

“Work, finish, publish”

A necessarily minimal intervention on Michael Faraday's lab notes

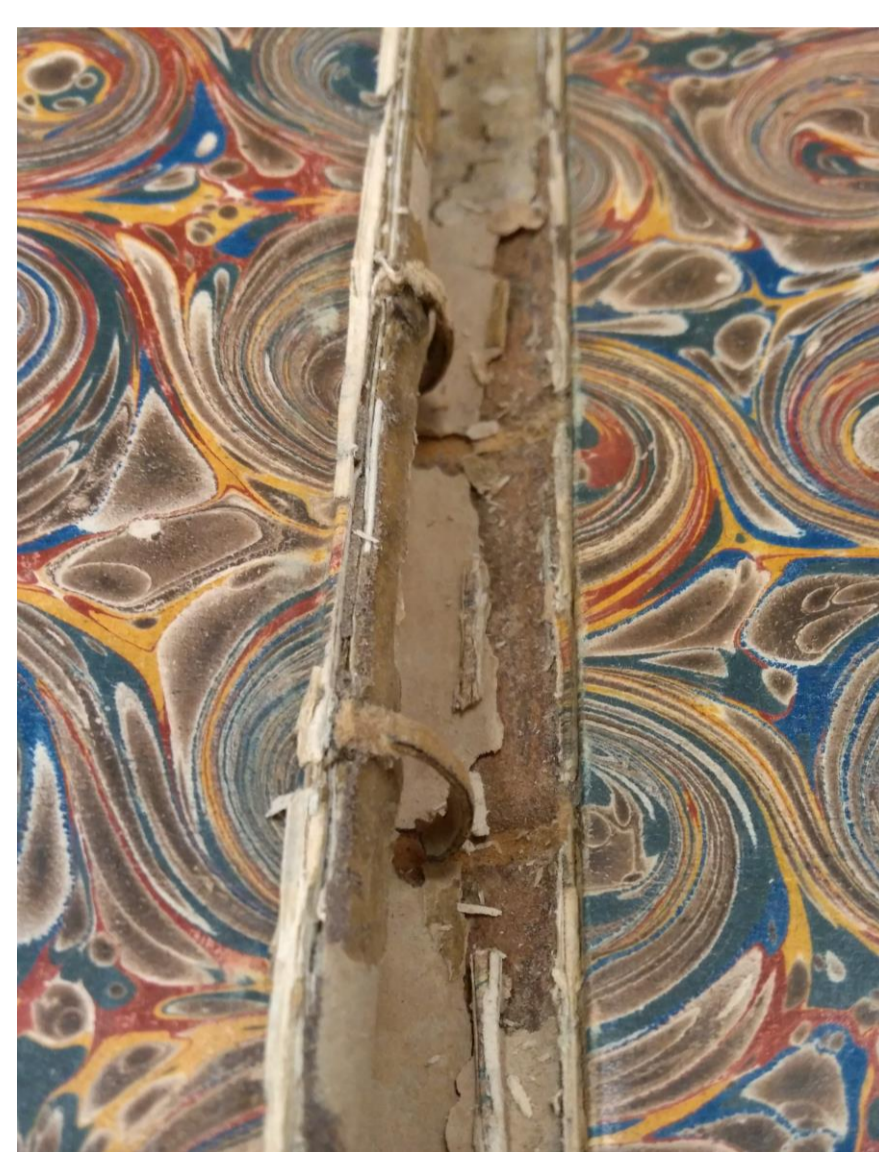
Meagen Smith, Book and paper conservator



F/2/C Faraday notebook showing split front inner joint, detached double bifolio endleaves.



Detail showing sewing supports folded back upon themselves to create raised bands



Detail showing detached sewing supports used to create raised bands



Spine lining showing original degraded and acidic paper



Spine being cleaned using a wheat starch paste poultice



Spine during cleaning



Interior of spine section of case mechanically cleaned

Bibliography

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Effectiveness of minimal intervention generates a lively debate at any conservation gathering. Some conservators question whether minimal intervention is sufficiently effective in bringing our collection items back into safe use while others advocate minimal intervention when items will be housed and prohibited from further handling. Faraday's lab notes needed to be robust enough to continue serving as a research source and playing their role as iconic objects as well as being part of the Royal Institution's foundational history.

Background

In late 2016, I was asked to advise on the conservation treatment of a set of Victorian era scientific volumes. Michael Faraday's lab notebooks hold working notes on his scientific discoveries such as:

- Electro-magnetic rotations (the principle behind the electric motor)
- Liquefied a gas (chlorine)
- Bicarburet of hydrogen (benzene)
- Electro-magnetic induction
- Invents the electro-magnetic generator

Conserving one of these notebooks should have been a fairly straightforward project however; Faraday's notebooks have additional significance within science and the Royal Institution's collections because Faraday bound the notebooks himself. Faraday completed a seven-year bookbinding apprenticeship during which he developed an interest in science by spending his time after hours reading the books he was binding. His self-bound notes, taken during scientific lectures, earned him an interview and eventually a job with the leading scientist of the day, Humphry Davy, at the Royal Institution.

Inscribed in the UNESCO UK Memory of the World Register, this volume featured is one of a few remaining Faraday bindings that had not been rebound, rebaked or significantly repaired in any way and therefore it was important to retain as much of his binding as possible while making it safe to use with a minimal intervention approach. It was therefore important that any conservation work preserved its unique character, whilst ensuring that it can be safely handled and consulted by staff and researchers.

Condition

Faraday used the lab notes heavily after their creation for scientific experiments and subsequent lectures and publishing. They have been continually consulted and displayed causing typical damage such as torn folios, split joints and detached endleaves. Faraday bound his lab notes in a typical half style case binding with no lacing-in and covers made entirely off the book using modest materials and time saving techniques such as creating semi-false raised bands by folding the extended sewing supports back on themselves over the spine lining. The made endpapers were formed of two machine made wove bifolios, forming a stiff leaf and the paste-down served as the only attachment between textblock and boards. The survival and condition of these volumes along with their historical place in the collection was integral to the identity of the Royal Institution and the history of science rendering them powerful historical objects.

Aims of conservation

The lab notes provide excellent material evidence of Faraday's training and scientific development. As such, the aims of conservation were not to reconstruct the bindings, but rather remove degraded and damaging material, consolidate the leather and stabilise the inherently vulnerable structure to prevent further damage and enable handling so that these rare manuscripts can be consulted without further harm or potential loss.

Ethical goals

- Retain as much of the binder's original material as possible
- Affect minimal change due to UNESCO status
- Stabilise by reducing potential degradation by replacing damaging material such as acidic paper and animal glue, pictured left
- Reattach fully detached front endleaves
- Restore mechanical function of binding by reattaching textblock to case

Result

Overall the treatment, detailed to the right, was very effective in preserving Faraday's craft skills as well as enabling future access by multiple disciplines to these iconic volumes embodying both educational texts and the manifestations of the collection's history.

Therefore, Faraday's answer when questioned on the secret of his success as a scientific investigator is equally relevant to this poster about his notebooks

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Lab notebook page (RI MS F/2/C) dated 29 August 1831 records Faraday's construction of the ring coil apparatus with which he discovered electromagnetic induction ©Royal Institution



Portrait of Michael Faraday Esq, 1830 (oil on canvas) by Pickersgill, Henry William ©Royal Institution

Treatment procedure

- Document, photograph and surface clean
- Front endleaves hinged using Tengujo and wheat starch paste(wsp)
- Acidic spine lining and animal glue cleaned off mechanically then using wsp
- Front endleaves hinged to textblock using Tengujo + wsp
- Spine lined with Tengujo + wsp
- Linen flanges adhered to textblock spine with wsp + EVA
- Two on – one off hollow using Kitakata Japanese tissue applied to spine with wsp + EVA
- 2 x false raised bands replaced with archival card on spine leather adhered using wsp + EVA
- Front flange adhered into split front board using wsp + EVA
- Back flange adhered into split back board adhered using wsp + EVA
- Leather over spine and at corners consolidated with Klucel-G in ethanol
- Acrylic toned Kitakata used to line both front and back inner joints adhered with wsp



Head of volume after treatment showing inner joint lined with toned Kitakata Japanese tissue



Volume after treatment including consolidation of leather using Klucel G in ethanol after a patch test

About the author

Meagen Smith is a book and archives conservator based in London. She currently works at the Parliamentary Archives and has previously worked for the Royal Institution, The National Archives, UCL Special Collections and others. She attained a post-graduate diploma and masters in conservation at Camberwell College, University of the Arts London to retrain after working in the City of London.