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Analyses of Paint Media

John Mills and Raymond White

As with the previous four volumes of this *Technical Bulletin* we record here most of the paint medium analysis results obtained during the past year for National Gallery paintings. They call for no general comment.

Notes to the Table

1. This sample was taken to see if the gold decoration on the blue robe had been applied with an adhesive of 'gold size', a sort of oil varnish. No oil was detected and so the manner of gilding remains uncertain.
2. This green area was sampled for medium analysis only after some staining tests on cross-sections had seemed to indicate that it contained oil. Gas-chromatography however failed to confirm this, showing only a medium rather rich in egg fats as in the case of the other samples. These fats were absorbing the oil stain (see p.56).
3. For convenience samples were taken only from the rearranged strips of painting along the sides. This fragmentary painting is discussed on p.27ff.
4. The palmitate/stearate ratios for this painting are in the overlapping region for linseed and walnut oils and so cannot be definitely interpreted. As has been reported previously [1] both linseed and walnut oils appear to have been separately used in the same artist's *The Family of Darius before Alexander* (No.294).
5. This sample showed a small peak on the chromatogram in the position of methyl dehydroabietate. Being so insignificant its identity was not certain since small peaks due to cyclic fatty acid esters sometimes come out in the same region and so the sample was also examined by gas-chromatography/mass spectrometry. The peak gave a mass spectrum close to that of methyl dehydroabietate. As we have explained elsewhere [2] dehydroabietic acid is the most stable of the diterpenoids present in conifer resins and its presence most commonly arises from the use of pine resin. The paint sample comprised an undiscoloured, thick and transparent 'copper resinate' glaze and the presence of resin probably arose from this rather than from the use of an oil-resin medium. It was not detected in the other samples from this painting. This example, in which only traces of characteristic resin components survive even with particularly favourable circumstances (protected from light and in the presence of anti-oxidant green copper pigment) demonstrates that the original presence of resin in many samples must often go undetected.

6. This ratio is sufficiently different from that of the other three samples to suggest the use of the less yellowing walnut oil for the white paint.

7. A little on the high side for walnut. Perhaps a mixture with poppy.

References

1. MILLS, J. and WHITE, R., 'Organic Analysis in the Arts: Some Further Paint Medium Analyses', *National Gallery Technical Bulletin*, 2 (1978), pp.71-76.
2. MILLS, J.S. and WHITE, R., 'Natural Resins of Art and Archaeology. Their Sources, Chemistry, and Identification', *Studies in Conservation*, 22, 1 (1977), pp.12-31.

Artist	Picture	Date	Sample	Medium	P/S	Oil type	Note
Nardo di Cione	Altarpiece: Three Saints No.581	1340s or 1350s	1. Red lead, bottom 2. Blue robe 3. Gold on the blue robe 4. Red robe	Egg Egg Egg Egg			1
Francesco del Cossa	S. Vincent Ferrer No.597	c.1473(?)	1. Grey habit 2. Dark grey fold of habit 3. Black robe 4. Pale blue sky 5. Green grass	Egg Egg Egg Egg Egg			2
Lorenzo Costa	Portrait of Battista Fiera No.2083	c.1510	1. Purple robe 2. Dark purple fold of robe	Oil Oil	1.7 1.9	Linseed Linseed	2
Dosso Dossi	A Man Embracing a Woman No.1234	1524 – 6	1. Pale blue, R.H. strip 2. Black-brown under sample 1 3. Black, R.H. strip 4. Flesh, bottom strip	Oil Oil Oil Oil	3.1 3.0 2.9 3.0	Walnut Walnut Walnut Walnut	3
Paolo Veronese	Allegory of Love, II No.1324	1570s (?)	1. Grey-blue sky 2. V. pale pink of woman's sash 3. Orange-brown, R.H. edge 4. Dark green of foliage L.H. side	Oil Oil Oil Oil + resin	1.9 2.2 2.2 2.0	Linseed? Linseed? Linseed? Linseed?	4 5
Nazario Nazari	Andrea Tron No.1102	Before 1773	1. Blue of carpet 2. Red robe 3. White glove 4. Yellow <i>stola</i>	Oil Oil Oil Oil	1.4 1.5 2.0 1.8	Linseed Linseed Linseed Linseed	
Rubens	The Watering Place No.4815	c.1620	1. Yellow-white highlight of tree-trunk 2. Green foliage 3. Brown R.H.S. 4. White cloud	Oil Oil Oil Oil	1.8 1.8 1.7 2.6	Linseed Linseed Linseed Walnut?	6
Hobbema	The Avenue, Middelharnis No.830	1689	1. White cloud 2. Blue sky	Oil Oil	1.8 1.8	Linseed Linseed	
Jacques-Antoine Val'in	Dr Forlenze No.2288	1807	1. Pale blue sea 2. Pale blue sky 3. Green foliage 4. Grey, L.H. edge	Oil Oil Oil Oil	3.9 3.5 3.1 2.9		7
Corot	The Leaning Tree-Trunk No.2625	1855 – 60	1. White highlight in sky 2. Very pale blue	Oil Oil	2.5 2.9	Walnut Walnut	
Philippe Rousseau	A Valley No.4849	Mid-19th cent.	1. Blue sky	Oil	2.3	Walnut	
Degas	Bains de Mer; Petite Fille Peigné par sa Bonne No.3247	c.1876 – 7	1. Greenish sky 2. Grey-blue sky	Oil Oil	2.3 2.7	Walnut Walnut	
Goya	Doña Isabel de Porcel No.1473	1805	1. Greenish background 2. Black, R.H. edge 3. Red ground	Oil Oil Oil	1.8 2.1 1.5	Linseed Linseed Linseed	