McNEILAGE CONSERVATION

Weeks Farm | Talaton | Exeter EX5 2RG | T: 01404 822076
enquiries@mcneilage-conservation.co.uk | www.mcneilage-conservation.co.uk
Partners: Torquil McNeilage ACR | Ruth McNeilage ACR
VAT No. 736 7680 95

ST DUBRICIUS CHURCH, PORLOCK

CONDITION SURVEY OF THE PAINTED AND GILDED TIMBER REREDOS

MARCH 2025

1. INTRODUCTION

The PCC of St. Dubricius church, Porlock, Somerset has applied for HLF funding to help with a major project for re-shingling the spire. The conservation of the important polyptych reredos has been included as part of this project.

The church has received funding for the Development Stage to undertake investigations to inform the Delivery phase and as part of these investigations, this report concerns the results of a survey and analysis of the gilded and painted polyptych reredos undertaken in December. Ecclesiatical timber expert Hugh Harrison visited the church at the same time to investigate the timber structure of the reredos.

1.1 SUMMARY

The report includes a brief history and description of the building and reredos. This is followed by the results of the condition survey and cleaning trials and paint analysis. The report concludes with an analysis of the causes of deterioration and finally recommendations for treatment.

1.2. MANAGEMENT

Author	Ruth McNeilage (McNeilage Conservation)
Client	St. Dubricius PCC, represented by Peter and Marian Fosker
Architect	Simon Horler (Jonathan Rhind Architects)
Timber specialist	Hugh Harrison

2. HISTORY AND DESCRIPTION

2.1. The Building

St. Dubricius' church is sited in the centre of the village of Porlock, on the south side of the High Street. The church is a substantial grade I listed building and consists of a chancel, nave with south aisle, south chapel, west end tower, north porch and south and north vestries. The earliest part of the building is the thirteenth-century tower. The nave and arcade are late thirteenth or early fourteenth-century, and the north porch was added in the fifteenth century. The church was restored to designs of J D Sedding in 1892.

The church is constructed of blue lias and red sandstone random rubble with Ham stone dressings. The roof is covered with slate and the tower roof has wooden shingles.

2.2. The Reredos

The reredos was dedicated by the Bishop of Taunton on April 26th 1931. A contemporary local newspaper article provided by the church states that the architect H R Blacking was the designer for the reordering undertaken at this time. The article also states that the woodwork was undertaken partly by messrs Jas. Huish and son of Porlock, and Messrs. Mowbray of Oxford and the paintings by Mr. Christopher Webb.

The reordering work included the re-flooring of the eastern part of the chancel and the east end of the south aisle and the erection of the new altar and reredos. The old altar was placed in the side aisle to form a chapel.

The reredos is unusually designed with a panel with carved painted figures, above which is an elegant painted polyptych made up of seven panels; the two end panels at each side fold in.

FIG. 1

View of the reredos from the west

The lower part of the structure consists of a panel with a dark green and gold background on which are mounted a series of beautifully carved small figures, divided by shields bearing the arms of families connected with Porlock. The central group consists of the crucifixion figures with Christ on the cross flanked by the Virgin Mary on the left and St. John the Baptist on the right. From the far left (north) side the figures represent St Dubricius, first bishop of Llandaff, patron of Porlock; St. Petroc, a Welsh missionary, patron of Timberscombe and on the south side St. Crantoc, another Welsh missionary who landed at Carhampton, and St. George, patron of Dunster. The shields from left to right are those of Courtenay, Loring, Harington, Fitz Rogers, Bonville and Grey.

The polyptych consists of seven painted panels with gilded backgrounds. The principal central panel is painted with the Resurrection. On the side panels on the left (north) side are the arms of Bath and Wells and the county of Somerset in the end panel; next, St Brendan, the Irish missionary and St. Olave king of Norway, patron saint of Scandinavia, who had a chapel at Porlock weir. To the right (south) of the central scene are St Bridget, the Irish saint and

Adam Bellenden bishop of Aberdeen who held the living from 1642 to 1647. The side panel on the right bears his arms and those of the university of Aberdeen where he was chancellor.

The quality of the craftmanship is very high, with skilled work in elegant areas of raised gilded gesso outlining the paintings, forming scrolling foliage in the spandrels above and emphasizing the rays of the mandorla. The gilding shows the influence of noted architect Ninian Comper and is beautifully finished. The paintings are subtle and graceful and there is a gentle stillness in the figures.

Christopher Webb (1886-1966) was a major stained-glass artist. He trained as a pupil with Comper, whose influences can be seen in his work. At Comper's workshop Webb met W H Randoll Blacking, an articled pupil with whom he formed a lifelong friendship. Soon after the war, in collaboration with Randoll Blacking, he began to work professionally as an artist and glass painter, setting up a studio in Guildford. 'In church after church', according to A. W. Croome, 'together they produced sanctuaries of a rare splendour; Blacking usually contributing the architectural plan and setting, Webb providing a glowing window above an altar furnished with a reredos for which he had painted the panels or provided cartoons for sculpture which he then decorated in gold and colour, perhaps adding an embroidered banner.'

He was not a Gothic Revivalist, and Renaissance designs often enter his work. Webb was essentially a figure draughtsman, and this is clearly seen in his work on the upper panels at St. Dubricius.

Professor Ernst Gombrich wrote, 'If anybody needs a champion to-day it is the artist who shuns rebellious gestures; Christopher Webb, stained glass artist and craftsman, was undoubtedly such a man.'

FIG. 2

View of the front of the reredos with the wing panels closed.

FIG. 3

Detail showing the main central panel with St. Olave to the north and St. Bride to the south.

FIG. 4

St. Brendan

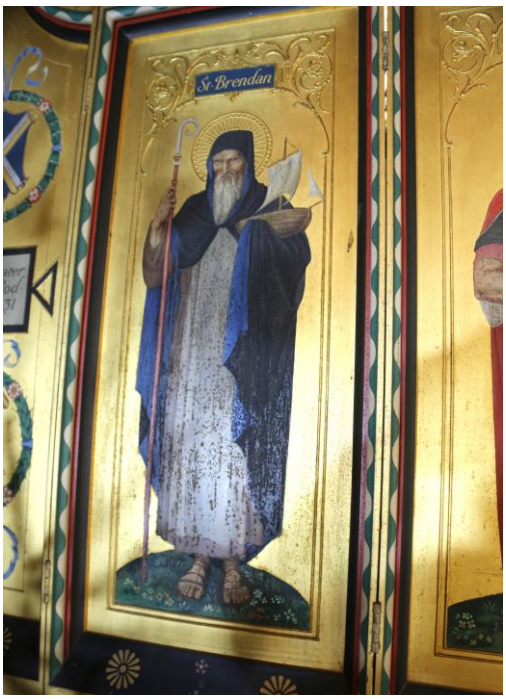


FIG 5.

Dr. Bellenden

3. TECHNIQUE OF EXECUTION

The structure and condition of the timber is being covered by Hugh Harrison.

The painting and gilding of the panels is exquisitely executed. The gilding is further embellished with some very fine gesso relief forming moulded borders to the panels and delicate relief scrolling foliage ornamentation above each figure.

A detailed examination of the surface in raking light revealed that the decoration on the background to the lower panel has been altered. Decorative leaf motif details within the diaper shaped borders have been overpainted. It is possible that this adjustment was made when the heraldic shields were attached.

FIG. 6

Detail of the background to the lower panel in raking light, showing details that have been painted out in black.

3.1. PAINT ANALYSIS

The following five paint samples were taken and sent to Catherine Hassall for analysis. The purpose of the analysis was to identify the pigments and the paint medium. In addition, it was hoped to investigate the surface for a possible organic coating.

Sample 1. Blue on the lining of St. Brendan's robe.

In this area a microbiological growth has developed on the painted surface.

Sample 2. Gold applied to the background of the panels

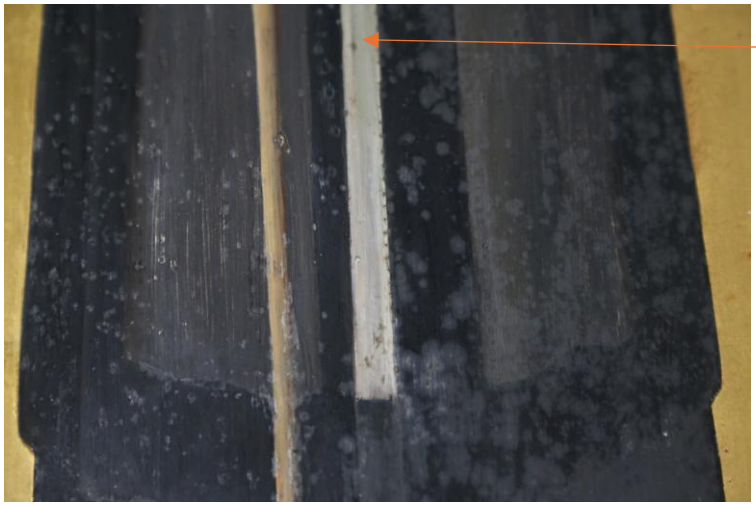
Sample 3

Blue on Mary's robe.

This figure may have been painted by a different artist so I would be interested to compare the paint stratigraphy with the sample from St. Brendan.

Sample 4

Black background of lower panel. This surface is in good condition.



Sample 5

Taken from the white on Dr. Bellenden's gown. To investigate if there was evidence of a thin organic coating applied over the surface.

The sample was taken from an area that had some microbiological growth on the surface.

3.2. RESULTS OF THE ANALYSIS

The results revealed that the painted panels were first coated with a gesso ground based on chalk. This was followed by a layer of pure white oil paint that acted as the ground layer for the decoration. In areas to be gilded there was an additional yellow paint layer containing lead white between the gesso and the white ground.

Pigments identified in the analysis were lead white (white), artificial ultramarine (blue) and Prussian Blue (blue). Artificial ultramarine (known also as French ultramarine) was first

developed in France in the 1820s. Prussian Blue (Ferric Ferrocyanide) was first created in Germany in the early 18th century and by the 1730s its manufacture was widespread.

In Samples 4 and 5, the cross-sections show that there is certainly a clear organic coating over the paint. However, in samples 1 – 3, the layer was not visible.

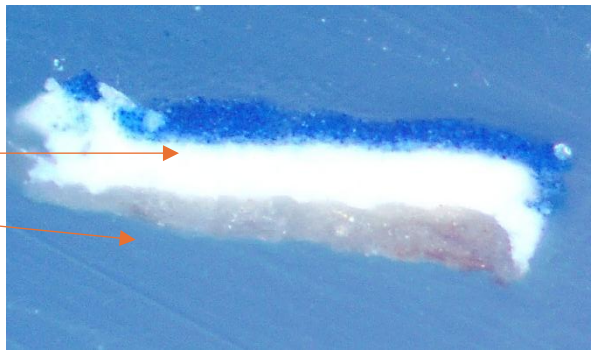
In Sample 5 from the white gown, the coating is much thicker than in Sample 4, and in transmitted light it appears to consist of more than one layer. The coating in Sample 4 is clear, but in Sample 5 it is cloudier, and there appear to be pigment particles caught up in it.

In UV light the coatings, in both samples, have a white fluorescence, indicating they are not oils. Further on-site investigations using a UV torch also indicated a white fluorescence to the surface.

3.3 PHOTOGRAPHS OF CROSS SECTIONS TAKEN BY CATHERINE HASSALL

SAMPLE 1
Blue lining of St Brendan's robe

Blue paint over white oil ground,
over part of a gesso layer

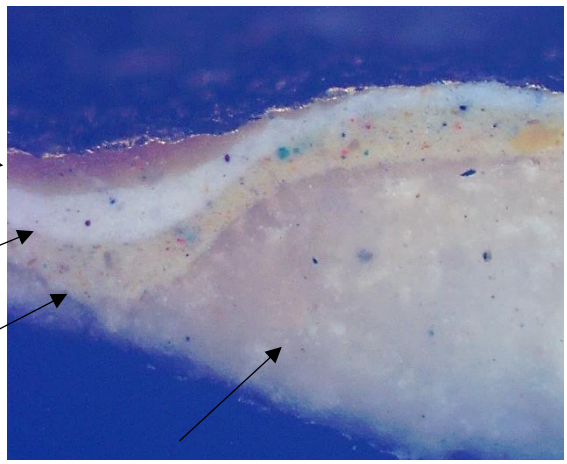


SAMPLE 2
Gold background

gold leaf laid over a yellow oil size

lead white ground layer

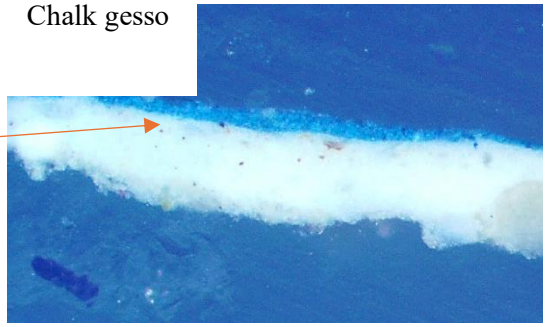
yellow underlayer



Chalk gesso

SAMPLE 3
Robe of St Mary

The same blue pigments as in Sample 1
but mixed with a little white

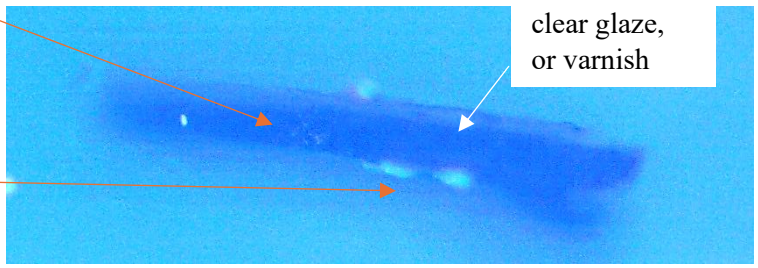


SAMPLE 4

Black background of lower panel

Over the black is a clear glaze or varnish.

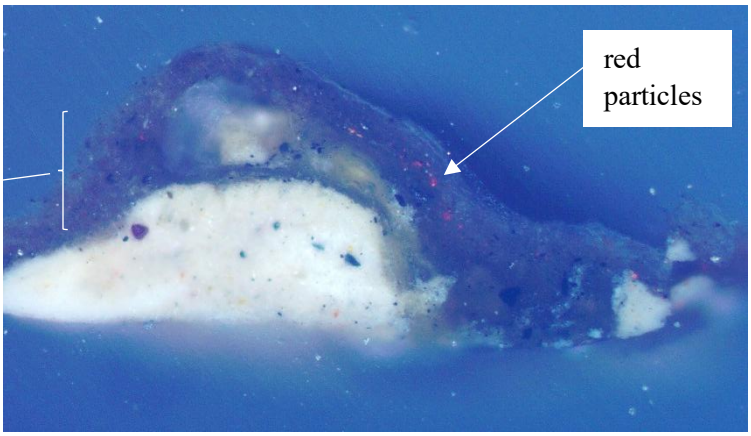
Under the black is some white from the ground layer



SAMPLE 5

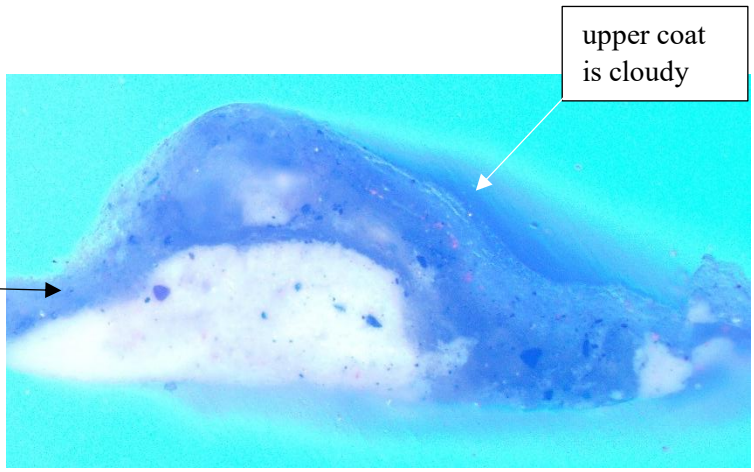
White of Dr Bellenden's gown

Lit from above



Lit from behind

Showing what appear to be two coats of the varnish



4. CONDITION SURVEY

The condition of the timber structure is covered in Hugh Harrison's report. This survey is concerned with the condition of the painted and gilded surfaces.

The upper section of the reredos is positioned in front of the east window at sill level – an area that is bound to be susceptible to moisture ingress and fluctuations in temperature. The window structure and adjacent jambs are both showing some deterioration and in these areas moisture ingress has occurred. The paint on the splay immediately below the window is visibly lifting and blistering, indicating that there has been moisture run-off, probably from the windows.

The plaster on the wall adjacent to the lower north side window jamb is lifting away from the surface and there are cracks in the plaster high up. The base of the north side mullion has cracked, and the stone has moved out of alignment

There is a small gap between the reredos and the wall, and the back of the reredos appears to be remarkably unaffected by the condition of the wall. Both the timber structure and painted surface on the back of the reredos are generally stable.

The main noticeable decay phenomenon on the painted surface is the brown spotting that can be seen in many areas on the surface. Interestingly these are most noticeable on the front face of the painted and gilded panels that form the polyptych. An examination of these spots revealed that they are most probably microbiological growth (MBG). Where they were present on the gilding, the surface beneath the MBG is undamaged. However, where they are present on the paint, it was sometimes found that the surface beneath the MBG had deteriorated. Areas of paint containing lead white were generally found to be less affected. It is not known how long this decay phenomenon has existed and whether it is historic or ongoing.

The carved figures on the lower panel have a dirt residue but do not appear to have the circles of MBG. However, they are visible on the background that has been painted black. The painted frame of the lower panel has no MBG.

There is no lifting of the paint layers or obvious deterioration of the ground preparatory layers. One might expect to find that the gesso ground supporting the gilding had been affected if there had been any serious moisture penetration in the surface.

FIG. 7

View showing the upper window reveal where there has clearly been some moisture ingress.

FIG. 8

View taken behind the reredos showing damage to the stone and plasterwork and lifting paint on the window slay where moisture has run off from the window.

FIG. 9

Detail showing a crack that has formed on the north window reveal.

FIG. 10

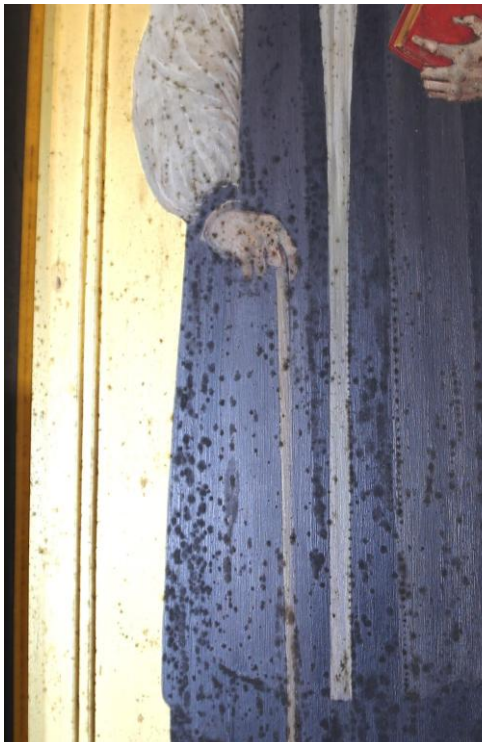
Detail showing the mould growth that has formed on the figure of St. Brendan

FIG. 11

Detail of St. Olave showing the spotting on the surface.

FIGS.12 & 13

Detail of Dr. Bellenden (below) and St.Bride showing the same pattern of mould growth on the painted surface.



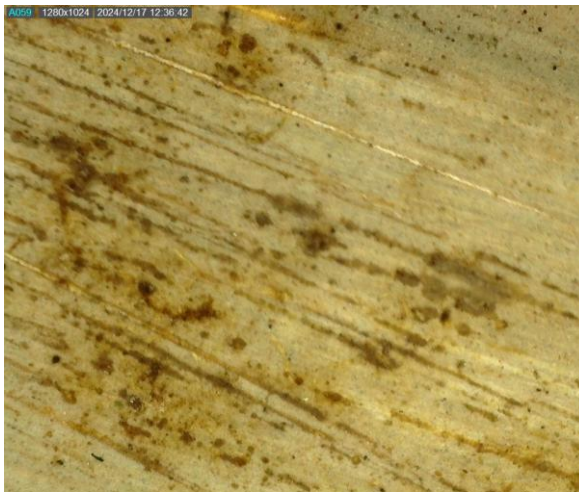


FIG. 14

Photograph taken with the digital microscope showing the microbiological growth on the surface of the white areas.

4.1 MOISTURE ANALYSIS

4.1.1 Infrared imaging

Differences in temperature were also assessed by infrared imaging. A thermal imager (also known as a thermal camera) is essentially a heat sensor that is capable of detecting tiny differences in temperature. The device collects the infrared radiation from objects in the field of view and creates an electronic image based on information about the temperature differences. The infrared images provide information about any changes in temperature along the walls which might imply poor insulation, water ingress and/or poor ventilation.

The images indicated that as expected the chancel is the coldest area of the church.

Southeast corner of the chancel

East wall of the chancel

Nave looking west

These photographs indicated that as expected the east chancel wall, particularly around the windows and in the corners were the coldest areas in the church.

4.1.2. Environmental recording

Relative Humidity (RH) and temperature values were recorded inside and outside the church using an electronic hygrometer. It is acknowledged that such readings have limited value. However, it will help to put the moisture readings in context.

Readings taken at 10.30 am on a damp cold day. February 19th 2025.

Location	**RH (%)**	**Temp. (oC)**	**Dew pt (oC)**	AH
Interior	75.5	8.4	4.3	6.4
Exterior	78.6	7.0	3.2	5.9

At 12 noon, the RH had risen to 82 and the temperature remained the same.

Readings from the Protimeter - the Protimeter relies on the electrical conductance of the fabric. Readings are relative and may suggest levels of dampness, with a low reading suggesting low moisture levels, and higher readings moving through orange to red. On the painted areas of the reredos the meter generally showed green, on gilded areas it showed red. The east wall on either side of the reredos were orange.

4.2. HEATING

The heating is primarily by an oil-fired boiler in the basement, with hot water pipes in ducts around the church and four fan-assisted radiators (which mainly blow hot air up to the ceiling). There is a little electrical heating by tubular heaters under the choir pews only, and occasionally an electric fan heater is used, hidden on the east side of the altar, to give the Rector a little warmth when taking Communion. The churchwarden stated that the East end is always the coldest place in the church.

During Autumn, Winter and Spring, the heating is on for an 8.00am and a 10.30 am service most Sundays, a monthly 6.00pm service, and typically once or maybe twice during the week. On each occasion it might be on for two or three hours.

In November and December, the heating might be on four or five times a week, again mostly for a few hours.

5. ANALYSIS OF THE CAUSES OF DETERIORATION

The timber structure and preparatory layers beneath the painted and gilded decoration were all found to be in remarkably good condition.

The main problem with the reredos is the microbiological growth that has damaged parts of the painted surface. The cause of this phenomenon is not completely clear. There are several possible contributing factors:

- The condition of the east wall. There is clear evidence of deterioration of the stonework and plaster around the window indicating that there is moisture ingress at this point.

- Environmental conditions within the church, which may lead to condensation on cold surfaces. The MBG is more significant and damaging on the reredos panels and is not so noticeable on the lower panel, indicating that the position of the upper section in front of the window may be a contributing factor. The reredos is not touching any other surfaces so the moisture would have to be atmospheric and is likely to be caused by condensation.

- The characteristics of the reredos and painted surface with the organic size-based coating that would be susceptible to microbiological growth. The results of the analysis have revealed that there appears to be an organic coating. This coating can be removed with water indicating that it is based on a size medium such as gelatine or gum arabic.

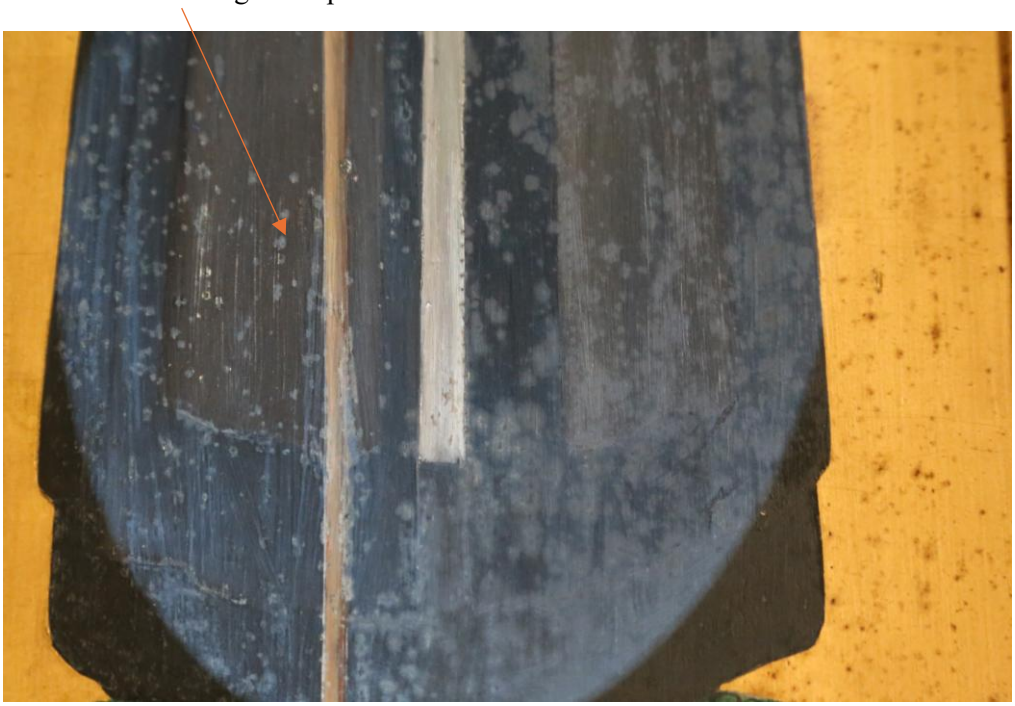
6. TREATMENT TRIALS

Cleaning trials were undertaken on the figure of Dr Bellenden on the upper panel and on the figures of St. John and St. Petroc on the lower panel. The purpose of the trials was to remove the microbiological growth on the surface. Cleaning was undertaken using saliva on cotton wool swabs followed by a 5% solution of TAC (Tri-ammonium citrate). A layer of surface dirt was removed with the saliva, but it was necessary to use the TAC to remove the MBG. In some places the MBG was found to be covering areas of loss and once this was removed the white underlayer was left exposed. It seems likely that although it is not clearly visible any size based organic coating would have been removed with the dirt.

Cleaning the gold was relatively straightforward and the dirt and spotting could be carefully removed with saliva.

FIG. 15

View showing an area that was cleaned using saliva and TAC. The white dots are areas where the MBG has damaged the painted surface.



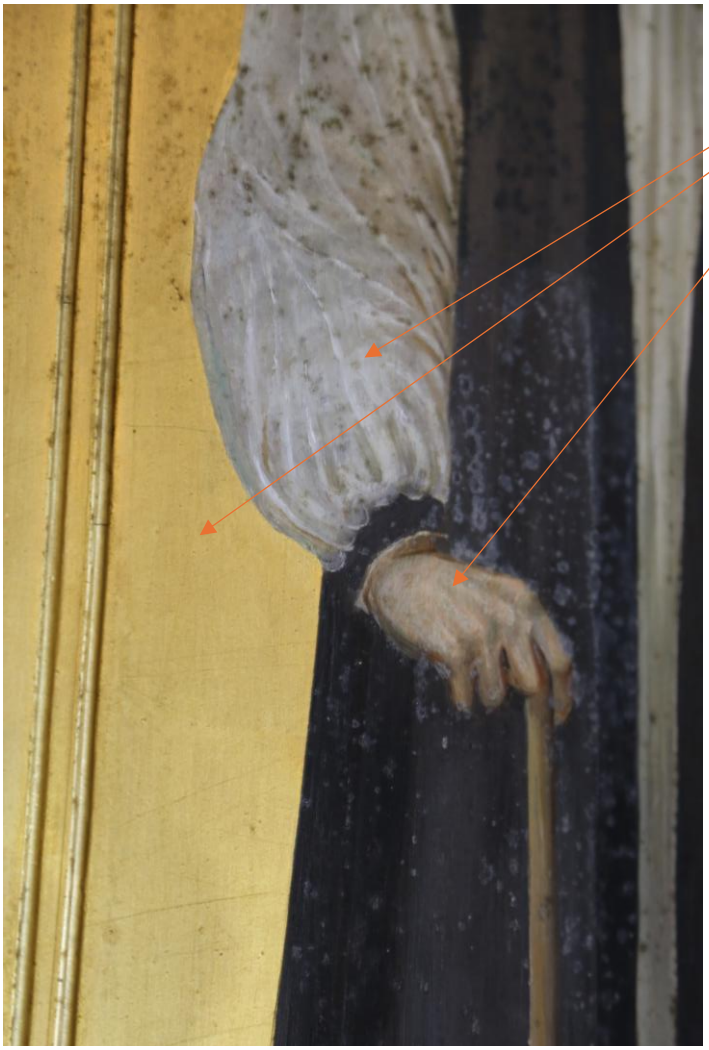


FIG. 16

Areas of white and gilding after cleaning.

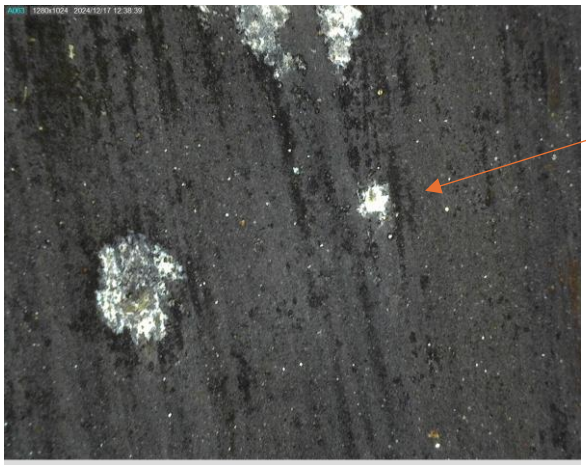


FIG. 17

Detail of the black area after removal of the MBG. Here the exposed white underlayer can be clearly seen.

7. PROPOSALS

The reredos was made for the church, and every effort should be made to ensure that it is able to remain in its current position.

7.1.Repairs to the east wall

Prior to any work being carried out on these painted surfaces, it is important that the cause of the deterioration is identified and where possible rectified. Initially this will involve the repair and conservation of the east wall and window surround where there are cracks in the plaster and stonework.

7.2.Environmental monitoring advice

It is recommended that professional advice is obtained to discuss the heating and monitoring of the painted surface to fully understand the deterioration processes prior to any conservation work being undertaken. It may be considered appropriate to install a monitoring system for a period of time in order to determine the exact causes of the deterioration.

The use of fan-assisted radiators is generally not recommended as the most efficient way of heating a building. Heating the air in this manner will inevitably lead to more moisture in the air (warmer air carries more water than cooler air) which will then be deposited on colder surfaces where the air cools.

According to Tobit Curteis (environmental monitoring specialist), 'various research projects are presently being undertaken in the UK and across Europe examining sensitive heating for historic churches. The results show broadly that acceptable conditions can be achieved either through establishing stable ambient heating throughout the building (generally based on convective heating systems which heat air), or by very localised heating which only heats the users of the building (generally based on radiant systems which heat surfaces). It is the fluctuation in overall ambient temperature (and therefore relative humidity) which tends to be the most damaging microclimatic factor and should therefore be avoided.'

8. TREATMENT PROPOSALS

The treatment trials have indicated that the panel surface can be cleaned using saliva carefully applied with cotton wool swabs followed by further cleaning with a 5 % solution of Tri-ammonium citrate (chelating agent that sequesters the dirt layer).

The figures on the lower panel only require a light clean using saliva carefully applied with cotton wool swabs with the aid of a magnified head lens. It may be necessary to use a 5% solution of TAC on the background to the lower panels where some microbiological growth is also evident.

During the cleaning the surface can be carefully examined using both a UV torch and a digital microscope.

Areas that have been damaged will require limited toning in to reduce the impact of the losses using either watercolour or Gamblin retouching colours as appropriate.

It is recommended that the surface should be protected with a synthetic resin varnish (Regalrez 1094 in Shellsol T) with added UV protection (Tinuvin 292) to prevent any further microbiological attack. The varnish will need the addition of microcrystalline wax to achieve the same matt finish.

8.1 Community participation

This project would provide an excellent opportunity to involve the local school in workshops and talks about the painting techniques used to create the paintings. In the past our company has run gilding workshops for primary school children and given talks about the origin of some of the colours used and how they were created.