



NATIONAL GALLERY TECHNICAL BULLETIN

30TH ANNIVERSARY VOLUME, 2009

National Gallery Company
London

Distributed by
Yale University Press

This volume of the *Technical Bulletin* has been funded by the American Friends of the National Gallery, London with a generous donation from Mrs Charles Wrightsman

Studying Old Master Paintings – Technology and Practice: The *National Gallery Technical Bulletin* 30th Anniversary Conference is supported by The Elizabeth Cayzer Charitable Trust

Series editor **Ashok Roy**

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First published in Great Britain in 2009 by
National Gallery Company Limited
St Vincent House, 30 Orange Street
London WC2H 7HH

www.nationalgallery.org.uk

British Library Cataloguing in Publication Data
A catalogue record for this journal is available from
the British Library

ISBN 978 1 85709 420 6

ISSN 0140 7430

525051

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Repro by Alta Image, London

Printed in Italy by Conti Tipocolor

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Sebastiano del Piombo, *The Raising of Lazarus*, detail

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Six Paintings by Corot: Methods, Materials and Sources

SARAH HERRING

In recent years there has been a resurgence of interest in Corot and a number of articles on his technique have been published. The most significant is A. Roquebert's essay, 'La Technique de Corot'.¹ Working through the components of a painting – support, canvas preparations through to pigments and media – Roquebert married statements and theories by Corot and others, notably Alfred Robaut, author of the first catalogue of Corot's works, and the critic Philippe Burty, with technical analysis carried out at the Laboratoire de recherche des musées de France (C2RMF) on pictures at the Louvre. This approach forms the basis of a number of other articles on Corot, all of which combine detailed examination and conservation work with quotations from original sources.²

In fact Corot himself is notably reticent on technique. Robaut lists 85 carnets, which Corot used for both sketches and notes, but only a few contain notes relating to working methods. However, what is missing from Corot is made up for in Robaut's unpublished papers, which contain a wealth of information on Corot's technique, much of it gleaned through conversations with the artist.³ Roquebert quotes extensively from these papers, some of which will also be used in this article.

The National Gallery's Corots

The Gallery's collection of Corots is strongest in the area of landscapes, which range from an early study made on Corot's first trip to Italy, *Landscape in the Roman Campagna*, through to paintings made towards the end of his life, including those made in northern France.⁴ Six of the paintings out of a total of 22 will be examined here. The question of continuity and development in Corot's technique will be addressed, as well as the circumstances surrounding the painting of each work. The paintings have all been examined in the Gallery's conservation studio in preparation for the first volume of the catalogue of nineteenth-century paintings. This survey has included sampling for pigments and media, and technical photography where appropriate (see Appendix II on pp. 108–9). Pigment samples have been analysed using optical and scanning electron microscopy (SEM), energy dispersive X-ray microanalysis (EDX),

X-ray diffraction and microspectrophotometry (msp). Gas-Chromatography–Mass-Spectrometry (GC–MS) and FTIR–microscopy have been used to identify paint media. Some results have been published elsewhere.⁵

Corot's life and working practice

Corot was born in Paris in 1796, the son of a cloth merchant and a milliner. After an education at the Collège de Rouen and two abortive apprenticeships with drapers, his parents gave him the financial freedom to devote himself to painting. He initially studied with two former pupils of Pierre-Henri Valenciennes (1750–1819), Achille Etna Michallon (1796–1822) and Jean-Victor Bertin (c.1767–1842) before making his first trip to Italy in 1825. On his return to France in 1828 he established a pattern of working during the winter months in his studio, and travelling in the spring and summer, filling numerous sketchbooks with drawings, and painting in the open air. In 1827 he made his debut at the Salon, where he was to exhibit historical and religious landscapes throughout his life. Alongside these he painted portraits and figure studies, which he never exhibited. He returned to Italy in 1834 and again in 1843, and also travelled extensively around France, as well as visiting Holland and Belgium in 1854, Switzerland on a number of occasions, and London in 1862. Corot generally presented himself as self-taught, yet his time in the ateliers of Michallon and Bertin would have given him a grounding in the principles of classical landscape and an introduction to the teachings of the academy in landscape painting, which emphasised the mastery of drawing and modelling before colour. In common with other painters of his generation Corot followed academic practice in the construction of his compositions, sketching with a pencil before painting an *ébauche*, or preliminary monochrome layer of darks and lights. Corot always had a large number of canvases on the go at any one time, all in different stages of completion:

These first ones [canvases] that he sketched [in pencil] were not resumed until after having undergone an incubation period. They would then

be brought back to his easel in order to be sketched in. Supplied with a fairly sombre and rather poorly organized palette composed of pure tones, armed with strong and pliable brushes, the master would establish, using umber, black and white, heightened with sienna and ochre, the arrangement of his picture in terms of values and lighting effects, by first fixing everything in the two extremes: the greatest light and the greatest strengths. He thus asserted the principal forms with an almost violent firmness, which he moderated afterwards with the aid of some light scumbling. A new abandon followed this principal effort. Then when the rough sketch was quite solid, the master would try to obtain the colour and harmony of his work with the help of coloured paints, both pure and thinned.⁶

Corot's choice of canvases, grounds, pigments and painting media were similar to those of his fellow artists of the Barbizon school. Although early in his career it is probable that on occasion he prepared and even stretched his canvases himself, in later years he bought his canvases ready-primed.⁷ While employing a wide range of traditional pigments – earths, ochres, siennas, umbers, vermilion, and red and yellow lakes – he also made wide use of the newly available pigments, favouring cobalt blue for his skies, and using both green mixtures that he prepared himself, and new ready-made greens such as viridian and emerald green.⁸ It is not known whether Corot prepared his own paints in the early part of his career but it is likely that as an established artist he made use of ready-prepared paints. All of the paintings discussed here contain mainly heat-bodied binding oils, whether linseed, walnut or poppy. Heat-bodying the oil would improve the drying properties of the paint, and allow a smooth glossy surface with few visible brushstrokes. All three oils, linseed, walnut and poppy, would have been readily available to Corot and there are several examples where different types of oil have been detected in the same painting. This could be accounted for in part by the use of ready-prepared paints. No particular pattern can be found in the samples analysed at the National Gallery, but Corot may have bought different colours prepared in different types of oil. Additional oil, not necessarily of the same

type, may also have been added to the paint to achieve the right consistency. Unfortunately it is not possible to distinguish analytically between walnut oil and a mixture of poppy and linseed oils. Results that suggest the use of walnut oil may in fact indicate a mixture, especially if poppy oil has been identified elsewhere on the painting, or the paint contains a mixture of pigments which could have been prepared in different oils.

The binding media, in a significant proportion of the paintings by Corot in the National Gallery collection, were also found to contain small quantities of natural resins. Pine resin was detected most often but copal, mastic and fir balsam have also been identified and sometimes a mixture of resins was present within one sample. The resin would have been incorporated into the paint in the form of varnish, which Corot presumably added on his palette as he worked. Where copal was identified, a prepared product such as *huile copal*, essentially drying oil with a little copal was probably used. The addition of a little varnish would have improved the working properties and increased the transparency and gloss of the paint, giving greater saturation of colour.⁹

There is a marked difference between Corot's early and late styles. His early work is distinguished by highly defined forms and fresh clear colours. In the 1850s his style changed to become softer and subtler, and he adopted a restricted range of colours, emphasising instead tonal harmonies. Throughout his life he painted landscapes based on observation but in later years he produced large numbers of studio landscapes, some based on real places, others purely imaginary, and many peopled with bathers, bacchantes and allegorical figures.

However, although his style changed dramatically over time, aspects of Corot's working practice, such as the order in which he composed his landscapes, remained consistent. Whether painting out of doors or in the studio, he always chose to paint his trees first and the sky last: 'a good method to follow: on your white canvas, begin with the strongest tone. Follow in order as far as the lightest tone. It is not logical to begin with the sky.'¹⁰ In this he was going against the great theorist and champion of academic landscape, Valenciennes, who advised always to start with the sky as this was the most important element in the composition.¹¹

The Roman Campagna, with the Claudian Aqueduct

(NG 3285) probably 1826 (PLATE 1)

Robaut 98bis

Corot travelled to Italy in the 1820s to hone his skills *en plein air*, as countless others had before him. This first trip, from 1825 to 1828, was also to be his longest. Accompanied by a fellow student, the German Johan Karl Baehr, he arrived in Rome in November 1825. Corot painted a number of views of the aqueducts south of the city early in his stay, and one (Robaut 96) is dated December 1825. Galassi suggests that NG 3285 was painted in the spring of 1826.¹²

The Claudian Aqueduct was one of two aqueducts begun by Gaius Caesar in AD 38, and completed by Claudius in AD 52. The exact spot where Corot stood has been identified: three kilometres from the Porta San Sebastiano, near to the Via Appia Pignatelli and a few metres from the church of Sant'Urbano. The Tor Fiscale, seen in the centre of the picture, was a medieval defence tower erected at the intersection of the crossing of the Acqua Claudia over the Acqua Marcia.¹³ To the right and the left of the tower is the Acqua Felice, an aqueduct constructed by Pope Sixtus V in 1585 on the ruins of the Acqua Marcia. On the right are the Alban Hills, on the left the Prenestini Hills. In the middle ground, behind the trees, flows the River Almone.¹⁴

In line with practice of the period, Corot painted on paper, which was subsequently laid down on canvas. The paper weave is prominent and affects the paint structure in the sky, where ridges are visible. The canvas itself is stretched on a rigid strainer which suggests that the mounting was done early. Robaut notes that almost all of Corot's early Italian views were painted on paper and were subsequently mounted: 'Almost all his studies of Italy are painted on paper...they were badly stuck onto poor quality canvases fitted with poor stretchers or executed on sorry panels, and what is more by lending them to hundreds of colleagues and friends, the master let them come and go all his life, the result being that many of them had suffered very badly.'¹⁵ Here, however, apart from a few minor damages, the overall condition is good. The top-right corner of the paper is folded and a small section is lost and there is a small diagonal tear in the upper right edge. There are possible pin marks in the two corners on the left side; the corners on the right side are too damaged to see. This would suggest that at one time, before it was mounted on canvas, the painting was pinned to the wall. According to the catalogue for the sale of Comte Armand Doria's collection, an inscription formerly on the back stated that: 'Corot avait donné cette étude à M. Panis, professeur de dessin à Sainte Barbe.' This may be Jules Ernest Panis

(1827–1895), who exhibited at the Salon from 1850 to 1874.¹⁶ It is possible that Corot simply lent it to him for copying, a common practice, as evidenced by Robaut's statement. However, the notebook where Corot lists his borrowers does not include Panis's name.¹⁷

There are some traces of drawing, possibly done with crayon, visible in the infrared photograph (FIG. 1), especially in the architecture and where the hills meet the skyline. The drawing follows the lines of the hills, the aqueducts, and the shapes of some of the clouds. There is no drawing in the foreground. Above this the landscape has been painted in one single layer of paint, swiftly and confidently brushed. Working with a small range of colours – greens, beiges and violets and blues in the land, and blues, purples and whites in the sky – Corot has perfectly captured an extensive sunlit landscape under a blue sky hung with bright majestic clouds. The foreground is a light grey-beige, almost white in appearance, behind which is painted a strip of mid-green with a row of small trees or bushes. The country then extends towards the aqueducts and tower. Beyond, the hills are rendered in violet and blue. Corot has left reserves for elements in the composition: the green bush on the right is not painted over the beige ground immediately to the left, but is in a space of its own. The hills are brought around the aqueducts on left and right. In the sky the clouds were painted first, with the sky brought around them. The technique of *The Roman Campagna, with the Claudian Aqueduct* fits perfectly Galassi's description of Corot's painting practice at this time, in which he began with a drawing in order to establish the composition before starting to paint: 'As he filled in the outlines with paint, the drawing disappeared. The result was a taut mosaic of interlocking blocks of colour, each treated as a single touch, or patch of touches, of the brush.'¹⁸ Galassi also points out, in relation to this picture, that Corot 'sought to impose a full-blown classical composition on the landscape', but that the juxtaposition of bright, bold colours makes the transitions awkward: 'The hillock and bush on the right have congealed into a dense mass, which stands up vertically to merge with the undulating line of the distant mountain range. Notice also the strange, bulbous shape of the shadow.'¹⁹

The pigments that Corot used are conventional for the period, with one notable exception – a new green. The ground is lead white, a preparation probably applied by Corot himself. The dull green of the foreground is a dense yellow-green matrix containing a bright green which is identified as viridian (transparent chromium oxide), large vermilion particles, earths, and a yellow-green (possibly a yellow lake) (PLATE 2). The blue of the sky is mainly cobalt blue, Corot's habitual choice,



PLATE 1 Jean-Baptiste-Camille Corot, *The Roman Campagna, with the Claudian Aqueduct* (NG 3285), probably 1826. Oil on paper, marouflaged to canvas, visible area 22.3–22.8 × 34 cm. Signed lower left: COROT.



FIG. 1 Jean-Baptiste-Camille Corot, *The Roman Campagna, with the Claudian Aqueduct*. Infrared photograph.

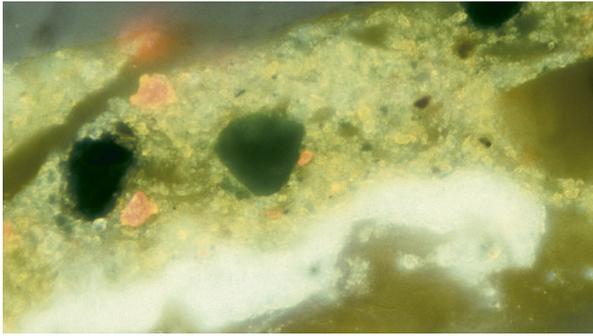


PLATE 2 *The Roman Campagna, with the Claudian Aqueduct* (NG 3285). Cross-section from dull green foreground, bottom edge, right, showing a combination of deep green viridian (transparent chromium oxide), yellow earth pigment, vermilion and perhaps also some yellow lake pigment. A white ground over paper fibres is visible beneath. Original magnification 300x; actual magnification 230x.



PLATE 3 Jean-Baptiste-Camille Corot, *The Roman Campagna, with the Claudian Aqueduct*, detail of bush at right-hand side.

mixed with fine transparent yellow particles in white, and the clouds are painted in lead white.

As noted above, there is one exceptional pigment, viridian, which is present in the foreground and also in the mid-green strip on the left-hand side, in the dull green foliage of the right-hand side, and in the black of the bush on the right-hand side (PLATE 3).²⁰ It is not used anywhere on its own, but mixed with earth pigments and transparent yellow lake. This is the earliest instance of the use of this pigment recorded by any artist working in the first half of the nineteenth century. It is possible, however, that analysis of other Italian views by Corot may reveal other examples of its early use.²¹

Viridian is the English name for hydrated (that is, transparent) chromium oxide, *vert émeraude* in French, thought until comparatively recently to have been available to artists only from the 1830s. Chromium oxide,

an opaque green, was discovered by the French chemist Vauquelin in 1797 and used in porcelain factories. In 1798, however, Vauquelin also described a green colour produced by heating the newly discovered chromium metal with a blowpipe and borax, which may have been chemically similar to hydrated chromium oxide pigment.²² Pannetier was the first to manufacture the pigment, keeping the process secret. Church gives the date of 1838 for Pannetier's discovery, which has been repeated by every author on the subject since.²³ Ch.-Er. Guignet patented a method for producing the pigment in 1859.²⁴

However, Arsenne refers to viridian in his *Manuel du Peintre et du Sculpteur* of 1833, stating that it was available from the colourmen Colcomb-Bourgeois.²⁵ He writes: 'This last colour marries perfectly well with browns and gives the greens a very intense tone. When it is known it will be of great use to the landscapist.'²⁶ It has also been found in a painting from Corot's second trip to Italy, *View of Riva* of 1835 (Munich, Neue Pinakothek), where it is mixed with cobalt blue, thus dulling it and making it more like opaque chromium green.²⁷ It was extremely expensive at this time but price does not seem to have been a disincentive to Corot, as by 1821 he was in receipt of a yearly income of 1,500 pounds.²⁸ Corot was already a customer at Colcomb-Bourgeois when he first went to Italy in 1825, and on 29 October 1826 wrote to his friend Abel Osmond for colours from the firm.²⁹ Although Arsenne published this source in 1833, the evidence from this painting is that the colour was being made by Pannetier and available even in the 1820s from these colourmen.

Related to the matter of Corot's early use of viridian is the further question of whether Corot preferred to mix his greens, rather than use ready-made ones, and in much of the recent technical literature on Corot it has been asserted that he preferred to use a mixture of blue and yellow. Robaut is again the source for this theory: 'When he saw the master on the 22nd of September 73 he observed once again that he didn't use a single green or viridian; and when I asked him the reason he told me that these ready-made greens irritated him, that they are harsh, that he preferred making them in his own manner, sienna earth and burnt sienna with cobalt or yellow ochre with Prussian blue or mineral blue, yellow cadmium with ochre lake and all the tones in-between without thinking about it or formula decided upon in advance.'³⁰ The evidence from this painting is that not only did Corot use ready-made greens, but that he used them extremely early in his career. His own description of them as harsh is particularly true of viridian, and here, as in the Munich painting, he has tempered the colour with earths and lakes.³¹

Avignon from the West

(NG 3237) probably 1836 (PLATE 5)

Robaut 328

Corot visited Avignon in May 1834, in July 1836, when he was accompanied by the Orientalist painter Prosper Marilhat, his pupil Gaspard Lacroix, and Achille-Adolphe Francey, and again in 1843. Moreau-Nélaton describes their routine during their stay in 1836: ‘The correspondence of Marilhat informs us that the friends settled themselves at Villeneuve-lès-Avignon “where there are the most beautiful things to paint.” “We used to rise at 4 in the morning”, he writes; “we worked until 11.00 o’clock, then we came back to dine like devils... After dinner, we slept until 2 o’clock, and then we went out again until night.”’³² During this visit Corot painted a number of *plein-air* studies which show either Avignon itself or Villeneuve-lès-Avignon, a small town on the far side of the Rhône.³³

Avignon from the West depicts the town from Villeneuve-lès-Avignon. Both branches of the Rhône are present on the left and the remains of the Pont Saint-Bénézet can be seen, the chapel being faintly delineated. To the right and above is the Rocher des Domes. The stepped wall is part of the former Bishop’s Palace, and is still standing. Of the two prominent towers, the one on the left is that of the Cathedral (Notre-Dame des Doms), surmounted since 1859

by a large statue of the Virgin. The one on the right and the remaining buildings are the Palais des Papes, which has been restored since Corot’s time. The ramparts which enclose the town are visible in places, with the Porte de l’Oulle just to the left of the tower of the Hôtel de Ville. This was demolished in 1900. To the right lie the Lubéron hills.

Corot has applied the paint in a similar manner to that of his Italian views, laying blocks of colour adjacent to each other. The architecture is defined by light and dark tones, with windows rendered as dark squares and little detailing given of architectural features. The treatment is very similar in other views painted on that same visit, for example, *Villeneuve-lès-Avignon* (R329, Indianapolis Museum of Art; PLATE 4), where again the lit-up town is perched in the middle distance. Although the painting is sketchier and less highly worked, the handling of the architecture is similar, with the square forms of the buildings treated as flat planes, deeply in shadow on the right sides. The foreground of dry terrain is very loosely painted, with ground showing through the thin brown paint. The trunks of the foreground trees are painted in very dark brown paint, and the foliage is dark green, applied with quite a dry brush.³⁴

By contrast, the foreground of *Avignon from the West* is evidently reworked and painted over in a khaki-green paint, an observation confirmed by both a cross-section (PLATE 6) and technical photography. The X-ray



PLATE 4 Jean-Baptiste-Camille Corot, *Villeneuve-lès-Avignon*. Oil on academy board mounted on canvas, 26 × 41.3 cm. Signed bottom right: COROT. Indianapolis Museum of Art, Legacy of James W. Fesler, 52.15.

photograph (FIG. 2) shows that the road which appears on the right actually runs along the entire foreground as far as the houses, but has been softened, and in some places eliminated, by this khaki scrub-like landscape. To the upper right a cliff or quarry also visible in the radiograph was later covered over by the prominent tree. A ragged edge of dull olive-green paint, applied with a dry brush, is visible under the top edge of the khaki overpaint, especially around the group of trees, left of centre. It is also visible under the green of the tree left of centre, overlaid with a blue-green, and by the house, indicating that this is part of the reworking, and suggesting that the small group of trees was added at this time. The foliage of the prominent tree to the left is also painted with a dryish brush, resulting in a scratchy appearance.

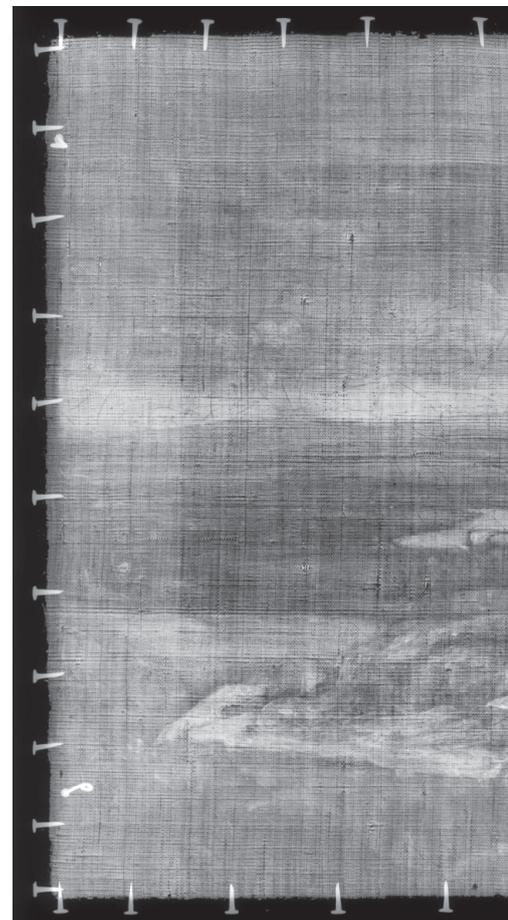
As a result of Corot's modifications to the design, the dull green of the middle foreground is multi-layered, with as many as six layers present above the off-white ground. There are some cobalt blue, orange (vermilion) and ultramarine blue particles present in the lower layers. The earliest layer contains a peach-coloured pigment, confirmed by EDX as a red lake pigment (possibly a pale madder). The sky contains cobalt blue and lead white with traces of opaque red, and cobalt blue mixed with vermilion occurs in the greyish trees of the middle distance (PLATE 7). There are no traces of dirt or varnish between the layers, suggesting that the top layer was not added at a substantially later stage. This is not the case for another view of the area painted in 1836, *Villeneuve-lès-Avignon, Fort Saint-André* (R333, The Hague, Mesdag Museum; PLATE 8). Corot returned to this painting in around 1865–70 and again reworked the foreground, adding a clump of trees and some figures, but the additions are predominantly in his late style, and flickering touches of foliage and shimmering brushwork contrast with the tighter handling of the main picture.³⁵

It is very likely that the foreground of *Avignon from the West* was originally thinly painted in a similar manner to the Indianapolis picture. The top paint is fairly thickly applied, but in the right foreground where it is thinner the underpaint looks quite thinly painted. At this period Corot often deliberately left his foregrounds less highly worked, in order to focus the eye on the most important part of the picture, the middle ground.³⁶ *View of Saint-Lô*, 1833 (R756, Paris, Musée du Louvre; PLATE 9), also features an undefined foreground, a pale brown thin layer rapidly brushed over the ground. The bushes edging this area are also thinly painted. Comparison of *Avignon from the West* with such paintings highlights the densely painted foreground, and indeed when it was exhibited at the Royal Academy in 1896 the *Athenaeum* noted that it was perhaps reworked.³⁷

PLATE 5 Jean-Baptiste-Camille Corot, *Avignon from the West* (NG 3237), probably 1836. Oil on canvas, lined, visible image: 34 × 73.2 cm, edges covered by brown paper. Signed bottom right: COROT.



FIG. 2 Jean-Baptiste-Camille Corot, *Avignon from the West*. X-ray photograph.





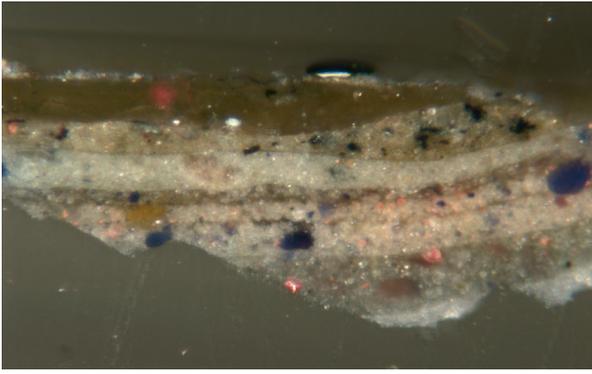


PLATE 6 *Avignon from the West* (NG 3237). Cross-section of brownish-green foreground, lower edge, left, showing the multilayered paint structure in this part of the composition, indicating Corot's reworking of this area. Original magnification 320 \times ; actual magnification 245 \times .

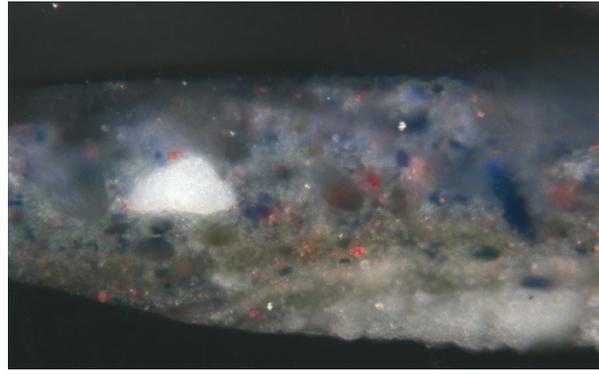


PLATE 7 *Avignon from the West* (NG 3237). Cross-section from greyish-blue trees, middle distance, right edge. The paint contains cobalt blue, vermilion, lead white and (faded) red lake pigment. A greener paint layer lies beneath, over a white ground. Original magnification 400 \times ; actual magnification 310 \times .



PLATE 8 Jean-Baptiste-Camille Corot
Villeneuve-lès-Avignon.
Fort Saint-André, 1836/
c.1870. Oil on canvas,
37.6 \times 74.5 cm. Signed
lower right: COROT.
The Hague, Mesdag
Museum.



PLATE 9 Jean-Baptiste-Camille Corot,
View of Saint-Lô, 1833. Oil on
canvas, 46 \times 65.1 cm.
Paris, Musée du Louvre,
RF 2580.

Peasants under the Trees at Dawn

(NG 6439) c.1840–5 (PLATE 10)

Robaut 431

Peasants under the Trees at Dawn depicts a scene in Lormes, the principal town in the area of the Morvan, in western Burgundy. In the nineteenth century the region was known for its rugged terrain and somewhat remote character.³⁸ The inhabitants lived mainly by tree felling or by keeping cattle. Here the man is sawing, while the woman is gathering twigs from the tree.³⁹ The exact site of NG 6439 has been identified as being in the mill quarter of the town.⁴⁰ The stream which winds from behind the foreground boulder through the gully at left is the Auxois, which worked all the mills in the town.

Corot's father's family originated from the region and in the early 1840s Corot made three long visits there. There are around fifteen paintings of the area dating from this period, noted for their high horizons and unusual light effects, and for the closed-in views of dense woodland.⁴¹ This painting could have been painted on any of these visits, and most commentators have dated it to around 1840–5.

The light effects in this painting are particularly pronounced, with the light coming from the right

background.⁴² The little girl on the bank and the logs under the tree are all strongly highlighted in shades of cream. The logs also cast strong shadows over the earthy area of the foreground. The hill, seen directly against the light, appears as misty grey and green, and the houses and trees dissolve in the light. The coloured greys which Corot began to use from the 1830s onwards here contribute to the misty atmosphere. The mauve-grey of the middle distance contains cobalt blue and vermilion mixed about half and half with smaller amounts of lead white and fine black.⁴³ The grey-blue highlights from the leaves are also examples of Corot's 'coloured greys': mainly a fine blue (likely to be cobalt) and black containing some larger cobalt blue and red lake particles, a small amount of transparent orange and yellow, and a few orange (possibly vermilion) particles. The whole is thickly and solidly painted, with a smooth application of paint which shows no trace of brushstrokes. As usual Corot has painted the sky last. It has been brought around the roofs of the houses at the right, but visible between the sky and the edges of the roofs are the reserves of brown *ébauche* underneath. The uneven edges of the off-white thick paint combined with the hint of the underpaint serve to fragment the outlines, and heighten the sense of the



PLATE 10 Jean-Baptiste-Camille Corot, *Peasants under the Trees at Dawn* (NG 6439), c.1840–5. Oil on canvas, lined, 27.3 × 38.8 cm (visible surface, within the brown paper, which covers up to 0.5 cm of the front of the canvas). Signed bottom right: COROT



PLATE 11 *Peasants under the Trees at Dawn* (NG 6439). Cross-section from greyish-brown foreground, left, containing lead white, cobalt blue, various earth pigments and black. An earlier warm brown lay-in is visible beneath the white ground. Original magnification 400 \times ; actual magnification 310 \times .

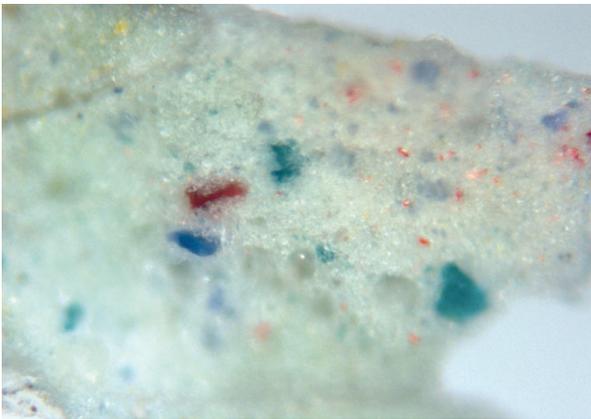


PLATE 12 *Peasants under the Trees at Dawn* (NG 6439). Top surface of an unmounted fragment of paint, mid-green foliage, left edge, containing lead white, cobalt blue, viridian (transparent chromium oxide), red lake pigment and vermilion. Original magnification 250 \times ; actual magnification 190 \times .

buildings dissolving in the light. The diffuse outlines caused by the juxtaposition of sky and *ébauche* are also particularly evident around the bushes in the right background. Around the central tree, where the sky has been brought around, further branches have been added on top, another practice followed by Corot throughout his life. They are painted in a very distinct dark brown paint with silvery foliage on both sides, spreading across the tall building on the extreme left.

Corot planned the composition with some care and developed it in several stages. The foreground, trees and buildings were reworked by the artist on a number of occasions.⁴⁴ The ground contains lead white with calcium carbonate as an extender. There is a thin pink-red layer above the ground under the greyish-brown left-hand foreground (a mixture of earths with larger black, white, cobalt blue and red particles) (PLATE 11). Traces of underdrawing in graphite pencil are visible

in an infrared photograph, in the branches of the tree at centre and the buildings in the background on the right. The figures of the man sawing wood and the woman gathering twigs were added at a late stage, as the branches of the tree can be seen to pass behind them. There was a second horse to the right of the present one, on the far right of the composition, which was at some stage painted out. The greens present are fairly complex, and illustrate that while Corot did make use of ready-made greens, he tended to modify their hue by adding colours such as reds and yellows. A sample taken from the mid-green at the extreme left-hand edge contains – in addition to viridian – lead white, cobalt blue and traces of transparent red and yellow (PLATE 12). To paint the foliage of the tree Corot used a ready-prepared ‘chrome green’ (a mixture of chrome yellow and Prussian blue); it also contains traces of red lake, yellow, vermilion and cobalt blue. The sky is cobalt blue, Corot’s preferred pigment for skies, mixed with lead white.

Monsieur Pivot on Horseback

(NG 3816) c.1853 (PLATE 13)

Robaut 665

In 1817 Corot’s parents bought a property in the village of Ville-d’Avray at 3 rue du Lac. His father died in 1847 and his mother in 1851 and thereafter the house was inhabited by Corot’s sister, Annette Octavie. Corot frequently returned to the area to paint, and occupied an attic room on the second floor until the end of his life. Monsieur Joseph Pivot (died 1856),⁴⁵ whose country residence was at the Côte d’Argent in the village of Ville-d’Avray, was Corot’s neighbour.

An X-ray photograph of the painting (FIG. 3) shows that Monsieur Pivot and his horse are painted over a more or less completed landscape, with a large tree to the left, filling up most of the present picture surface, through which sunlight filters, giving way to a more open landscape on the right, with an expanse of sky. A path leads under the tree from left to right. To the right of centre in the X-ray there is a vertical light form, which is possibly the pillar or post in *Ville-d’Avray: a Path in the Woods* (R681, 1850–5, private collection; PLATE 14). The disposition of the trees in this painting also suggests that this is the site of the original landscape of *Monsieur Pivot*. Almost nothing of the figure of Monsieur Pivot shows in the X-ray image, despite the fact that lead-white has been identified in his trousers, and is also likely to be present in the grey of the horse, and the yellow of his hat. At the bottom and top edges a few strokes of paint run over the edge of the stretcher, but at the right edge the paint goes right up to the edge of the turned-over canvas. At the top edge an area of pale blue paint (the

blue of the original sky) is visible on the overlap (PLATE 15), the same colour which is visible under the thin dark green paint at the top left (PLATE 16). The pale blue sky paint can be associated with the first landscape, as can a very light brown with a pinkish tinge (PLATE 17), visible under the sketchy grey paint of the trouser leg, where a green also from the first composition has been painted on top (PLATE 18). A thin underpaint, it can also be seen in areas of the horse, for example the hind leg.

When Corot embarked on the portrait of Pivot he painted some of the greenery over the initial landscape and added the figure of Pivot on his horse directly over the first landscape. The present setting differs greatly from the landscape visible in the radiograph. Back in the studio Corot further reworked the setting in which the horse and rider stand, and added the slender trunks of the silver birches. As the initial layer was in a dark to mid-green, everything painted on top now appears as light coming out of dark. The birches are not anchored to the ground, but are treated as floating decorative elements. Corot carried out much more reworking in the lower half of the picture, such as the addition of the foliage in the light blue-greens, but he left the top half quite sketchy, and the green paint is applied quite thinly, especially top left where the pale blue paint is visible, and can be seen more clearly in infrared light (FIG. 4).⁴⁶ Corot also apparently cut the canvas down on the right, and restretched it before finishing off the painting, hence the paint on the overlap.

Examination of paint cross-sections reveals the multi-layered structure that could be expected from a picture painted on top of another. The ground is cream, consisting of lead white with a certain amount of an opaque yellow (earth pigment) and a trace of calcium, probably from an extender, calcium carbonate. A sample taken from the dark green foreground contains just two layers of paint above the ground, that of the initial landscape (a mid to light yellow-green containing a few dark blue clumps, possibly Prussian blue and organic yellow/yellow lake) followed by a layer of varnish or medium, and then by another green layer (PLATE 19). By contrast a sample taken from the foreground in the lower right corner has a further four layers of paint (PLATE 20). The lowest of these is a dark brown layer containing particles of dark red, which is part of the original composition. A sample taken from the top edge reveals a thin red layer above the ground, possibly red chalk. Above this is a layer of cobalt blue and lead white which is the sky of the first landscape, on top of which is painted the initial green layer of the second landscape. The last sample, taken from a touch of foliage on the lower right-hand edge, has the same layer of paint as in the first two samples, an oiling-out layer, and a further

two layers of greenish-brown paint which are part of the second composition. The top layer contains fine blue (possibly Prussian blue), white, and some yellow (possibly a mixture of yellow lake and ochre) and orange particles. Analysis of the media reveals the presence of resins in the paint, probably added by Corot, to alter handling properties and perhaps to make them more glaze-like without actually making them transparent. In particular the thin yellow-green paint at the top edge is a glaze, formed from transparent pigments and resins added to the medium. There has been some debate as to whether Corot used glazes, but they have been found on his paintings, for example *Concert champêtre*, begun in 1844 (Chantilly, Musée Condé), and Corot writes of their use in a letter of 1849.⁴⁷

The evidence presented by the X-ray photograph and the cross-sections is backed up by an anecdote dating from 22 October 1873 related by Robaut:

The Master showed me a little canvas which was entrusted to him yesterday and which he had seen before in singular circumstances. Around 20 years ago a certain M P(ivot), owner of a neighbouring estate to that of the Master, was passing by on horseback in the Ville d'Avray woods in front of our artist, who, in the middle of doing a study, asked him to stop for a moment so that he could do a quick sketch of him. The honest merchant let him do this. Some time later he died, and the dear Master thought that it would be an act of kindness to send this canvas to his widow. He had never received either congratulations or thanks for this; what is more, the most basic acknowledgement that it had been received had not even reached the generous donor, and he got to the point of wondering whether the errand had been carried out properly. To be brief, passing by there yesterday [22 October 1873] in the company of the doctor C[ambray], to whom the story had just been told, they had the idea of going in and taking a chance and asking to see the work. The lady of the house arrived, and the Master made the excuse that the little canvas which he had once sent her pleased him very much and he told her that he wanted to copy it. At once as the lady made as if to fetch it, M. Corot told her that he wanted her to take it out of the frame, which would get in his way, and she replied artlessly: 'Oh, but that is very easy, we have never put it in a frame.' This painting, lent to Corot by Mme Pivot at his request, remained in the artist's studio until his death. Included by mistake in the paintings to sell, it was put into the posthumous sale [under lot 358] from which it was withdrawn and returned to Mme Pivot.⁴⁸



PLATE 13 Jean-Baptiste-Camille Corot, *Monsieur Pivot on Horseback* (NG 3816), c.1853. Oil on canvas, wax-lined, 39.2 × 30.3 cm. Signed bottom left: COROT.



FIG. 3 Jean-Baptiste-Camille Corot, *Monsieur Pivot on Horseback*. X-ray photograph.



PLATE 14 Jean-Baptiste-Camille Corot, *Ville-d'Avray: A Path in the Woods*, c.1850–5. R.681. Oil on canvas, 50.2 × 61.6 cm. Private collection.

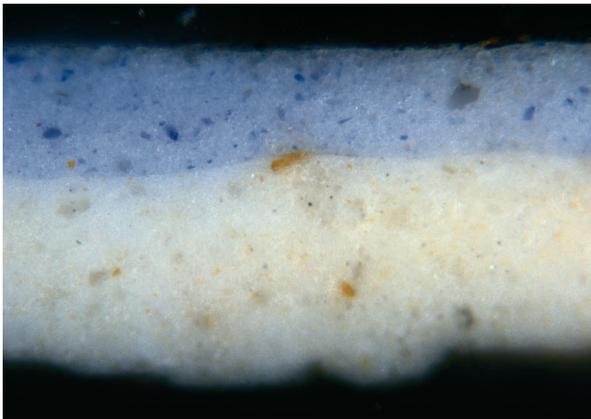


PLATE 15 *Monsieur Pivot on Horseback* (NG 3816). Cross-section from the sky, upper corner, left, showing cobalt blue with lead white. The cream-coloured ground beneath, containing white with yellow earth, is evident. Original magnification 200×; actual magnification 155×.



PLATE 16 Jean-Baptiste-Camille Corot, *Monsieur Pivot on Horseback*, photomicrograph of top edge showing blue of original sky under green.



PLATE 17 Jean-Baptiste-Camille Corot, *Monsieur Pivot on Horseback*, photomicrograph of light brown with pinkish coloration under grey paint of trouser leg.



PLATE 18 Jean-Baptiste-Camille Corot, *Monsieur Pivot on Horseback*, photomicrograph of green of first composition under trouser leg.



FIG. 4 Jean-Baptiste-Camille Corot, *Monsieur Pivot on Horseback*. Digital infrared reflectogram.

The anecdote implies that Corot was in the middle of painting the first landscape when he was interrupted by Monsieur Pivot. The evidence for this is not clear-cut. Three of the samples, but not that from the top edge, contain a varnish or medium layer between the paint layers. It is probable that this layer is a quick touching-in layer painted by Corot before he started on the portrait of Pivot. He would not have needed to paint this over the featureless sky at the top, which explains why the sample from this area does not have this layer. However, he would only have painted this varnish or medium layer if his original landscape was touch-dry; if it was still wet then he would have simply painted straight onto the paint. The painting would more likely to have been touch-dry if he had started it a couple of days earlier, and had brought it out for a second campaign of working. Taking into account his practice of having a selection of canvases on the go at any one time, it is quite likely that he had this second canvas with him, which he decided to use rather than the canvas he had on the easel when Monsieur Pivot rode by.

Monsieur Pivot was cleaned, re-stretched and ‘oil-varnished’ by a former owner, Percyval Tudor-Hart (1873–1954), in 1919.⁴⁹ There is a thin unpigmented layer above the green background paint which contains a drying oil and FTIR microscopy indicated it to be a drying oil layer, probably representing Tudor-Hart’s ‘oiling out’.⁵⁰ He notes that at the time of his cleaning the canvas had been torn by the tacks in several places. It has been wax-lined since entering the National Gallery collection; this must have been carried out after April 1962 as there are two photographs of the original back in the ‘history dossier’, each dated ‘27.4.1962’. The original canvas is stamped ‘Détrimont’, although the address is too faint to read in the photograph. Détrimont’s stamp is also to be found on the back of *The Seine near Rouen* of 1830–5 (NG 4181) and *The Marsh of Arleux* of 1871 (NG 2135).⁵¹ The paint is in general in very good condition, but the craquelure appears to have been slightly softened and flattened by the lining process. The outer edges are abraded all round. The stretcher is modern except for the central bar with the ‘Vente Corot’ seal, which has been reclaimed from the original stretcher. There are pin holes at the top right and left corners.

Monsieur Pivot shares similarities with other, later paintings by Corot, particularly the setting of the figures against dark trees, and the use of silver birches as highlights.⁵² Madeleine Hours also made a link with *Forest at Coubron* of 1872 (R.2386, Washington, National Gallery of Art; PLATE 21), which shows a horse and rider riding off into the distance along a wooded path, silhouetted against the sky.⁵³ The painting can also be

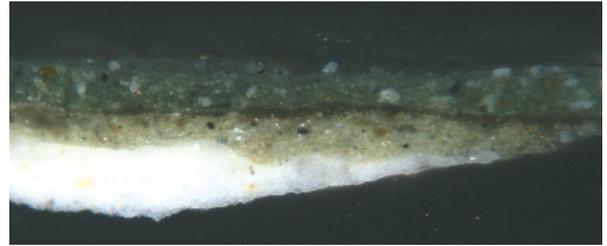


PLATE 19 *Monsieur Pivot on Horseback* (NG 3816). Cross-section from dark green foreground, lower edge, right, showing at least two layers of paint separated by a discontinuity indicating two stages in the painting process. The surface paint contains Prussian blue, lead white, yellow earth and black. Original magnification 250x; actual magnification 190x.

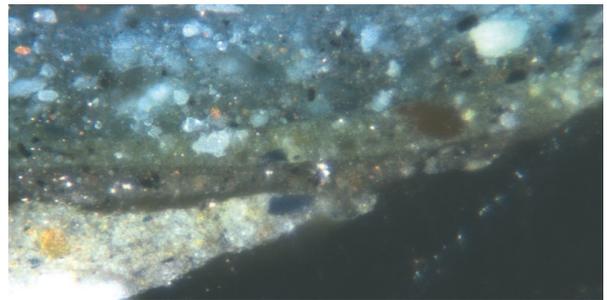


PLATE 20 *Monsieur Pivot on Horseback* (NG 3816). Cross-section from deep saturated green touch, foreground, lower right. As in PLATE 19 there is a discontinuity in the layer structure and evidence of multiple working. The surface paint is rich in Prussian blue, with the addition of lead white and some yellow earth. Original magnification 400x; actual magnification 310x.



PLATE 21 Jean-Baptiste-Camille Corot, *The Forest at Coubron*, 1872. Oil on canvas, 96 × 77.8 cm. Signed and dated lower centre: COROT 1872. National Gallery of Art, Washington DC, Widener Collection, 1942.9.12.



FIG. 5 Jean-Baptiste-Camille Corot, *Le Petit Cavalier sous Bois*, 1854. *Cliché-verre*, 18.9 x 14.9 cm. Signed in the plate, bottom right: COROT. Paris, Bibliothèque Nationale.



FIG. 6 Jean-Baptiste-Camille Corot, *Le Grand Cavalier sous Bois*, 1854. *Cliché-verre*, 28.3 x 22.5 cm. Signed in the plate, bottom left: COROT. (back-to-front). Paris, Bibliothèque Nationale.

compared with two *clichés-verre* of around 1854: *Le Petit Cavalier sous bois* of January 1854 (FIG. 5), in which the rider and horse face in the opposite direction from Monsieur Pivot, and *Le Grand Cavalier sous bois*, of around 1854 (FIG. 6), in which the rider faces in the same direction. Although the figure is not Monsieur Pivot himself, and the horse is set against a gap in the woods, the overall composition, framed by curving silver birch trunks is closely related. The figure on the horse is also closely related in stance to Monsieur Pivot, particularly in *Le Grand Cavalier*. The gap in the trees can be explained by the fact that when working with outline only, and in monochrome, setting a figure against a mass of foliage would have been harder to achieve visually. This gap is repeated in the later *Forest at Coubron*. It is most likely that these *clichés-verre* were inspired by his painting of M. Pivot on horseback, and that Corot returned to the theme in the Washington painting. Both Delteil and Melot refer in their catalogues of prints to a painting of the same subject, but are not more specific.⁵⁴ Corot wrote to C. Dutilleux about the print on 23 January 1854: 'I would ask you, if M. Cuvelier has not sent off the box, to send me by the same post, or later, if it has gone, three proofs of the light etching with the man on horseback which I like so much...'⁵⁵

Late works

The last two paintings in this survey are late works. Colour became for Corot less and less important during the 1860s and 70s, partly as a result of the rise in landscape photography, in which tones, rather than colour, played a major role.⁵⁶ His emphasis on tonal values is exemplified in these much-quoted lines from a sketchbook of about 1860: 'The first two things to study are the form, then the values. For me, these two things are the mainstays of art. Colour and touch give the work its charm.'⁵⁷ The technique of Corot's later years has been studied perhaps more thoroughly than his other periods, especially with regard to his gradual shift away from colour.⁵⁸ However, it is also a change in his brushwork which alters the appearance of his late work so radically. He often painted very thinly, leaving more of the *ébauche*, or even the ground, visible. But he also enlivened his picture surface with innumerable small touches of paint, creating a shimmering effect. However, as we shall see, the order in which he painted his landscape compositions remained constant.

The Oak in the Valley

(NG 6466) 1871 (PLATE 22)

Robaut 2223

This scene of a lake surrounded by trees was painted by Corot in May 1871 while staying with the Robauts in Douai. In the foreground three figures are huddled together. The area by the lake and immediately behind the oak tree is painted in a milky brown tending to mauve and to green around the lake (PLATE 24). This coloration, which is made up of red lake, black and white with traces of green, lends the picture the silvery tonality so characteristic of late Corot.

Corot used a very fine canvas, which he favoured increasingly in his later years. The ground is white, consisting of a mixture of lead white and extenders: chalk and silicate minerals. The handling, particularly of the tree and foliage, is very typical of Corot's late style. The order of painting, including leaving reserves for forms such as the trees and painting the sky last, was a technique he employed throughout his life, but the brushwork used to render foliage and branches changed in his later years. The preliminary sketching in of the trees is visible through the paint and many

of the earlier branches, painted in fluid black paint, are visible under the paint surface. Subsequently, the trunk and most of the branches of the oak tree were picked out in a brown glaze-like paint. To the right a single thin trunk is painted in the same brown paint, painted on top of all the other paint layers. The sky has been brought around the tree, and some of the pale blue paint, a mixture of cobalt blue and lead white, is painted over it. Corot often uses quite a dry brush, and the lines of the bristles are visible, as in some of this sky paint which he has added over the branches and foliage, for example the pale blue to the top right of the tree. By contrast he has used a thicker paint in the long stroke of blue and white of the sky, added at a late stage, which follows the line of the distant hills (PLATE 25). Here the brush is loaded with thick paint, and again the bristles show as textured lines in the paint. Corot also used the end of the brush to scratch into the paint, for example in the immediate foreground. But in many areas the paint is thin, as at the bottom left foreground, where the colour of the ground is visible in many places through the pale brown *ébauche*. The area at the far left is painted extremely thinly in brown fluid paint, with all the brushstrokes visible. At a late stage of working he added strong olive-green



PLATE 22 Jean-Baptiste-Camille Corot, *The Oak in the Valley* (NG 6466), 1871. Oil on canvas, 39.8 × 52.8 cm. Signed bottom left: COROT.

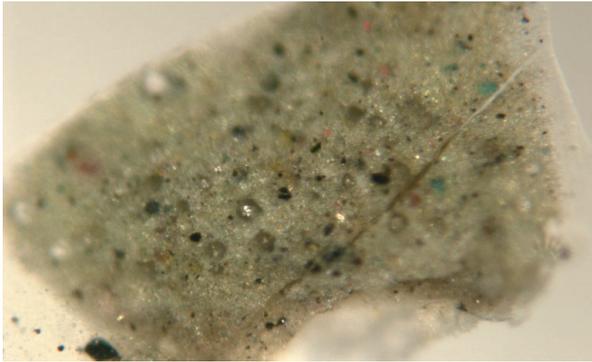


PLATE 23 *The Oak in the Valley* (NG 6466). Top surface of an unmounted fragment of paint, dull grey-green foreground made up of lead white, red and yellow earth pigments, viridian (transparent chromium oxide) and black. The paint contains rounded greyish starch grains, probably as an extender. Original magnification 250x; actual magnification 190x.

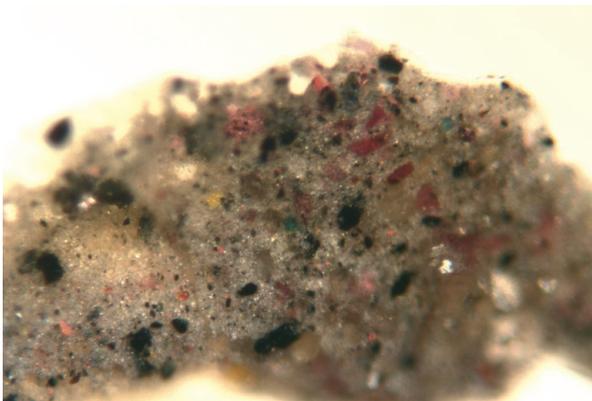


PLATE 24 *The Oak in the Valley* (NG 6466). Top surface of an unmounted fragment of paint, greyish-mauve middle distance, left, consisting of lead white, black pigment and red lake pigment, with a little yellow earth and viridian. Original magnification 250x; actual magnification 190x.



PLATE 25 Jean-Baptiste-Camille Corot, *The Oak in the Valley*, detail of thick brushstroke of sky following the line of hills.

highlights, for example in the tree and along the bottom edge. They are a mixture of emerald green, yellow-orange and fairly large flakes of yellow-brown semi-translucent material, probably a yellow lake. Under the microscope samples from highlights in the foreground and tree show the proportions of the pigments to be rather different in different areas (PLATE 23).

Landscape at Arleux-du-Nord

(NG 6531) 1871–4 (PLATE 26)

Robaut 2017

During Corot's trip to the north of France in 1871 to escape the Paris Commune, Robaut rented a cottage near Arleux in July for his use. The site depicted here is probably the Canal de la Sensée, which now joins up with the Canal du Nord between Arleux and Palluel. There are two versions of this composition. According to Robaut, the first version was painted in May 1871, while Corot was in Douai, and is based on a study by Robaut himself (PLATE 27).⁵⁹ Two months later Corot painted a second version on the spot, which is the National Gallery picture. Robaut gives an exact date for its completion back in the studio, of 24 November 1874, more than three years later, and just a couple of months before Corot's death in February 1875. There are compositional differences between the two paintings. They are from slightly different viewpoints, and the later, National Gallery, version is painted more from the left. The trees are taller, and are cut off at the top. Also, the river appears to slope down to the right, caused by the rendering of the shadows on that side. There are fishing nets and a dog on the bank; in the earlier version an old woman with a bundle on her back trudges along. In the background, next to the house, a large round tree stands in the earlier version, but is not included in the later study. Both versions have haystacks on the bank, although in the Gallery picture Corot has painted a further stack next to the building; in the earlier version it is a bush which obscures the house. In the National Gallery version he has turned the boat around so that the prow is pointing away from the bank, and has shortened it: its original length might be described as a *pentimento*. Corot would often repeat back in the studio a composition already painted in front of the motif; another example in the collection is *The Wagon* ('*Souvenir of Saintry*') (NG 6340), 1874, which is a repetition of a view painted by Corot at Saintry in May 1873 while attending a family celebration. The studio versions were often called 'souvenirs', a term which Corot also applied to views painted from memory or scenes which were a composite of a number of views. Generally writers have stressed the generalised nature



PLATE 26 Jean-Baptiste-Camille Corot, *Landscape at Arleux-du-Nord* (NG 6531), 1871–4. Oil on canvas, lined, visible surface 48.2 × 58.1 cm, the outer 4–5 mm of the canvas edges concealed by paper tape. Signed bottom right: COROT.

of the later versions, where Corot sacrificed detail and objectivity for general effect and stylisation. Here the later version is in fact that painted after nature.

The light tonality of *Landscape at Arleux-du-Nord* can be seen in a number of other paintings by Corot from the 1870s, and it has been suggested that he might have been responding to the Impressionist palette of Pissarro, Sisley and Monet.⁶⁰ The painting also exhibits the kind of formality of composition and clarity of style which is associated more with his earlier period, and the foliage is less shimmering and more solidly painted. However, closer examination does reveal some traits of Corot's characteristic late technique, for example the area of sky near the top left is extremely cursorily painted, using circular brushstrokes of thin paint, although the grey cloud below is rather more thickly worked. Dark fluid paint is used to add extra branches to the tree furthest to the right, although there is less of this technique than in his other late paintings, such as *The Oak in the Valley*. Thin green underpaint is visible in the trees, and this

is followed by thicker darker green paint. The foliage highlights in lighter and silvery greens are painted on top, a few of which have been extended over the sky, as if floating off the trees, in the same manner as in *Peasants under the Trees at Dawn*. Some of this 'floating' foliage lies beneath the sky, and some on top. The ground is visible around the trees where the sky has been brought around, which Corot has extended over some of the floating foliage on the right, the trees to the right, the bushes and trees on the left, and also over a branch in the gap in the trees at top centre (PLATE 29).

The extent to which Corot touched up the painting is not entirely clear. Certain areas suggest reworking, for example parts of the sky, which varies in both colour and thickness. However, technical evaluation is not conclusive. A paint sample taken from a thick layer of strong blue at the centre does not reveal a double layer of paint, suggesting that in fact the whole of the sky was painted in one sitting, in all probability back in the studio. A sample from the thinner paint (taken from



PLATE 27 Jean-Baptiste-Camille Corot, *Landscape at Arleux-du-Nord*, 1871. R2018. Oil on canvas, 46 × 60 cm. Signed bottom right: COROT. Private collection.



PLATE 29 Jean-Baptiste-Camille Corot, *Landscape at Arleux-du-Nord* (NG 6531), detail of gap between trees.



PLATE 28 Jean-Baptiste-Camille Corot, *Landscape at Arleux-du-Nord* (NG 6531), detail of water and ducks.

the thin pale blue at the top) contains calcium and silica in addition to the lead white and cobalt blue also present in the thicker paint, but this could have come from the ground, which is a mixture of lead white with extenders (calcium carbonate and silicate minerals). Analysis of the paint media has shown that the artist used paints with different binders. In an area of green water, which appears to be part of the initial working, the medium is linseed oil containing some pine resin, whereas in a touch of brighter green possibly added later in the studio the medium is heat-bodied walnut oil (or a mixture of linseed and poppy oils) and a trace of copaiba or a similar resin.⁶¹ It is not unusual, however, for different oils and resins to be used with different pigments in different parts of a picture. At the upper edge there is a thin varnish layer between the top yellow-green layer and a very pale layer of similar colour to the ground, which is only visible as a separate layer under ultraviolet light and is perhaps a varnish layer applied after the first campaign or just prior to the second.

Visual comparison with the first version would

suggest that the highlights in the trees and the water were added in the second campaign. In general the National Gallery version is more flatly and densely painted, for example the foliage and the two haystacks by the side of the river. The surface of the former version is busier, with dots and dashes of paint in the foliage and trunks of the trees. Perhaps when Corot came back to rework this later version he sought to emulate the picture surface of the first: dashes of lighter green and green-white in the trees, particularly the tree furthest in the row, are probably retouchings. In the bottom right corner a few white and off-white dots in the grass are similar to the many dots enlivening the grass of the earlier painting. The reeds on the left bank are also overlaid with green dots and dashes as in the first version. The area of the water is also likely to have been reworked. A layer of pale blue-grey paint has been added at a late stage, and been brought over some of the reeds and ducks, partly obscuring them, particularly the one on the left (PLATE 28). Just above there is scratching with the end of the brush in the grey-blue of the paint. As noted above, the application of the sky is tightly bound up with the final touches of foliage and other highlights that Corot almost certainly added in the final stages, providing further evidence that these were the areas worked in the second campaign on the picture when it was back in the studio.

Conclusion

This survey has examined a range of Corot's painting from the earliest in the National Gallery collection to his latest, looking in particular at his brushwork, his use of pigments, and the manner in which he built up his compositions. In appearance Corot's early paintings differ greatly from his late ones, but this is primarily

due to changes in brushwork, in the consistency of the paint and in his attitude to colour. However, as we have seen, in some areas he remained consistent throughout his life, notably in the order in which he built up his compositions, preferring from beginning to end to paint the sky last. As outlined in the introduction Corot habitually worked on a number of canvases at any one time, often revisiting and reworking paintings, and many of the pictures discussed here are of particular interest because of the degree to which they were reworked.

Appendix 1

Antoine-Claude Pannetier (1772–1859) was an artist-chemist, a friend and pupil of Girodet, and exhibited portrait miniatures at the Salon. He was also an intimate friend, perhaps from childhood, of the celebrated painter on porcelain, Marie-Victoire Jacquotot.⁶² Opaque chromium green was already in use in the ceramics industry at this time. Pannetier also prepared reds for her, as reported by Louis-Alphonse Salvétat (1820–1882), chemist at Sèvres: ‘The first beautiful reds were made by Dihl, who obtained them with an oxide which is said he procured from Prussia. Bourgeois [of Colcomb-Bourgeois], an excellent chemist of Paris, likewise made some of great beauty; but the reds which have acquired the greatest celebrity are those prepared by M. Pannetier for Madame Jacquotot, and which shine in all their brilliancy in the masterworks of that celebrated artist.’⁶³ Pannetier also invented a special portable daylight-lamp for Girodet, to facilitate his habit of working late at night.⁶⁴

Pannetier died in 1859, the year that Guignet brought to light his own method for making the pigment, as was reported by Salvétat:

The trade in colours for fine painting provided, under the name of *vert émeraude*, a magnificent colour of a very solid green, it is hydrated chromium oxide, whose discovery goes back more than 25 years, but of which no method of preparation has been published up until now. M. Pannetier gave his secret to M. Binet, his laboratory assistant, who for a long time has taken advantage of it....⁶⁵

Pannetier initially sold it for six francs for 30 grammes, and Binet, when he took over its manufacture, made some thousands of francs out of the enterprise.⁶⁶

Barreswil’s account stresses the secrecy surrounding Pannetier’s green:

M. Guignet has succeeded in reproducing by a very simple procedure the beautiful emerald green colour which is known in the trade by the name of

Pannetier’s green, and whose preparation has been kept in the greatest secrecy. This magnificent colour has attracted the attention of chemists for a long time... What amazed the most with Pannetier’s emerald green, is that it is hydrated whereas it was known that the author obtained it through the dry method. As nothing up until now has emerged from M. Pannetier’s procedure,⁶⁷ there is nothing to say that Guignet’s green, which is identical, is made in the same manner, and the discovery belongs to M. Guignet just as legitimately as if M. Pannetier’s green had not existed. From the point of view of the user, there is only this difference, that there are two origins instead of one for the same product... The chemical composition of chromium oxide has been given by M. Guignet and confirmed by M. Salvétat. This chemist, before M. Guignet’s publication, was already on the track of Pannetier’s green which he had observed being produced when researching into boric acid and borates.⁶⁸

Guignet sold the rights of manufacture for his green to M. Scheurer-Kestner of Thann, who produced it on an industrial scale for the dyeing of cloth.⁶⁹ Salvétat’s account of 1859 states that hydrated chromium oxide was discovered by Pannetier more than twenty-five years previously. This again brings the date back to the early 1830s, but Pannetier was certainly producing the pigment in the 1820s, and made it available for sale at Colcomb-Bourgeois.

Acknowledgments

The author would like to thank the following people without whom this article could not have been written: David Bomford, with whom initial discussions took place in front of the paintings; Ashok Roy, Jo Kirby and Rachel Morrison, who both carried out scientific research and advised on the presentation of the material; and Christopher Riopelle and Michael Clarke, who read and commented on the manuscript.

Notes

- 1 A. Roquebert, ‘Quelques observations sur la technique de Corot’ in *Corot, un artiste et son temps. Actes des colloques organisés au Musée du Louvre par le Service Culturel les 1er et 2 mars 1996 à Paris et par l’Académie de France à Rome, Villa Medice, le 9 mars 1996 à Rome*, Paris and Rome 1998, pp. 73–97 and republished in a slightly reduced form in *Corot, Natureza, Emocion, Recuerdo*, Madrid/Ferrara, 2005–6.
- 2 See, for example, R. Woudhuysen-Keller, ‘Observations Concerning Corot’s Late Painting Technique’ in A. Burmester, C.H. Heilmann and M.F. Zimmermann, *Barbizon. Malerei der Natur – Natur der Malerei* (papers given at a symposium of 1996 in conjunction with the exhibition *Corot, Courbet und die Maler von Barbizon: “Les amis de la nature”*, Haus der Kunst, Munich), 1999, pp. 192–200, and P. Woudhuysen-Keller, J. Cuttle and Ch. Hurst, ‘Zwei Gemälde von Camille Corot. Gedanken zur Maltechnik und zur Restaurierung’.

- rierung', *Restaurio*, 1993, no. 3, pp. 306–15. *Barbizon. Malerei der Natur – Natur der Malerei* also contains articles on the technique of the Barbizon painters, for example A. Burmester and C. Denk, 'Comment ils inventaient ces verts chatoyants? Blau, Gelb, Grün und die Landschaftsmalerei von Barbizon', pp. 295–329, and A. Roy, 'Barbizon Painters: Tradition and Innovation in Artists' Materials', pp. 330–42.
- 3 *Collection Robaut. Notes, croquis, calques, photos, estampes*, 34 cartons, Bibliothèque Nationale, Paris, housed in the Département des Peintures, Musée du Louvre, Paris, and *Alfred Robaut, Documents sur Corot*, 3 vols, Bibliothèque Nationale, Paris, Yb.3.949 4to. See also Ph. Burty, 'Notice Biographique', preface to *Exposition de l'œuvre de Corot*, Ecole des Beaux-Arts, Paris 1875.
 - 4 The Gallery's collection is less representative of Corot's figure work, apart from one study, *Sketch of a Woman in a Bridal Dress*, and a further study, *Peasant Woman*, thought to be by a follower.
 - 5 See, for example, Roy 1999, (cited in note 2), and R. White, J. Pilc and J. Kirby, 'Analyses of Paint Media', *National Gallery Technical Bulletin*, 19, 1998, pp. 79–94.
 - 6 Burty 1875, quoted in P. Conisbee, S. Faunce, J. Strick with P. Galassi, *In the Light of Italy. Corot and Early Open-Air Painting*, exh. cat., National Gallery of Art, Washington, The Brooklyn Museum, The Saint Louis Art Museum, 1996–7, p. 103.
 - 7 See S. Constantin, *The Painters of the Barbizon Circle and Landscape Painting: Techniques and Working Methods*, unpublished PhD thesis, Courtauld Institute of Art, University of London, 2001, p. 164, for a discussion of Corot's grounds and the use of extenders. She states that the grounds covering Corot's canvases are characterised by a high proportion of extenders in comparison with those of other artists. This is probably due to the fact that he used a different supplier.
 - 8 Cobalt blue was discovered in 1803/4. It was manufactured soon after and was rapidly adopted by painters. See A. Roy, 'Cobalt Blue', *Artists' Pigments: A Handbook of Their History and Characteristics*, ed. B. Berrie, Vol. 4, Washington and London 2007, pp. 150–77, and for a discussion of other new pigments available in the nineteenth century see Roy 1999 (cited in note 2) and D. Bomford, J. Kirby, J. Leighton and A. Roy, *Art in the Making. Impressionism*, London 1990–1, pp. 51–75.
 - 9 See White, Pilc and Kirby 1998 (cited in note 5) for a full discussion of paint media especially pp. 82–83. See also J. Koller and U. Baumer, 'Die Bindemittel der Schule von Barbizon', *Barbizon. Malerei der Natur – Natur der Malerei*, 1999, pp. 343–69.
 - 10 Corot, Carnet 17, c.1855–60, R. 3054. Quoted in Roquebert 1998 (cited in note 1), p. 91.
 - 11 *Eléments de perspective pratique à l'usage des artistes*, Paris 1799–1800, p. 407. This advice was copied in further paintings manuals throughout the nineteenth century.
 - 12 P. Galassi, *Corot in Italy. Open-Air Painting and the Classical-Landscape Tradition*, New Haven and London 1991, pp. 170–2. He bases this dating both on the fact that the composition shows signs of experimentation, and on the assumption that it has no underdrawing, although in fact there is one. The atmosphere of the work certainly would fit in with a spring date.
 - 13 See T. Ashby, *The Aqueducts of Ancient Rome*, ed. I. A. Richmond, Oxford 1935, p. 232.
 - 14 See A. and R. Jullien, 'Corot dans les castelli Romani', *Gazette des Beaux-Arts*, 129, 1987, pp. 109–30, esp. pp. 112–13, for identification of the view. The Claudian Aqueduct was also painted by Corot in *Aqueduct in the Roman Campagna* (R74), Philadelphia Museum of Art, where the Via Appia Nuova is included in the view, and *Aqueduct in the Roman Campagna*, dated December 1825 (R96), location unknown, where he is looking at the arches from next to the tomb of Cecilia Metella.
 - 15 Bibliothèque Nationale de France, Cabinet des Estampes, Archives Robaut, 40Y b 3 949 I p. 36. Quoted in Roquebert 1998 (cited in note 1), p. 79.
 - 16 The author is grateful to Claire Bechu, Centre Historique des Archives Nationales, Paris, for this suggestion. Martin Davies took Sainte-Barbe to be the Collège Sainte-Barbe in Paris, but was not able to find mention of Panis in either J. Quicherat, *Histoire de Sainte-Barbe, Collège etc.*, Paris 1860/4, or in the *Almanach Royal* for that period. He is also not mentioned in E. Nouvel, *Le Collège Sainte-Barbe: la vie d'un collège parisien de Charles VII à nos jours*, Paris 1948. There is no mention of Panis among the college's archives in the Sorbonne, which date mostly from before the Revolution. The author is grateful to Jacqueline Artier, Conservateur du service du livre ancien, Bibliothèque de la Sorbonne, for checking this.
 - 17 Carnet 66, c.1825, R.3103, which contains the 'liste d'études prêtées à un grand nombre d'artistes dont les noms suivent'.
 - 18 Galassi 1991 (cited in note 12), p. 157.
 - 19 *Ibid.*, pp. 170–2.
 - 20 A. Roy notes this early use of the pigment in 'Monet's Palette in the Twentieth Century: Water-Lilies and Irises', *National Gallery Technical Bulletin*, 28, 2007, pp. 58–68, esp. p. 66 and note 35.
 - 21 In their analysis of small scenes dating from the 1820s and 1830s painted into the lid of Corot's painting box, E. Hermens et al. acknowledge that very little analysis of Corot's early work has been carried out. Their own analysis reveals the presence of Schweinfurt green (also a new pigment), but not viridian. See E. Hermens, A. Kwakernaak, J. van den Berg and M. Geldof, 'A Travel Experience: The Corot Painting Box', *Netherlands Technical Studies in Art*, 2002, pp. 104–21.
 - 22 L.N. Vauquelin, 'Second Memoir on the Metal Contained in the Red Lead of Siberia', *Philosophical Magazine*, I, 1798, pp. 361–7 and 'Mémoire sur la meilleure méthode pour decomposer le chromate de fer, obtenir l'oxydé de chrome, préparer l'acide chromique, et sur quelques combinaisons de ce dernier', *Annales de Chimie*, 1^{re} ser. 70, 1809, pp. 70–94. See R. Newman in E.W. Fitzhugh, ed., *Artists' Pigments. A Handbook of Their History and Characteristics*, Washington/Oxford 1997, pp. 273–93. Newman does not go into the question of the date of its introduction.
 - 23 A.H. Church, *The Chemistry of Paints and Painting*, London, 3rd edn, 1901, pp. 194–5. See also R.J. Gettens and G.L. Stout, *Painting Materials. A Short Encyclopedia*, New York 1942, pp. 173–4.
 - 24 Gettens and Stout 1942, *ibid.*, pp. 173–4.
 - 25 The reference in Arsenne is noted in Bomford et al. 1990–1 (cited in note 8), p. 219, and Burmester and Denk 1999 (cited in note 2), p. 298.
 - 26 L.-C. Arsenne, *Manuel du Peintre et du Sculpteur*, 2 vols, Paris 1833, II, p. 248. However, J.-E.-L. Mérimée, *De la peinture à huile*, Paris 1830, p. 190, only mentions the opaque variety of the green, not true viridian, which suggests that he was unaware of it.
 - 27 See Burmester and Denk 1999 (cited in note 2), p. 302.
 - 28 A. Robaut, *L'Oeuvre de Corot. Catalogue raisonné et illustré précédé de l'Histoire de Corot et de ses œuvres par Étienne Moreau-Nélaton, ornée de dessins et croquis originaux du maître*, 4 vols, Paris 1905, I, p. 24. See Burmester and Denk 1999 (cited in note 2), p. 307.
 - 29 Robaut 1905 (cited above), I, pp. 38ff. See Burmester and Denk 1999 (cited in note 2), p. 298.
 - 30 *Alfred Robaut, Documents sur Corot* (cited in note 3), Bibliothèque Nationale de France, Cabinet des Estampes, Yb3 949, II, p. 15. Quoted in Roquebert 1998 (cited in note 1), p. 90. While acknowledging that on occasion Corot did make use of certain greens, for example *vert Veronèse* and *vert émeraude*, Roquebert repeats this in her essay 'La technique de Corot' in Madrid/Ferrara 2005–6, pp. 57–71, French translation, pp. 343–7, Italian edition pp. 59–71, esp. pp. 66–7. In both essays she cites the findings of J.-P. Rioux, that Corot hardly ever used ready-made greens, backed up by Woudhuysen-Keller/Cuttle/Hurst 1993 (cited in note 2).
 - 31 Other, later paintings in the collection where viridian has been found are NG 6439, *Peasants under the Trees at Dawn*, and NG 6466, *The Oak in the Valley*, both of which are discussed below. At the same time he also created greens using a mixture of Prussian blue and chrome yellow, as in NG 2625, *The Leaning Tree Trunk*.
 - 32 E. Moreau-Nélaton, 'Histoire de Corot et ses Oeuvres', in Robaut, vol. I (cited in note 28), p. 78.
 - 33 *Villeneuve-lès-Avignon. Vue prise d'Avignon* (R.330), *Villeneuve-lès-Avignon. Vue prise dans le jardin de l'hospice* (R.331), both Paris, Musée du Louvre; *Etudes de cypress* (R.334), location unknown; *Villeneuve-lès-Avignon* (R.329), Indianapolis Museum of Art; *Villeneuve-lès-Avignon, Fort Saint-André* (R.333), The Hague, Mesdag Museum.
 - 34 *View of Villeneuve-lès-Avignon and Fort Saint André* (Musée des Beaux-Arts de Reims), formerly attributed to Corot but now given to Prosper Marilhat who was working with Corot at the time, also features a sketchy foreground of thinly painted reddish brown and a sunlit town in the middle distance.
 - 35 For a description of these changes see F. Leeman and H. Pennock, *Museum Mesdag. Catalogue of Paintings and Drawings*, Zwolle 1997, p. 138, no. 70.

- 36 See Roquebert 1998 (cited in note 1), pp. 84–5, on this, and the authors she quotes.
- 37 *Athenaeum*, 15 February 1896, p. 223.
- 38 See, for example, the description of Morvan by Augustus Hare in his guide to south-eastern France of 1890: ‘the wild district of *Morvan* (Montagne noire), which has a Celtic population, weaving the ancient saga, and speaking a patois incomprehensible to the inhabitants of the plain...’ A.J.C. Hare, *South-Eastern France*, London 1890, p. 74, quoted in M. Clarke, *Corot and the Art of Landscape*, London 1991, pp. 65–6.
- 39 Her attitude anticipates that of the woman gathering from the tree in Corot’s *Souvenir de Mortefontaine* of 1864 (Paris, Musée du Louvre). This is noted by M. Geiger, ‘Corot et la Bourgogne’, *Mémoire de l’Académie des Sciences, Arts et Belles-Lettres de Dijon*, vol. 122, 1973–5, pp. 329–37, esp. p. 334.
- 40 See P. Berte-Langereau, ‘Jean-Baptiste Camille Corot dans le Morvan’, *Ca-mosine. Les Annales du Nivernais*, no. 74, Nevers 1993, pp. 3–33, esp. pp. 8–9 and 17. He also cites the following related painting, of 1831: *Cottage and Mill beside a Stream (Morvan or Auvergne)* (R293) (Property of the Greentree Foundation, from the collection of Mr and Mrs John Hay Whitney, Sotheby’s, New York, 5 May 2004, lot 4). The author is grateful to Berte-Langereau for further clarifying the view of NG 6439 in correspondence.
- 41 Exceptions to this are *View of Lormes* (R421), jointly owned by the Metropolitan Museum of Art and Mrs Walter Mendelsohn, see A. Schoeller and J. Dieterle, *Corot. Premier Supplément à l’Oeuvre de Corot par A. Robaut et Moreau-Nélaton*, Paris 1948, no. 16, and *Morvan Landscape* (R878), Strasbourg, Musée des Beaux-Arts. The panoramic view and long format of these paintings are reminiscent of such paintings as *Avignon from the West*.
- 42 See H. Toussaint, G. Monnier and M. Servot, *Hommage à Corot*, exh. cat., Orangerie des Tuileries, Paris 1975, p. 49, who quote Corot’s remark that Claude ‘regardait le soleil en face.’
- 43 See Roy 1999 (cited in note 2), p. 340. *Avignon from the West* also has this mixture of vermilion and cobalt blue mixed with white at the horizon.
- 44 Noted by J. Leighton, ‘“Bienheureux les paysagistes!” Landschaftsmalerei unter freiem Himmel’, *Corot, Courbet und die Maler von Barbizon. ‘Les amis de la nature’*, exh. cat., Haus der Kunst, Munich 1996, pp. 23–31, esp. pp. 26–7, and by Roy 1999 (cited in note 2), p. 333. In fact, as Leighton notes, Robaut had already surmised that the study had been painted in six sittings. *Collection Robaut. Notes, croquis, calques, photos, estampes*, 34 cartons, Bibliothèque Nationale, Paris, housed in the Département des Peintures, Musée du Louvre, Paris (cited in note 3), vol. 3, plate 157.
- 45 Information from G. Matheron, *Corot à Ville-d’Avray*, exh. cat., Musée d’Avray, Ville d’Avray 1987, no. 39.
- 46 Infrared reflectography was carried out using the digital infrared scanning camera OSIRIS which contains an indium gallium arsenide (InGaAs) sensor. For further details about the camera see www.opusinstruments.com/index.php
- 47 See G. de Wallens, ‘Corot as a copyist at the Louvre, and new evidence on his technique’, *Burlington Magazine*, November 2001, pp. 685–6.
- 48 *Alfred Robaut, Documents sur Corot*, Cabinet des Estampes, Bibliothèque Nationale, Paris (cited in note 3), Yb 3, 949, folio 25. Quoted in G. Bazin, *Figures de Corot*, exh. cat. Musée du Louvre, Paris 1962, p. 102, no. 41.
- 49 In the dossier for the painting, there are two reports by Tudor-Hart on the painting, the first gives a history of its condition and treatment prior to 1919, when he acquired it, the second gives a report of his own treatment once the painting was in his possession. See also A.A. MacGregor, *Percyval Tudor-Hart (1873-1954), portrait of an artist*, London 1961, especially chapter XIII which is on the Corot painting itself.
- 50 See White, Pilc and Kirby 1998 (cited in note 5), p. 90.
- 51 Alexis-Eugène Détrimont (born 1825) was a picture dealer who also dealt in canvases. He started out with a small framing business in the rue Notre-Dame-des-Champs in Paris before setting up in the rue Lafitte. From 1865 to 1870 he was operating at 33 rue Lafitte, and in 1871 he moved to no. 27. See Roquebert 1998 (cited in note 1), p. 95, note 14.
- 52 See, for example, *The Promenade in the Parc des Lions at Port-Marly* (R2127, Madrid, Museo Thyssen-Bornemisza), which is a portrait of around 1872 of the children of G. Rodrigues-Henriquez in their father’s property, the Parc des Lions at Port-Marly, where Corot stayed in August 1872. It shows the same concern with figures, one on a donkey, the other in a light dress, against dark trees, and the light trunks of silver birches against dark forest. It was exhibited in Paris 1962, no. 80, where the painting is linked to both *Monsieur Pivot* and *Madame Stumpf and her Daughter* of 1872 (R2125, Washington, National Gallery of Art), no. 81 in exhibition, as pastoral scenes. R. Pickvance, *Corot. El Parque de los Leones en Port Marly*, 1872, exh. cat., Museo Thyssen-Bornemisza, Madrid 2001, included a further work which can be added to the group, *Children in the Wood*, 1872 (R2128), private collection, where two children, one in a white and the other in a grey dress, stand against thick forest, where the odd silver birch trunk is picked out.
- 53 M. Hours, *Jean-Baptiste-Camille Corot*, first edn Paris 1979, New York 1984, p. 111.
- 54 L. Delteil, *Le Peintre-graveur illustré*, Paris 1906–30, vol. V, 1910, no. 42 (*Le Petit Cavalier sous Bois*), writes: ‘Corot treated a number of times this same subject: in painting, and again in drawing on glass (see no. 46) [Le Grand Cavalier].’ M. Melot, *L’Oeuvre gravé de Boudin, Corot, Daubigny, Dupré, Jongkind, Millet, Théodore Rousseau*, Paris 1978, no. 42. A. Matthias links the Washington painting with the two prints. See *Zeichnungen des Lichts*, exh. cat. *Clichés-verre von Corot, Daubigny und anderen aus deutschen Sammlungen*, Kunstsammlungen Dresden, Kupferstichkabinett, 2007, p. 45.
- 55 Letter in the Cabinet des Estampes, Bibliothèque Nationale, Paris. Quoted in Claude Bouret, *Corot. Le génie du trait. Estampes et dessins*, exh. cat., Bibliothèque Nationale de France, Paris 1996, p. 35.
- 56 See M. Pantazzi, V. Pomarède and G. Tinterow, *Jean-Baptiste-Camille Corot 1796–1875*, exh. cat., Grand Palais, Paris, National Gallery of Canada, Ottawa, Metropolitan Museum of Art, New York 1996–7, p. 265.
- 57 Carnet B, fol. 3, c. 1865–70, R3118. There is a similar statement in Carnet 17, 1855–60, R3054. Moreau-Nélaton quotes them both in Robaut 1905, vol. I, cited in note 28, pp. 199–200.
- 58 See for example Woudhuysen-Keller 1999 (cited in note 2).
- 59 R2018, height 46cm, length 60cm. This version was exhibited in *Exposition Corot 1796–1875*, Galerie Schmit, Paris, May to June 1971, no. 54. The relationship between Corot’s and Robaut’s work at this time is of some interest. See, for example, Corot’s *Souvenir d’Arleux du Nord* (R2189), which was painted for Robaut. Robaut, to help Corot, sketched the canvas with a drawing after one of his own sketches made in the area of Arras in 1871. Corot painted his work over this preparation.
- 60 See Pantazzi, Pomarède and Tinterow 1996–7 (cited in note 56), p. 266.
- 61 White, Pilc and Kirby 1998 (cited in note 5), p. 80.
- 62 See A. Lajoix, ‘Marie-Victoire Jaquotot, 1772–1855. Peintre sur porcelaine’, *Société de l’Histoire de l’art français. Archives de l’art français*, tome XXXVIII, 2006.
- 63 M. Salvétat, ‘On the red pigments employed in painting upon Porcelain’, *Annales de Chimie et de Physique*, November 1849, in W. Francis, *The Chemical Gazette, or Journal of Practical Chemistry*, vol. VIII, 1850, p. 53.
- 64 See *Oeuvres posthumes de Girodet-Trioson peintre d’histoire. Suivies de sa correspondance précédées d’une notice historique et mises en ordre par P.-A. Coupin*, Paris 1829, I, pp. xlii–xliv.
- 65 ‘Sur le vert de chrome, par M. Salvétat’, *Répertoire de Chimie appliquée. Compte rendu des applications de la Chimie en France et à l’étranger*, par M. Ch. Barreswil, Paris 1859, p. 168. In M. Barreswil and A. Girard, *Dictionnaire de Chimie Industrielle*, vol. II, 1^{re} partie, Paris 1862, pp. 93–4, Binet is called a ‘potier de terre’, or potter or ceramicist. He also appears in the Bottin for Paris for 1858 under colourmen at Sedain 25.
- 66 Ch. Laboulaye, *Annales du Conservatoire Impérial des arts et métiers*, vol. III, Paris, 1862, pp. 801–2.
- 67 Note in the text: ‘M. Pannetier is the most disinterested man. If his secret has not been put in the public domain, it is that the venerable author wanted it to be the livelihood of an entire family. M. Pannetier could have taken out a patent; the event has proved that he has been better inspired in not doing so; moreover supposing that his patent had been respected, it would have been in the public domain for perhaps 10 years. M. Pannetier was, as M. Guimet [Jean-Baptiste Guimet, inventor of synthetic ultramarine] had done, assured that his secret for preparing emerald green couldn’t be lost either to science, or to industry.’
- 68 ‘Sur une variété de l’oxyde de chrome, par M. Guignet’, *Répertoire de Chimie appliquée*. Paris 1859 (cited in note 65), pp. 198–200.
- 69 Ch.-Er. Guignet, *Les Couleurs*, Paris 1889, p. 188.

Appendix II: The Materials used by Corot

Ashok Roy and Rachel Morrison

Painting, title and date	Support/dimensions	Ground	Sky	Greens
<i>The Roman Campagna, with the Claudian Aqueduct</i> (NG 3285); 1826	Paper, marouflaged to canvas; 22.3–22.8 × 34 cm	PbW	PbW + CoB ² ; PbW (clouds)	foliage, right-hand side.: orange-red earths, PbW, black, viridian. dull green foreground: viridian, earths, HgS, yellow lake(?)
<i>Avignon from the West</i> (NG 3237); 1836	Canvas; 34 × 73.2 cm	PbW + alumina	PbW + CoB ² + trs red	olive-green foreground: charcoal black, red and yellow earths, PbW green underlayers: CoB, PbW, HgS, earths
<i>Peasants under the Trees at Dawn</i> (NG 6439); c.1840–5	Canvas; 27.3 × 38.8 cm	PbW + calcium carbonate	PbW + trs CoB ²	mid-green, left edge: PbW, CoB, viridian, red lake, HgS foliage of tree: ⁵ 'chrome green', ⁷ red lake, yellow earth, HgS, CoB
<i>Monsieur Pivot on Horseback</i> (NG 3816); c.1853	Canvas; 39.2 × 30.3 cm	PbW + calcium carbonate + yellow earth	PbW + CoB	yellow-green underlayer, right: PbW, yellow earth, brown earth, ⁸ organic yellow(?), CoB, black blue-green surface, right: Prussian blue, PbW, yellow earth, black deep saturated green, right: Prussian blue, PbW, yellow earth, black
<i>The Oak in the Valley</i> (NG 6466); 1871	Canvas; 39.8 × 52.8 cm	PbW + calcium carbonate + silicate minerals	PbW + CoB ²	olive-green highlights on tree: EG, translucent yellow-brown, earths dull grey-green foreground: ¹⁰ PbW, red and yellow earths, viridian
<i>Landscape at Arleux-du-Nord</i> (NG 6531); 1871–4	Canvas; 48.2 × 58.1 cm	PbW + white extenders	PbW + CoB	grey-green foliage: PbW, black, Prussian blue, red and yellow earths

Key

PbW (lead white); CoB (cobalt blue; cobalt aluminate); viridian (viridian); hydrated chromium (III) oxide; HgS (vermilion; mercuric sulphide); EG (emerald green; copper acetoarsenite).

P/S (palmitate/stearate ratio); A/P (azelate/palmitate ratio); A/Sub (azelate/suberate ratio)

Notes

- The palette noted is based on the examination and analysis of samples and may not include all pigments present in each painting for lack of a comprehensive range of samples.
- Cobalt blue identified by microspectrophotometry in visible spectrum (by transmittance) in addition to conventional optical microscopy.
- Analytical result previously published in R. White, J. Pile and J. Kirby, 'Analyses of Paint Media', *National Gallery Technical Bulletin*, 19, 1998, pp. 90–1.
- The identification of walnut oil is based on the palmitate/stearate ratio obtained by GC–MS analysis which is intermediate between those expected

Other areas	Palette ¹	Medium: sample	Medium: result
black bushes, right-hand side.: fine black, orange earths, viridian pinkish ruins: HgS, PbW, black mauve sky: CoB, HgS, PbW	lead white, CoB, earths, yellow lake(?), vermilion, viridian, black	1. Blue sky, slight impasto 2. Green impasto of bank, lower right 3. Black shadow underneath trees, near right edge 4. White impasto of cloud, upper left 5. Green-brown, near left edge	1. Heat-bodied linseed / walnut oil + minor addition of pine resin, P/S 2.0 ³ 2. Heat-bodied linseed oil + trace of pine resin + trace of mastic resin ³ 3. Heat-bodied or partially heat-bodied walnut oil + minor addition of pinaceae resin, possibly fir balsam, P/S 3.7, A/P 0.7, A/Sub 3.8 ⁴ 4. Linseed oil + minor addition of pinaceae resin, possibly fir balsam, P/S 1.2, A/P 0.8, A/Sub 7.4 5. Heat-bodied poppyseed oil + minor addition of pinaceae resin, possibly fir balsam, P/S 5.3, A/P 1.2, A/Sub 3.0
blue bushes: ⁵ CoB, HgS, PbW grey-blue trees: CoB, HgS, PbW, red lake ⁶	lead white, CoB, artificial ultramarine, earths, vermilion, red lake, charcoal black	1. Blue sky, near top edge 2. Blue-green trees near centre, middle distance 3. Blue-green bush, near right edge 4. Olive-green foreground, near right edge	1. Heat-bodied walnut oil ³ 2. Heat-bodied linseed oil, P/S 1.7, A/P 1.9, A/Sub 2.9 3. Heat-bodied linseed oil, P/S 1.1, A/P 3.1, A/Sub 2.7 4. Heat-bodied linseed oil, P/S 1.2, A/P 2.8, A/Sub 2.6
grey-brown foreground: PbW, CoB, earths, black mauve grey, middle distance: CoB, HgS, PbW, black	lead white, CoB, earths, vermilion, red lake, viridian, 'chrome green', black	1. Cream-white of sky, left 2. Brown of building, near left edge 3. Pale blue sky, upper left edge	1. Heat-bodied linseed oil, P/S 1.8, A/P 2.1, A/Sub 2.9 2. Heat-bodied linseed oil, P/S 1.8, A/P 0.9, A/Sub 3.1 3. Heat-bodied linseed oil, P/S 1.6, A/P 1.3, A/Sub 2.9
M. Pivot's trousers: PbW	lead white, CoB, Prussian blue, translucent brown earth, earths, organic yellow or lake, black	1. Greyish-blue underlayer, below green background, right edge at damage 2. Thin unpigmented layer, above sample 3 3. Dark green background paint over sample 1, after removal of varnish and 'oiling out' layer	1. Heat-bodied walnut oil + minor addition of pine resin ³ 2. Drying oil ^{3,9} 3. Heat-bodied walnut oil + a little pine resin ³
greyish mauve, middle distance: PbW, black, red lake, yellow earth, viridian (trs)	lead white, CoB, earths, yellow lake(?), red lake, viridian, emerald green, black	1. Green grass of foreground, bottom edge turnover 2. Ground layer beneath sample 1 3. White impasto of cloud	1. Walnut oil, P/S 2.5, A/P 1.3 ¹¹ 2. Linseed oil, P/S 1.5, A/P 1.2, A/Sub 5.8 ¹¹ 3. Heat-bodied walnut oil, P/S 2.8, A/P 1.2, A/Sub 3.2 ¹¹
warm grey tree-trunk: PbW, black, red lake, earths (trs)	lead white, cobalt blue, Prussian blue, earths, red lake, black	1. Brighter green of water, bottom edge 2. Dull green water 3. White impasto of cloud	1. Heat-bodied walnut oil + trace of copaiba-like resin ^{3,12} 2. Linseed oil + trace of pine resin ³ 3. Heat-bodied poppyseed oil + minor addition of pine resin ³

for linseed and poppyseed oil. However, both linseed and poppyseed oil have been identified in other samples from this painting and therefore the results could also be interpreted as indicating a mixture of these oils. This should be taken into consideration for other samples where walnut oil has been identified, especially where mixtures of pigments are present.

5 Starch grains (as an extender) were identified in the paint layer by FTIR microscopy.

6 Alumina substrate by EDX.

7 'Chrome green' is a manufactured mixture of chrome yellow and Prussian blue.

8 This pigment is present as moderately large translucent crystalline particles.

9 This sample was too small for GC-MS, but FTIR microscopy indicated it to be a drying oil, probably representing an 'oiling-out' layer.

10 Starch grains (as an extender) were identified in the paint layer by microscopy.

11 Since the publication of White et al. 1998 (cited in note 3) the data for this sample has been re-examined. The result published here supersedes all previously published material.

12 It is possible that this brighter green was added later: compare with the duller green of sample 2.