Wood finish sample project

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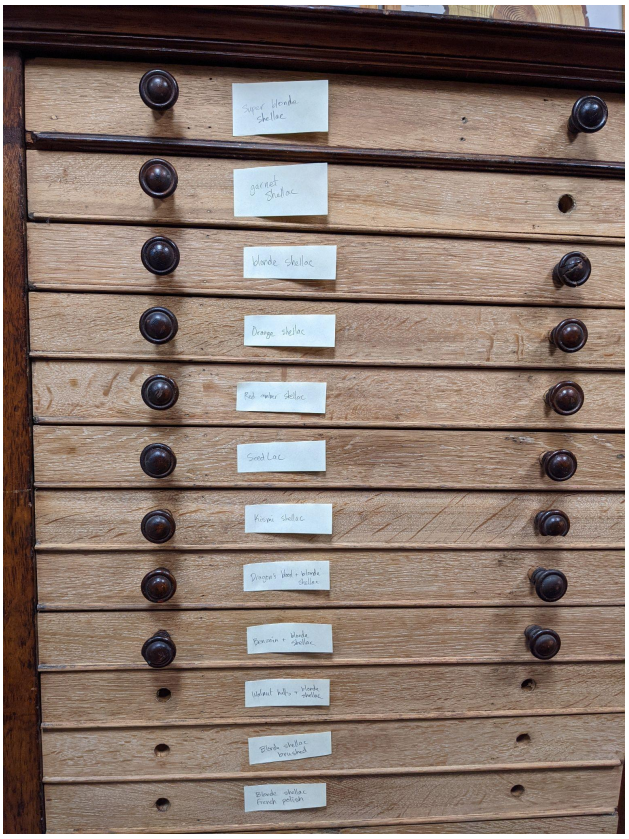
The purpose of this project is to provide a resource for comparison of traditional wood finishes and stains. The various samples of finishes will be applied to the front of each drawer of a storage cabinet in the Winterthur furniture lab.

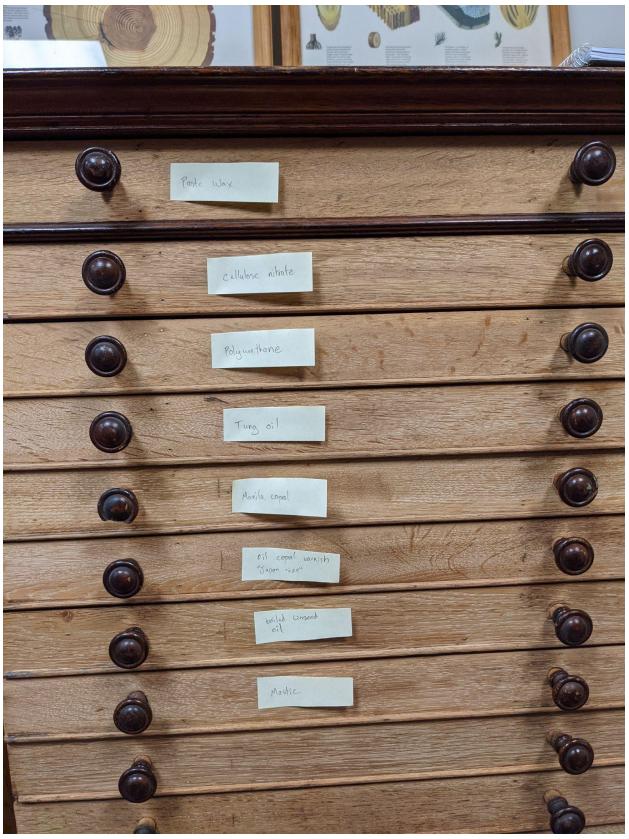
The cabinet holds 44 drawers in 2 columns, all of which measure 21.5” wide. The 2 bottom drawers measure 3” tall, and the rest are 2” tall. All of them are made of oak--possibly white oak. Each drawer has 2 drilled holes for knobs to open and close them, all of which were removed in 2019 when Mark Anderson stripped the drawer fronts of their previous wood finish in preparation for this project.

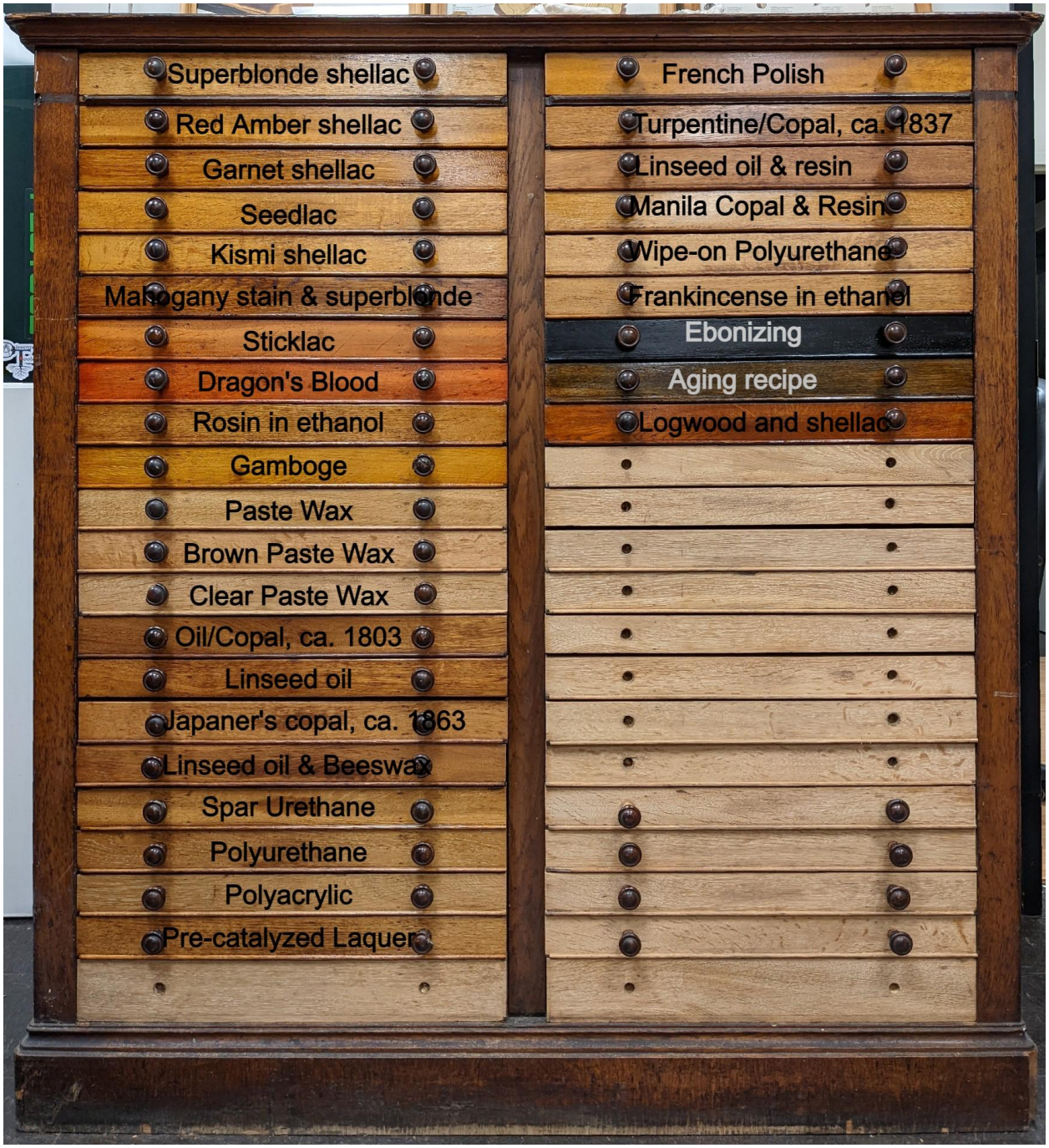
Process:

Wood finishes were mixed up using the available samples in a collection of glass bottles, stains/pigments/finish materials from the lab, workshop, and the Winterthur carpentry shop.

Research was carried out using sources listed at the end.






Superblonde shellac
Red Amber shellac
Garnet shellac
Seedlac
Kismi shellac
Mahogany stain & superblonde
Sticklac
Dragon's Blood
Rosin in ethanol
Gamboge
Paste Wax
Brown Paste Wax
Clear Paste Wax
Oil/Copal, ca. 1803
Linseed oil
Japaner's copal, ca. 1863
Linseed oil & Beeswax
Spar Urethane
Polyurethane
Polyacrylic
Pre-catalyzed Laquer
French Polish
Turpentine/Copal, ca. 1837
Linseed oil & resin
Manila Copal & Resin
Wipe-on Polyurethane
Frankincense in ethanol
Ebonizing
Aging recipe
Logwood and shellac

Superblonde shellac: There was some trouble with the superblonde shellac--it did not fully go into solution, despite repeated attempts with the 2 available batches. Woodworkers online shared that superblonde shellac can have a shelf life, and that this is a sign of its expiration. This is the most logical option, since the same solvent was used with the available orange, red amber, and garnet shellac, all of which dissolved completely and quickly. Mark Anderson confirmed that it was likely bad shellac. Subsequent recipes which required shellac consisted of either orange or red amber shellac.

Red Amber shellac: went into solution well, did not give as dark a color as expected.

Garnet shellac: a dark-colored shellac, premixed.

Seedlac: Relatively fine raw material, lots of impurities, which resulted in low yield.

Kismi shellac: a pretty fine raw material, quickly went into solution, but with a lot of impurities.

Mahogany stain and superblonde shellac: In Hodgson, pt.2, pg 44, a mahogany stain was found which consisted of 15g alkanet root, 30g dragon's blood, 30g aloes (#38010 from Kremer pigments), in 500g alcohol. This was allowed to sit for 2 days, then strained. The stain was applied and superblonde shellac applied over it. The dragon's blood that was used was of a low quality and gave very weak red tones, so it ended up far more brown than expected.

Sticklac: removed directly from the sticks and, with lots of impurities, had low yield. Distinct red tones that deepened with each application.

Dragon's blood: high quality dragon's blood was acquired from Brian Baade and placed in an ethanol solution. Applying this solution solely as a stain was not very effective; a better option was making a 50/50 solution of 1) dragon's in ethanol, and 2) red amber shellac. Applied about 5 coats.

Gamboge: Gamboge was also used with the same method as dragon's blood above, substituting orange shellac for red amber.

Rosin in ethanol: gave a dark amber colored finish that dried well.

Paste wax: a mixture made by S. Auffret (sp?), consisting of 100g beeswax, 50g shellac wax, 100g mineral spirits, 50g turpentine. Compared to other paste waxes, this recipe seemed a bit softer and with a higher sheen. A soft brown color.

Brown paste wax: from Behlen, Blue Label Paste Wax. Complete ingredients list not available, but includes carnauba waxes, petroleum distillates, and turpentine.

Clear paste wax: White Diamond, Bowling Alley Paste, Butcher's Wax. Complete ingredients list unavailable, but contains petroleum naphtha and turpentine.

Oil/copal varnish, Japan size 1803: made by Riley _____ in 2019, consists of

Linseed oil: coats were applied liberally, allowed to sit for an hour, then excess was wiped off and the surface burnished. Left to dry about 48 hours between coats.

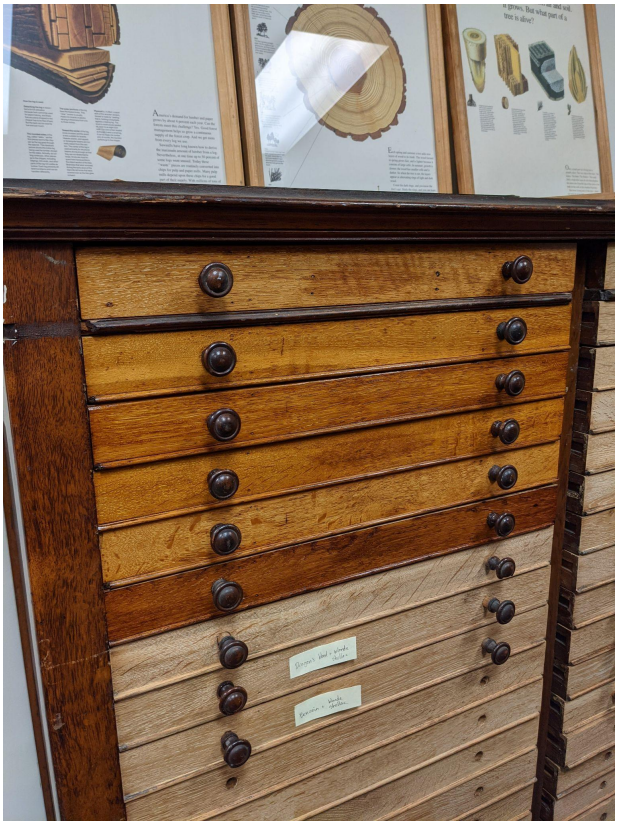
Japaner's copal varnish, 1863: made by Riley _____ in 2019, consists of

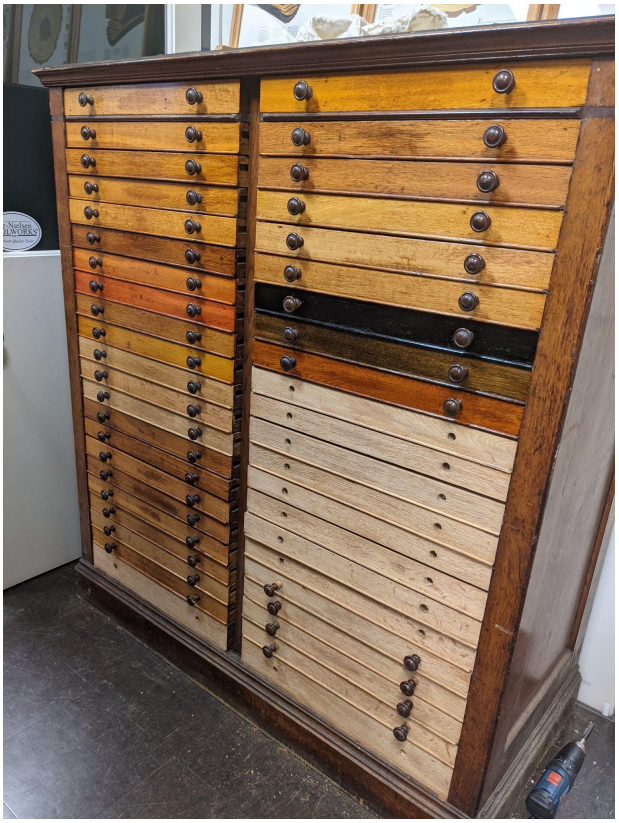
Linseed oil & beeswax varnish: from Tried and True Wood Finishes. A blend of polymerized linseed oil and pure beeswax. Application process was as follows: apply a relatively thin coat, allow to sit for an hour, then wipe off the excess and burnish with steel wool. I applied 3-5 coats.

Spar urethane, semi-gloss: acquired from the carpentry shop, applied with a brush.
Polyurethane, fast drying: acquired from the carpentry shop, applied with a brush.

Polyacrylic, water based: acquired from the carpentry shop, applied with a brush.
Pre-catalyzed lacquer: acquired from the carpentry shop, applied with a brush.

Right side, top to bottom
French polish:
Turpentine copal varnish, 1837: made by Riley _____ in 2019, consists of
Linseed oil & resin varnish: from Tried and True Wood Finishes. Consists of polymerized linseed oil and natural resin. The label writes that the recipe is from a coachmaker's varnish from around 1850.
Manila copal in ethanol: ran down the surface much more than shellac, dried slowly and unevenly. Difficult application. Used ethanol to wipe off softer buildup of copal, then made a 50/50 mix of the copal solution and orange shellac and applied about 5 layers. Much better outcome.
Wipe-on polyurethane: came from the Winterthur carpentry workshop, applied with a brush.
Frankincense in ethanol: ran down the surface much more than shellac, dried slowly and unevenly. Difficult application. Used the method for manila copal above: made a 50/50 mix of frankincense solution and orange shellac and applied about 5 layers.
Ebonizing: This method was taken from Hodgson, and is a combination of 2 recipes from the ebonizing section in pt. 2, pgs. 34-39. This process consisted of 4 steps: 1) 40g logwood chips were boiled in 100ml water for 1 hour, then brushed on hot. 2) once dry, a mixture was applied which consisted of approx. 50ml acetic acid and 15g steel shot that had been left to sit for 48 hours. This turned the drawer a greyish black. 3) once dry, aqueous $FeSO_4$ was brushed over the surface, which turned the drawer a very dark black. 4) a french polish was then applied with orange shellac, and dry bone black pigment used as a grain filler.
Aging recipe: A solution was made of acetic acid and steel shavings, and allowed to sit for 48 hours. Logwood was boiled in water for 1 hour, then applied hot to the drawer, once dry the acetic acid solution was applied and allowed to dry. This mixture made a dark faux aging effect, similar to a walnut stain, but without the strong red tones.
Logwood stain and orange shellac: Logwood was boiled for 1 hour and applied hot. Once dry, 3 layers of orange shellac were applied.
Lin-Speed Gunstock Oil: product dating from 1950, still manufactured as of 2022. Consists of refined boiled linseed oil and a petroleum thinner. No lead driers. Recommended application on packaging was to wet fingers with the oil and rub into the surface until smooth, allow to dry overnight, lightly sand, then repeat until the wood is lightly covered.
Zip-Guard Urethane: Satin,





References

Hodgson, F. T. (1915). *Complete, Practical, Up-to-Date Hardwood Finisher*. Frederick J Drake & Co.