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Plate 3
Follower of
Campin,
*The Death of the
Virgin*
(No.658).
After cleaning
and restoration.



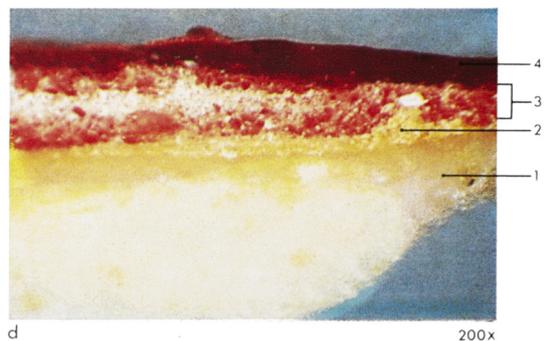
a 200x



b 200x



c 200x



d 200x

Plate 4
Follower of
Campin,
*The Death of the
Virgin*
(No.658).
Photomicro-
graphs of paint
cross-sections.
Full caption on
facing page.

'The Death of the Virgin': A Technical Approach to an Art-Historical Problem

Jill Dunkerton

In the early 1950s an extensive photographic survey was made of the small panel *The Death of the Virgin* (No.658) (Fig.1 and Plate3, p.20), at present catalogued as being by an early sixteenth century follower of Campin [1], for inclusion in the volumes on the National Gallery in the series *Les Primitifs Flamands. Corpus de la Peinture des Anciens Pays-Bas Meridionaux au Quinzième Siècle* [2]. The X-radiograph, and to a lesser extent, the infra-red photographs, revealed that the National Gallery panel was once even more closely related than had hitherto been suspected to two paintings of the same subject in Berlin (Fig.3) and Prague [3]. Although stylistically very different, not only do all three share an identical arrangement of the figures, but the National Gallery version originally also had an identical background, with the same tester and curtains over and around the Virgin's bed, and with a window on the left acting as

the main source of light for the composition [4].

This discovery made the question of the attribution of the painting and its relationship to the other versions and to any possible earlier sources more problematical than ever, leading Martin Davies eventually to propose the tentative hypothesis that the work was a pastiche in the style of Campin based indirectly on a work by Hugo van der Goes, but that it might not necessarily be 'purely Netherlandish' in origin [5].

The recent cleaning and restoration [6] of *The Death of the Virgin* provided an opportunity for a study of the materials and techniques used in the painting to be made in conjunction with the Scientific Department, in the hope of producing evidence of its likely date and provenance. As it was necessary to remove the cradle to be able to glue the lower part of the join between the planks [7], it was also possible to obtain a clearer X-ray image without any interference from the wood of the cradle members.

The panel, which has been identified as oak (evidence which suggests that the work is more likely to have been executed in Northern Europe [8]), originally had an arched top like that of the Berlin version (Fig.3) [9], but segments of the curve have been cut away to produce the present rather curious shape. The left and right edges have almost certainly also been cut slightly, since they are without the narrow borders of unpainted wood which were uncovered during cleaning along the bottom edge and across the top corners (Fig.1). The panel has been planed-down at the back to a depth of approximately 4 mm ($\frac{3}{16}$ in.) which is probably about half of its original thickness. This has exposed the horizontal wooden dowels used to reinforce the join between the two planks which make up the panel (Fig.4). The use of dowels to strengthen butt joins in panels seems to have been fairly widespread throughout Europe from at least the fourteenth century onwards [10]. An interesting feature of the dowels used for *The Death of the Virgin* is that they are not perfectly straight and cylindrical, but have a very slight kink, resulting in a distinctive barbed profile exactly at the junction between the planks (Fig.5) [11].

A sample of the whitish-coloured ground was taken for X-ray diffraction analysis and was found to be chalk (calcium carbonate). This is also consistent with a probable Northern European origin for the work. The ground has been applied fairly thinly so that when seen in raking light, the surface of the painting has a very marked texture which is related to the vertical grain of the wood (Fig.6).

No sign of any underdrawing could be found, either in the infra-red photograph (Fig.7) or when scanning

Plate 4 Follower of Campin, *The Death of the Virgin* (No.658).

Photomicrographs of paint cross-sections, photographed in reflected light at 250× magnification; actual magnification on the printed page shown beneath each photomicrograph.

(a) Warm grey of wall, above and slightly to the right of candlestick, upper left corner.

1. Chalk ground.
2. Thin yellowish underpaint (the function of this layer is unclear).
3. Pale pink underpaint for hidden curtain: white + a little red lake.
4. Purple-red of hidden curtain: azurite, red lake + some lead white.
5. Warm grey of background wall: black or brownish black pigment, white and some vermilion.

(b) Bluish grey fold on hem of right-hand angel's drapery.

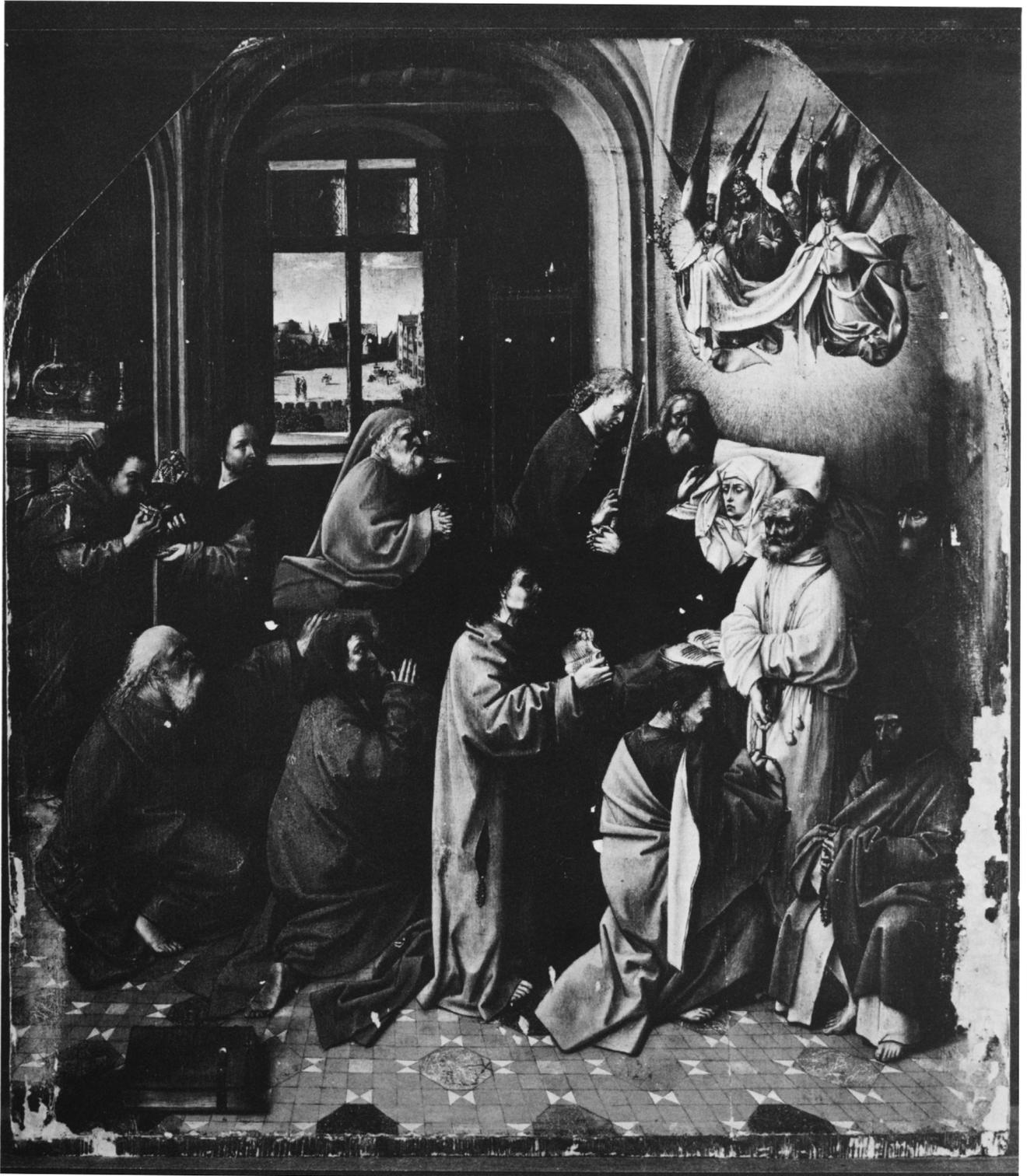
1. Chalk ground.
2. As layer 2 in (a).
3. Light-coloured paint, possibly representing wall behind the bed in earlier version of the composition: mainly lead white with some azurite and red lake.
4. Dark-coloured layer, possibly of wall cast into shadow, or of panelled bed-head: black pigment, vermilion + some red earth and white. Similar to layer 5 in (a).
5. Angel's bluish grey drapery, with warmer thin underlayer: white with some azurite and carbon black. The underlayer is comparable in composition to the surface paint, but contains in addition a proportion of red lake pigment.

(c) Green drapery of apostle holding censer, left.

1. Chalk ground.
2. Mid-green underpaint: lead white and verdigris.
3. Highlight layer: mainly lead white with verdigris.
4. Relatively undiscoloured 'copper resinate' type glaze.

(d) Red drapery of seated apostle, right.

1. Chalk ground.
2. As layer 2 in (a).
3. Two or three layers of red lake pigment mixed with white, with a few particles of vermilion in the basal layer.
4. Fairly thick, red lake glaze.



the painting with the infra-red vidicon camera, and no trace of any drawing material was visible in any of the cross-sections. This apparent lack of underdrawing can perhaps be explained by the fact that, if, as seems likely, this was not the original version of the design, the artist was sufficiently confident in the placing of the figures to dispense with any preliminary drawing.

Samples of paint and ground were taken from the edges of losses and damaged areas for identification of the pigments and medium, and to examine the layer structure of the altered background and of the various

coloured draperies worn by the Virgin and the apostles.

The three samples analysed by gas-chromatography showed the medium to be linseed oil [12], a result which again does not contradict the probability of the work having been painted in Northern Europe.

When taking samples to investigate the alterations to the background, it was possible to make use of a strange and unexplained row of small circular losses which occur at very regular intervals in a horizontal line across the upper part of the picture (Fig.1) [13].

Figure 1
The Death of the Virgin
(No.658),
after cleaning,
before
restoration.



Figure 2
X-radiograph of
the picture.

The cross-sections made from these samples show that, as in the Berlin version and that in Prague, the curtain on the far side of the Virgin's bed was drawn across to fill in the background and that like the Berlin painting it is a purple-red colour, which in the case of the National Gallery painting consists of a mixture of red lake and azurite with some white lead in the lighter areas. This colour can, in fact, be seen on the painting in areas where the new background has not been painted right up to the edge of the figures. It is most obvious where it appears deliberately to have been left exposed to serve as a stole thrown over the

right shoulder of the figure of S. James(?) who holds a scallop shell under the censer on the left of the composition.

In the cross-sections, of which the clearest is that taken from the warm grey-coloured wall above and slightly to the right of the candlestick and therefore coinciding with the end of the pear-shaped bundle of curtain visible in the X-ray (Fig.2 and Plate4a, p.20), it can be seen that this purple-red layer has been underpainted with a thin layer of lead white to give it maximum luminosity. Beneath this lead white layer is a very thin, apparently pigmented, yellow layer which

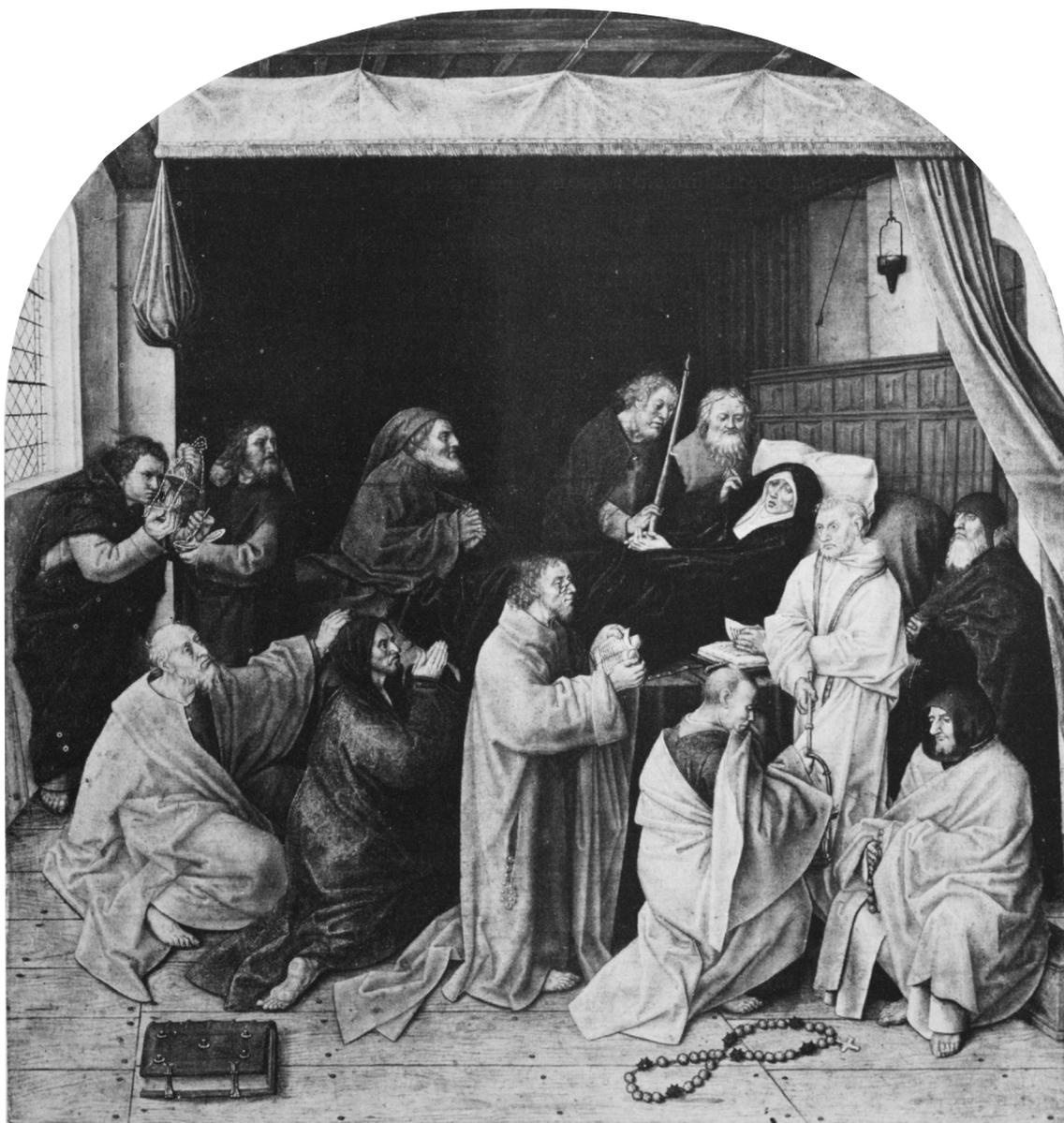


Figure 3
Follower of
Hugo van der
Goes,
*The Death of the
Virgin*,
Staatliche Museen
Preussischer
Kulturbesitz,
Berlin (no.538b).

lies directly over the calcium carbonate ground. At first this was thought to be a form of priming applied over the white ground to give the superimposed colours some warmth, but it was found not to be present in some of the samples taken from the drapery of the figures in the foreground (for example Plate 4c, p.20), so its purpose is not entirely clear. Unfortunately the layer is too thin for an identification of its components.

A cross-section made from a sample taken from the bluish grey robe of the angel on the right of the group hovering above the Virgin's bed (Plate 4b, p.20) proved to be surprisingly complicated, and can only be explained by reference to a feature of this area which was only revealed by infra-red reflectography. Between the top layer which consists of a mixture of azurite and carbon black with a few particles of red lake in a matrix of lead white, and the bottom layer (discounting the yellow layer mentioned above) which is similar in composition and probably represents the area of light-coloured wall visible between the curtains

and bed-head in the Berlin and Prague versions, is a layer of predominantly black pigment with a small amount of vermilion, and possibly also some red earth and white. This black pigment must be responsible for the strange, dark shape which can be seen beneath the group of God (or Christ) and angels in the infra-red reflectogram (Fig.8). As this shape seems roughly to conform to the area of wall between the curtains in the other versions, it may represent an intermediate stage in the alterations to the setting of the National Gallery version, in which the artist appears to have tried out the effect of throwing this area into deep shadow. This does not make much sense if the main light source was still to be the window on the left-hand side of the room, but the rather contradictory directions of the shadows, particularly the very disconcerting shadow cast over the book on the floor, suggest that a consistent use of light and shade was not a strong point of the artist.

One of the most striking features of the main figure group is the brilliance of the extremely well-preserved

Figure 4
The back of the
panel.

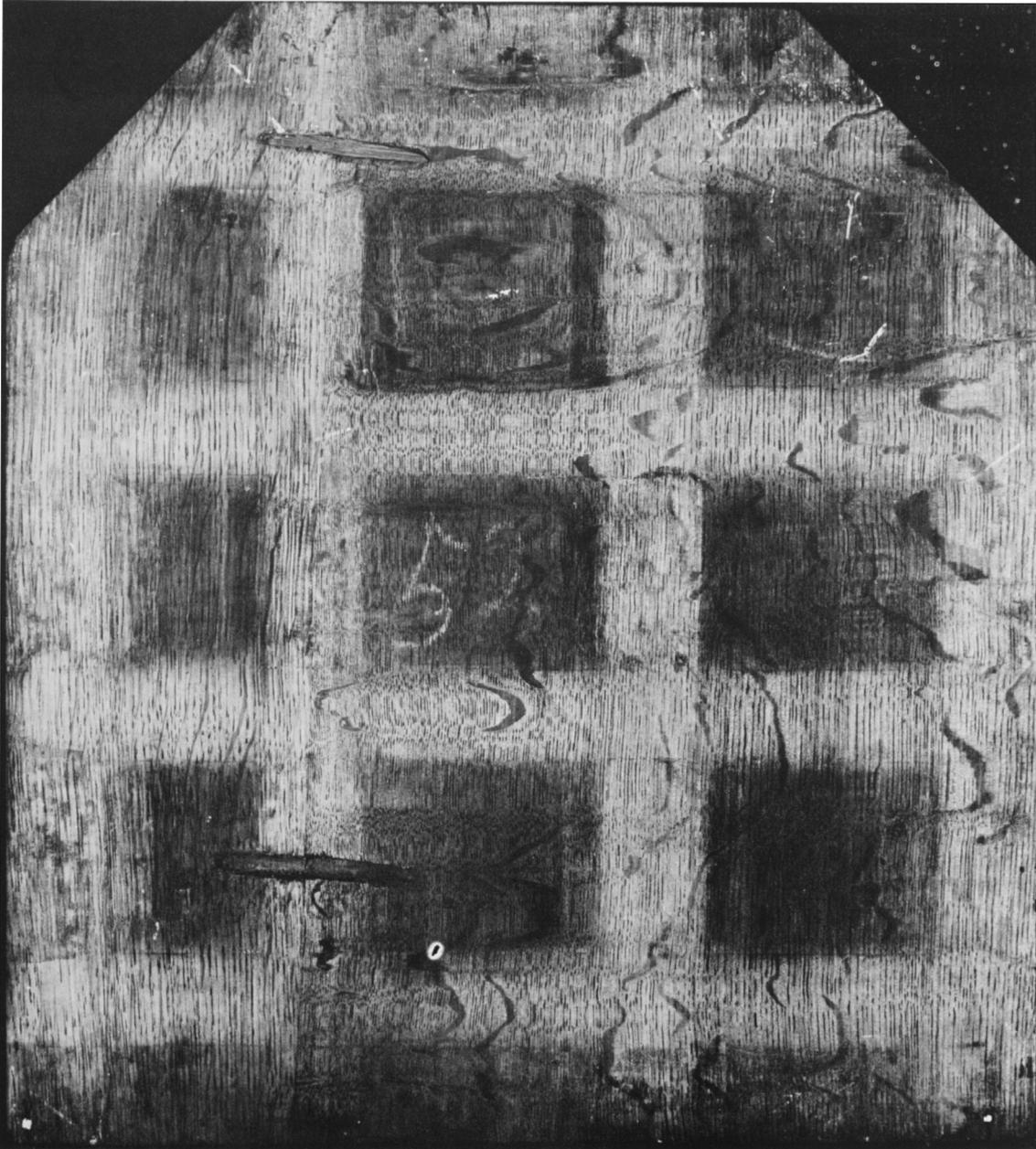
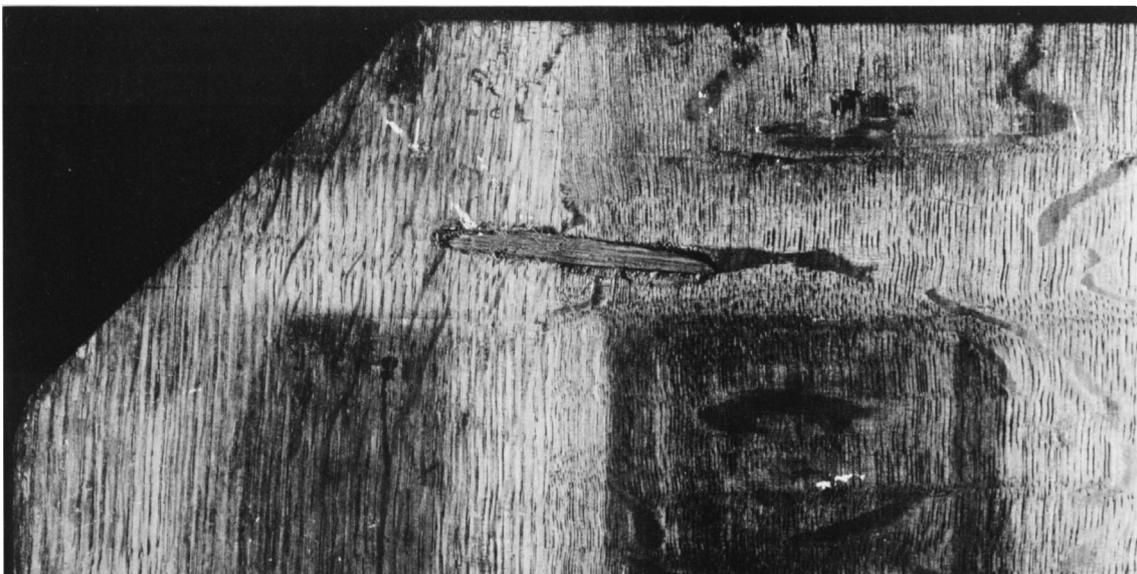


Figure 5
Full-sized detail
of dowel from
back of panel.





areas of green and red drapery which are disposed evenly across the composition. A cross-section from the green robe of the apostle with the censer on the left (Plate4c, p.20) shows a relatively simple layer structure with, at the bottom, a layer consisting of verdigris and lead white, followed by a layer which is mostly lead white with a very small amount of green pigment, and then, finally, a thick, green glaze of verdigris or 'copper resinate'. The presence of the intermediate, very pale green layer can be accounted for by the fact that the sample was taken from a point at which a strong highlight (clearly visible in the

X-ray, Fig.2) has been painted over the mid-tone before the application of the final glaze to the whole robe. A similar explanation can be given for the complexity of a sample of red paint taken from the robe of the seated apostle on the right (Plate4d, p.20). In this case the sample appears to have been taken at the exact point where a highlight has been blended into the mid-tone and then glazed with red lake.

The technique of applying a transparent or semi-transparent glaze over an opaque underpaint has also been used for the Virgin's robe which consists of a layer of azurite mixed with a considerable amount of

Figure 6
Raking light
photograph.



Figure 7
Infra-red
photograph.

lead white (showing up strongly in the X-ray), and glazed with a thick layer of azurite with a few particles of natural ultramarine. Unfortunately, when azurite is mixed with excess medium or natural ultramarine is used in a drying oil as a glaze without any addition of lead white, the paint tends to dry badly, developing cracks and wrinkles, and it can also blacken and deteriorate with the results visible in the dark blue draperies in *The Death of the Virgin* (Plate 3, p. 20). However the undergarment of the kneeling apostle, second from the right, has retained its colour because the blue pigment (almost certainly azurite) has

been mixed with lead white.

The warmish pink of the robe worn by this figure is achieved with a mixture of vermilion and lead white with a few particles of azurite over a lead white underlayer, whereas in the cooler, more purple-pink of the figure to his left the vermilion has been replaced with red lake. A similar mixture, but with a higher proportion of azurite has been used for the piece of mauve drapery which trails across the floor.

The floor itself has first been painted with the basic light brown colour (the marks of the brush as it follows round the outlines of the figures can be seen in



Figure 8
Detail from
infra-red
reflectogram.

the X-ray) and the coloured tiles superimposed over it, guided by the perspective lines which have been lightly incised into the lower paint layer. A sample of pale yellow paint from one of the small triangular tiles was identified by X-ray diffraction analysis as lead-tin yellow [14]. Lead-tin yellow must also have been used in the yellow and red 'shot' fabric of the undergarment worn by the seated figure on the right of the composition. A second, rather unusual, 'shot' effect occurs on the dark, purple-red robe of the bearded figure to the right of S. John the Evangelist (with the candle) which is highlighted along the shoulder with a touch of blue pigment.

Owing to the excellent condition of the faces and hands, no samples could be taken of the flesh paint. Although the range of flesh colours varies widely, from the pallor of the Virgin to the flushed, red face of the elderly kneeling apostle on the left, and the swarthy complexion of the seated figure on the right, all the faces appear similarly blurred and featureless on the X-ray, most of the detailed modelling having been drawn in using X-ray-transparent pigments over an opaque underlayer. A slight alteration to the position of S. John the Evangelist's right hand can also be seen.

Despite the considerable quantity of information obtained on the physical structure of *The Death of the Virgin*, only the most tentative of conclusions can be drawn concerning the origin of the picture. The materials identified in the painting and the way in which they have been used suggest that the work

could have been produced at almost any time in the fifteenth, sixteenth or even, just conceivably, the seventeenth centuries, in a geographical area comprising most of Northern Europe. The possibility that the work was executed in a Southern European country, for example Spain, by a Northern-trained artist can not be completely excluded, since artists working abroad may sometimes have favoured materials with which they were familiar, rather than those which were available locally [15]. Ultimately, *The Death of the Virgin* remains a problem for the art-historian.

Notes and references

1. See DAVIES, M., *National Gallery Catalogues: The Early Netherlandish School*, 3rd ed. (revised) (London 1968), pp.29 – 32.
2. See DAVIES, M., *Les Primitifs Flamands I. Corpus de la Peinture des Anciens Pays-Bas Meridionaux au Quinzième Siècle*, *The National Gallery London* (Antwerp 1953), Volume I, pp.52 – 60 and Plates CXXI – CXXXV.
3. All three versions are illustrated in FRIEDLÄNDER, M.J., *Early Netherlandish Painting*, Volume IV: Hugo van der Goes (Leyden 1969), Plate 38. In his catalogue of *Copies after Lost Works by Hugo van der Goes and Works by his Imitators*, Friedländer lists a fourth version

of considerably greater dimensions than the other three, which was sold in Amsterdam in 1923 (*op. cit.*, p.73).

4. Davies also suggested that the binding of the book on the floor had originally been decorated with five studs joined by straight lines like those in the Berlin and Prague versions. No trace of the studs can be seen in the X-ray, but the diagonal lines from this previous design are visible in the infra-red photograph, together with the indecipherable remains of a possible inscription. See DAVIES (1953), *op. cit.*, pp.55 – 6.

5. See DAVIES (1968), *op. cit.*, p.31.

6. Most of the discoloured varnish and retouchings could be removed using propan-2-one. The patchy remains of a much older brown varnish (noted by DAVIES (1953), *op. cit.*, p.52) were removed with a potassium oleate soap. The repaint and putty which extended over the surviving unpainted edges of the panel were removed, as well as areas of overpaint along the right edge of the robe of the standing apostle with a book, and from around the head of the apostle in front of the window. The painting is in generally good condition, although two strips, approximately one inch wide, of abraded and damaged paint run down the left and right edges, with a relatively large area of total loss of paint and ground from the right-hand edge. Some of the paint in the background is slightly worn, allowing the alterations to become more prominent, and several areas are affected by drying defects. These do not necessarily seem to be related to the changes in the composition.

The painting was re-varnished with Ketone – N and restored using pigments in Paraloid B72, the Berlin version serving as a model for the reconstruction of the loss along the right edge. In those areas where the alterations had become disturbingly visible, they have been reduced, but not completely eliminated.

7. Apart from denying access to the open join, the cradle did not appear to be having any adverse effect on the panel and since its removal, the panel has remained reasonably flat. Although it is rather thin and is likely to be sensitive to changes in humidity, it was not considered necessary to build up the back with balsa-wood and 'wax cement' (see SMITH, A., REEVE, A. and ROY, A., 'Francesco del Cossa's "S. Vincent Ferrer"', *National Gallery Technical Bulletin*, 5 (1981), pp.47 – 54), so the painting has simply been placed in a protective panel tray. It is hoped that a description of the design and manufacture of these panel trays will be included in the next issue of this *Bulletin*.

8. See MARETTE, J., *Connaissance des Primitifs par l'Étude du Bois* (Paris 1961), pp.48 – 75, and pp.168 – 202 (the catalogue of oak panels examined). The main exceptions to the general rule that most paintings on oak are of Northern European origin appear to be those of the Portuguese School of which a very high proportion were found to be on oak.

9. The Prague version is illustrated in FRIEDLÄNDER, *op. cit.*, Plate 38 by a photograph of rectangular format, but, as the dimensions given in the catalogue are identical to those of the Berlin picture, it probably also has an arched top.

10. See MARETTE, *op. cit.*, pp.114 – 5. A number of

specific instances of dowels in panels are also mentioned in the catalogue of panels examined (pp.167 – 295). An obvious problem in determining the relative frequency with which a certain form of joinery was used is that generally the method of construction of a panel is exposed only when the panel has been planed-down, or separated from another painting on the reverse, although devices to reinforce joins, such as dowels, can occasionally be seen in X-rays.

11. This might be of some significance in that, so far, the only panels at the National Gallery in which these barbed dowels have been noted are of the late fifteenth and early sixteenth century Westphalian School: 'The Adoration of the Kings' [fragment] (No.258) by the Master of Liesborn, and the 'Coronation of the Virgin' and 'Christ before Pilate' (Nos. 263 and 2154) by the Master of Cappenberg.

12. The samples for analysis were taken from the edges of the large loss in the red and green robes on the right of the painting, and from a yellow floor-tile.

13. There is no sign on the back of the picture of there ever having been any batten or similar addition which could have been pinned or nailed to the panel, causing the damage now visible.

14. The form found by XRD was that known as lead-tin yellow 'type I'.

15. For example a calcium carbonate ground has been identified on 'Christ Appearing to the Virgin with the Redeemed of the Old Testament' (No.1280), one of a series of panels painted in Spain by Juan de Flandes and his studio, for Queen Isabella of Castille.