

Acc. No.:		Conservation No.:	08-6-2424
Cat. No.:	FC-7.52	Date Examined:	August 18, 2007
Owner:	Shelburne Museum	Date Completed:	October 20, 2008
Title:	Carousel Panel: Lady walking Dog	Conservator:	Nancie Ravenel, Richard Wolbers, Suki Fredericks, Rob Proctor, Kim Crozier
Structure:	Paint on canvas, pine strainer		
Artist/Country:	Gustav Dentzel Co.		
Signature/Date:	1902		

Accessories:**Labels/Legends:****Digital Photographic Documentation:**

File Name	Description of Image
CO2008062424A1	Before Treatment, overall, recto
CO2008062424B1	During Cleaning, detail, verso, showing progress of oil removal on verso
CO2008062424B2	During Cleaning, detail of oil staining on front
CO2008062424B3	During Cleaning, detail of solvent migrating through painting when cleaning with emulsion containing benzyl alcohol
CO2008062424B4	During Cleaning, detail of spots near skirt
CO2008062424B5	During Cleaning, detail of cleaning progress
CO2008062424B6	During Cleaning, detail of cleaning progress
CO2008062424C1	After Cleaning and completion of inserts
CO2008062424C2	After Cleaning, detail of spots behind skirt
CO2008062424C3	After Cleaning, detail of marbled area that had been covered with grease
CO2008062424C4	After Cleaning, detail of marbled area showing wear to paint that had not been covered with grease
CO2008062424D1	After Treatment, overall, recto
CO2008062424D2	After Treatment, detail of skirt and insert in man's leg

Reason for Treatment: IMLS funded project: remove/reduce oil staining, clean , repair tears

EXAMINATION:

The painting is estimated to be executed in oil paint and possibly ink on a fine linen (est.) canvas on a wood strainer. The thickness of the paint layer is variable. The ground layer it is quite thin. The canvas appears to be varnished.

The image depicts a flirtatious woman walking a small dog with three men ogling her.

CONDITION

Black staining from splatters of oil are evident on the panel on the upper quarter and on the proper left side of the bottom two thirds. The back of the canvas and the strainer is heavily splattered with what appears to be machine oil and much of this staining has migrated through the paint to the front.. There is yellow staining to

the surface of the canvas in the vicinity of the oil staining that appears to be migrating from the back of the canvas does not appear to be directly associated with it. The varnish is yellowed. Spots of silver solder and white colored paint splatters are noted over top the varnish as are black splatters and drips primarily located along the proper left edge of the canvas. Small holes, possibly burns, are noted on the lower quarter of the panel

There are marks and abrasions where the strainer bars come in contact with the canvas. There are 6 tears and two punctures in the canvas. The tear in the canvas along the shortest man's leg is the longest and widest, measuring 4 1/4 inches long and 5/8 inches wide. The longest tear in the dog's rear foot measures 2 1/2 inches long and 1/2 inch at the widest.

TREATMENT PROPOSAL

1. Reduce/remove dirt, grime, grease, and yellowed varnish from canvas and strainer.
2. Repair tears in canvas.
3. Varnish.
4. Fill losses and inpaint as deemed necessary.
5. Apply a protective Coroplast backing to the reverse of the strainer.

TREATMENT

1. Cleaning tests were undertaken prior to the visit of project consultant Richard Wolbers. The dark oil staining was found to be quite soluble in xylenes and somewhat soluble in mineral spirits. Ethanol did nothing but blanch the painted surface. A 3% solution of ammonium citrate in deionized water had no effect. Wolbers tested mineral spirits gelled with Carbopol, xylenes gelled with Carbopol, and benzyl alcohol gelled with Carbopol.¹ The benzyl alcohol gel, cleared with a 1:1 solution of mineral spirits and isopropanol, was the most effective, but occasionally picked up paint in the reds in the marbled area. Wolbers then introduced Pemulen TR2 as a gelling and emulsifying agent. He prepared and tested an emulsion of deionized water adjusted to a pH between 7 and 7.5 with triethanolamine thickened with Pemulen² and mixed with benzyl alcohol. This proved to have the best efficacy, but might also tend to pick up color, particularly in the red painted areas. Following further experimentation, a Pemulen emulsion using TRIS/triethanolamine and benzyl alcohol was found to be most effective in removing grease, oil and discolored varnish without affecting most paints below. This emulsion applied with a brush and cleared with deionized water on cotton swabs was used to clean most of the surface. Where oil drips were particularly thick, they were reduced with petroleum benzine or acetone on cotton swabs. The blue sky proved somewhat difficult to clean evenly using Pemulen emulsion. Thus, the sky was cleaned with a benzyl alcohol gel applied with a brush and cleared with petroleum benzine/isopropanol 1:1 on cotton swabs.

Solutions were also tested on the reverse side of the canvas to reduce the amount of grease and oil found there. Due to concerns of solvent applied to the back migrating to the front of the canvas, solvent gels were thickened with a number of inert materials, but the only inert material that seemed reasonable to even try was cellulose powder. Attapulugus clay and Laponite RD produced thickened gels that were coarse and grainy. After removing thick drips of oil and grease mechanically using scalpels³, oil was initially removed from the reverse side of the canvas using a petroleum benzine gel thickened with cellulose applied with a metal spatula and cleared with petroleum benzine on cotton swabs⁴. However, when working in larger areas, it was found that a thin layer of cellulose powder was being left behind on

¹ Consulting paintings conservator Suki Fredricks was also involved in evaluating the cleaning tests. Gel recipes are listed in Appendix A.

² See Appendix B for stock Pemulen® gel recipes. Emulsions were formed by adding 10% solvent to the stock gel and shaking.

³ This work was undertaken by Nancie Ravenel, Suki Fredericks, Richard Wolbers and summer intern Kim Crozier.

⁴ This work was undertaken by Nancie Ravenel and conservation volunteer Betsy Bogner.

the surface of the canvas after clearing. Experiments were also made allowing the cellulose thickened gel to act as a poultice, peeling it away once the solvent had evaporated. This was not very effective.

Tests using Pemulen thickened benzyl alcohol emulsions were effective, however the solvent seemed to migrate through the paint, leaving an oil slick on the opposite side of the canvas. A Pemulen thickened petroleum benzine emulsion was formulated and tested. It was found to be effective and the solvent did not migrate through the canvas. Thus, the balance of the oil that was removed from the reverse of the canvas was removed using this petroleum benzine emulsion applied with a brush and cleared with deionized water.

Oil and grease on the strainer was reduced primarily using petroleum benzine gel applied with a brush and cleared with petroleum benzine on cotton swabs. Tests were also made using Pemulen emulsion containing benzyl alcohol and a Pemulen emulsion containing petroleum benzine which were found to be slightly more effective than the Carbopol gels. Clearing the emulsion with water, however, left the surface of the wood slightly roughened.

- Approaches to tear repair were discussed and tried with project consultant Rob Proctor.⁵ Attempts to get Beva film to adhere to the reverse of the canvas were unsuccessful probably due to the presence of oil and grime on the reverse of the canvas (note Katherine Hird's experience lining FC-7.60, Conservation number 89-6-0446). Proctor filled the gaped tear in the man's pants with a thin linen found in the colored fabrics scraps. The linen was sized with Lascaux 498 and was cut to size. The insert was maneuvered and held in place using a suction platen designed by Proctor. The insert was adhered to the painting canvas with a mixture of sturgeon glue and wheat starch paste (1 part 20% sturgeon glue in deionized water mixed with 1 part 15% wheat starch paste) applied with the head of an entomology pin and set with the tip of a heated wax carving tool. Stabiltex infused with a mixture of Lascaux 360 and Lascaux 498 in deionized water (1:2;30) was heat set through the front of the canvas while the suction platen was on the reverse. This method worked well, and was repeated for the other tears in the canvas. When inserts were not necessary, the broken canvas threads were adhered to each other using the same adhesive combination as was used to adhere the inserts in place. A suction platen was used to hold the breaks and canvas threads in place.⁶
- The painting was varnished with a mixture of Golden MSA varnishes (75% Satin to 25% Gloss, by eye) and petroleum benzine (1 part resin mixture to 1 part solvent). The varnish was applied with a brush.
- Inserts were filled using Golden Acrylic gesso applied with fine brushes and spatulas. Fills were inpainted with Golden Acrylic paints.
- Sheets of Coroplast corrugated polyethylene board were attached to the back of the frame with screws to provide some protection to the back of the canvas.

APPENDIX A : Carbopol gel recipes

Benzyl alcohol gel: 100 mL. benzyl alcohol, 20 mL. Ethameen C25, 2 g. Carbopol 934; water to thicken

Petroleum benzine gel: 100 mL. petroleum benzine, 20 mL. Ethameen C12, 2 g. Carbopol 934; water to thicken

Xylene gel: 100 mL. xylenes, 20 mL. Ethameen C12, 2 g. Carbopol 934; water to thicken

APPENDIX B: Pemulen stock gel recipe

TEA gel: 200 mL. deionized water, 20 mL. triethanolamine, 2 g. Pemulen T2

TEA/TRIS gel: 200 mL. deionized water, 10 mL. triethanolamine, 10 mL. TRIS, 2 g. Pemulen T2

⁵ Consulting paintings conservator Suki Fredericks was also present for these discussions.

⁶ Aside from the tear in the man's pants, all other tears were repaired by Nancie Ravenel. All other work following this was undertaken by Nancie Ravenel.

MATERIALS

Ammonium Citrate: Aldrich Chemical, Milwaukee, WI
Attapulugus Clay: Conservation Materials, 240 Freeport Blvd., Box 2884 Sparks, NV 89431
Benzyl Alcohol: Aldrich Chemical Co., Milwaukee, WI
Cellulose powder: Talas, New York, NY
Carbopol 934: Conservation Materials, 240 Freeport Blvd, Box 2884 Sparks, NV 89431
Coroplast: conservation supply house
Ethomeen C-12: Conservation Materials, 240 Freeport Blvd., Box 2884 Sparks, NV 89431
Ethomeen C-25: Conservation Materials, 240 Freeport Blvd., Box 2884 Sparks, NV 89431
Golden Acrylic Paint: Blick Art Materials, Galesburg, IL 61402-1267
Golden MSA (Mineral Spirit Acrylic) Varnish with UVLS (Satin and Matte): Blick Art Materials,
Galesburg, IL 61402-1267
Laponite RD: Conservation Resources (703) 321 7730
Lascaux 498HV: Conservation Emporium, 100 Standing Rock Circle, Reno, NV 89431
Pemulen®TR 2: Protameen Chemicals, Totowa, NJ 07511
Stabiltex loosely woven polyester organdy: Talas, New York, NY
Sturgeon Glue: Kremer Pigmente, 228 Elizabeth St., New York, NY 10012
Truss screws: McMaster-Carr
Wheat Starch-Zin Shofu: Talas, New York, NY
Isopropanol, petroleum benzine, xylenes: Fisher Scientific, Fair Lawn, NJ
Triethanolamine: Fisher Scientific, Fairlawn, NJ
Tris(hydroxymethyl)amino methane: Sigma-Aldrich, St. Louis, MO 63103

Conservator's Signature: _____ Date: _____

Approved by:

Director, Preservation & Conservation: _____ Date: _____

Curator: _____ Date: _____