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An Investigation into Alternative Recreations for Surface Coatings on 19th-Century Wall Maps after Conservation Treatment

INTRODUCTION

In the field of paper conservation, the Northeast Document Conservation Center (NEDCC) is known for the conservation of oversized items with a special focus on wall maps. Throughout NEDCC's 50-year history, a standardized but flexible treatment for wall maps has been designed and modified by the various paper conservators who have worked at the regional center (note 1). Despite the perceived complexity and occasional invasiveness of the conservation process of treating period wall maps, proper execution in treatment can help revitalize and breathe new life into these historically rich but often fragile artifacts. However, an area of the treatment that has been lacking, not only at NEDCC but in the field of wall map conservation overall, is the recreation or reapplication of a surface coating on wall maps after conservation treatment. Between 1980 and 2000, NEDCC, like other conservation laboratories, regularly encapsulated wall maps in clear polyester film to protect the map from accumulations of grime and direct contact. The polyester also served to add supplemental support when hung using wooden rods, resulting in relieving stress on the object.

Despite the protection offered, the encapsulation does not provide a suitable aesthetic for those maps that are to be placed in situ in a historic house, museum, or historical society, given the reflective nature of the film. Furthermore, there are limitations in the ability of conservators to adequately weld the polyester, either ultrasonically or via heat, given the sheer size of the maps that must be considered. Likewise, there are limitations on size when it comes to the conservation-grade polyester available. In many cases, the result of encapsulation sometimes left irregular overlapping seams in the polyester or uneven welds, given the length of the arm on the ultrasonic devices. Another issue with the encapsulation is that once sealed, the wall map must remain flat either vertically or horizontally to avoid stressing the welds. This limits the overall storage options for the individuals who oversee the care of the item, resulting in the wall maps being on display for an extended period keeping them exposed to light without suitable protection.

Given these imperfect protective solutions, NEDCC undertook an investigation into the potential for recreating the surface coatings on wall maps using both historic and modern materials. The conservation community often discourages the introduction of a varnish-like coating to the surface of the paper (Holden 1984; Fleygnac, Martin, and Rouchon 2014); however, the distinctive characteristics of wall maps prompt reevaluation of this practice. The following research is not a definitive or an exhaustive analysis of the materials available to conservators. Rather, it is merely an initial foray into the exploration of the reapplication of surface coatings to answer preservation questions of how to protect a map's surface without encapsulation or exposing the artifact to additional risk. It is hoped that the information presented in this article expresses the complexities that come with navigating the selection of materials available while providing conservators, regardless of their working environment, a reliable approach that intersects heritage science, practicality, and safety.

COATINGS ON WALL MAPS

Before embarking on the methodology for selection criteria of new surface coating materials, consideration had to be given to the use of surface coatings on wall maps in general. Maps are interesting objects as they sit at an intersection of practical information and fine art. In the same way that one might read religious iconography, in maps—aside from the obvious indications of the physical locations of places—one can read the color coding, pattern details, and illustrations to understand the movement of people and goods throughout the history of humanity. During the 19th and 20th centuries, as the mass production of information became cheaper to produce and more readily available, so did maps. The exploration of the

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Americas, as well as other parts of the world, also contributed to the increase in both the interest in and need for accurate maps. Wall maps became items of conversation within homes, necessary in encampments during war, and complemented the understanding of trade routes throughout the country by those who lived in various towns and cities (Brückner 2017).

There is much debate over the nature of the coating on the surfaces of maps and how exactly it was applied, as well as what recipes were used (Brückner 2024a). Maps are an oddity in the paper conservation field as they are one of the few objects where an overall coating is consistently applied on top of the media as an intrinsic part of the object. We loosely use the term "varnish" for this final surface as a catch-all term; however, the surface coating may not necessarily be a true varnish in the traditional sense. Indeed, its use over the terms "glazing" or "coating," which may be more accurate in cases where we have no firm knowledge of the applied solution, comes from the historic use by mapmakers themselves, who often referred to them as "varnished maps" and the workers who applied the coating as "varnishers." As such, while we can turn to our painting conservation colleagues' far deeper breadth of knowledge on the subject, we should be wary to label the final layer as a "varnish" in our documentation process without the added historical context.

Given the protective quality of varnish on paintings, it makes sense that the individuals involved in the map trade felt that varnish would imbue similar protection to their paper maps. As conservators well know now, though, the introduction of any surface coating to paper does not necessarily grant the same protection that it does to painted surfaces. It is generally assumed by the conservation community that most wall maps were historically coated in natural resins. These often discolor and can become embrittled as they age over time, often imparting this brittleness in the cellulose matrix of the paper. Mapmakers must have realized this as well, as there are references that an introduction of a layer of gum arabic in between the paper and the "varnish" was soon introduced as an isolation layer, potentially to counteract this (Brückner 2024a, 2024b). Gum arabic was well known among watercolorists as a protective layer to prevent lightening of pigments, creating a local richer hue, and as a material that assisted with the dispersion and diffusion of water to allow more working time and even tone. As such, its addition, although perhaps not present on all wall maps, is not out of place, and it was likely used either alone or in combination with other natural resins and gums.

RE-"VARNISHING" OF WALL MAPS

Although NEDCC lacks the capacity to quantitatively analyze the surface coating of maps by either FTIR or GCMS, it can qualitatively note that most of the coatings are soluble in polar solvents, most commonly either ethanol or ethanol and water combinations. Given the period of the maps, it is likely that the coating is made from "soft resins" like mastic or damar given their prevalence and use in paintings during the same period (Petukhova 1992; Mayer 1995; Epley 1996). However, it is suspected that shellac was also used on some items, although its presence is more easily identified as it fluoresces orange in UV light (Holden 1984; Measday 2017). Regardless of the composition, the removal of these coatings is necessary to facilitate most treatment for the stabilization of wall maps, in the same way that its removal is often necessary in paintings conservation. Removal of the varnish layer results in the loss of a historical part of the object, and thus this action should be appraised carefully. Conservators should consider the level of damage to the map, how treatment will affect the surface finish, the presence of secondary information on the surface, and whether any other issues would arise should the coating be kept intact when determining the overall treatment to be done (Petukhova 1992; Treacey 2017). Understanding the coatings and the way they were removed served as the first step in determining the aspects needed to recreate the surface coating (Samet 1995, 1997b).

Conservators at NEDCC set out to find a material that would mimic the original surface coating and help to protect the map below from moisture, dust or other airborne pollutants, and abrasion as originally intended by the mapmakers. However, it was hoped that by cross-examining those solutions favored by paintings conservators, the final ideal coating would also improve the protection of the map by

- offering resistance against UV light;
- being easy to apply and safe for the conservator regardless of their space or budget;
- being easily reversible in solvents or water; and
- aging well, with a focus on being able to maintain its color properties, surface sheen, flexibility, and durability overall.

A list of recommended coatings was compiled from those that were acceptable for use by paintings and objects conservators. It was then narrowed down to 10 likely candidates based on the preceding criteria, with consideration given to the historically available materials, the porous nature of paper, and the knowledge that an isolation layer would be applied as part of testing (table 1). This list was divided into three broad categories for comparison:

- *Water based*: Maimeri Matte and Maimeri Brillante;
- *Solvent based*: Paraloid B-72, BEVA Matte Varnish, BEVA UVS Finishing Varnish, Gamblin Gamvar Gloss, Golden Archival Varnish (Gloss), and Golden Archival Varnish (Satin); and
- *Natural resins*: Crystalac and Lemon Shellac.

Prior to testing on a sample map, small applications of each were applied to an 8-ply 100% rag card to determine how

Coating	Classification	Color	Preparation requirement	Application method
Crystalac #500	Natural resin, flakes	No color/clear	Dilution in ethanol	Brush or airbrush
#1 Lemon Shellac	Natural resin, flakes	Yellow	Dilution in ethanol	Brush or airbrush
Maimeri Matte	Water-soluble synthetic varnish	No color/clear	N/A	Brush or airbrush
Maimeri Brilliante	Water-soluble synthetic varnish	No color/clear	N/A	Brush or airbrush
Gamblin Gamvar	Hydrogenated hydrocarbon resin	No color/clear	N/A	Brush or airbrush
BEVA UVS Matte	Hydrogenated hydrocarbon resin	No color/clear	N/A	Brush or airbrush
BEVA UVS Gloss	Hydrogenated hydrocarbon resin	No color/clear	N/A	Brush or airbrush
Paraloid B-72	Acrylic resin, pellets	No color/clear	Dilution in acetone, ethanol, toluene, or xylenes	Brush or airbrush
Golden Archival Varnish (Matte)	Acrylic resin	No color/clear	N/A	Spray
Golden Archival Varnish (Satin)	Acrylic resin	No color/clear	N/A	Spray

Table 1. Surface Coating Property Table

easily each might be able to be applied to the surface of an object and what the overall working time was. No isolation layer was applied to the card so that the conservators could get a feel for each solution and note how it was absorbed by a hard-surfaced material. In the case of the water and solvent-based materials, except for Paraloid B-72, the solution was used directly from the containers with no further dilution to ensure clear results in the initial testing phase on the rag cards. When applied to the sample map, the solutions were diluted, as noted on the instructions for each material. Two solutions of Paraloid B-72 were mixed to a 10% w/v concentration in both acetone and ethanol to compare evaporation and absorption rates. Both Crystalac #500 and the Lemon Shellac were mixed in concentrations of 5%, 10%, 15%, and 20% w/v in ethanol, as they were believed to be the closest type of natural resin that may have been used for the historic coating. In the end, the 10 finalists expanded into 17 possible solutions, given these variations.

As can be seen in figure 1, the coatings reacted in the ways that one would expect when placed under UV light (Measday 2017). The standout material in this phase was the Golden Archival varnishes, as both fully absorbed the UV light in both long and short wavelengths, creating even black-brown rectangles on the surface of the card. All coatings were relatively easy to apply, although the evenness and working time was an issue on the Maimeri Picture varnishes. In contrast, the BEVA UVS was the most forgiving, allowing time for smoothing of the surface with the brush.

Moving forward, the next phase of testing was conducted to try and reduce the number of potential coating materials and home in on the ones that met the most desired criteria. A portion of a sample wall map from NEDCC's study

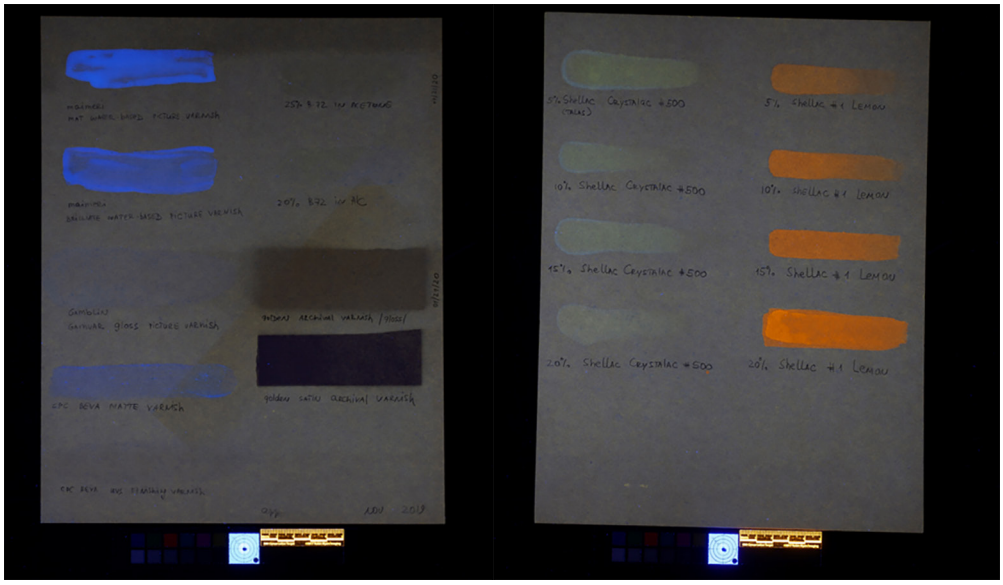

Fig. 1. Test sample cards in long wave UV light.

Fig. 2. Wall map test sample with all coating options. From left to right, samples are over 3% methylcellulose, 2% methylcellulose, 4% methylcellulose, 5% methylcellulose, and the control section (no isolation layer).

collection was taken through the center's "one-day" stabilization method, except for including a linen backing, as it was known that most conservators did not reapply a textile along with the Japanese tissue paper lining. The map was divided into five vertical sections with thin strips of Japanese tissue paper to act as a barrier in preparation for the isolation layers. One section was left as a control, meaning that it had no isolation layer, whereas the other four sections had 2%, 3%, 4%, and 5% methylcellulose in water applied. Methylcellulose was chosen over gum arabic because it has compatible properties with the cellulose of paper, is more easily purchased in bulk, and is a common choice when it comes to serving as an isolation layer for watercolors in paper conservation. The 2%, 3%, and 4% sections had two layers of methylcellulose applied, with time to allow the first to fully dry overnight before the second coat was applied; however, the 5% methylcellulose was found to be too thick to easily manipulate and thus only had one layer. Once fully dry, the map was divided horizontally into 18 sections, each measuring approximately 5¾ × 1 in., and the coatings were applied (fig. 2).

Overall results from testing the sample map showed that the concentration of the methylcellulose did not matter, and no penetration from the applied coating was seen outside of the control area. The concentration also did not affect the specular reflectance of the coating in any notable manner on such a small scale. In the areas where no isolation layer was applied, any areas where there was cracked or weakened paper experienced some penetration through to the lining material. The Lemon Shellac, Gamvar, and BEVA Matte showed the most penetration through to the lining material in these areas. Furthermore, the Lemon Shellac, both Maimeri varnishes, and 10% B-72 in acetone faced immediate elimination from further testing due to issues that resulted in uneven application, color change, and irregularity in the final surface texture. The other coating solutions had enough positives when it came to ease of application and final surface finish

Coating	Control	Over the isolation layer	Notes
5% Crystalac #500	3	4	Final sheen is comparable to the overall map finish; longer working time would be helpful
10% Crystalac #500	2	3	Final sheen is comparable to the overall map finish; longer working time would be helpful (decreases as concentration increases)
15% Crystalac #500	2	3	Final sheen is comparable to the overall map finish; longer working time would be helpful (decreases as concentration increases)
20% Crystalac #500	1	1	Too thick to easily manipulate into a thin layer
5% #1 Lemon Shellac	0	1	Color and finish unacceptable overall
10% #1 Lemon Shellac	0	1	Color and finish unacceptable overall
15% #1 Lemon Shellac	0	0	Too orange and too difficult to manipulate at this concentration
20% #1 Lemon Shellac	0	0	Too orange and too difficult to manipulate at this concentration
Maimeri Matte	0	1	Dries too white/hazy over paper and difficult to manipulate
Maimeri Brilliante	0	1	Dries too white/hazy over paper and difficult to manipulate
10% Paraloid B-72 in ethanol	3	3	Application method/drying time and finish could be viewed as a positive or a negative; solid middle of the road contender
10% Paraloid B-72 in acetone	0	1	Evaporation rate too rapid; no working time and uneven finish
BEVA UVS Matte	0	3	Bleed-through and flat surface eliminate the solution from further testing
BEVA UVS Gloss (Finishing Varnish)	3	3	Did not bleed through like BEVA Matte; high sheen shows promise as a glossier coating material
Gamblin Gamvar	0	4	Bleed-through on control leads to slightly lower favorability, but the final application over the isolation layer indicates that further testing should be pursued
Golden Archival Varnish (Matte)	4	4	Lower ranking than the satin only due to the flatness of the matte finish
Golden Archival Varnish (Satin)	5	5	Top choice in all categories

Results are ranked from 1 to 5, with 1 meaning low favorability and 5 meaning high favorability, based on the combination of ease of application, final surface appearance, and color. A 0 denotes failure in all categories or a negative aspect that negates all positive aspects.

Table 2. Surface Coating Preliminary Results

(both visually and as perceived durability) that they were moved forward to the next stage of testing. More summary notes on the results of each coating are presented in table 2.

Based on the overall results of the coatings, six finalists were chosen to determine how well they handled environmental stressors. These were Crystalac at concentrations of 5% and 15%, Gamblin Gamvar Gloss, 10% w/v B-72 in ethanol, BEVA UVS, and Golden Archival Varnish (Satin). The six coating solutions were applied on a second sample map that had been prepared in the same way as the first one and divided into 18 sections that each measured approximately 2 × 8 in. Testing was conducted to determine how well they performed when applied over a larger area than the 5¾ × 1 in. rectangles and how that might contribute to choices by conservators within the space or protective limitations of their laboratories. More summary notes on the results of each of the finalist coatings are presented in table 3.

All materials were found to be easy to apply with a varnishing brush, although there were nuances in the final surface finish and number of layers that might be needed for each coating. The exception to brush application was the Golden Archival Varnish (Satin), as it comes in an aerosolized can. Of the six finalists, it has the lowest margin of customization by the conservator, and any surface change is controlled by the spray distance, speed, and number of layers. Of the materials tested, it also had the longest drying time overall. Crystalac was found to be easier to apply at 5% than 15% over a large area, with its application appearing to provide the largest opportunity for specific finishes and control by the conservator. Paraloid B-72 behaved as expected and was a familiar material to the conservators among the other contenders. Aside from the level of comfort with understanding how it interacts with paper over time, its semigloss finish was probably the closest in terms of surface texture to many of the coated wall maps that come into NEDCC, with the Golden Archival Varnish coming as a close second. As noted previously, BEVA UVS's longer working time to ensure an even surface gave it a slight edge over the other candidates when combined with the fact that this also meant that only a single layer was needed to provide adequate coverage. Last,

Fig. 3. Finalist coatings prepared for further testing (left) and being placed in the baking oven (right).

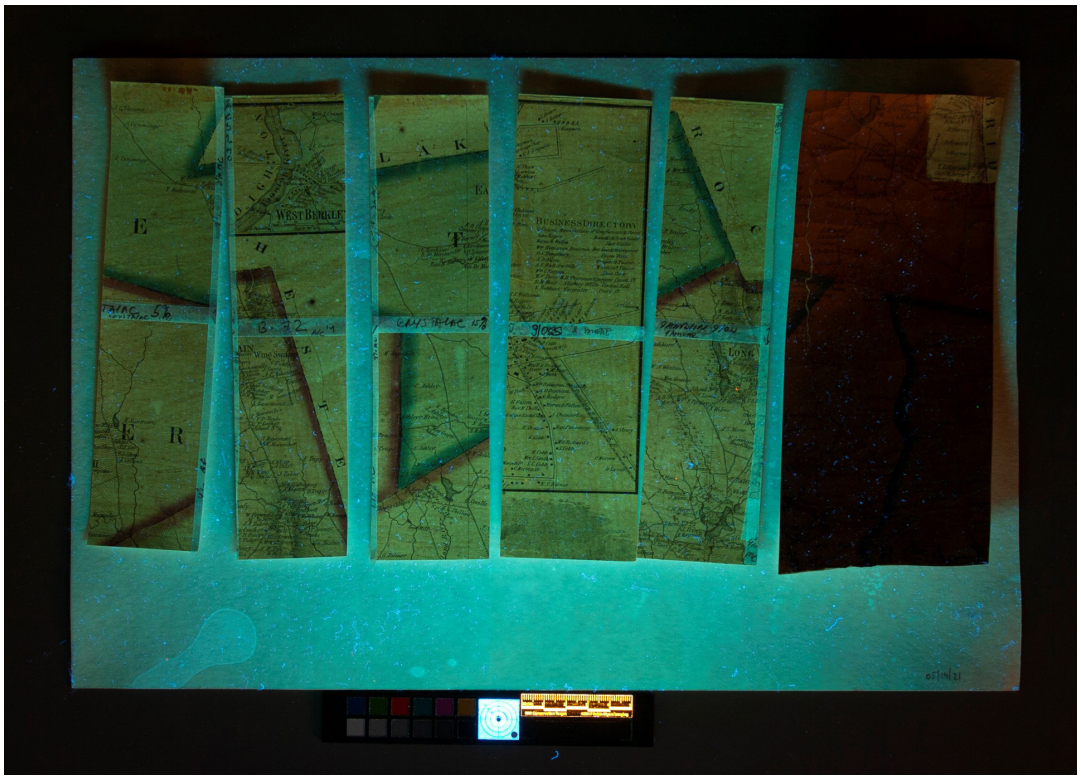

Fig. 4. Finalist samples under long wave UV light after the dust test.

the Gamblin Gambar was highlighted as the favorite overall for its smooth, even dispersion over the surface of the isolation layer. Its favorability was not surprising, as it contains 35% Regalrez, which is preferred in the painting conservation community for its seamless integration over larger areas.

Once dry, the map samples were divided into sections and physically manipulated to simulate the common handling of a usable wall map prior to testing for aging characteristics (note 2). Samples were placed in the oven for 3 hours at a time over 28 workdays at 65°C (fig. 3). The purpose of the testing, although speculative, was to stress the material through a series of rapid temperature fluctuations to impose any color alteration, observe any heat-related tackiness, or observe the formation of surface cracking of the coating to determine the feasibility for conservation applications on paper-based substrates.

Proper accelerated aging and additional testing should be conducted in the future; however, the initial results of all 6 finalist coating materials were promising. None of the samples showed a color shift or major surface disruption, although some brittleness and very minor loss of flexibility were noted on all. Whether this can be attributed to the desiccation of the coating or to the Japanese paper lining is unclear. Additional testing at higher temperatures for longer periods of time would be possible within NEDCC's laboratory, but these have not been pursued due to time limitations by staff and heavy need by the audio department for their oven in the time since the research was initially undertaken.

Six of the 18 sections of the map were prepared to see how well the coatings protected the surface from dust and if the slow drying time of some coatings would result in debris being lodged in the layers. The samples were left out for 6 months in a high-traffic area above a file cabinet so that they were out of the way. They were checked visually periodically to make sure that they had not been disturbed but otherwise remained untouched. After 6 months, they were removed from the space, and although significant dust accumulation was present on the surface of the blotter the sample sections rested on, there was minimal buildup on the sections proper when observed under magnification or when a latex sponge was used to clean the surface. Such results indicated that the surfaces on even the matte finish coatings were likely too smooth for the dust to catch and build up in this time. It is hypothesized that vertical hanging combined with the coatings will likely serve as a solid surface protectant within standard archival environmental parameters.

The final environmental test conducted was the protection of the object from light. As encapsulation offers no additional light protection, framing certainly can, and both offer physical protection from mechanical damage when it comes to displaying maps. Protecting the map from light was not the most critical factor in the overall reapplication of surface coatings; however, conservators felt that if one or more offered such protection, it could tip the balance of preference when it came to treatment choices. Overall, the standout performers for UV protection were the Golden Archival varnishes. In UV photography tests, the areas applied with these solutions showed a complete absorption of the UV light resulting in blacked-out samples. UV Plexiglas was compared with the varnish and showed similar levels of absorption. Some of this was expected based on the initial varnish card tests, but in applying over a wide area to mimic actual treatment, the results were undeniable (fig. 4).

Surface coating	Aging	Dust	UV protection	Permeability	Reversibility	Notes
5% Crystalac #500	4	5	2	1	5	Solubility in water leads to high permeability and reversibility; could be considered more historically accurate
15% Crystalac #500	4	5	2	1	5	Solubility in water leads to high permeability and reversibility; could be considered more historically accurate; higher concentration makes it slightly more difficult to apply to a larger surface quickly
10% Paraloid B-72 in ethanol	4	5	2	2	4	Slightly better protection from moisture than Crystalac; reverses in ethanol but needs a longer dwell time than the Crystalac as well
BEVA UVS Matte	4	4	2	4	3	Longer drying time showed that some dust became embedded in the surface, but not much; reversing took a little bit of manipulation with solvents but was within acceptable parameters
Gamblin Gamvar	4	5	4	4	3	Reversing took a little bit of manipulation with solvents but was within acceptable parameters
Golden Archival Varnish (Satin)	4	5	5	4	3	Has a slight edge over other solutions due to UV protection; reversing took a little bit of manipulation with solvents but was within acceptable parameters

Results were ranked from 1 to 5, with 1 meaning low favorability and 5 meaning high favorability.

Table 3. Surface Coating Finalists

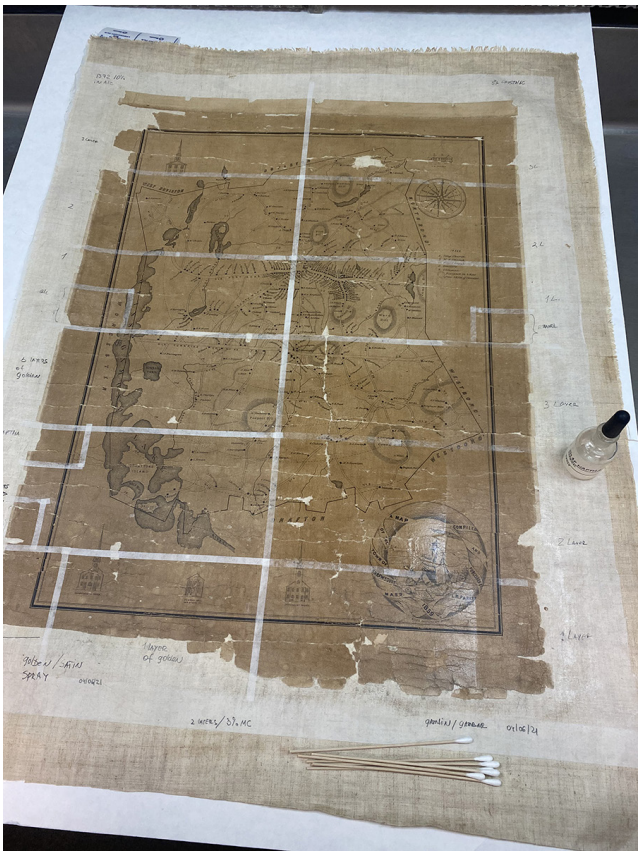

Fig. 5. Map sample testing permeability and reversibility over a larger area. Clockwise from upper left: 10% B-72 in ethanol, 5% Crystalac #500, Gambin Gamvar, and Golden Archival Varnish.

When testing the reversibility and permeability of the coatings, there were no surprising results. Coatings that were created by dissolving concentrates in water or ethanol tended to fail the permeability tests, whereas those that were premade synthetics or dissolved in nonpolar organic solvents tended to be more durable (fig. 5). None of the coatings would likely provide significant protection in an extensive water event such as a flood, but there is significantly more working time available to clear any stray moisture on those that were not easily soluble in polar solvents. The polar-based coatings also tended to blanch more readily in the water—something that makes them highly reversible but could also put water-soluble media at risk.

The most successful nonpolar solvent used for reversing the coating was found to be naphtha, whereas ethanol was found to be the most successful polar solvent for removing the coatings. Both pose health, flammability, and environmental risks for their use that are compounded exponentially by the sheer quantity of solvent that would be needed to remove the coating from a large surface area. Although some laboratories may be better equipped to conduct the removal of coatings with these solvents using fume hoods, half-mask respirators, and other personal protective equipment to mitigate the risks, this consideration should be included as part of the decision-making process by the treating conservators. This is especially true if they are institutional laboratories that will oversee the treatment in the future and know their own internal limitations. Greener chemical alternatives may be able to be safely pursued on the removal of coatings, but more extensive testing was not done as a part of this study in the initial phases.

Case Study of a 19th-Century Wall Map: Map of Boston in the State of Massachusetts by J. G. Hales

The treatment of a small wall map was conducted shortly after the preliminary research investigation was completed. The map seemed to be an ideal candidate as a final case study in applying a new coating after treatment, given its intended display, lack of hand-applied media, degree of mechanical damage, and size (fig. 6). The map in question was a smaller wall map, only 40¼ × 29¼ in. (102 × 74 cm), and the client wished to display it in the traditional manner on its hanging rods with no other protective measures. Conservators evaluated and discussed the potential coatings internally before approaching the client with the proposal modification. Some factors that went into choosing the coating solution used were the overall appearance match, ease of application, and evaluation of the environmental protection test results of the six finalist solutions in more detail.

In the end, Golden Archival Varnish (Satin) was chosen for use, but a 5% solution of Klucel G in ethanol was chosen as an isolation layer instead of methylcellulose, given its faster evaporation rate, limiting the risk of additional surface sheen, and the desire to not disrupt the paper and linen lining with an influx of moisture. The Golden varnish was chosen, as its finish on the samples most closely matched that of the original map, and its performance during testing showed that it provided the most protection from a variety of factors. Its ease of application was also thought to be beneficial as a case study for other conservation labs with minimal staff or supplies, as it allowed for the least amount of preparation and object manipulation by the conservator.

The map was taken through aqueous treatment after surface cleaning and removal of the rods, as noted in the "one-day" method article within this volume. After applying the isolation layer, Golden Archival Varnish (Satin) was applied while the map was still stretched on an acrylic board to allow for coverage around the perimeters (fig. 7). The application was done in four coats, allowing the varnish to dry completely between each layer, to ensure full coverage and prevent gaps or areas of uneven coverage. Conservators found that approximately half a can was needed to varnish this object in the manner described. The overall final visual

Fig. 6. Map of Boston in the State of Massachusetts before (left) and after (right) treatment.

Fig. 7. Lead Preparator, Annajean Hamel, applying Golden Archival Varnish (Satin) to *Map of Boston in the State of Massachusetts*.

appeared historically accurate when treatment was done and was aesthetically pleasing when placed in its display location.

CONCLUSIONS AND FUTURE WORK

As noted at the beginning of this article, even though the research is not considered to be exhaustive, it has narrowed down the list to the potential surface coatings that provide the most flexibility and differing variables to a group of four. The coatings deemed to have the most promise for treatment use by any conservation laboratory were found to be Crystalac, B-72, Gamvar, and Golden Archival varnishes. Although the tables in this article more clearly outline the aspects of each that should be considered for treatment decisions, this list provides a mix of traditional materials and newer conservation-grade compounds that should undergo further assessment for their use in paper conservation. NEDCC staff would like to have their experiments replicated by other conservators that take the samples through more strenuous environmental testing, including formal accelerated aging tests, to further determine the long-term stability and reversibility of the various coating materials. If additional testing reinforces the results already seen in these initial research phases, it is quite possible that they prove to be the obvious choice in the nuanced realm of varnish application

by bridging the gap between practicality and visual authenticity needed to preserve historical wall maps.

ACKNOWLEDGMENTS

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NOTES

1. This treatment approach is described in more detail in the article "The 'One-Day' Conservation Treatment Method for Wall Maps at the Northeast Document Conservation Center" by Kathryn Boodle in this volume.

2. NEDCC does not have the capability to perform empirical accelerated aging tests; however, a drying oven is available for nonempirical desiccation assessment without humidification controls. The readily available Thermo Fisher Heratherm oven is a general-purpose model that provides prolonged heating and drying but does not allow for humidity regulation.

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SOURCES OF MATERIALS

BEVA UVS gloss finishing varnish (SKU:TFK035001, 1 qt.), BEVA UVS Matte finishing varnish (SKU: TFK036001, 1 qt.), Shellac flakes (Crystalac #1100, Crystalac 1101 premium flake; SKU: TFK052011 [CAS #9000-59-3]), Shellac flakes (#1 Lemon Shellac, orange flake shellac; SKU: Shellac [CAS #9000-59-3]), Klucel G (Klucel Hydroxypropylcellulose; SKU: Klucel-G), Methyl cellulose (Culminal MC 2000 S Methylcellulose; SKU: Methyl-cellulose), Paraloid B-72 (Paraloid B-72 100% resin; SKU: TFK0028003), Regalrez 1094 (Regalrez 1094 hydrocarbon resin; SKU: TFK051001 [CAS #: 68441-37-2])
TALAS
https://www.talasonline.com
Golden Archival Spray Varnish—Gloss (#21717-1010; Golden Code: 7731-Archival Varnishes; 10 oz.), Golden Archival Spray Varnish—Matte (no longer available; Golden Code: 7741-Archival Varnishes; 10 oz.), Golden Archival Spray Varnish—Satin (#21717-1020; Golden Code: 7736-Archival Varnishes; 10 oz.), Golden Archival Spray Varnish—Semigloss (no longer available; Golden Code: 7746-Archival Varnishes; 10 oz.), Gamblin Gamvar Gloss varnish (#00456-1706; Secondary Code: 953036; 500 mL [16.9 oz.]), Gamblin Gamvar Matte varnish (#00456-1211; Secondary Code: 953037; 250 mL [8.5 oz.]), Gamblin Gamvar Satin varnish (#00456-1221; Secondary Code: 953037; 250 mL [8.5 oz.]), Maimeri Picture Varnish—gloss (#01565-1166; Secondary Code: 58670-Auxiliary Products; 500 mL), Maimeri Picture Varnish—matte (#01565-1196; Secondary Code: 58674-Auxiliary Products; 500 mL)
Blick Art Materials
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