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Analyses of Paint Media

John Mills and Raymond White

Notes to the Table

1. The blue paint possessed a very porous structure and traces of pine resin found in this sample are likely to represent traces of varnish which have been trapped. No resin was detected in any of the other samples. Blue overpaint was identified as based on egg and oil.

2. The difference in P/S ratios gives one confidence in the use of different oils in the various areas of this work sampled. The green paint in sample 4, from the left-hand side of the painting, was markedly glaze-like in comparison to the green paint sampled from the right. Badly flaking red-brown overpaint was found to be in glue distemper.

3. Once again a clear difference in P/S ratios suggests selective use of walnut oil in the lighter paint and linseed in the darker areas. Small amounts of pine resin were identified in the blue and grey paints. Though not major, they seem too large to be attributed to traces of residual varnish.

4. A double ground was present in this picture, which exhibited some signs of poor adhesion between the upper and lower ground. The latter, red ground examined in sample 1, gave an indication of sensitivity to water. There would appear to be some form of glue and linseed oil emulsion involved as the binder.

5. In this instance it was possible to examine two types of white from No.6508a, each differing markedly in 'warmth'. Sample 3 was very warm and is based on linseed oil—no resin was detected. Sample 1 was decidedly cooler and had a much higher P/S ratio, suggesting walnut oil. The low value for the ratio of the C9 to C8 dicarboxylate (1.6) points to the probability that this walnut oil had been prepolymerized, that is heat-bodied [1,2].

6. Walnut oil was identified in both samples of white (cool) paint from this panel. In addition, results for sample 6 suggest that the walnut oil had been heat-bodied (C9/C8 dicarboxylate ratio = 3.0). Traces of hopane homologues in sample 8 lead one to conclude that some asphaltum or bitumen has been included in this sample [3] (see also p.18 and p.31). Samples of later red paint from red scrolls on the reverse of each panel contained egg tempera.

These van Heemskerck panels are discussed in detail on pp.16–35.

7. Glue distemper was found in all samples investigated from this panel. The sensitivity of such a medium to damp probably accounts for the losses and staining observed on the reverse.

8. No trace of resin could be detected in any of the samples. A dark varnish removed on swabs during cleaning was also examined. It was found to contain dammar resin and substantial amounts of resin labdanes from a Leguminosae source. In fact the chromatogram suggested the use of copaiba balsam. At one time such a material was popular as an additive to solvents used by restorers during cleaning. The short-term effect was to reduce the matt appearance of the paint surface remaining after the removal of the top varnish [4,5]. No pine resin was detected in this varnish.

References

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4. MILLS, J.S. and WHITE, R., *The Organic Chemistry of Museum Objects*, Butterworths (London 1987), p.92.
5. SCHIESSL, U., "'Apage Satanas! Apage Copaiva!'" Über Materialmoden in der Restauriergeschichte', *Zeitschrift für Kunsttechnologie und Konservierung*, **1**, 1 (1987), pp.165–75.

Artist	Picture	Date	Sample	Medium	P/S	Oil type	Note
Botticelli, Follower of	Virgin and Child with an Angel No.589	3rd quarter 15th C.(?)	1. Blue sleeve, Virgin's robe 2. Red Glaze, Virgin's red dress 3. White highlight, arch, R.H. side	Egg Egg Egg			1
Veronese	Saint Mary Magdalene laying aside her Jewels No.931	2nd quarter 16th C.	1. Opaque green of cloak of R.H. figure, mid R.H. edge 2. White coat (highlight) of figure with red cap 3. Red-brown, over green 4. Green glaze L.H. figure's dress 5. Transparent brown layer over green, R.H. figure 6. Grey fluted column, upper R.H. corner	Oil Oil Oil Oil + resin Oil Oil	1.2 3.2 3.4 3.5 3.7 1.9	Linseed Walnut Walnut Walnut Walnut Linseed	2
van der Heyden	An Architectural Fantasy No.992	1660s	1. White cloud 2. Dark grey cloud 3. Blue sky	Oil Oil + resin Oil + resin	3.7 1.7 1.8	Walnut Linseed Linseed	3
Treck	Still Life with a Pewter Flagon No.4562	1649	1. Red, lower ground 2. Brownish black shadow 3. White napkin	Oil + glue Oil Oil	1.9 1.7 1.9	Linseed Linseed Linseed	4
van Heemskerck	The Virgin and S. John the Evangelist No.6508a	Mid-16th C.	1. White headdress (obverse) 2. Green of S. John's cloak (obverse) 3. Warm white robe (reverse) 4. Black of niche (reverse)	Oil (prepolymerized) Oil + resin Oil Oil	3.8 1.5 1.4 1.4	Walnut Linseed Linseed Linseed	5
van Heemskerck	The Donor and S. Mary Magdalene No.6508b	Mid-16th C.	5. Green glaze band of S. Mary's robe (obverse) 6. White of donor's surplice 7. White sleeve of bishop's cloak (reverse) 8. Black paint of niche (reverse)	Oil Oil (prepolymerized) Oil Oil + bitumen	1.8 3.4 3.5 1.4	Linseed Walnut Walnut Linseed	6
French School(?)	Richard II presented to the Virgin and Child by his Patron Saints (‘The Wilton Diptych’) No.4451	c.1395 or later	1. Red of helmet from lacuna (reverse) 2. Blue of shield (reverse) 3. Ground, corner of frame (reverse)	Glue Glue Glue			7
Caspar David Friedrich	Winter Landscape with a Church No.6517	c.1811	1. White snow 2. Grey sky 3. Ground, L.H. turnover	Oil Oil Oil	2.4 2.5 2.5	Walnut Walnut Walnut	8