Rare electromagnetic Chronos Wall Clock

A rare and interesting German walnut wall regulator with electric rementoire by Chronos to a design by Dr. Herman Aron, circa 1890.

Designed to run off 200 volts DC, we have converted it to a safer 3 volts DC.

The four pillar timepiece movement has a small spring-box to the greatwheel arbor and deadbeat escapement. The tapered backplate is stamped PATENT over number 290. The great wheel arbor is fitted with a superbly finely crafted bevel gear to facilitate torque to be delivered from the electric rementoire mechanism fitted to the case above. The rementoire mechanism has a rotating electromagnetic armature and switch gear to allow periodic oscillation against a ratchet wheel fitted with maintaining power to compensate for loss of delivery whilst the armature is resetting. See the video to view in slow motion.

The glazed door of the case allows the wood-rod pendulum to be seen, and the glazed sides show the movement. The front door surround has book-matched veneers, and the backboard is quarter veneered.

6.25 inch circular silvered Arabic numeral dial with subsidiary seconds dial and inscribed *CHRONOS* to the centre, with blued steel hands and a brass bezel.

The interior of the case is fitted with a ceramic insulated coil power supply to the left hand side of movement and with an enamel beat scale below the pendulum. The base is fitted with a brass plaque inscribed *No: 290, Electric: Clock, Dr. Aron's System, for direct currents, 200 Volt* and *REFERENCE No. W 433* .

Height: 33.5ins (85 cms)
Width: 13 inches (33cms)
Depth 6.5 inches (16 cms)

Hermann Aron was born in 1845 and in 1867 went to study Medicine at Berlin University before transferring to mathematics and natural sciences. From 1870 he studied at the University of Heidelberg with such notable physics lecturers as Helmholtz and Kirchhoff. He obtained his doctorate from Berlin in 1873 and became an assistant at the physical laboratory of the trade academy. He taught at the University of Berlin where he became professor of physics, and at the Prussian Army's school for artillery and engineers. In 1883 Dr. Hermann Aron patented the Pendelzähler – the first accurate watt-hour meter. The meter contained two pendulum clocks with coils around their pendulum bobs. One was accelerated and the other slowed in proportion to the current used. A differential gear mechanism measured the difference in speed between the two clocks and counted this on a series of dials. The first meters used clockwork clocks that required manual winding monthly; later models were self-winding by electricity. This meter was introduced into Great Britain by Hugo Hirst and was made and sold by his General Electric Company from 1888. Aron also invented another called the 'Aronschaltung' comprising a circuit for measuring total power in three-phase AC circuits, whilst requiring only two direct measurements of power. These inventions expanded into a business with factories in Paris (1890), London (1893), Vienna (1897) and by the time of his death in 1913, it employed over 1,000 people. The electric winding system (or rementoire) used in this clock is basically the same as used in Aron's electricity meters as sold by G.E.C.; a detailed description and illustrations of its operation can be found in Wise, S.J. ELECTRIC CLOCKS, Principles, Construction, Operation, Installation and Repair of Mains and Battery-operated Clocks for Domestic and Industrial Purpose on pages 61-2 (Figures 31-33).