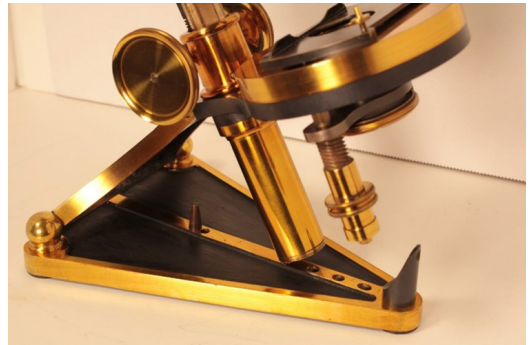


AHS London Lecture Thursday 12 March 2026

Penny Thoyts, Lacquers on Victorian and Edwardian scientific instruments



Before and after

Scientific instruments such as barometers, telescopes, theodolites, orreries, magic lanterns and microscopes (in which I specialise) were made of brass or had a large number of brass parts which were lacquered to prevent oxidation, usually in a golden yellow colour.

Instrument makers in the Victorian and Edwardian era were extremely secretive about their production methods. As a result the precise methods used to lacquer scientific instruments have largely been lost.

Charles Holzapffel, who wrote five large volumes on turning and mechanical manipulation in 1894, has only a few pages dedicated to lacquering. Even when methods of lacquering and lacquer recipes were published, they were not always accurate. I have recreated a recipe given to Holzapffel by instrument maker Andrew Ross and found it to be so pale in colour that it could not have been used on his instruments which remain a medium gold colour even today. It also contained saffron, which is poorly soluble in ethanol (the solvent for all lacquers) making it a poor choice of colourant.

Saffron was, and still is, extremely expensive and its inclusion in a published recipe was most likely a marketing strategy.

Additionally, most published recipes contain turmeric which produces a beautiful, rich gold lacquer, but however fades completely and rapidly when exposed to light. The fact that many scientific instruments remain yellow and gold today despite light exposure indicates that the inclusion of turmeric is a red herring.

While it is possible to lacquer antique instruments using modern dyes, for many instruments it is undesirable. I have spent a decade researching and recreating authentic lacquers and testing them under different wavelengths of light. I have also conducted experiments to investigate the effects of humidity on these lacquers. In my talk I will share my findings, I will speak about the testing of lacquers and how the creation of a home-made colorimeter enabled me to measure fading rates accurately. I will also speak about the preparation of metals and the application of lacquers.

Dr Penelope Thoyts' first degree was in biology with analytical science, she completed her PhD in molecular biology in 2000 and in 2023 she returned to education to complete an MA in Preventive Conservation. She runs a small business, Brass and Glass, specializing in the sympathetic restoration of scientific instruments.

Attending London Lectures

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