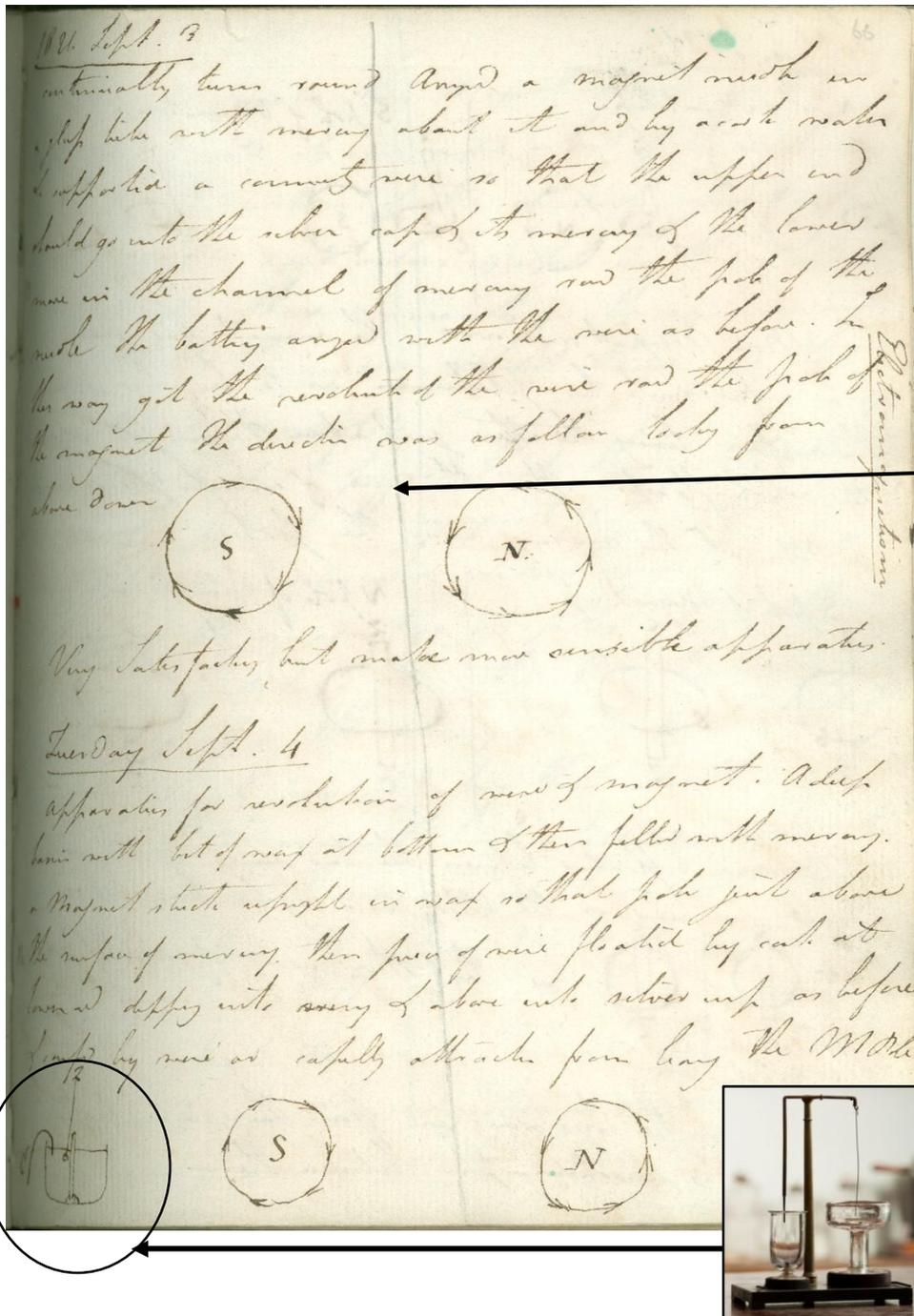


# Faraday's notebooks: electromagnetic rotations



Michael Faraday kept meticulous notes throughout his scientific career, writing up the rough notes he made in the laboratory and sometimes illustrating the pages with small diagrams of his apparatus.

This notebook page (RI MS F\_2\_A) from September 1821 records Faraday's successful attempt to demonstrate electromagnetic rotation. The small diagram in the corner shows his apparatus which he later refined to the model shown.

On 3<sup>rd</sup> September he observed a wire attracted and repelled by the magnetic poles and realised that it was moving in circular motions. He built a simple experiment to establish the motion of the wire which is detailed in the page of the notebooks shown. The next day he refined his apparatus and continued to experiment along the same lines, varying the materials and arrangements.

Faraday published his paper soon after he made his discovery, which upset his working relationship with Humphry Davy. You can tell that he has published the discovery as he's drawn a pencil line through the page to mark it.

## Transcription

### 1821 Sept 3

....continually turn round. Arranged a magnet needle in a glass tube with mercury about it and by a cork, water, etc. supported a connecting wire so that the upper end should go into the silver cup and its mercury and the lower move in the channel of mercury round the pole of the needle. The battery arranged with the wire as before. In this way got the revolution of the wire round the pole of the magnet. The direction was as follows, looking from the above down.

Very satisfactory, but make more sensible apparatus.

### Tuesday Sept. 4

Apparatus for revolution of wire and magnet. A deep basin with a bit of wax at bottom and then filled with mercury, a Magnet stuck upright in wax so that pole just above surface of mercury, then piece of wire floated by cork, at lower end dipping into mercury and above into silver cup as before, and confined by wire or capillary attraction from leaving the M. Pole.