

Black coatings on musical instruments and response to COMM 2179.

Luke Emmet kindly described his experiments making and using gall ink to produce a black surface on a lute he recently made (FoMRHI Quarterly 157 April '2022). The gallotannic ink he describes was commonly used for writing on vellum and paper throughout long history and well into the 19th century. The ink firmly penetrates and binds to the substrate fibres and becomes a more or less permanent inscription. The basic formula of tannin, usually from galls or another tannin-yielding source, treated with a 'vitriol', typically iron sulphate, or other metal sulphate was sometimes modified and adjusted by adding, for example, logwood extract or cochineal.

The main problem with gallotannic ink is its acidity that is known to corrode documents (and pen nibs) over time. It also allows iron to migrate into the adjacent substrate in humid conditions, causing staining or other deterioration processes. This is not an objection to Emmet's ideas, but I offer a few comments that may inform decisions about 'blackening agents' on instruments.

I am not aware of any specific historical source recommending the use of gall ink on musical instrument wood, or wood generally and Emmet provides none. Wood stains were used historically, on mahogany furniture for example, to liven up the colour before French polishing or varnishing. Gall ink can be used, but there are some relevant issues. Generally, when finishing a wooden surface of an instrument, with a varnish of some type, it is essential to 'seal' the surface in some way and often fill open grain pores, then apply smoothing or sanding to produce an impervious, smooth, even, flat substrate before applying subsequent colour or varnishes. Emmet uses the ink directly on to bare wood as a type of penetrating wood stain that most DIY practitioners will understand. Bare, maple species woods do not absorb penetrating stains evenly and coloured stains on bare *figured* maple give horrible and visually disastrous results. Additionally, any water-based application raises the wood grain requiring further sanding to flatten the surface. Subsequent varnishing of a water-stained wood often requires more than usual varnish coats to consolidate the stain, prevent wear and to make a reasonably even final surface. Emmet's black lute seems to have heavily applied varnish of some type. The less varnish and thinner the better as a general rule, especially on violins or instruments made from thin section wood, otherwise their acoustic functions are affected. On the finest historical instruments the varnish is barely evident, yet imparts beauty and aesthetic value to choice figured woods.

My preferred historical blackening or ebonising method is described in my previous Comm 2067 (FoMRHI Quarterly 137. April 2017). In essence, a prepared, sealed wood substrate is applied with a carbon pigment (bone black, ivory black) mixed in a shellac medium. Other mediums can be used: oil based varnish or mixed dissolved resins to carry the (insoluble) carbon particulate pigment. No chemical hazards or reactions are required and the colour density can easily be adjusted *in process* as desired by adding more carbon pigment or diluting the mixture.

Looking at just two examples of historical ‘ebonised’ instruments I have worked with, this method was employed by the instrument maker. Its true that a carbon loaded varnish wears through in due course and is evident in the examples shown. The black varnish has worn through and has chipped in parts revealing a clean (not stained) wood substrate.



PLATE 1. A black 18th century instrument showing surface coating worn through to the sealed bare wood beneath.



PLATE 2. Part of a 19th century instrument showing surface coating worn through on the edges.

From personal experience, the application of black *surface* coatings, rather than penetrating stains, seems to be common on historical instruments and components.

Whether Emmet’s method of ebonising wood was used much in the past awaits his further research. The history of applying acidic, pigmented black dyes to luthiers wood is unknown, but we do know that the ‘Japanning’ ebonising method I describe was employed extensively on furniture, wooden wares and musical instruments, so is an undisputed historical technique. Whether gall ink stain produces a more aesthetically pleasing end result is a subjective judgement and whether my own forthcoming fictional work ‘**The Black Mandora**’, achieves any critical interest or acclaim awaits to be seen...