

Transatlantic Cables and the Ohm

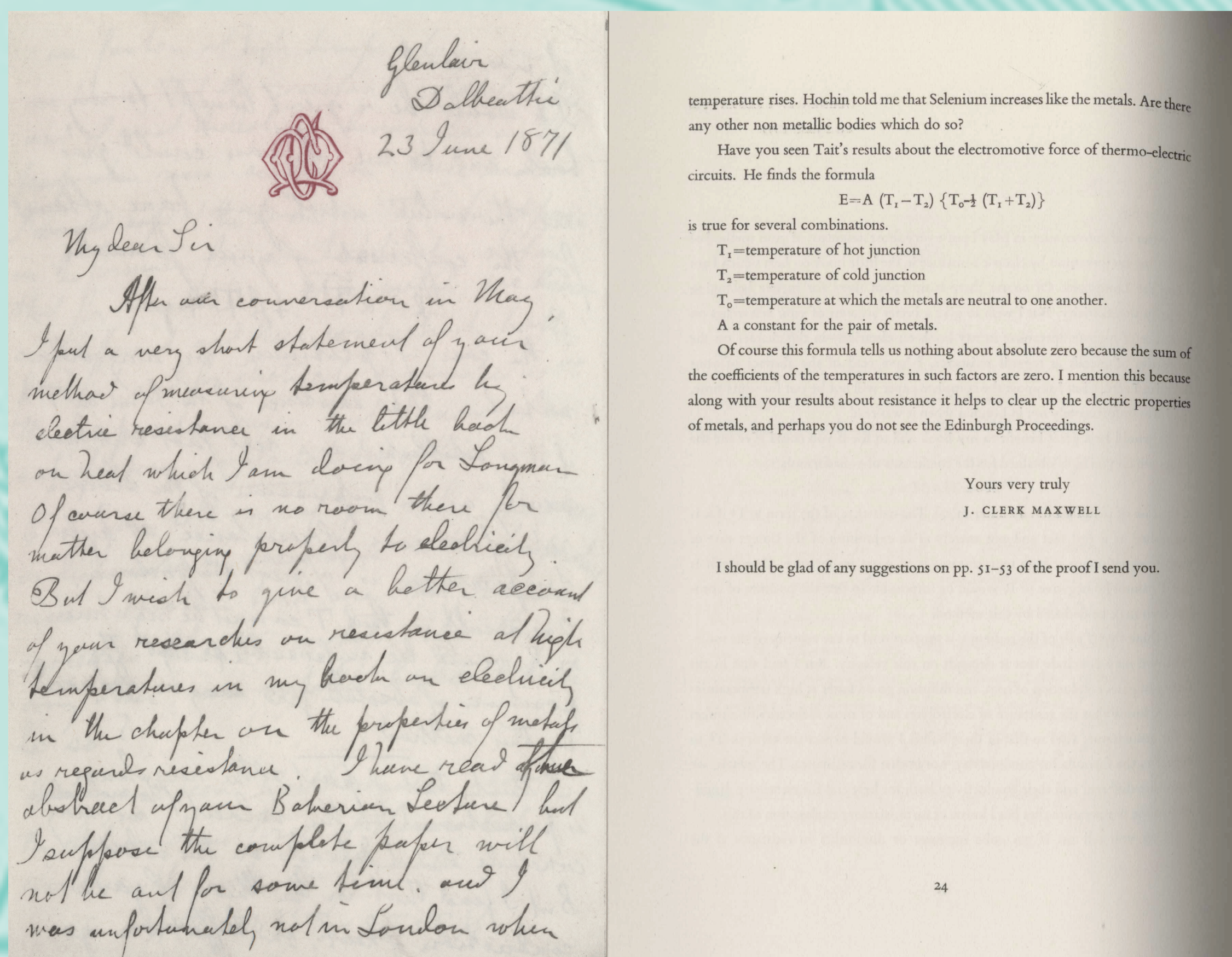
Submarine cables, the first medium for intercontinental telecommunications, were pioneered by William Thomson (1824 – 1907), later Lord Kelvin, with Fleeming Jenkin (1833 – 1885), a school-friend of Maxwell who was the engineer in charge of international cable laying operations before becoming Regius Professor of Engineering at The University of Edinburgh.

In the 1850's, Michael Faraday (1791 – 1867) and Thomson demonstrated how the core resistance of the cable could limit messages to only one character every four seconds! It was therefore important to know exactly what its resistance was.

Jenkin, as secretary to the British Association Committee on Electrical Standards, appointed a committee including Maxwell to define the "Standards of Electrical Resistance".



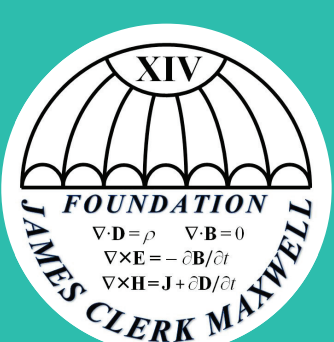
Maxwell with his apparatus, courtesy IET Archives, London.



A letter from Maxwell to Siemens on the variation of resistance with temperature. On the left is Maxwell's original first page, while transcribed on the right is its conclusion, courtesy IET Archives, London.

An instrument proposed by Thomson, as seen here alongside Maxwell, employed a magnet suspended within a spinning coil of standard wire. Maxwell and Jenkin led the experimental verification of the coil resistance. Their reports, published along with others including those of Charles Wheatstone and Werner Siemens, culminated in 1867 in the adoption of the unit that we now represent with the symbol Ω , after the German physicist Georg Ohm.

In 1873, Maxwell and Jenkin each published their individual textbooks on electricity and magnetism.



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