Electrical Engineers, Royal Engineers (Volunteers) was formed in 1897, Crompton became Commanding Officer with the rank of Major. He designed a range of military searchlights using his arc lamp. His searchlight designs ranged from small tripod-mounted types to large fixed designs. Soon afterward Crompton led a detachment of his Volunteers to South Africa to operate electric searchlights in the Boer War. During 1900 they served in the Transvaal and Orange Free State.

Crompton was promoted to Lieutenant-Colonel, mentioned in Dispatches and made a Companion of the Bath. Later, he was given the honorary rank of Colonel. He continued as Commanding Officer of the London Division of Electrical Engineers Volunteers, and its successor the London Electrical Engineers, Royal Engineers. Crompton retired from the Territorial Force in 1910, but was appointed Honorary Colonel of the London Electrical Engineers in 1911, which became the 27<sup>th</sup> (London Electrical Engineers) Battalion, RE, in 1923.

Early in the Second Boer War, Robert Baden-Powell (then a Colonel) improved searchlights to deter attacks during the siege of Mafeking.



*Boer War searchlights*



*Vienna Opera House*

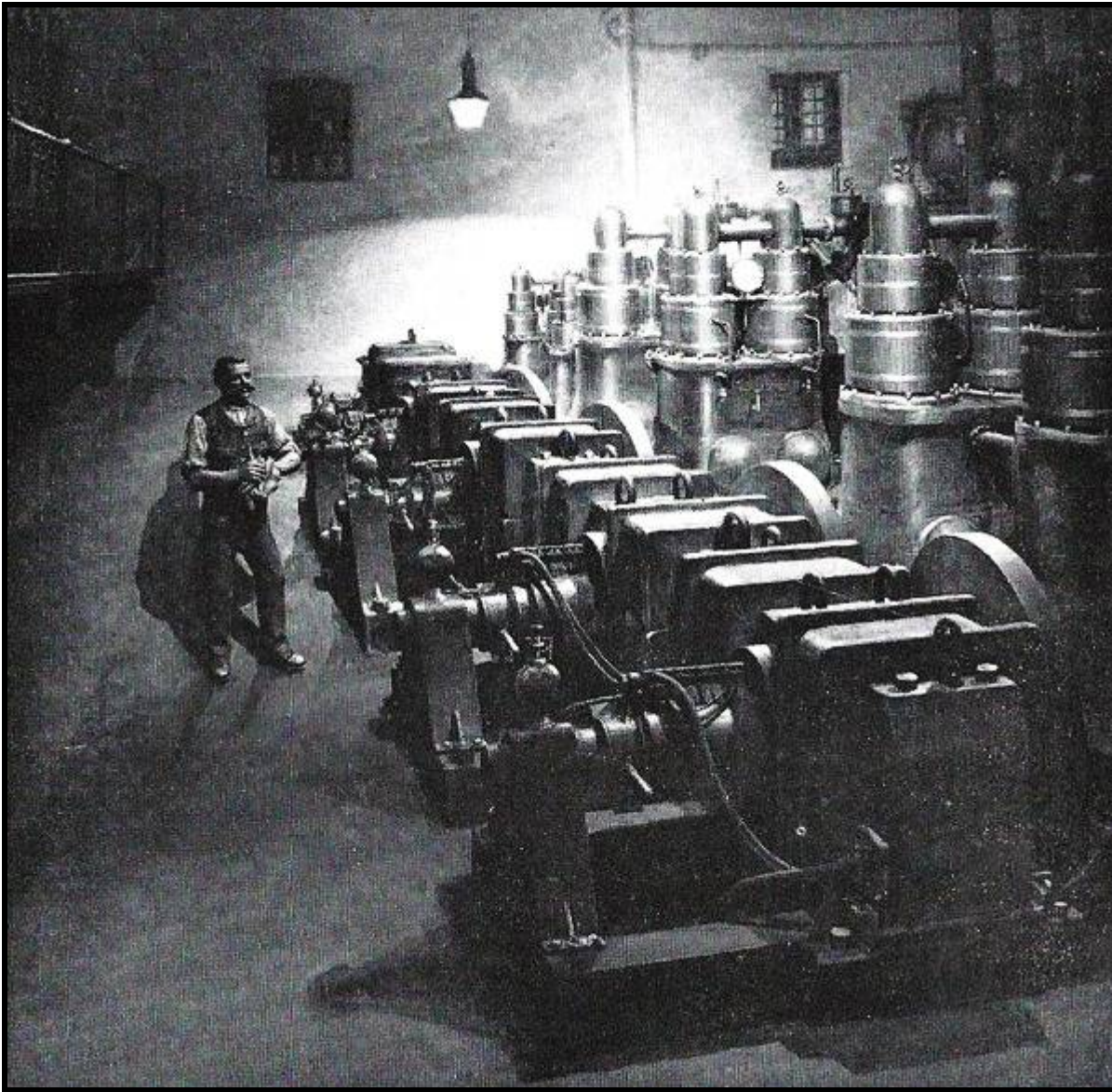
In the years 1885 to 1889 Crompton spent much of his time in Vienna where he designed and supervised the electric lighting for the Imperial & Continental Gas Company and manufactured some of the equipment for the Opera House. He worked on other public buildings, all these being fed from a single central generating station about a mile away which operated at 440 volts DC charging Crompton-Howell 100 volt batteries.



*Windsor Castle in 1887*

It is said that Crompton provided the first electric lighting for Windsor Castle and for Holyrood House.



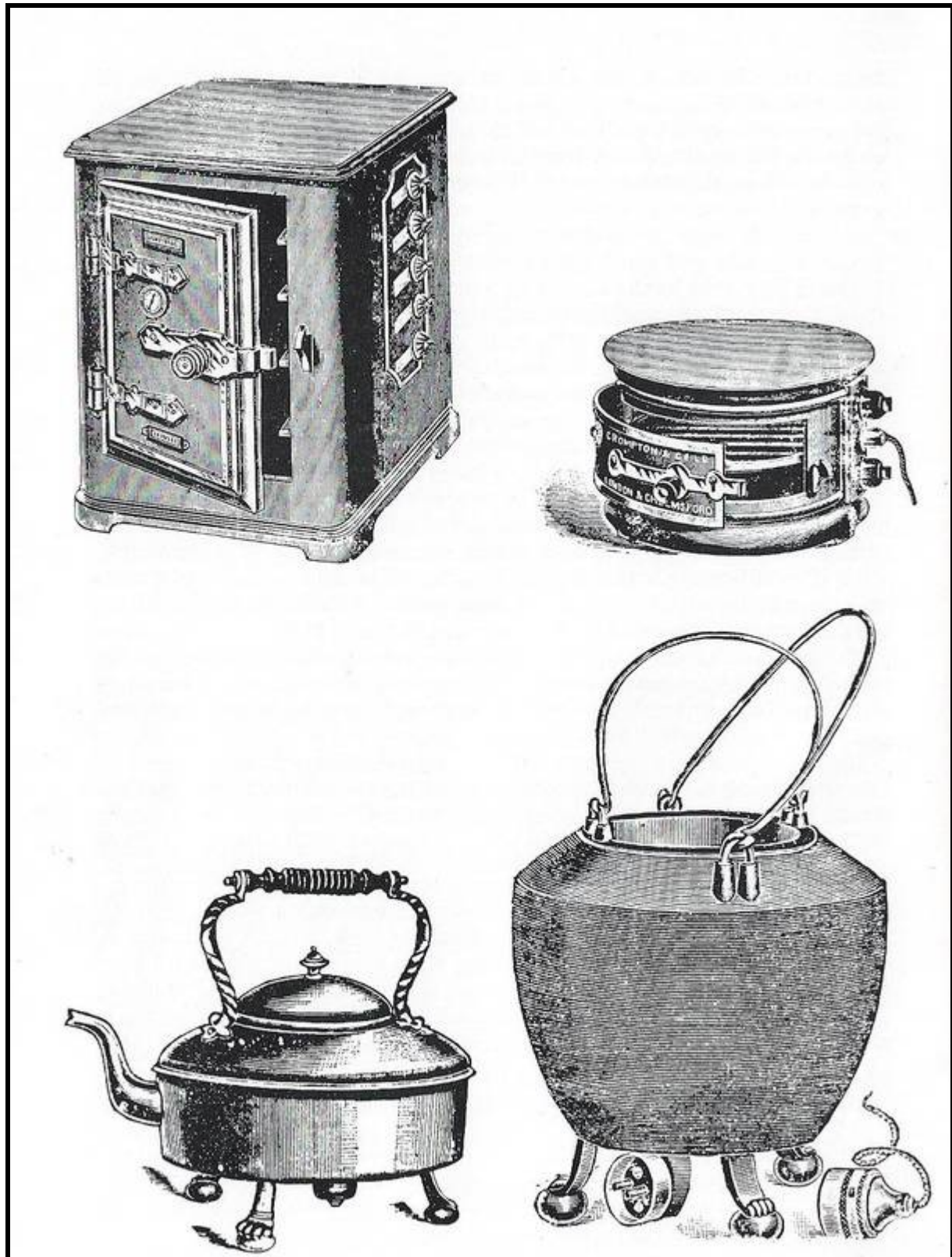


*Kensington Court generating station*

After Vienna, Crompton looked for a similar opportunity in London and was introduced to the architect for Kensington Court, a new estate of some one hundred large houses linked by subways which allowed the nearly one hundred consumers to be supplied from a central generating station without the problem of having to break up public roads.

In 1886, the Kensington Court Company was formed and in due course a 200 volt three-wire DC electrical distribution system (later increased to 400 volts) was adopted. Each house was supplied from the middle conductor and one outer one. It was here that “Crompton first used his copper-strip distribution system (instead of cables) ....the main conductors were bare copper strips one inch wide and one quarter of an inch thick..... stretched over supporting porcelain insulators. To increase the current-carrying capacity additional strips were laid on top.”

The generating plant comprised seven Willan steam engines each driving one Crompton generator giving a total output of 550 kW. Crompton went on to be responsible for many electricity companies supplying both direct current and alternating current systems at home and abroad.



*Crompton catalogue from 1900 showing electric oven, small oven & hotplate, kettle and gluepot*

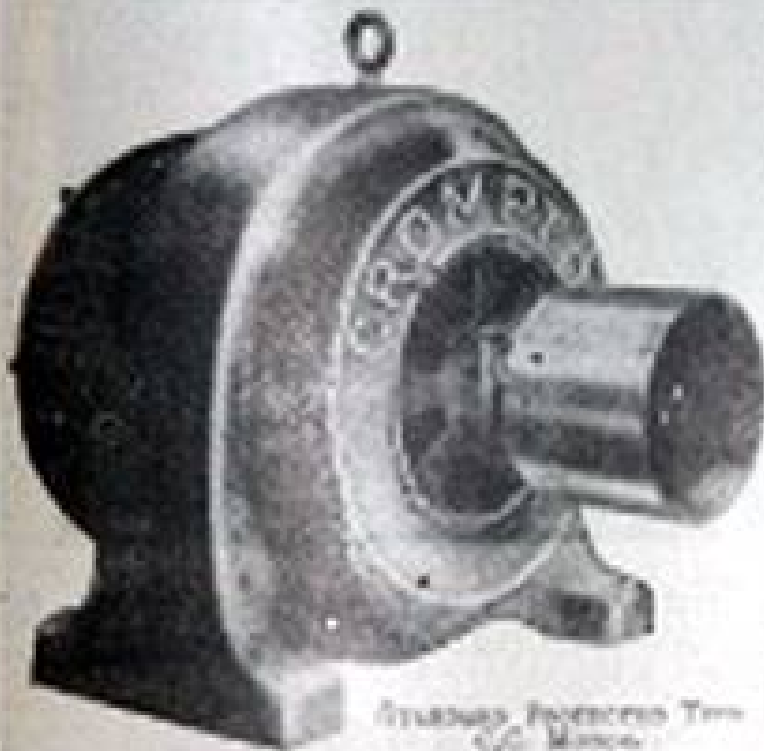




*More from the Crompton 1900 catalogue featuring urns (top) and electric radiators (bottom)*

# Complete Electric Light and Power Plant.

ALTERNATING AND CONTINUOUS CURRENT MOTORS  
OF ALL TYPES  
FOR EVERY CONDITION OF POWER APPLICATION



Standard Parsons Type  
50 H.P. Motor

Write for Detailed Lists

Alternators.  
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# CROMPTON

and COMPANY Limited

CHELMSFORD, ENGLAND.

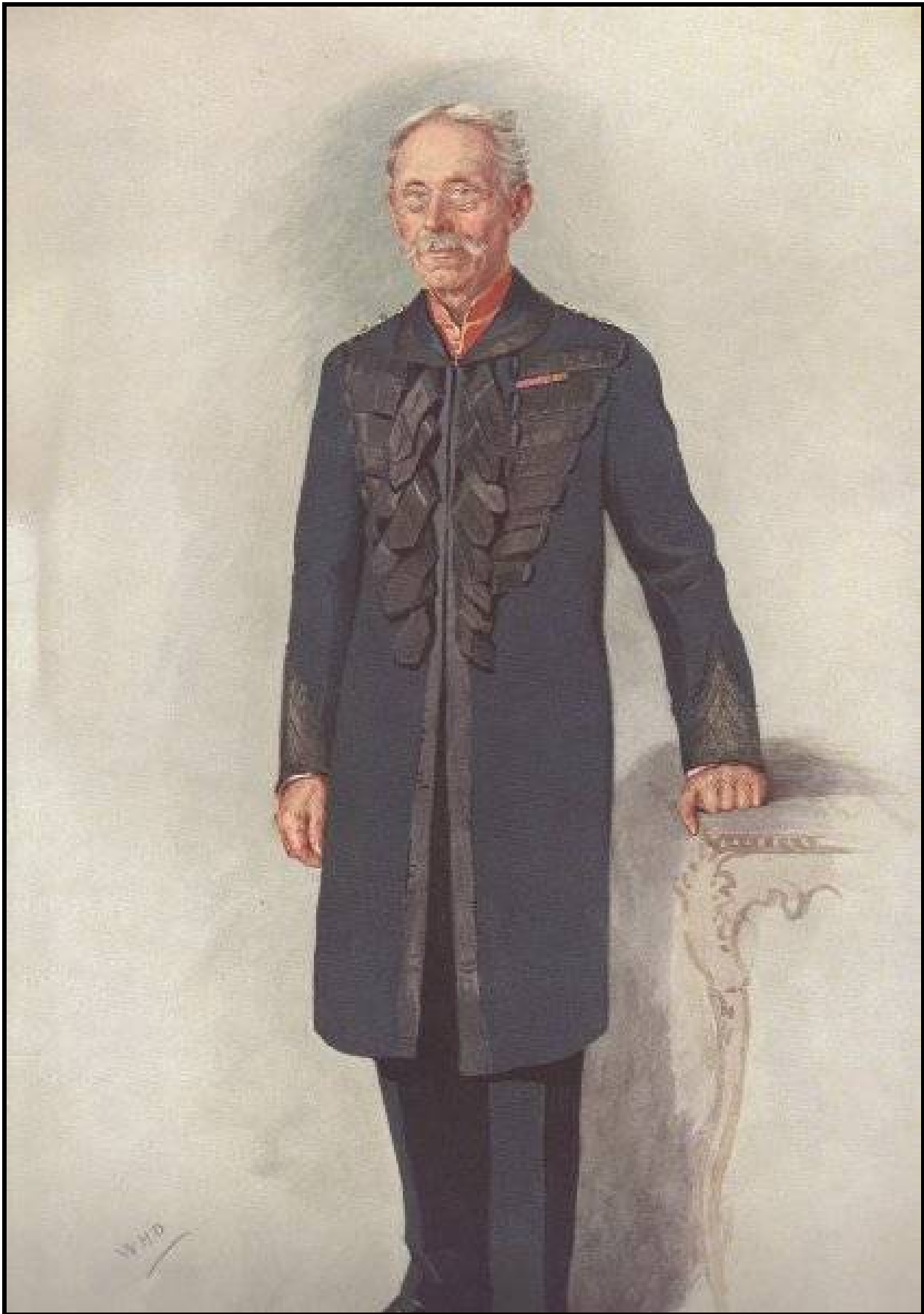
Telegrams: Crompton, Chelmsford.

Telegrams: C. G. & Co., Chelmsford.

Rep. Office and EXPORT Dept. Salisbury House, London Wall, London

Telegrams: Crompton, Power, London. Telephone: 22 Central; 34 London Trust.





*Colonel Rookes Evelyn Bell Crompton (Vanity Fair 30<sup>th</sup> August, 1911)*

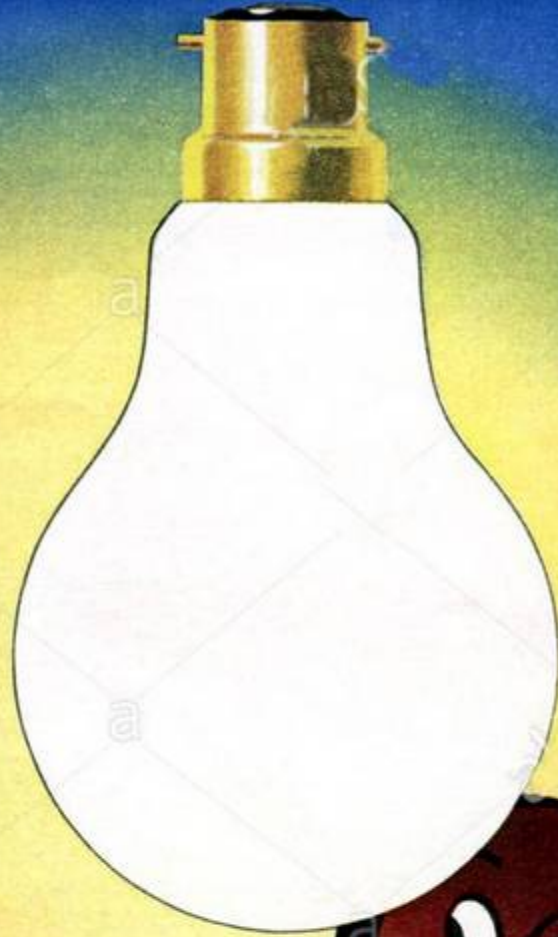


*Crompton: From Crimea to Boer War*





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OF ELECTRIC LAMPS  
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**SWITCH TO**

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*Crompton Lamps still available in 1950*

APPENDIX: CROMPTON AMERICAN PATENTS

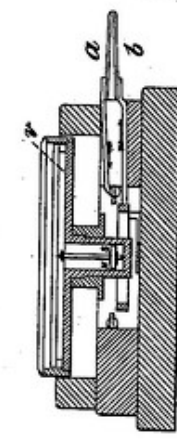
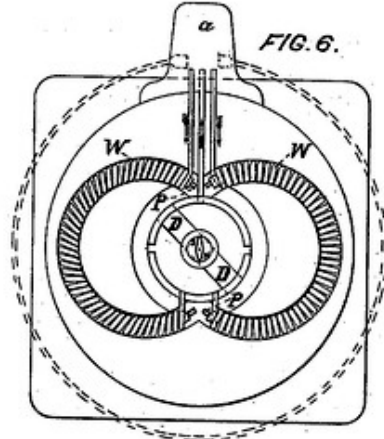
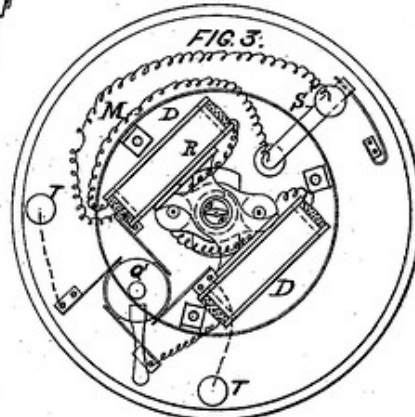
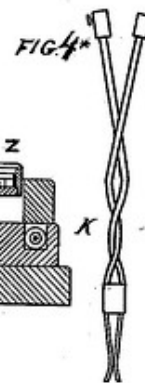
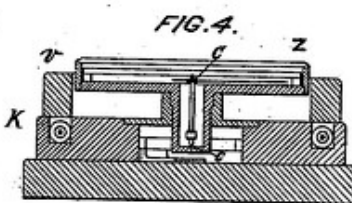
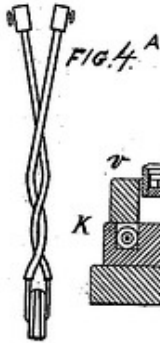
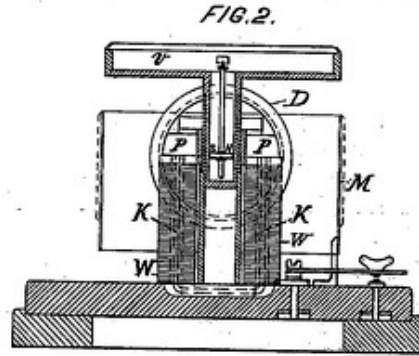
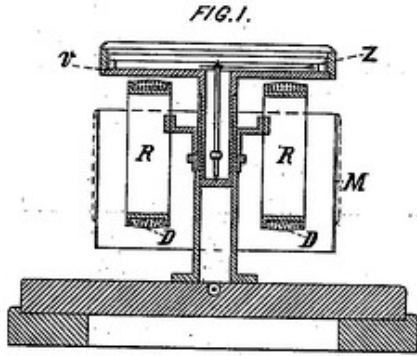
(No Model.)

R. E. B. CROMPTON & G. KAPP.

GALVANOMETER.

No. 383,444.

Patented May 29, 1888.



Witnesses:  
 Percy White  
 G. L. DeMotte

Inventors.  
 Rookas Lovell, Bell, Crompton.  
 and  
 Gilbert Kapp.  
 By John J. McKittrick  
 their attys.



(No Model.)

R. E. B. CROMPTON.

DYNAMO ELECTRIC MACHINE AND ELECTRIC MOTOR.

No. 387,343.

Patented Aug. 7, 1888.

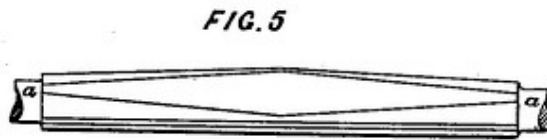
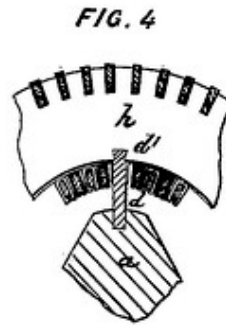
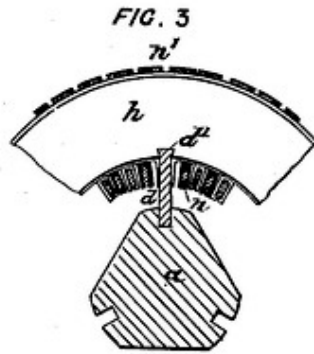
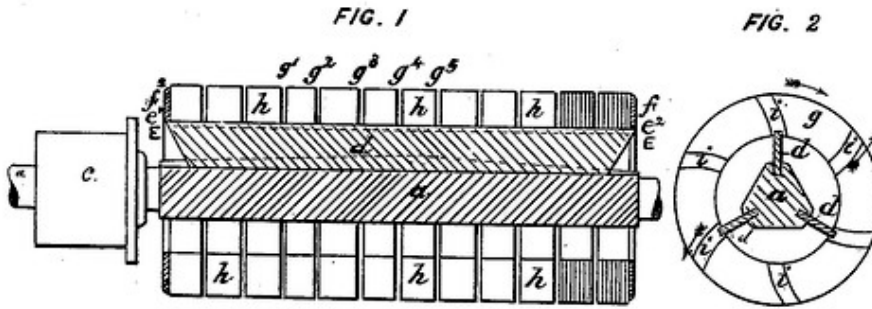


FIG. 6

FIG. 7

FIG. 8

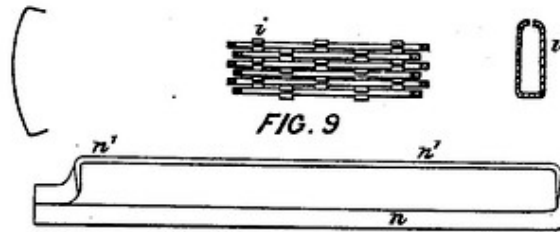


FIG. 9

FIG. 10

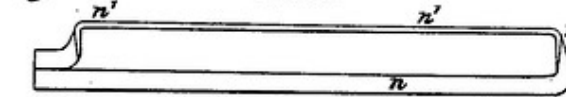
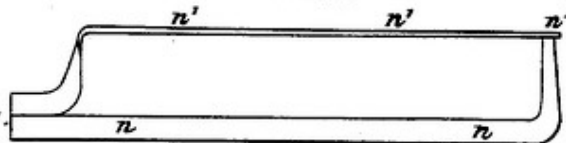


FIG. 11

FIG. 12



Witnesses:  
*Walter Norton*  
*Walter Allen*

Inventor:  
*R. E. B. Crompton*  
 by his Attys. *John J. Baister & Son*

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<http://www.theiet.org/resources/library/archives/featured/crompton-india.cfm>

<http://www.theiet.org/resources/library/archives/biographies/crompton.cfm>

Other publications:

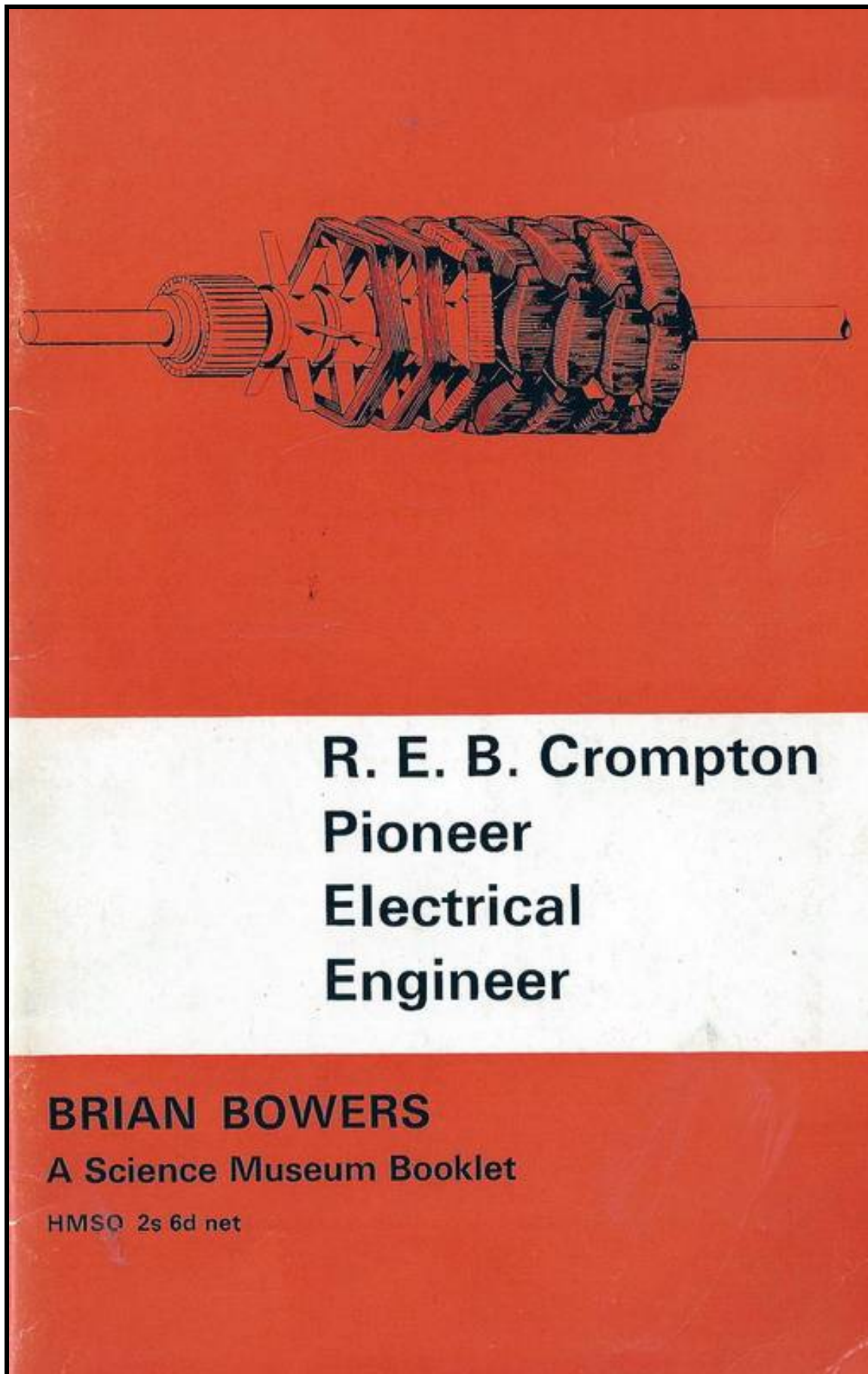
1881 *A Lecture delivered at the London Institution and repeated at St George's Hall, Liverpool, Mansion House Buildings*

1928 *Reminiscences (mainly Army Life in India)*, R E B Crompton, Constable, London

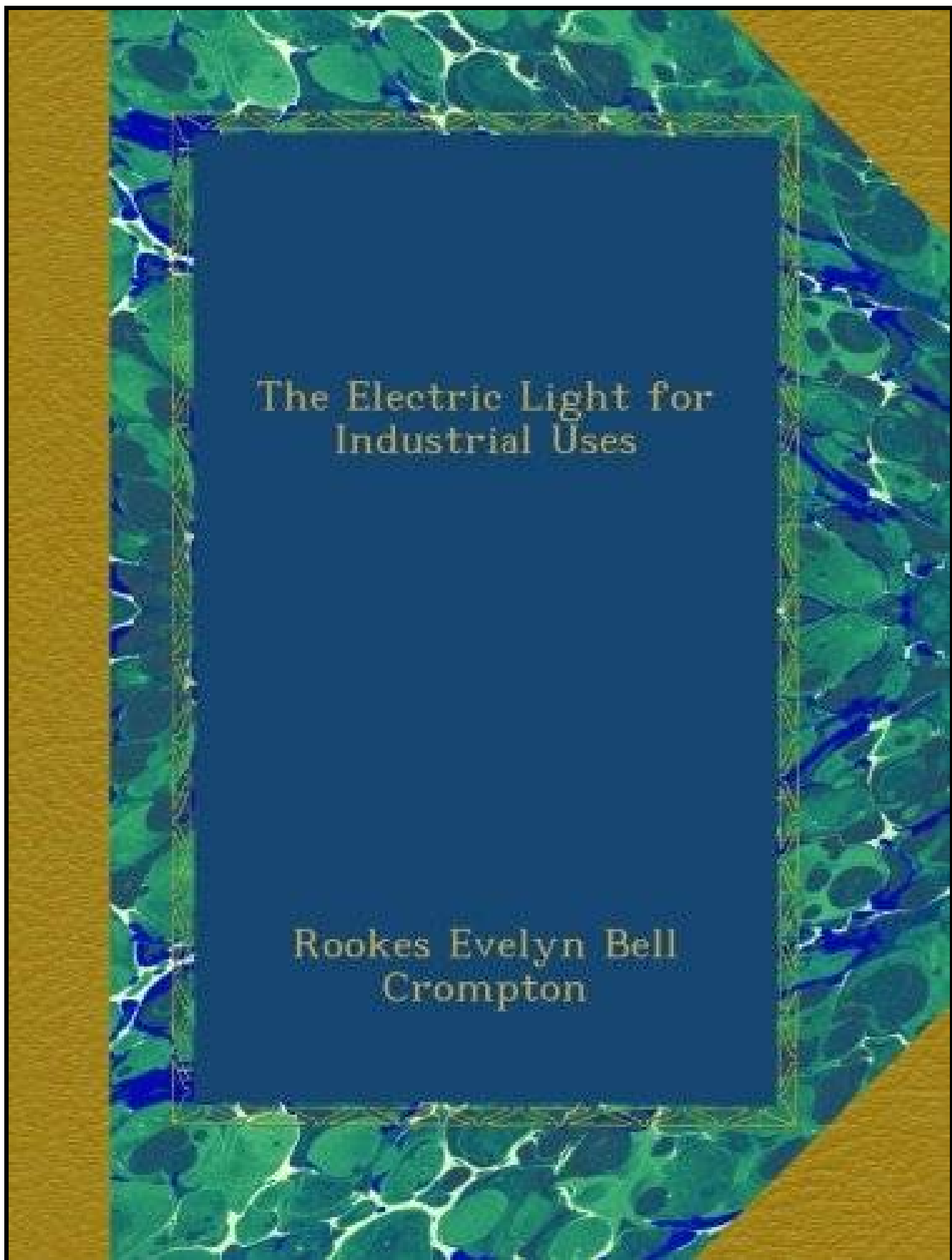




**POSTSCRIPT: FURTHER READING**



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## EPILOGUE

In 1939, Crompton moved back to his native Yorkshire. His house had no electricity but his former company installed a generating plant free of charge. Crompton died on the 15<sup>th</sup> February, 1940, at the age of 94, a few months after the death of his wife, his place in the history of the practical development of electricity secure.



*Crompton Blue Plaque in Kensington Court, London*

Crompton was awarded the Faraday Medal in 1926. In 1931, engineers and scientists from many countries gathered at the Faraday Centenary Celebrations in London. A banquet, held in Crompton's honour, was sponsored by the International Electro-Technical Commission, the Royal Society and the Institutions of Civil, Mechanical and Electrical Engineers. Crompton was elected a Fellow of the Royal Society and made an Honorary Member in each of the three senior Engineering Institutions.