The Getty Peacock Fresco: Unraveling Its History Through Technical and Historical Investigations

Kenneth Lapatin, Marie Svoboda, Sierra Schiano, Monica Ganio, and Karen Trentelman

Introduction

On 30 October 1968, at an extraordinary meeting presided over by J. Paul Getty himself, the Trustees of the J. Paul Getty Museum voted unanimously to acquire a mosaic representing the taking of Briseis from Achilles (an episode from the Trojan War described in Homer's *Iliad*) and a "Roman fresco from Pompei depicting a peacock standing on a fence" (fig. 1).[1] The meeting was notable for two reasons: first, it was held via telephone, rather than in person; second, the acquisition of these objects represented Getty's first purchase of antiquities from the London-based dealer Spink & Son, Ltd, after a hiatus of more than a decade.

J. Paul Getty had a long relationship with the seller. He bought many antiquities (and pseudo-antiquities) from them in the late 1940s and early to middle 1950s. Spink & Son also served as the go-between in Getty's purchase of the Lansdowne Herakles in 1951, which he subsequently donated to his museum.[2] We do not know when Mr. Getty, who had resided at Sutton Place in Surrey since 1960, first saw the fresco, nor what representations about its origin Spink may have made to him. Also unknown is when precisely the fresco arrived in Southern California, and it does not appear to have been displayed publicly until the opening of the Getty Villa on 16 January 1974, when it was likely installed with other frescoed panels in one of the cubicula off the atrium (today designated Galleries 101C–F).[3]

In preparation for the opening of the new museum (now called the Getty Villa Museum), the fresco was published in the catalog authored by architectural historian Norman Neuerburg and curator of classical art at the Museum of Fine Arts, Boston, Cornelius Vermeule, *Catalogue of the Ancient Art in the J. Paul Getty Museum: The Larger Statuary, Wall Paintings and Mosaics* (1973).[4] There it is described as follows:

Getty Research Journal, no. 21 (2026): 5–24

FIG. 1. — Wall fragment with a peacock, pigment and plaster, 40 × 24.8 × 3.2 cm. Los Angeles, J. Paul Getty Museum, Villa collection, 68.AG.13.

108. Fragment of a Wall Painting with a Peacock
About 70 A.D.
40 × 24.8 cm (15 3/4 × 9 3/4 in.)
Provenance: Purchased by the Museum in 1968 (68AG13)

An architectural frame of dark red contains a peacock standing on a dark red "union jack" fence. The bird is blue and black on the breast and neck, while the body and top-knot are red; the beak and legs are brown. A pink shield with red ribbons hangs above from behind the drooping lintel. The piece is composed of several fragments and is set in cement, but there are no areas of repaint. It closely resembles a detail from the upper register of a room in the House of Siricus in Pompeii,[i] the only difference being that the fence is in three sections rather than two. In fact, the similarity is close enough to suggest the same painter. The rather odd tonality of the colors, which seem chemically changed, resembles a circumstance occurring in Pompeii and Herculaneum; this also suggests a provenance from the same zone. At any rate the fragment belongs to the so-called fourth style and should date around 70 A.D.

i. R. A. Briggs, *Pompeian Decorations,* London, 1911, unnumbered plate. No trace of this painting now remains.

As will be seen, the reference to Briggs's publication is a significant clue in the story of the peacock fresco. Robert Alexander Briggs (1858–1916) was a British architect who traveled to the Continent in the 1880s but did not publish his observations of paintings preserved at Pompeii until 1911: "Owing to the absence of any process that could faithfully reproduce the drawings, no book has hitherto been published, which shows with fidelity the beautiful and gorgeous colouring of the Mural Decorations at Pompeii."[5] The aim of his publication was "to illustrate, at a moderate cost, what the Pompeian Decorations are really like."[6] His color rendering of the peacock fresco is one of two illustrations in his book of his own watercolor reproductions of wall paintings from the House of Siricus (VII.1.47), which was excavated between 1851 and 1872 (fig. 2). By the time of his publication in 1911, Briggs notes, "The friezes have become very faint in color, having been exposed so long to the air."[7] Earlier, nineteenth-century archaeologists had noted, but did not illustrate, frescoes with birds, including a peacock, in two rooms near one of the entrances to the house on the Vicolo del Lupanare.[8] Autopsy in November 2022 by Kenneth Lapatin confirmed Briggs's observation that nothing remains of the peacock wall painting at Pompeii.

Peacocks are frequently depicted in ancient Roman art in various guises.[9] Similarly, Roman lattice ("Union Jack") balustrades, shields, and suspended fillets are also common in ancient Roman art. However, there are no published parallels for a peacock standing on a Union Jack balustrade other than the now-lost fresco from the

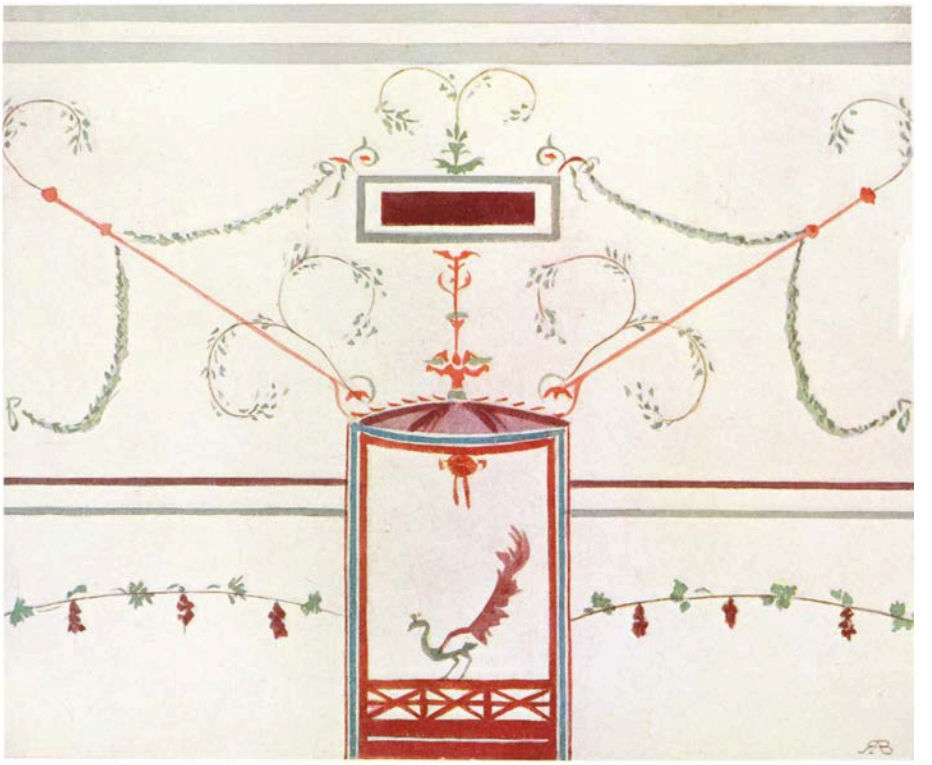


FIG. 2. — Robert Alexander Briggs (British, 1858–1916). Reproduction of a watercolor of a lost ancient Roman fresco from the House of Siricus, Pompeii, from Robert Alexander Briggs, *Pompeian Decorations* (London: B. T. Batsford, 1911), unnumbered plate. Los Angeles, Getty Research Institute, 84-B30541.

House of Siricus.[10] In any case, for more than half a century, the Getty Peacock has gone largely unremarked upon by scholars but has been a perennial favorite of visitors. It has appeared on the cover of a blank, spiral-bound yearly planner retailed at the Museum store in 1981 titled the *J. Paul Getty Museum Appointment Calendar*, on the cover and front jacket flap of Matthew Kneale's book *Rome: A History in Seven Sackings* (2017), in the *L.A. Zoo Review* (1985/1986) and a Latin textbook (2020), and in a few other publications intended for the general public.[11] It has also featured prominently on postcards, shopping bags, coasters, refrigerator magnets, pendants, and scarves sold in the Getty Museum Store over many years, and even as a graphic on the exterior of the shop during the course of our research (figs. 3a, 3b).

The closure of the Getty Villa during the pandemic provided an opportunity to survey the collection of frescoes and catalog the use of Egyptian Blue, a synthetically produced pigment commonly found in Roman wall paintings. Egyptian Blue can be easily detected using visible-induced infrared luminescence (VIL) imaging, a method in which the diagnostic response of certain pigments is captured using an infrared camera.[12] Eleven of the twelve wall paintings on display exhibited the characteristic luminescence of Egyptian Blue, but the peacock, with its blue head, neck, and breast,

FIG. 3A. — Merchandise featuring the Getty Peacock (magnet, postcard, appointment calendar, and necklace) for sale at the Getty Museum Store, 1981–2022.

FIG. 3B. — The Getty Museum Store at the Villa featuring window graphics of the Getty Peacock, May 2022.

did not. This surprising result inspired a technical study into the peacock fresco by a multidisciplinary team to characterize the pigments and materials used in the creation of the painting and identify the source of the blue color. This study, employing nondestructive and minimally invasive technical imaging and scientific analyses, coupled with an in-depth historical investigation, has led to a new interpretation and a better understanding of the Getty Peacock.

The Fresco: Pigments and Other Material Considerations

The Getty Peacock is composed of eleven joined fresco fragments set in concrete (see fig. 1). Prior to its acquisition, the perimeter was filled with a commercial spackling compound that was painted black in the 1990s. Today the fresco is enclosed within a rectangular aluminum frame that normalizes its irregular shape. The painting has a very thin, smooth, off-white painted calcitic intonaco layer.[13] Thus, it is not a true fresco, which would consist of paint applied directly on a smooth, wet lime-plaster surface where the pigments are bound into the wet or setting plaster.

The peacock itself (painted in red, blue, green, and black) as well as the balustrade, shield, ribbons, and border that enclose the scene (painted in shades of red), are superficially applied, indicating a fresco-secco technique in which the pigments are mixed with an organic binder or limewater painted on top of a dried lime-plaster surface. However, for simplicity, throughout this paper, the Getty Peacock will be referred to as either a fresco or wall painting. The execution of the work is very painterly, with visible, deliberate brush strokes, unlike many other Roman frescoes characterized by a sketchier application of paint. Gray surface accretions are visible, mostly along the breaks and at the edges, and the entire front surface is glossy with visible brush strokes suggesting that it has received a modern coating.

The Painted Surface

To identify the materials in the peacock wall painting and help elucidate how and when it was created, a suite of analytical methods was employed. Noninvasive imaging techniques—ultraviolet-induced visible fluorescence (UVF), infrared reflectography (IRR), X-radiography, and macro X-ray fluorescence (MA-XRF) scanning—provided information about the distribution of materials and guided the choice of sampling sites. Analyses of small amounts of removed material—by Raman spectroscopy, gas chromatography–mass spectrometry (GC–MS), Fourier transform-infrared (FT-IR) spectroscopy, X-ray diffraction (XRD), and scanning electron microscopy with energy dispersive X-ray spectroscopic (SEM-EDS) analysis—provided more specific identifications of the pigments and the other materials present.

Under UV radiation, the object displayed an overall pale-blue fluorescence with additional intensity in areas with accretions and within break joins, possibly indicating the presence of synthetic materials such as an adhesive and/or a coating (fig. 4).[14] Analysis of a sample from one of the highly fluorescing areas identified the presence of pentaerythritol and phthalic anhydride, suggesting the use of a drying oil alkyd resin.[15] Invented in the 1950s, this synthetic resin was commonly used in the production of paints and water-resistant materials.[16] It was also used in the second half of the twentieth century to consolidate, saturate, and protect the surfaces of wall paintings.[17]

IRR revealed the use of sketch lines and, more puzzling, highlighted the presence of pounce marks, which are also visible to the naked eye throughout the composition, particularly along the edges of the red border and the ribbons hanging from the shield at the top, the beams of the Roman lattice balustrade (fig. 5), and the peacock itself.[18] Such

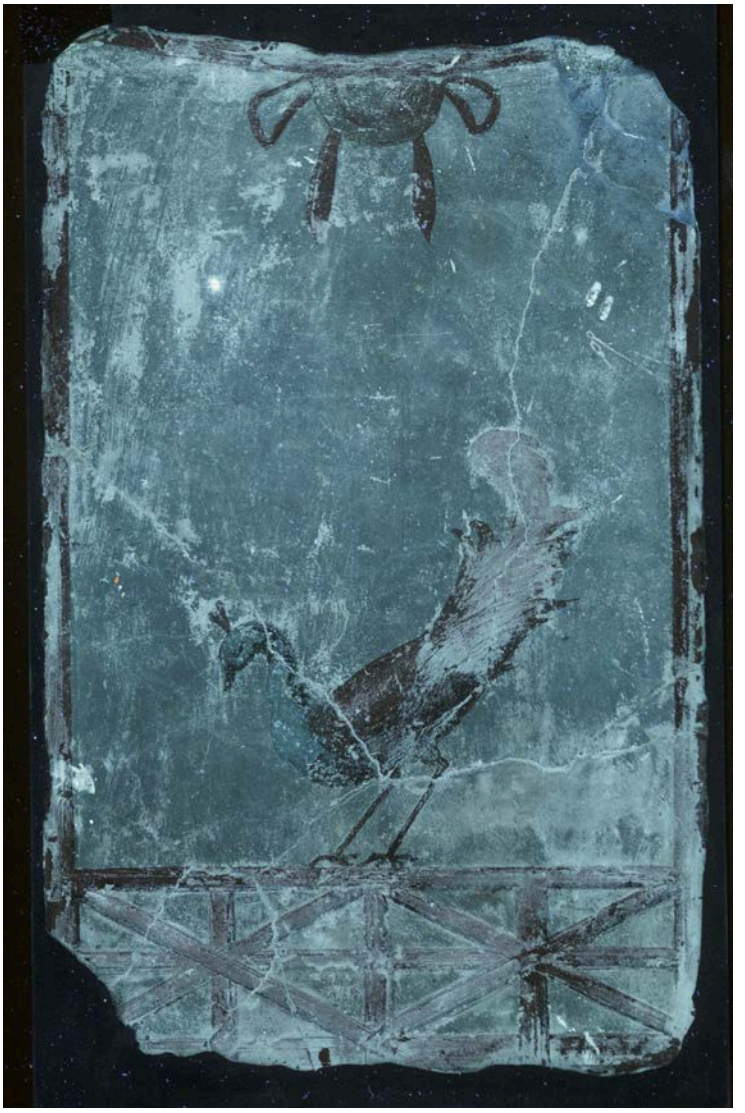


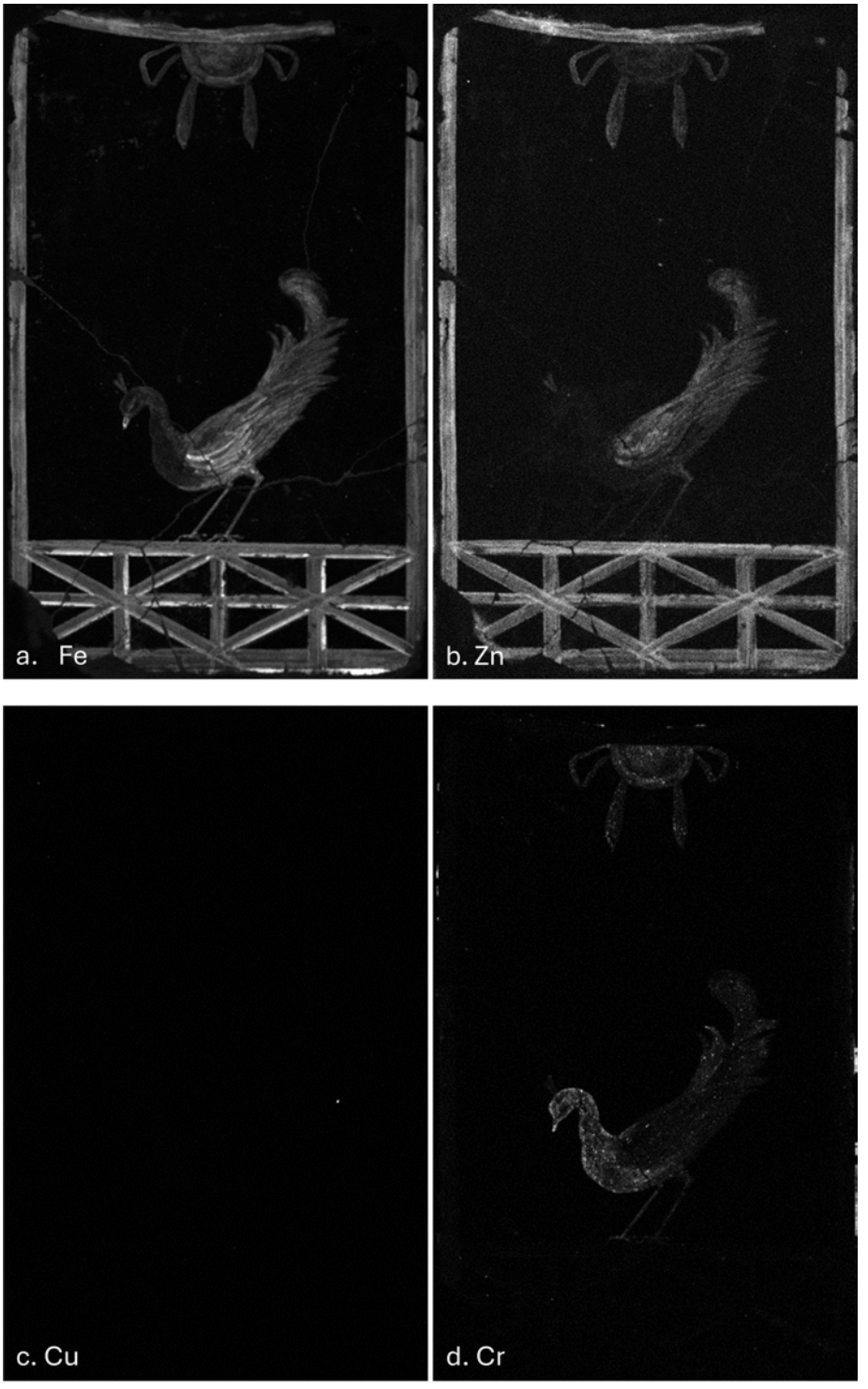
FIG. 4. — Ultraviolet-induced visible fluorescence (UVF) image of the Getty Peacock.

pounce marks are evidence of *spolvero,* a technique in which a preparatory drawing on paper (or similar substrate) is transferred onto the final surface by dusting (*spolverare*) chalk or carbon black through the pounce holes in a preparatory drawing that are punched along the contours of its features. This technique was documented as early as the tenth century in China and first described in Europe around 1390.[19] During the Renaissance, it was a common method for transferring sketches to frescoes perfected by artists such as Michelangelo Buonarroti, Cennino Cennini, and Raffaello Sanzio.[20] The presence of pounce marks, a technique otherwise unattested in ancient Roman painting, on an artifact thought to date to circa 70 CE challenged our understanding of the fresco.

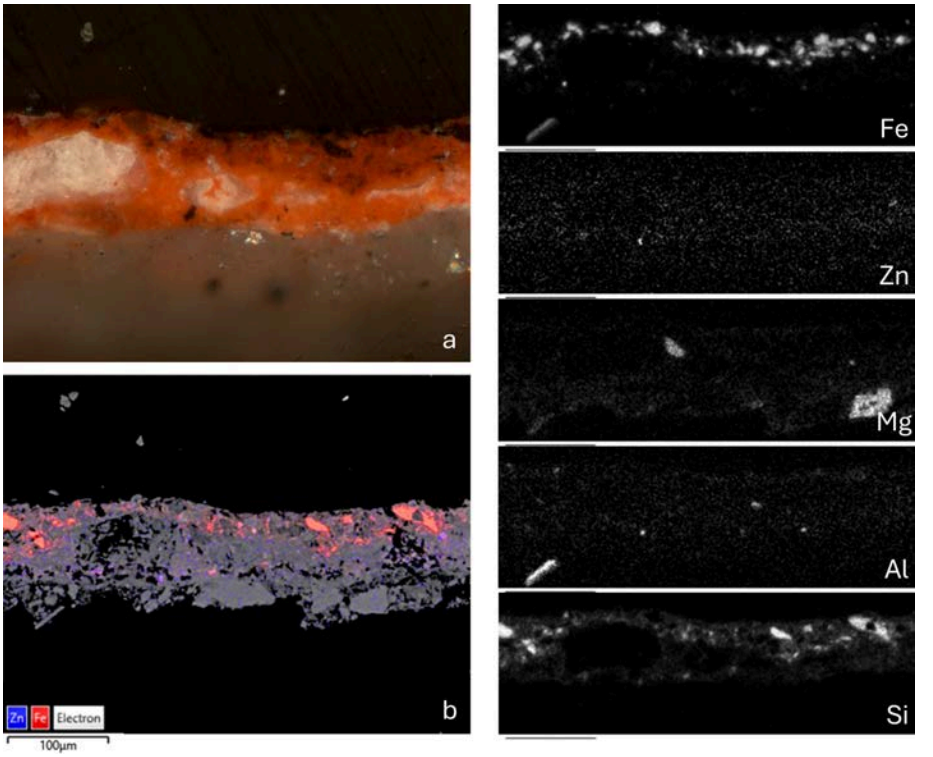
FIG. 5. — Detail of the Roman lattice balustrade of the Getty Peacock showing pounce marks and pronounced, superficial brushwork.

Spatially resolved MA-XRF scanning produced distribution maps of individual chemical elements across the surface of the object.[21] Most significant for the understanding of the palette used to paint the work were the maps of iron (Fe), zinc (Zn), copper (Cu), and chromium (Cr) (figs. 6a–d). The iron map shows a strong correlation to the many shades of red observed on the surface, suggesting the use of iron-earth pigments (see fig. 6a). These red areas also were found to contain variable amounts of impurities, most notably zinc (see fig. 6b). A cross section of a sample from the balustrade shows the painting's stratigraphy: a superficial (organic) coating, under which is a dark-red pigment layer, then a light-red pigment layer, followed by the intonaco (figs. 7a, 7b). SEM-EDS analysis confirmed that both the dark- and light-red layers contain iron, and Raman analysis identified the presence of hematite (Fe_2O_3) in both layers.[22] The dark-red layer did not show the presence of zinc. By contrast, the light-red layer contained grains rich in zinc along with iron, sodium, and oxygen (as shown by SEM-EDS). This suggests the use of two different iron-earth pigments, one with zinc impurities and one without. Zinc oxide, employed in the nineteenth-century pigment zinc white, if present, would have been detected by Raman spectroscopy or SEM-EDS. No indication of zinc white—in other words, grains containing only zinc and oxygen with no impurities—was found.

Egyptian Blue and azurite, both copper based, are the two most common blue pigments found in antiquity and are likely the only ones used in ancient Roman wall paintings.[23] Initial VIL imaging indicated that Egyptian Blue was not used in the peacock, and the absence of copper in these areas as evidenced by MA-XRF scans (see fig. 6c) suggests that azurite was also not the source of the blue. Surprisingly, the blue in the peacock's body was found to contain chromium, which was also found in the



FIGS. 6A–D. — MA-XRF element-distribution maps of the Getty Peacock indicating the presence of (a) iron (Fe), (b) zinc (Zn), (c) copper (Cu), and (d) chromium (Cr).

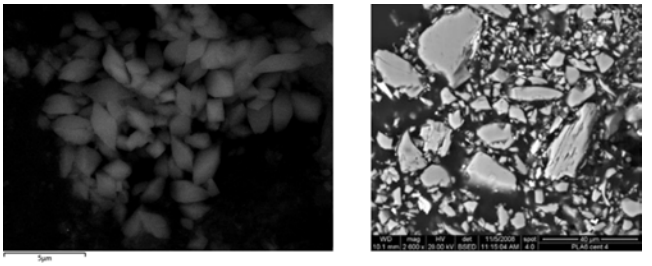


FIGS. 7A, 7B. — Images of a cross-sectioned sample from the balustrade of the Getty Peacock under (a) visible light and (b) backscattered electron (BSE) imaging overlaid with energy dispersive X-ray spectroscopy (SEM-EDS) element-distribution maps of iron (Fe, in red) and zinc (Zn, in blue); at right are shown the individual SEM-EDS element-distribution maps of iron, zinc, magnesium (Mg), aluminum (Al), and silicon (Si).

FIGS. 8A, 8B. — Detail of the Getty Peacock showing (a) MA-XRF element-distribution map of chromium (Cr) showing sparse globular aggregates of a chromium-containing material throughout the peacock's head and neck, and (b) visible image in which green pigment can be seen extending beyond the tip of the peacock's beak, corresponding to a bright spot in the Cr map.

red feathers, with a higher concentration in the tail (see fig. 6d). The distribution of chromium is not homogenous (see, for comparison, the iron map, fig. 6a) but is present in sparse globular aggregates, or dots (figs. 8a, 8b).

Examination of the surface under magnification revealed that the areas painted blue contained a mixture of blue and green particles. The use of a pure green pigment



FIGS 9A, 9B. — Backscattered electron (BSE) image of (a) a sample of blue pigment taken from the peacock's breast showing uniformly small grains with rounded edges, characteristic of synthetically produced ultramarine pigment; and (b) BSE image of natural ultramarine pigment extracted from lapis lazuli from Afghanistan, showing the variety of sizes and sharp edges characteristic of a ground, natural-mineral pigment, from M. Favaro et al., "Characterization of Lapis Lazuli and Corresponding Purified Pigments for a Provenance Study of Ultramarine Pigments Used in Works of Art," *Analytical and Bioanalytical Chemistry* 402, no. 6 (2012): 2202.

was also observed as a discrete underlayer in areas such as the peacock's beak (see fig. 8b). Traces of chromium have been identified in natural green earth minerals (celadonite or glauconite) sourced from Italy and identified on ancient wall paintings.[24] However, Raman analysis, conducted directly on the painting surface and on removed microsamples, identified the presence of chrome oxide green (Cr_2O_3), a modern pigment first introduced into the artist's palette in 1862.[25]

Raman analysis also identified the presence of lazurite, the mineral responsible for the blue color in lapis lazuli.[26] Lapis, and the corresponding pigment ultramarine blue, is an uncommon finding on an ancient Roman wall painting, where the use of lapis lazuli in its ground form is not attested.[27] SEM imaging of a sample of blue pigment from the peacock's breast revealed uniformly small (approximately 1–2 micrometers [μm] in diameter), particles with rounded edges characteristic of a synthetically produced pigment (figs. 9a, 9b). First manufactured in 1826, synthetic ultramarine blue is chemically identical to natural lazurite.[28] The uniform shape of the blue particles found in the peacock, together with the absence of accessory minerals typically found in natural lapis, strongly suggests the use of synthetic ultramarine blue. While the presence of pounce marks and the notably refined quality of the painting cast doubt on the ancient origin of the Getty Peacock, the identification of two modern pigments—chrome oxide green and synthetic ultramarine blue—provides definitive evidence that the painting, at least, is not ancient in origin.

The Underlying Structure

Typically, paintings removed from walls are reinforced with a concrete backing, and the peacock fresco is no different. X-radiographs show the presence of chicken wire with a mesh width of approximately 1 1/4 inches embedded within the concrete backing (fig. 10). Invented in 1844, chicken wire is commonly used not only for containing poultry but also for providing structural support in construction materials, such as ferro-cement, a type of reinforced concrete. To further investigate the concrete backing,

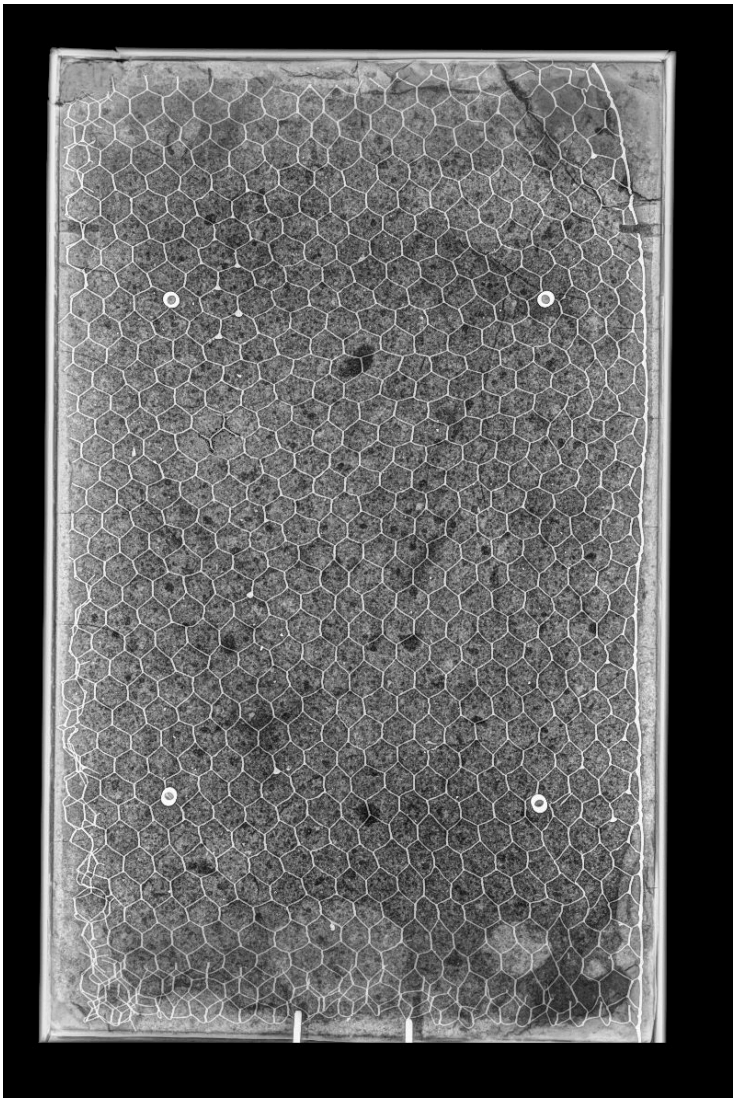


FIG. 10. — X-radiograph of the Getty Peacock revealing the presence of chicken wire within.

a sample was extracted for petrographic and compositional analysis.[29] In brief, the findings indicate a composite mixture of aggregate particles containing oxides of silicon, aluminum, calcium, and iron in a carbonated Portland cement–based matrix.[30] Portland cement was invented and patented in 1824 in Leeds, England, and soon became the most common ingredient in the production of concrete.[31] Composed of crystalline hydraulic calcium silicates, Portland cement served as a strong and durable binder, making it ideal for construction applications. By the twentieth century its use had spread worldwide. Although not an unusual discovery, the identification of Portland cement with embedded chicken wire helps provide a timeline for when the fresco was backed.

Taken together, the visual and material investigations into the Getty Peacock constitute a strong case for the painting having been created no earlier than the mid-nineteenth century as a wall painting that was subsequently removed and backed for individual display. This sets the stage for the last phase of our collaborative investigation, tracing the history of the object back to its source.

If Not Ancient, What?

As stated above, no parallels to the Getty Peacock have been found elsewhere in wall paintings from Campania apart from the now-lost painting of a peacock in the House of Siricus mentioned by nineteenth-century scholars and reproduced by Briggs, whose publication of 1911, *Pompeian Decorations*, was intended to provide sources of inspiration for contemporary architects. The author, however, was widely known not for classical forms but for his designs of English country homes. Nicknamed "Bungalow" Briggs, he published five editions of *Bungalows and Country Residences* between 1891 and 1901 containing designs for aspirational and built structures. While most of Briggs's designs in these volumes follow the Arts and Crafts style popular at the turn of the century, one particular design for a "free Greek style" bungalow stands out (fig. 11). Here, it is perhaps significant that in the preface to *Pompeian Decorations*, Briggs states: "The trend of Architectural thought is now towards the Greco-Roman style, and the archaic Greek forms, treated in a free way, are engaging the attention of many Architects and Decorators of the present day, to whom, it is hoped, the examples in this volume should prove sources of inspiration."[32] With its unconventional Doric colonnade, Briggs's bungalow appears to be inspired by the Greco-Roman decorative motifs he observed in Pompeii. The drawing room illustrated in plate XV from the first edition of *Bungalows and Country Residences*, moreover, includes Ionic columns, hanging Roman lamps, and a shelf modeled after a Pompeian lararium (fig. 12).[33] Most notable in the context of our investigation, however, is the pattern lining the top of the drawing room wall, which features a peacock depicted within a bordered frame standing on a Roman lattice balustrade; its composition is startlingly similar to the lost peacock from the House of Siricus and to the Getty wall painting itself.

Briggs's designs strongly support the hypothesis that the peacock fresco was created by or for the English architect. Two publications from the early twentieth century announced the construction of a house in 1912 following Briggs's plans for a "free Greek style" bungalow on Furze Hill in Banstead/Burgh Heath in Surrey, England, the same county where J. Paul Getty would reside from 1959 until the end of his life.[34] Photographs of the exterior of the structure, aptly named "Doric House," appear in Charles Massin's publication *Villas Normandes & Anglaises* (Norman and English villas) of 1913, demonstrating that the facade and floorplan of the realized building were faithful to Briggs's designs (fig. 13).[35] Unfortunately, only one photograph of the interior of the home has been found to date, in Massin's book *Intérieurs Anglais* (English interiors) from 1927. It depicts an entrance hall with Ionic columns, suggesting that the "free Greek

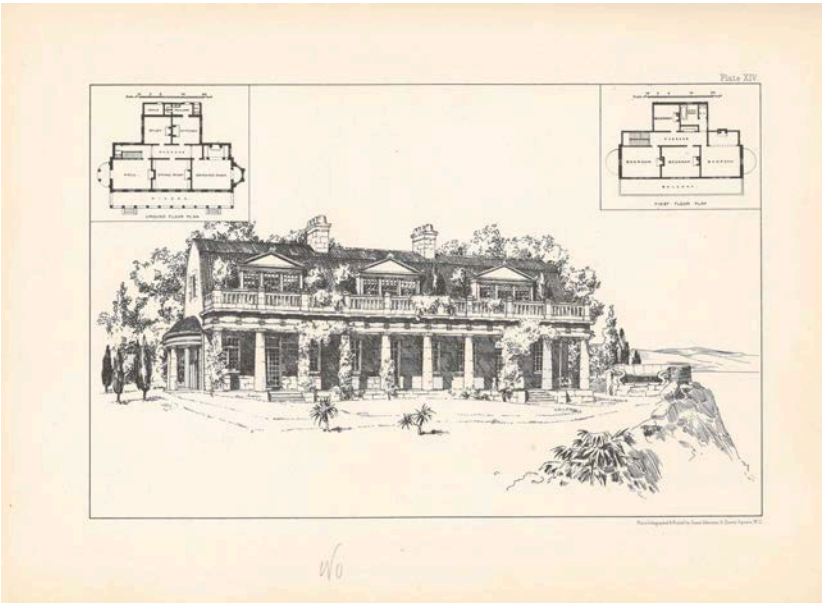


FIG. 11. — Robert Alexander Briggs (British, 1858–1916). Exterior of a proposed "free Greek style" bungalow, from R. A. Briggs, *Bungalows and Country Residences,* 1st ed. (London: B. T. Batsford, 1891), pl. XIV. Photolithograph by James Akerman. Los Angeles, Getty Research Institute, 2625-511.

FIG. 12. — Robert Alexander Briggs (British 1858–1916). Drawing room of a proposed "free Greek style" bungalow, from R. A. Briggs, *Bungalows and Country Residences,* 1st ed. (London: B. T. Batsford, 1891), plate XV. Photolithograph by James Akerman. Los Angeles, Getty Research Institute, 2625-511.

style" decoration likely continued in other rooms throughout the building.[36] Sadly, no photographic documentation of the adornment of the drawing room has yet to be located.

FIG. 13. — "Doric House," Furze Hill, Surrey, constructed in 1912, from Charles Massin, *Villas Normandes & Anglaises* (Paris: s.n., 1913), pl. 2.

Ordnance Surveys of Surrey from 1911 to 1955 confirm, through its distinctive, irregular shape, that the structure on Furze Hill, often labeled in the documentation as Doric House, matched Briggs's floorplans.[37] The building was also recorded in an aerial photo of Furze Hill in 1947.[38] Local land registries, district records, and electoral registers confirm that the house was built for Lester Bellingham, who is listed as a subscriber to Briggs's *Pompeian Decorations*.[39] Bellingham likely commissioned the house from Briggs in anticipation and celebration of his marriage to Gladys Muriel Selby in 1912 and their honeymoon in Italy.[40]

Although photographic proof is lacking, Briggs's designs in the first four editions of *Bungalows and Country Residences* suggest that the drawing room of Doric House in Surrey was painted with a series of peacocks standing on Roman lattices (see fig. 12). It seems likely that one of these peacocks was at a later date removed and accidentally or intentionally mistaken for an authentic Roman fresco and sold to J. Paul Getty. The presence of pounce marks on the Getty fragment further supports the hypothesis that it originated in Doric House, as this technique was frequently employed to reproduce repeated images and decorative motifs.

Perhaps the answer to how the Getty fresco could have traveled from a country home in Surrey to Spink & Son in London and, finally, to an art museum in California lies in the later history of Doric House. By 1919, the original owners, the Bellinghams, had moved out, and the house was purchased by the nearby St. Monica's School for

Girls.[41] Records suggest that Doric House was used as a residential space for the school's teachers, domestic staff, and visitors, including early feminist and pacifist Vera Brittain.[42]

In 1939, Legal and General Assurance Society Ltd. acquired St. Monica's School and converted the campus buildings to rehouse their London office.[43] While this move was intended to escape the aerial bombardment of London during World War II, an oil-based incendiary bomb landed just north of Doric House in 1940, reportedly causing no serious damage.[44] Legal and General Assurance Society appear to have used Doric House to accommodate its staff; local resident David Goodger, the son of two Legal and General employees, attested to living in the bungalow as a child from 1951 to 1965.[45] Although he did not recall any peacock wall paintings, Goodger revealed that Doric House had been stripped out and converted into two flats, one upstairs and one downstairs. In 1973, Legal and General conveyed the land where Doric House stood to House Developments Ltd. By 1976, the bungalow had been entirely demolished, and several new homes were built in its place on the nostalgically named Doric Drive.[46]

If a peacock wall painting matching Briggs's design in *Bungalows and Country Residences* was part of the original decoration of Doric House, it had to have been removed from the building before 1968 in order to be the same peacock fresco sold to J. Paul Getty by Spink & Son. Renovations and redesigns resulting in the removal of the peacock fresco could have occurred at any point in the house's history, perhaps owing to undocumented damage from the 1940 bombing or during Legal and General's acquisition and the building's subsequent conversion into two separate flats. Until additional evidence emerges, the precise circumstances remain unknown.

The evidence so far compiled presents a compelling story: Inspired by his travels in the late nineteenth century, Briggs designed a bungalow decorated with Pompeian motifs from the House of Siricus, which he had carefully recorded in watercolor. In the early twentieth century, Briggs had the opportunity to make his vision a reality for a young couple who shared his appreciation for antiquity. As the whimsical Doric House aged, one of its peacocks was removed and misidentified or misrepresented as a genuine antiquity. It eventually traveled across the Atlantic to its current home in the Getty Villa, where its status as an ancient Roman artifact stood unquestioned for decades.

In 2006, in conjunction with the reopening of the Getty Villa after a major renovation, the Getty Peacock was given its own stop on a new gallery audio guide intended for families.[47] Opening with mellifluous flutes and punctuated by squawking birds, the script describes some of the various contexts in which peacocks appeared in ancient Roman society. Our recent investigations, employing modern imaging technologies, however, have demonstrated that the Getty fresco can no longer be considered reliable evidence of ancient Roman painting. In any case, just as the ancient Romans depicted peacocks on the walls of their homes to invoke the high culture of ancient Persia (as well as Juno, the Queen of the Gods), late Victorians evidently drew upon the same imagery, invoking ancient Roman luxury to advance their own cultural aspirations.

Kenneth Lapatin is curator of antiquities at the J. Paul Getty Museum.

Marie Svoboda is conservator of antiquities at the J. Paul Getty Museum.

Sierra Schiano is an educator at the Los Angeles County Museum of Art.

Monica Ganio is associate scientist at the Getty Conservation Institute.

Karen Trentelman is senior scientist at the Getty Conservation Institute.

Notes

The authors of this study are grateful to Mark Abbe, M. Arnold, Will Austin, Judith Barr, Hilary Becker, Edward Bottoms, Rob Briggs, Julian Brooks, Nicole Budrovich, David Carson, Pia Chamberlain, John Clarke, James Crouch, Michelle Da Silva, Mike Eden, Rhona Elstone, John Fidler, Susanne Gänsicke, Regina Gee, Kiernan Graves, Arlen Heginbotham, Sarah Lepinski, Irene Machariah, Joy Mazurek, John McInally, Fiona Mann, Devi Ormond, Christiana Payne, Leslie Rainer, David Saunders, Jeffrey Spier, Miranda Stead, Jeanne Marie Teutonico, Simeon Wilkie, Lewis Wood, and Gabriel Zuchtriegel for generously providing access, information, and insights at various points in their investigations.

1. Minutes of the meeting are housed in the files of the Department of the Registrar of the J. Paul Getty Museum. Mosaic floor with Achilles and Briseis, Roman, possibly Antioch, Syria (present-day Antakya, Turkey), 100–300 CE, stone mosaic and glass tesserae, J. Paul Getty Museum, 68.AH.12, https://www.getty.edu/art/collection/object/103SPQ; and Homer, *The Iliad,* 1.327–48.

2. Statue of Hercules (Lansdowne Herakles), Roman, ca. 125 CE, marble, J. Paul Getty Museum, 70.AA.109, https://www.getty.edu/art/collection/object/103QSP.

3. *The J. Paul Getty Museum*, visitor guide, 1974, 11. On the masthead, the guide states: "This is a temporary guide for the assistance of visitors during the period immediately after the opening of the new Museum." Los Angeles, Getty Research Institute, 87-B7598.

4. Cornelius Vermeule and Norman Neuerburg, *Catalogue of the Ancient Art in the J. Paul Getty Museum: The Larger Statuary, Wall Paintings and Mosaics* (J. Paul Getty Museum, 1973), 50, no. 108.

5. Robert Alexander Briggs, preface to *Pompeian Decorations* (B. T. Batsford, 1911), n.p.

6. Briggs, preface to *Pompeian Decorations*, n.p.

7. "Two Friezes," text preceding two unnumbered plates from the House of Siricus, in Briggs, *Pompeian Decorations*, n.p.

8. These rooms are alternately numbered 3, 5 and 2, 11. See Fausto Niccolini and Felice Niccolini, *Le case ed i monumenti di Pompei, disegnati et descritti,* vol. 1 (Naples, 1854), 2: "Sono nel mezzo taluni simboli delle principali Deità, il pavone sacro a Giunone, l'aquila ed il globo di Giove, la cerva con la faretra di Diana, un grifo rimpetto alla lira d'Apollo, la mistica cista ed il sistro d'Iside presso una sfinge, l'uccello di Minerva, ecc." (In the middle are some symbols of the principal deities, the peacock sacred to Juno, the eagle and the globe of Jupiter, the doe with the quiver of Diana, a griffin in front of the lyre of Apollo, the mystical cista and the sistrum of Isis near a sphinx, the bird of Minerva, etc.) Translation of the quotation from the Italian by the present authors; and Johannes Overbeck, *Pompeji in seinen Gebäuden, Alterthümern und Kunstwerken* (Leipzig, 1875), 285–86: "das auf weißben Wänden mit leichten Ornamenten und kleinen Landschaften und mit einer interessanten Folge von Götterattributen (Adler, Blitz und globus für Zeus, Pfau und Wollkorb für Hera, Greif und Kithara für Apollon u. s. w.) decorirt ist." (which is decorated on white walls with light ornaments and small landscapes and with an interesting sequence of attributes of the gods [eagle, lightning and globe for Zeus, peacock and wool basket for Hera, griffin and kithara for Apollo, etc.].) Translation of the quotation from the German by the present authors. Very similar text appears in Johannes Overbeck, *Pompeji in seinen Gebäuden, Alterthümern und Kunstwerke*, 4th ed. (Leipzig, 1884), 322–23.

9. For peacocks in ancient art and thought, see, for example, J. M. C. Toynbee, *Animals in*

Roman Life and Art (Cornell University Press, 1973), esp. 250–53; John Pollard, *Birds in Greek Life and Myth* (Thames & Hudson, 1977), esp. 91–93; and W. Geoffrey Arnott, *Birds in the Ancient World from A to Z* (Routledge, 2007), 342–45, s.vv. "Tahōs, Taōs, Taōn."

10. Peacocks depicted in profile with upward curving tails do, however, appear perched on silver basins and a thin vegetal garland in the House of the Vettii at Pompeii (VI.15.1).

11. See the Bibliography section of the object page for Wall fragment with a peacock, Los Angeles, J. Paul Getty Museum, 68.AG.13, https://www.getty.edu/art/collection/object/103SPR?tab=bibliography.

12. Ruth Siddall, "Not a Day Without a Line Drawn: Pigments and Painting Techniques of Roman Artists," *infocus Magazine,* June 2006, 18–23, 24; and Giovanni Verri, "The Spatial Characterization of Egyptian Blue, Han Blue and Han Purple by Photo-Induced Luminescence Digital Imaging," *Analytical and Bioanalytical Chemistry* 394 (2009): 1011–21.

13. Calcite was identified by X-ray diffraction (XRD); no other components were detected. XRD patterns were collected using a Rigaku MiniFlex 600 benchtop X-ray diffractometer equipped with a copper (Cu) tube operating at 40 kilovolts (kV)/15 milliamps (mA), with a 0.03-millimeter (mm) nickel (Ni) filter, and a D/teX Ultra2 silicon strip detector. Randomly oriented powder was scanned in spin mode from 2° to 80° 2Θ, with a 0.01° 2Θ step size and counting time of 2 degrees per second (deg/s). Data analysis was carried out using Rigaku PDXL 2 software and Profex. See Nicola Doebelin and Reinhard Kleeberg, "Profex: A Graphical User Interface for the Rietveld Refinement Program BGMN," *Journal of Applied Crystallography* 48, no. 5 (2015): 1573–80.

14. UVF imaging captures diagnostic responses of materials when excited by UV radiation, allowing pigments to be characterized and ancient or modern surface interventions to be revealed. Imaging was performed using a modified Canon 80D 24.2-megapixel camera with UV-VIS-IR functionality, equipped with a Zeiss Milvus 50 mm macro lens and optical filters (Max Max CCI and 918) along with a Kodak 2E gel filter, and a Wildfire Long Throw Series ultraviolet source (365 nanometers [nm]). Coatings can mask the fluorescence response from the pictorial layer, thus interfering with the observation of any characteristic emissions associated with ancient materials, such as madder lake or lime plaster.

15. Analysis was carried out using an Agilent 7890A/5975C GC-MS system equipped with a thermal separation probe (TSP) and a ZebronTM ZB-5HT Inferno column (30 m × 0.25 mm × 0.10 µm) from Phenomenex. FT-IR spectroscopy was conducted using a Bruker Hyperion 3000 FT-IR microscope.

16. Kass Peter and Zeno W. Wicks, "Alkyd Resins," US Patent 2,577,770, 11 December 1951, https://patents.google.com/patent/US2577770A/en. Harriet A. L. Standeven, *House Paints, 1900–1960: History and Use* (Getty Conservation Institute, 2011), 4–5, 72, 76, 121–22.

17. Shuya Wei et al., "Scientific Investigation of the Materials in a Chinese Ming Dynasty Wall Painting," *International Journal of Conservation Science* 1, no. 2 (2010): 108; and Kirsten Travers et al., "Pemulen Case Study: Holy Innocents Mural Project," *WAAC Newsletter* 32, no. 3 (2010): 13.

18. IRR imaging can reveal the presence of underdrawings produced with infrared-absorbing materials. IRR images were created using a modified Canon 80D 24.2-megapixel camera with UV-VIS-IR functionality, a Zeiss Milvus 50 mm macro lens, and an 830 nm filter. See Molly Faries, "Techniques and Applications—Analytical Capabilities of Infrared Reflectography: An Art Historian's Perspective," in National Academy of Sciences, *Scientific Examination of Art: Modern Techniques in Conservation and Analysis* (National Academies Press, 2005), 87–88.

19. Sarah E. Fraser, "Regimes of Production: The Use of Pounces in Temple Construction," *Orientations*, November 1996, 60; and Kim Beil, "In Pursuit of the Hole," *Aeon,* 7 Jan 2022, https://aeon.co/essays/the-history-of-holes-tells-a-story-of-power-and-potential.

20. Carmen Bambach Cappel, "A Substitute Cartoon for Raphael's *Disputa," Master Drawings* 30, no. 1 (1992): 11; Carmen Bambach Cappel, "Michelangelo's Cartoon for the *Crucifixion of St. Peter* Reconsidered," *Master Drawings* 25, no. 2 (1987): 135; and Cennino d'Andrea Cennini, *The Craftsman's Handbook: "Il Libro dell'Arte,"* trans. Daniel V. Thompson Jr., 2nd. ed. (Dover, 1954), 87.

21. MA-XRF spectroscopy was performed using a Bruker M6 Jetstream spectrometer equipped with a 30 W rhodium (Rh) tube and polycapillary focusing optics. The scans were carried out using the following parameters: 530 micrometers (µm) spot size, 530 µm step size, and 30 milliseconds (ms) dwell time per pixel. The X-ray tube was operated at 50 kV and 600 microamps (µA). Spectra were collected over a 40 kiloelectron volts (keV) energy range and 130

kilocounts per second (kcps) throughput. The raw map data were calibrated, fit, and mosaicked using PyMca and Datamuncher software suites. See V. A. Solé et al., "A Multiplatform Code for the Analysis of Energy-Dispersive X-Ray Fluorescence Spectra," *Spectrochimica Acta Part B: Atomic Spectroscopy* 62, no. 1 (2007): 62, 63–68; M. Alfeld and K. Janssens, "Strategies for Processing Mega-Pixel X-Ray Fluorescence Hyperspectral Data: A Case Study on a Version of Caravaggio's Painting *Supper at Emmaus*," *Journal of Analytical Atomic Spectrometry* 30, no. 3 (2015): 30, 777–89; and T. Wolff et al., "A New Fundamental Parameter Based Calibration Procedure for Micro X-Ray Fluorescence Spectrometers," *Spectrochimica Acta Part B: Atomic Spectroscopy* 66, no. 2 (2011), 66, 170–78.

22. Raman spectroscopy was performed using a Renishaw InVia Raman microscope using 785 nm laser excitation and a Leica 50× objective lens. Laser power and other collection parameters varied between measurements to optimize the signal while avoiding sample degradation.

23. Hamdallah Bearat, "Quelle est la gamme exacte des pigments romains? Confrontation des resultats d'analyse et des textes de Vitruve et de Pline," in *Roman Wall Painting: Materials Techniques, Analysis and Conservation*, ed. H. Bearat (Fribourg: Institute of Mineralogy and Petrography, 1997), 24; and Jose Luise Perez-Rodriguez et al., "Green Pigments of Roman Mural Paintings from Seville Alcazar," *Applied Clay Science* (2015): 212, https://doi.org/10.1016/j.clay.2015.03.016.

24. E. M. Molacek et al., "Re-Discovering a Roman Wall Painting at Harvard: New Research on a Fragment from the Villa at Boscotrecase," *Studies in Conservation* 65, no. 5 (2020): 306.

25. Richard Newman, "Chromium Oxide Greens," in *Artists Pigments: A Handbook of Their History and Characteristics*, vol. 3, ed. Elisabeth West FitzHugh (Oxford University Press, 1997), 274.

26. The elements in lazurite (sodium [Na], calcium [Ca], aluminum [Al], silicon [Si], sulfur [S], and oxygen [O]) are not easily detectable by XRF. However, potassium (K) can serve as a surrogate marker for the presence of natural lapis lazuli, where it is often present as an impurity (M. Favaro et al., "Characterization of Lapis Lazuli and Corresponding Purified Pigments for a Provenance Study of Ultramarine Pigments Used in Works of Art," *Analytical and Bioanalytical Chemistry* 402, no. 6 [2012]: 2195–208). The K map for the Getty Peacock showed weak intensity across the entire painted surface but was insufficient to attribute it to lapis lazuli.

27. Joyce Plesters, "Ultramarine Blue, Natural and Artificial," in *Artists Pigments: A Handbook of Their History and Characteristics*, vol. 2, ed. A. Roy (Oxford University Press, 1993), 37–61.

28. See Plesters, "Ultramarine Blue," 37–61.

29. Testing was performed by consulting engineers of Sandberg LLP on 30 March 2023. Chemical analyses of the aggregates and matrix of the concrete core were carried out using an Oxford Instruments INCA energy dispersive X-ray (EDX) microanalysis system calibrated with certified mineral standards.

30. The sample includes particles of just over 3 millimeters in diameter and consists of a mixture of angular and subrounded ash particles lacking the texture typically associated with ash of geological origin, such as pumice, together with siliceous sand particles. Reported by Sandberg LLP, 30 March 2023.

31. Joseph Aspdin, "An Improvement in the Modes of Producing an Artificial Stone," British Patent BP 5022, 21 October 1824, Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Joseph_Aspdin-BP_5022_1.jpg.

32. Briggs, preface to *Pompeian Decorations*, n.p.

33. Specifically, a lararium from the House of M. Epidi Sabini (IX.1.22). The lararium is also illustrated by Briggs in *Pompeian Decorations*, n.p.

34. Monochrome drawing of a "House at Furze Hill, Burgh Heath, Surrey," from *The Academy Architecture and Architectural Review,* December 1912, 143; and "House, Furze Hill, Burgh Heath," *The Architect and Contract Reporter*, 18 July 1913, 52.

35. Charles Massin, *Villas Normandes & Anglaises* (s.n., 1913), pls. 2, 3.

36. Charles Massin, *Intérieurs Anglais* (s.n., 1927), pl. 37.

37. Surrey sheet XIX.15, revised 1911, published 1913, Ordnance Survey Maps, 25 inch England and Wales, 1841–1952, National Library of Scotland (NLS), https://maps.nls.uk/view/103315153; Surrey sheet XIX.SE, revised 1911, published 1914, Ordnance Survey Maps, Six-inch England and Wales, 1842–1952, NLS, https://maps.nls.uk/view/101436943; Surrey sheet XIX.15, revised 1933, published 1935, NLS, https://maps.nls.uk/view/103315150; sheet TQ2457 – A, revised 1954–55, published 1956, Ordnance Survey National Grid maps, 1944–1974, NLS, https://maps.nls.uk/view/103028352; and sheet TQ25NW – A, surveyed / revised 1866–1961, published 1961,

National Grid Maps, NLS, https://maps.nls.uk/view/189259061.

38. Photograph, taken in flight 11 April 1947, Historic England Archive, Aerial Photo Explorer, Aerial Photo - RAF_CPE_UK_1982_FP_1145, https://historicengland.org.uk/images-books/archive/collections/aerial-photos/record/raf_cpe_uk_1982_fp_1145.

39. Title Register for 3 Doric Drive, Tadworth (KT20 6HH) (Freehold), title number SY453808, HM Land Registry, https://www.gov.uk/government/organisations/land-registry. Epsom Rural District Council Building Plan application no. 909, submitted 31 May 1911 and approved 7 June 1911, Woking, England, Surrey History Centre Archives. All Census & Electoral Rolls, "Surrey, England, Electoral Registers, 1832–1962," Surrey Electoral Register, Polling District of Banstead, 1913, s.v. "Bellingham, Lester," accessed on ancestry.co.uk.

40. England & Wales, Civil Registration Marriage Index, 1837–1915, Marriages Registered in July, August, and September 1912, s.v. "Bellingham, Lester," ancestry.co.uk; and All UK and Ireland, Outward Passenger Lists, 1890–1960, s.v. "Gladys Bellingham," departure date 1 July 1913, ancestry.co.uk.

41. Register of Electors, Autumn 1919, Reigate Parliamentary Division of the County of Surrey, Polling District of Mickleham, s.vv. "22 Bellingham, Lester" and "23 Bellingham, Gladys Muriel"; and Register of Electors, Autumn 1919, Reigate Parliamentary Division of the County of Surrey, Polling District of Banstead (Tadworth Only), s.v. "511 Parker, William," accessed on ancestry.co.uk.

42. Winifred Holtby, *Letters to a Friend* (Collins Clear-Type Press, 1937), 206–59; and 1921 Census of England, s.vv. "Florence, Bervon," and "Surrey"; Bervon is listed as the co-headmistress of St. Monica's School and as the person responsible for returning the census form. The postal address is listed as Doric House, Burgh Heath, Tadworth, Surrey. A teacher, a housekeeper, and sixteen pupils are listed as residents. London, United Kingdom National Archives, accessed on findmypast.co.uk.

43. Legal & General, *Pensioner's Memories 1836 to 1986*, vol. 1 (Legal & General, 1988), 48–49, London Archives, CLC/B/144/MS36331A.

44. Surrey World War Two Bomb Incident Map, Banstead_103, 18 October 1940, Surrey History Centre, www.exploringsurreyspast.org.uk/bombsites/.

45. David Goodger, personal e-mail interview by Lewis Wood, Banstead History, 30 August 2022, shared with the authors via e-mail by Wood on 16 January 2024.

46. Title Register for 3 Doric Drive.

47. "Fresco Fragment with Peacock (Family)," audio, 58 sec., wall fragment with peacock, 68.AG.13, Museum Collection, Related Media, https://www.getty.edu/art/collection/object/103SPR#full-artwork-details.