

## The Palette and Pigments of a Thirteenth-Century Oxford Illuminator



New College Library, Oxford, MS 322, f. 113r—Psalm 109

Among the manifold library treasures of New College, Oxford, the thirteenth-century psalter MS 322 occupies a special place both on account of its magnificence and of its historical significance.<sup>1</sup> Of grand dimensions (350x250 mm), the volume is lavishly decorated with historiated, figural and decorated initials not to mention elaborate border bars and line fillers. The illumination has long been associated with the person of William de Brailes, a documented professional illuminator based in Oxford who was active from the 1230s to the 1250s and who, moreover, has left two signed depictions of himself, one in a book of hours now in London, the

<sup>1</sup> General description: Nigel Morgan, *Early Gothic Manuscripts I, 1190–1250* (London: Harvey Miller, 1982), no. 74.

other within an illumination of the Last Judgement now in Cambridge.<sup>2</sup> MS 322 is the largest and most luxurious of the sixteen volumes or parts thereof in which his hand has been recognised. At the same time, divergences of style and workmanship within its artwork indicate that it was produced as a collaborative endeavour, de Brailes being assisted by colleagues and/or apprentices with similar idioms—exactly as one would expect in a busy commercial environment. The identification of de Brailes’s oeuvre and the business of distinguishing autograph work from the contributions of collaborators rest on scholarly connoisseurship. To this can now be added some new hard data, namely identification of the pigments that were used in his masterpiece, MS 322.

MS 322 was recently examined *in situ* by Team Pigment from the universities of Durham and Northumbria,<sup>3</sup> using Raman spectroscopy, fibre optic reflectance spectroscopy, and multi-spectral imaging. These non-invasive, non-destructive techniques, operated in accordance with stringent conservation protocols, provide specific identifications for mineral and manufactured pigments, and generic characterisations for organic dyes.

The palette of MS 322 is dominated by reds (included red-orange), pinks, blues and gold; such other colours as appear (green, purple and brown) do so far more sparingly. Nevertheless, as the paints for each of these colours could be made with different degrees of suffusion (i.e. with more or less pigment in them) and might be applied in contrasting densities via differing numbers of coats, and since further tonal variations could be wrought via admixtures of other colours, not to mention of black and white, the range of hues is considerable. Thus to take one case, *minium* was the basic material for the orange reds, being deployed in the grand historiated initial at Psalm 109, for instance, for the side panels of the letter ‘d’ itself, the dragon head at its top, as for God’s cushion, parts of his throne, and the lining of Christ’s loin cloth; however, it was darkened—be it for shading or to create surface pattern—with vermilion and then articulated with highlights of white lead, occasional details being added in carbon black.

The inks, pigments, and dyes from which the palette was realised are as follows. Red—vermilion; mixtures of vermilion and red lead. Red-brown—organic; variable mixtures. Pink—organic (plant- rather than insect-based). Orange—red lead (*minium*). Green—copper (a verdigris). Blue—lapis lazuli; azurite; mixtures of lapis and azurite. Purple—organic (plant- rather than insect-based). Brown—organic; variable mixtures. Black—carbon (in the decoration); gallo-tannic (for text). White—white lead. Gold—leaf (applied over a substrate tinted with ochre; burnished and modestly tooled on fol. 7r, burnished but untooled elsewhere). These colour stuffs were all widely used in northern Europe during the thirteenth century and will probably have been available commercially in a university town like Oxford with a thriving book trade. While we cannot exclude the possibility that William de Brailes and his collaborators may sometimes have manufactured certain pigments themselves, the processing that they undertook on a regular basis is likely to have been limited to the tempering (grinding with water and/or another medium) necessary to turn these colorants into paint of the desired suffusion, covering strength, and viscosity. Since different substances required different degrees of grinding to realise their optimum hue and consistency, this was an important craft skill in itself. Correspondingly, whoever was responsible for manufacturing the pigments did a good job: the red lead, for instance, is entirely pure—there is no trace of massicot, a lead (II) oxide that could be generated if the necessary roasting was less than perfect.

The colour here that merits particular attention is blue, since MS 322 represents an interesting stage within a slow but sure transition from one mineral to another, a process that extended from the twelfth century to the fifteenth. For most of the twelfth century, lapis lazuli

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<sup>2</sup> Respectively British Library, Add. MS 49999 and Cambridge, Fitzwilliam Museum, MS 330.iii: Morgan, *Early Gothic Manuscripts*, nos. 73 and 72. MS 322 seems first to have been linked to de Brailes in [Sydney Cockerell], *Burlington Fine Arts Club, Exhibition of Illuminated Manuscripts* (London: Burlington Fine Arts Club, 1908), no. 59.

<sup>3</sup> The investigation was accomplished by Prof. Andrew Beeby, Miss Louise Garner, and the present writer, all from Durham, and by Dr Catherine Nicholson from Northumbria.





New College Library, Oxford, MS 322, f. 7r—actual colour

had been the standard blue of English scribes and illuminators, as likely to be deployed for minor initials in modest library volumes as for the major decoration of high-grade service books. During the first quarter of the thirteenth century azurite appears intermittently alongside it, becoming more prominent during the second quarter of the century when it occasionally replaced lapis altogether. Now the blue used in MS 322 for text, for verse initials, and for line-fillers is generally lapis lazuli alone, while the major decoration features both azurite and lapis—in different combinations. Thus the blue within the grand initial for Psalm 51 is predominantly azurite; that in the initial for Psalm 109 is azurite with some lapis; while the grand design for Psalm 1 (the most opulently decorated page of the whole book) features the two minerals in differing proportions. Here the brighter blues of the panels bearing golden lettering, as also that of the ground behind



the sprig at the very top of the Tree of Jesse, are wholly or predominantly lapis lazuli, whereas the duskier blues of the many draperies and of the tubes that define the grand initial 'B' are azurite-lapis mixtures, their lighter zones richer in the former, their darker areas having more of the latter. False-colour imaging (reprocessing the multi-spectral data to highlight the contrast between colours that look similar to the eye but are in fact derived from different pigments or mixtures) renders this easier to see: lapis lazuli now becomes pink, while azurite remains blue. Consequently, the blue of the lettering panels (rich in lapis lazuli) appears pink, while most of that within the initial 'B' (confected from varying mixtures of azurite and lapis) becomes different shades of purple.



New College Library, Oxford, MS 322, f. 7r—false colour

Although there is no unequivocal documentation for the cost of these two mineral blues in thirteenth-century England since the same term *azure* was used for both, there can be no doubt that lapis lazuli (available only from Afghanistan and requiring complicated processing to extract its blue chromophores) will have been more expensive than azurite (of which there were plentiful deposits within Europe, and which was easier and less time-consuming to turn into pigment). Nevertheless, decisions concerning which of them was used where in MS 322 seem to have been made not on economic but rather on aesthetic and practical grounds—which material was better suited to writing and to drawing fine lines, which would give the optimum blue for a particular area of decoration, and how contrasting blue tones might best be engineered.

To date only one other product of William de Brailes's workshop has had its pigments identified scientifically—a set of pictorial leaves that are presumed to have prefaced a now-lost psalter.<sup>4</sup> These include one colour, one hue, and a metal that do not feature in MS 322—namely a yellow worked up from an organic dye plus gypsum, white lead and red lead; a dark green confected from azurite, one or more earth(s), lead white and an organic dye; and silver leaf—while conversely they lack one of the pigments present in MS 322: lapis lazuli. Collectively, therefore, these pictorial leaves and MS 322 demonstrate the variations in pigment choice possible within a single workshop between one project and another. Understanding the reasons for such variations presupposes a comprehensive knowledge of the colorants employed by William de Brailes and his associates across his career as a whole.

Few thirteenth-century English manuscripts have had their pigments reliably identified by modern scientific techniques, and it is wholly appropriate that the magnificent MS 322 should be one of the first to be so examined. However, it is only as the body of sound data slowly but surely expands that it will be possible to understand in more detail how typical (or otherwise) are the colorants of this particular book in relation to the rest of de Brailes's oeuvre, to other books made in contemporary Oxford, and to thirteenth-century manuscripts more generally.

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<sup>4</sup> Cambridge, Fitzwilliam Museum, MS 330: Stella Panayotova, ed., *The Art and Science of Illuminated Manuscripts: A Handbook* (London: Harvey Miller, 2020), case study 18 (pp. 252–9).