

Thornhill St Michael and All Angels

Diocese of Wakefield

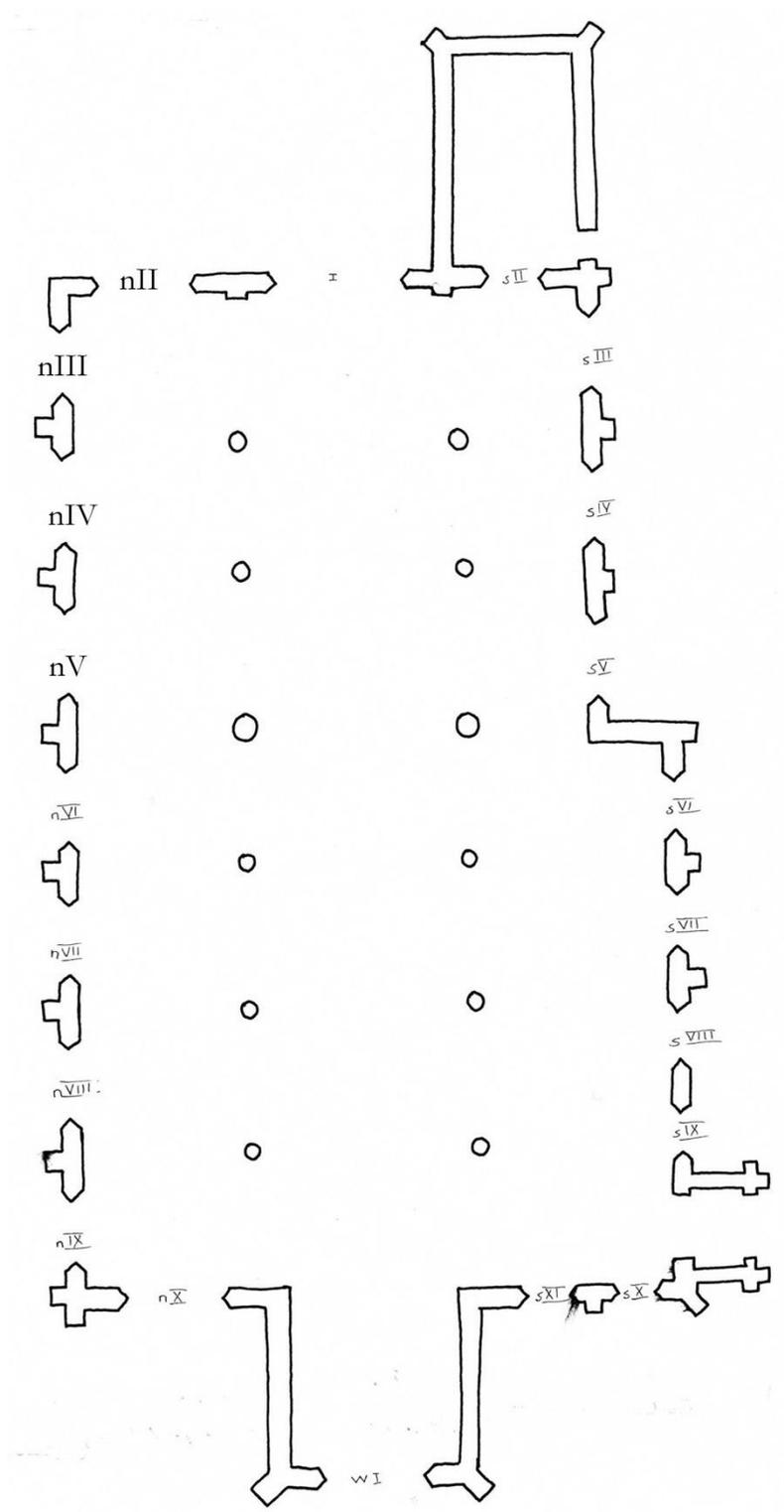
Savile Chapel windows

Condition Report

J & R Cooke Ltd
December 2008

Thornhill St Michael and All Angels

Ground plan



Commissioning of present condition report

This report on the condition of the York glazing of the Savile chapel windows – windows nII, nIII, nIV and nV- with outline recommendations was prepared at the request of Mr Brian Pearson for the PCC. The glass of the east window of the chapel, nII, in particular, is known to be in very poor condition. The windows were inspected on 2nd October 2008 from ladders; internally to full height, with the exception of nII, where tracery lights were not closely accessed. External access to nII was similarly limited on height; wire guards prevented close access.

Thornhill contains several c15 windows, restored by Burlison and Grylls at the time of the reordering by G E Street 1877-1880. Most of this glass, including that of the Savile Chapel, is stylistically associated with the York school of glass painting. The great east window, a Jesse Tree of 1499, differs from the York glass and is thought to be the work of continental glaziers. It is associated both stylistically and by patronage with the Court glass produced by the Southwark glass painters.

There are five panels of fragments of ancient glass in the west window given by Dean Milner White in 1953. There is in the north choir a panel by Henry Gyles.

The majority of the other stained and painted glass is the work of Burlison and Grylls, and is of similar date to the restoration work to the ancient glass between 1877 –1880,

Historical context

For a detailed account of all the medieval glass in the church, with the exception of that in the tower and thought to have been donated to the church in 1953 by Milner White, then Dean of York and which consists of an arrangement of fragments of c14 glass from the Minster, see L.S. Jones, 'St Michael and All Angels, Thornhill: a catalogue of the medieval glass' (unpublished B.Phil dissertation, University of York 1971). The present writers owe a debt of gratitude to him for his painstaking cataloguing of this glass and regret we have been unable to trace him.

Tracings made by Burlison and Grylls at the time of the restoration survive, and are useful in clarifying the extent of their restoration, and the condition of windows nII and nIV prior to restoration.

Tracings made by The Reverend J Fowler of nIII were published in the Yorkshire Archeological Journal in 1870; the original hand coloured tracings appear to have been lost.

Since the Street restoration, it is known that work was carried out on nII by the workshop of the Dean and Chapter of York Minster in 1953, though no records appear to have been kept.¹ All work appears to have been done *in situ*.

Windows nIII and nIV were re-leaded by York Glaziers Trust in 1974, and minor work to windows in the Savile Chapel has been carried out by the Trust *in situ* over the period 1970 – 1981. The records for much if not all of this work survive in the YGT archive, and the present writers acknowledge the kind assistance of Sarah

¹ Peter Young, Archivist to the Dean & Chapter of York, has confirmed that he cannot identify any material relevant to Thornhill in the Milner-White papers held at York, though some of his papers are at King's College Cambridge.

Brown and Charlotte Allaway of YGT in making this information available. The church archive contains a set of slides, possibly taken by Peter Newton of York University, which we would date to about 1970, ie before the restoration of nIII and nIV by York Glaziers' Trust. These have been useful in determining condition of nIII and nIV prior to their restoration.

Condition of the Savile Chapel glazing

As a general note, the glass and pigments of the Savile Chapel windows are in much worse condition than the Southwark glass of the main east window, which was conserved by the present writers at Barley Studio in 2000. The source of the glasses and their chemical compositions are likely to be different.

At the date of inspection condensation settlement was not evident, though the 15c white glasses in particular are severely decayed, most markedly in the east window of the chapel, there was ample evidence of past action of condensation and moisture attack on all windows, in each case more marked on the internal than the external surface.

We understand that until recently this part of the building in particular was damp, due to a soakaway system for the guttering. The drainage has recently been linked into the storm drain and the building is now significantly less humid, and with apparently good air circulation throughout. The heating in recent years has been kept at an ambient and constant 60°. Though reference is made in Jones to "the system of heating lately used in the church which utilised a coke boiler" (p.10), Mr Pearson is clear that the heating has always been provided by a system of hot water pipes, heated by an externally ventilated coal boiler as the church benefited from free coal from a nearby pit, and there is no nearby coking plant. Fumes from coke burning would have had a deleterious effect on glass and pigments. Jones(p.8) and others refer to the storage of some glass in a mine during the 1939-1945 War, and we are aware of the arguments advanced by Newton (1982) pp. xiii- xiv for the damage caused to glass by adverse war-time storage and accelerated post-war corrosion. However, we have not found any evidence that either nII or nV have been removed since the Burlison and Grylls releading. Our findings are supported by anecdotal evidence of a parishioner with a connection to the church of some eighty years and who was a miner at the local colliery. He confirms that the Jesse window was stored in the mine, but not the Savile chapel east window, which was 'left *in situ* and covered by a lead screen in a frame'. As windows nIII and nIV were removed for releading in 1974, evidence for earlier twentieth century removals has now been lost.

The glasses in all four windows are deteriorating; the glass in nII gives most cause for concern. The Burlison and Grylls tracings indicate that as early as 1877 the processes of glass deterioration at least in respect of the surface layer and manifesting itself as pigment loss was under way, and its condition was known to be poor in 1953 when external plate glass was installed in an effort to protect it from further pigment loss and glass substrate deterioration, and the detail then visible was recorded in a water colour, now on display in the Chapel.

The YGT report of November 1970 which records its relatively poor state at that time, recommended only *in situ* work. Reasons are not given, but it is reasonable to assume that this was owing to the view taken of the risk to the 15c material in removing this window; nearly forty years on we have serious concerns that removal of this window without further damage may prove impossible due to the advanced state of deterioration of the white glasses it contains.

Removal of the adjacent north wall windows nIII and nIV was recommended for releading in 1970, and we can infer from the report that the glass of these two windows was better at that time than nII. Therefore, the post conservation reports on nIII and nIV written by Christopher Wardale in 1974 make disturbing reading for those who now seek to conserve this glass:

nIII "...Due to the unstable character of some of the medieval glass it was found necessary to 'triple plate' these pieces. In some cases it was necessary to replace small pieces of medieval glass *which were found to be beyond recovery...*"².

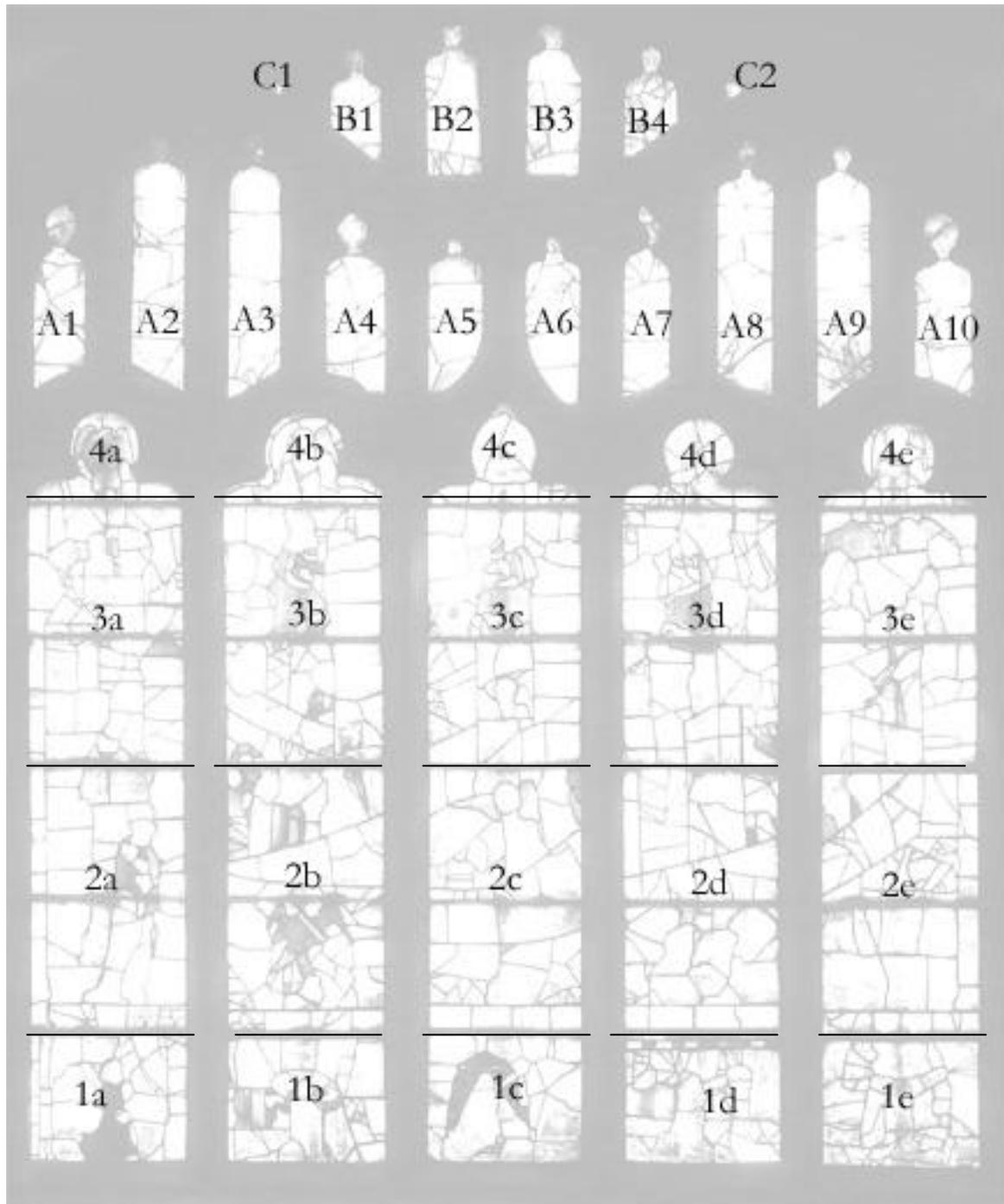
nIV ... "Due to the unstable nature of some of the Medieval glass, these particular pieces have been 'triple plated'...It has been necessary to replace some of the Medieval glass with toned c19th glass and modern antique glass *as the original glass had crumbled to a state which made it impossible to recover the glass*"³

The attached report on the condition of the c15 white glasses by Dr David Martlew confirms empirical evidence that the damage has been caused by moisture attack. However, it should be noted that the deterioration is so advanced in the case of nII that the processes are now internal to the glass structure; moisture does not need to be present for deterioration to continue.

² Our italics

³ our italics

Thornhill nII



Savile Chapel east window: nII

Sometimes referred to as the 'Doom' window.

Jones (p68) notes that it 'lacks a number of the traditional elements of the medieval Doom...and the emphasis is on Salvation. He suggests that the present arrangement was not the original plan, and that the theme of the window could be stated as 'the Resurrection and Salvation of the Soul through the Passion of Christ...and, in some measure, a celebration of the intercessory powers of the Virgin Mary and Christian Martyrs.....'

Jones is of the opinion that the work was executed by the York workshops, but that its design, and composition which runs through the mullions has a continental influence.

Sizes

Perpendicular fenestration: each of the five main lights measures approximately 19" x 90" each in four panels, with divisions at 15" 47 "and 78" from sill.

Tied to external ferramenta characteristic of Street's reorderings and assumed to date from the 1880 restoration; each light has a single ½" square stanchion set arriswise with fleur de lys finial: five knuckled horizontals each ½" x ¾"

Tracery panels not closely accessed:

each 8" width approximately, with exception of C1 and C2

A2, A3, A8 and A9 approximately 30" height

A1, A4,A7 and A10 approx. 24" height

A5 and A6 approx. 18"

B1 and B4 approx. 10"

B2 and B3 approx. 18"

C1 and C2 approx. 4" x 6"

Catalogue of glass

Notes

- a) **panel divisions and dimensions** see above and diagram
- b) **panel numbering:** see diagram - CVMA system has been used and is indicated bold throughout. Notation in brackets which follows in the text is that used by Leslie Jones.
- c) **inscription** - the continuous stickwork (clear on black painted ground) text running across base of all five lights above the donor figures in two rows now⁴ reads:
 "Pray for:the good prosperitie, mercy and grace of William Sayvile, oon of the companye of Grayes Inn and for the soul of Syr John Sayvile and Dame Alice his wife, fadyr and modyr to the sayd William, and for the good prosperitie, mercy and grace of Syr John Sayvile and Dame Alice, which William Sayvile enlarged the quire at hys cost at the oversight of Syr John his newew, the whiche worke was finished in the year of our Lord 1493"

⁴ The present wording differs from that recorded by Glover and Dodsworth

MAIN LIGHTS

Each of the five base panels contains a donor figure; the commemorative inscription runs across the five panels above. Above this, the main subject continues through the four mullions across all five lights.

1a [1A]

Donor figure (?William Saville), kneeling at a *prie-dieu* in profile facing south, purple robed. Scroll around his head now illegible. Set against a domestic interior, with curtain rail and hangings; black and white floor tiles. Predominantly white glass with yellow stain. Approximately 2/3rd c15 glass, with the right hand third c19 restoration.

2a [1B and 1C]

St Peter with keys, blue robed, flanked by two souls in shrouds. Part of stick work inscription recorded above. Predominantly white glass with yellow stain. The female shrouded figure, the area around it and part of the inscription are c19, otherwise c15.

3a[1D and 1E]

Walls of the Holy City with two musician angels; banner depicting the five wounds of Christ at top of crossed staff. Above the parapet are two musician angels, under a canopy which overarches all main lights. Predominantly white glass, yellow stained. Very high proportion c15 – one piece of c19 glass, cut and leaded into four, forming lower part of window detail was noted.

4a [1F]

Musician angel playing ?harp; pot metal blue glass, white glass ground, yellow stained. One small piece of c19 glass was noted just above the holed piece at the top of the panel, otherwise c15.

1b [2A]

Kneeling ?female figure at *prie dieu*, set against an interior with curtain hangings. Scroll around head now illegible. "The figure is praying to an image ... of the Assumption of the Virgin: the outline of the *vesica* being visible in yellow stain, and signs of the four supporting angels."⁵ White glass, yellow stained. Pot metal blue and flashed ruby hangings. High proportion c15, some c19 and with further recent *in situ* repairs to the bottom right, effected in abraded c19 glass by York Glaziers' Trust.

2b[2B and 2C]

At base, part of stick work inscription recorded above.
St Michael with balance, weighing a soul; above, souls with angel in procession . towards the Heavenly City, c15 glass predominantly white, yellow stained, some detail in pot metal glasses. Much restored panel, with at least eight c19 pieces.

3b [2D and 2E]

⁵ Jones p.51

In lower part a stairway with angels and souls; above is a seated male red robed figure, with green tunic, wearing a triple tiara, facing left – a ?Trinity figure: to both sides of this figure, angels on blue glass. From the evidence of the tracings, it would appear that part of the stairway has been reconstructed by Burlison and Grylls, the upper part of the panel mostly c15 – two further c.19 insertions were noted. Predominantly white glass, yellow stained.

4b [2F]

musician angel playing ?trumpet; partial fleur de lys repeated motif at base; white glass, yellow stained; pot metal blue wings. c15, with extraneous material used by Burlison and Grylls to fill out the panel to the shape of the stonework.

1c [3A]

A kneeling figure of a knight in armour; a pot metal green pavilion behind. Scroll coming from his mouth now illegible. Angel to left of pavilion and to right an area depicting "severely corroded Christ of Pity' emerging from the tomb bearing scourges and spear, under a canopy supported by angels...."⁶ White glass, yellow stained, except pavilion noted above. c15

2c [3B and 3C]

At base, part of the stick work inscription recorded above. A shrouded soul emerging from a tomb, another to the viewer's right. Above is an angel with a ladder, greeting a procession from 2b, pot metal blue winged, another to the viewer's right, winged with ruby flashed glass. Predominantly white glass, yellow stained. Rearranged, but predominantly c15. The shrouded soul on the left is c19.

3c [3D and 3E]

Pot metal blue winged angel on balcony blowing a trumpet with heads in procession moving upwards above a balustrade. Two windows of the Heavenly City radiate light. In the upper part of the panel is a Trinity figure as in 3b, seated red robed with blue tunic facing the figure in 3b, against a row of arches; musician angels as 3b on pot metal blue glass, otherwise white glass, yellow stained. The upper part of this figure appears to be a Burlison and Grylls reconstruction/restoration; glass c19, as is the area to the left of the upper part of this figure. Otherwise white glass, yellow stained, c.15.

4c [3F]⁷

musician angel playing a lute; fleur de lys repeated motif at base: white glass, yellow stained.. Two pieces of c.19 glass – apex of panel and a further one with fleur de lys were noted

1d

A kneeling female figure at a *prie dieu* Scroll coming from her mouth; "Ora pro..." still legible. Object of her devotion an image of the Virgin and Child. Alternating red and blue leaded band across top of panel. Predominantly white glass, yellow stained; pot metal blue, yellow stained glass forming the curtain hanging. c15

⁶ Jones p.55 – description based on TT

⁷ As diagram, p.43 Incorrect numbering in catalogue on p59, where it appears as a duplicate '3E'

2d [4B and 4C]

At base, part of the stickwork inscription recorded above. In the lower part of the panel [4B] " the reading ... depends almost entirely on the tracing for clarification of the few blurred remains of the painting. The figures in shrouds rise from tombs of which the lids are set aside. Beyond them flows the stream of water and above rises the masonry of the outer wall of the City. The figures face left. One covers his eyes, the other cups an ear, evidently signifying hearing the summons of the trumpets above".⁸ In the upper part of the panel is a staircase with souls and angels moving upwards to the right, one with pot metal blue robe. On the left, a female figure looking through a window. Predominantly c.15 white glass, yellow stained, some c19 and later interventions.

3d [4D and 4E]

The lower part of the panel [4C] "...is very difficult to read and the following results from a judicious collation of the information remaining in the window itself with those parts of the tracing which have obviously remained the same. In the centre should be the figure of an angel, wings extended, blowing a trumpet to the left. He is presumably standing on a balcony. Left is a small head at a window. Above right is another figure, standing on a balcony, apparently reaching over to grip the hand of persons on a lower level, of whom there are at least two."^{9 10}

In the upper part of the panel is the Virgin, seated left, red robed. Musician angel to viewer's left, blowing a trumpet, another pot metal blue winged angel to right. Radiance behind the figures.

Predominantly white glass, yellow stained; mostly c.15. Musician angel Burlison and Grylls c1877, as is part of the figure of the Virgin.

4d [4F]

musician angel playing a harp; fleur de lys repeated motif at base; white glass, yellow stained; c.15

1e [5A]

"A knight, armed,...arms of Savile on his breastplate, kneels on a cushion under a pavilion. A prayer desk with text anda helmet with the Thornhill crest. The pavilion flies a banner which bore the arms of Savile also.....The figure faces South and prays to a Trinity group....A scroll issues from the mouth of the knight, now very faint..."¹¹

Predominantly c.15 white glass, yellow stained. Trinity group Burlison and Grylls 1877

2e [5B and 5C]

⁸ Jones p.60-61

⁹ Jones, p.61. The present writers have used his descriptions, which is based on the tracings; as he notes in 1971, the glass is undecipherable; moreover, we have not had access to the tracings for this light.

¹⁰ In respect of this part of the window Jones (p.62) comments, as elsewhere, on the 'remarkable deterioration in the visibility of detail since the tracings were made'

¹¹ We have used Jones 1971 inscription, which appears part based on evidence of the tracings, as this panel is in very poor condition.

At base, part of the stickwork inscription recorded above. Above this, three figures emerging from tombs. Above, part of staircase with figures moving upward to the right. To the right is an area of *in situ* repair work carried out after 1971 with extraneous fragments which postdates Jones' thesis. The male figure rising from a tomb which he describes, and can be seen in the tracing, is now lost.

White glass, yellow stained; c15

3e [5D and 5E]

facade of the Holy City with pot metal blue musician angel playing trumpet at centre: above this are four more musician angels; predominantly white glass, yellow stained, but there is pot metal blue for parts of the angels, and one angel top left on ruby flashed glass. c15. There is a recent repair possibly because of impact damage, with new painted piece, distressed to blend with original work, pieced in, with black silicone emulating a lead line, between the angels; this postdates 1971.

4e [5F]

musician angel with pot metal blue wings; fleur de lys repeated motif at base. Predominantly white glass, yellow stained. c15

TRACERY

Inspection of tracery internally limited by height:

A1 [7] Unidentified saint

A2 [8] Saint Andrew, with saltire cross

A3 [9] St. James the Great, with shell and pilgrim staff (high proportion Burlison & Grylls restoration)

A4 [10] Unidentified female saint

A5 [11] Unidentified male saint (high proportion Burlison & Grylls restoration)

A6 [12] Unidentified male saint with staff.

A7 [13] unidentified male saint with crossed staff

A8 [14] unidentified saint

A9 [15] unidentified saint with book and axe (high proportion Burlison & Grylls restoration)

A10 [16] unidentified saint with saw

B1 [2] **B4** [5] sunburst

B2 [3] unidentified male saint

B3 [4] unidentified male saint – pole axe indicates St Jude

C1 [1] and **C6** [6] unidentified

Predominantly c15 white glass, yellow stained.

a) condition of glass

As indicated above, the window was restored in 1877. The original material, approximately 80% of the total glass area, is distributed throughout the main lights and tracery panels, and has been made up by the restorers from redrawing and sometimes reversing some of the detail, apparently basing their reconstruction on the internal evidence of the window.

Access to tracery was restricted on height and to the external surface by wire guards. Please see attached report by Dr Martlew on the condition of the 15c white glass in this window, which is the glass giving most cause for concern. The c15 pot metals are generally in rather better condition than the white glass. No corrosion either internal or external was noted on any of the glass dating from the Burlison & Grylls restoration.

There is an area of impact damage in panel 4a, with one holed border and a further shattered piece. Two further impact damaged areas, have been repaired with sheet glass attached to the internal painted face with an unidentified substance, probably linseed oil putty. Neither the damage nor the repairs are recent.

b) condition of pigments

c15 pigment

i) All pigments applied to this glass are metallic oxides. Back painting comprising rough shading, picked out as stickwork has been used to strengthen detail in some areas on c15 glass. We would suggest that back painting was originally extensive, now lost, but this was not possible to determine from our inspection.

ii) In places, pigment loss was noted in a pattern to a band width of 4mm. approx. following the present lead lines. Elsewhere, and generally, pigments have been lost from the internal face of the glass, in the process of deterioration outlined by Dr Martlew, where the surface of the glass has been lost, taking the painted detail with it.

iii) A comparison of the present condition of the painted work with the tracings demonstrates that this process was underway by 1877, but that further significant deterioration has occurred since that date. Moreover, if it is assumed that Burlison & Grylls restoration painting was a reasonable match with the condition of the c15 glass at that date, a comparison of the two provides a further indication that much c15 pigment has been lost since 1877.

c19 pigment

i) Despite restoration painting of 1877 distressed in places to match what would have been the condition of the c15 glass at that time, the underlying condition of the c19 pigment appears, interestingly, to be rather better than in Burlison & Grylls windows of similar date in the same part of the church depicting a Litany series; and most notably that in the window to the east of the present position of the organ.¹² It is difficult to determine extent of any pigment loss from a visual inspection; on balance, we consider that the painted work was distressed prior to firing to match c15 glass.

¹² . The writers have noted loss in the form of runs in other Burlison and Grylls windows of similar and later date, including the great east window. While this may have been a problem specific to this building, it may also be associated with the practices of the studio - fluxes and firing temperatures.

c) deposits

Internally, the window throughout is covered with a loose deposit of fine dust and cobwebs and a more adherent coating of candle soot. Externally, there is a thick layer of dust and debris against the glass at the base of main lights.

d) Condition of leadwork

The leads, predominantly 3/16" flat beaded, date from the Burlison and Grylls restoration of 1877. There is no evidence to suggest that the window has been removed and reinstalled since that date. The lead matrix was generally structurally sound, indicators being that there was no movement within panels, all ties were sound and no cracks were noted around solder joints.

In panel 3a, serious deformation was noted between the fourth and fifth bar from sill: one piece of glass now protruding from leads. As the lead deteriorates further, and the window is subjected to further wind pressure, this glass will be at risk of falling out. Panels 1b, 1c, 1d, the lower part of 2d, 1e, and the lower part of 2e, are also distorted.

The leaded light cement appears generally in reasonable condition.

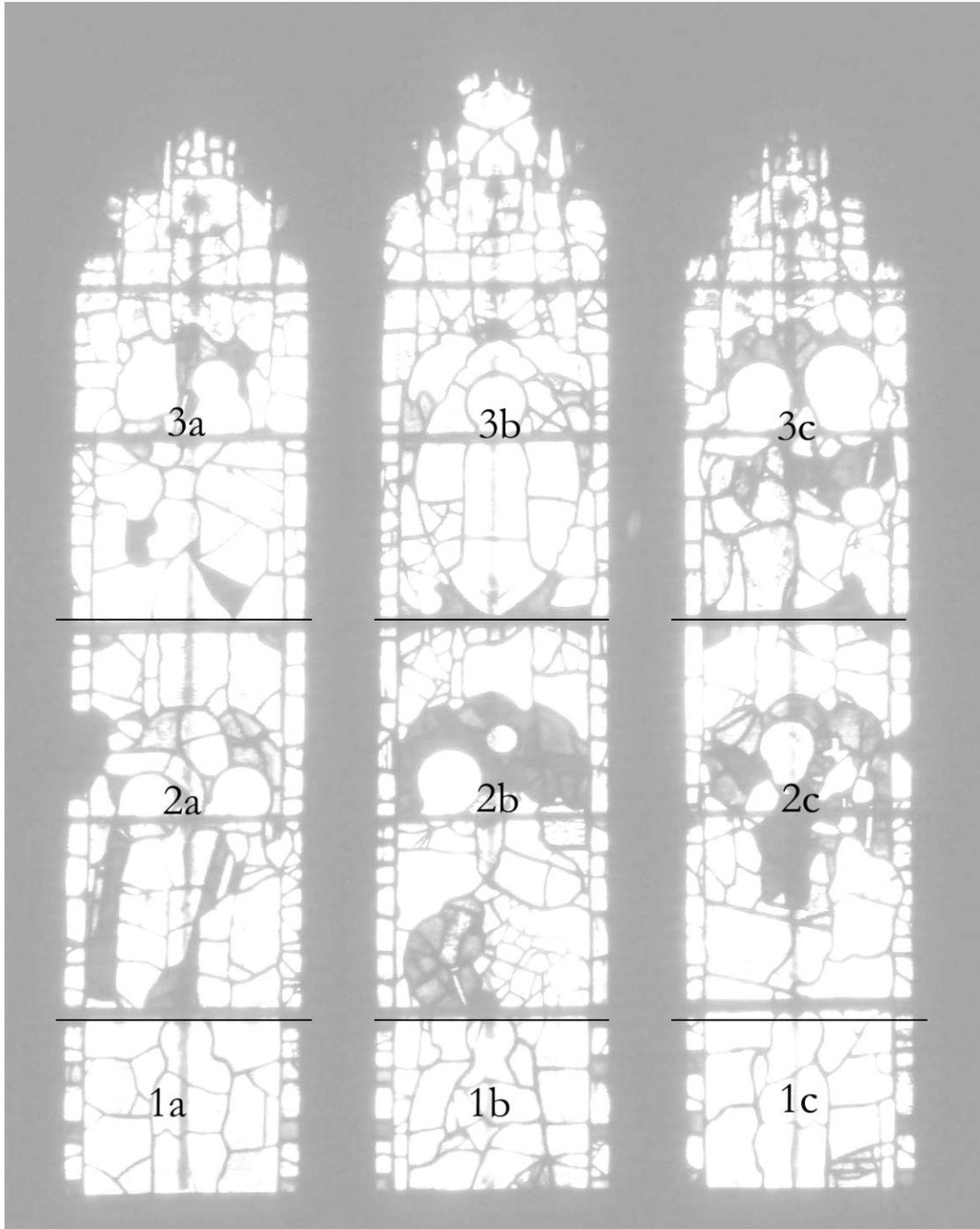
e) fixings /ferramenta

The panels are supported on external ferramenta, to which they are tied by copper ties. These comprise a central stanchion of approximately 1/2" square section set ariswise and five horizontals of approximately 3/4"x 1/2" rectangular section per light, dating from the Street restoration 1877 -80. The panels are pointed in to grooved stonework with what appears to be a hard cement mix externally and internally this seems to have been renewed with trowel mastic. Each main light has an integral lead sill.

Condition summary

Advanced deterioration of some of the c15 glasses, mostly of the white glasses.
Lost and unstable pigment, on ancient and possibly c19 glasses.

Thornhill nIII



Savile Chapel south wall first from east : nIII

It seems likely that the stonework for this window was made during the extension of the Choir in 1493, as it differs from the stonework of the 2nd and 3rd windows from the East in the North Aisle. It is also possible that the glass in *b* and *c* lights is of this date, the glaziers producing a window in keeping with the earlier glass in the adjacent window nIV. Jones notes the stylistic similarities between the ancient glass of this and nIV, notably in the decorative details, though firm dating is not possible on the internal evidence of the glass alone, and whether it was originally designed for this position. On balance he favours the c.1493 date.

It is known that the left- hand light was closed in 1622, due to the erection of a monument to Sir George Savile. The window was moved eastward and the light was re-opened during the Street restoration of the 1870's. New glass, matching the style and iconography of the two existing lights (subjects based on Fowler's speculations as to the original contents) was painted for *a* light by Burlison and Grylls. No tracings are known to exist for this window. Further work was carried out by YGT in 1974. (see below, under 'Condition')

"The present restoration has preserved the design of the glass as found. Due to the unstable character of some of the medieval glass, it was found necessary to 'triple plate' ..these pieces. In some cases it was necessary to replace small pieces of medieval glass which were found to be beyond recovery. New insertions of toned 19 glass and modern antique were used to replace the lost glass. The paint on much of the c19 restoration glass was found to be unstable. This was therefore refired and some of the painted lines were reinforced with new paint, this being fired during the refiring process. The work was carried out by G King and Son, Norwich..."

Sizes

Three light window, with double cusps in the head: *a* and *c* lights measure approximately 17" x 81" and *b* light 17" x 85", each in three panels with divisions at 14" and 42½" from sill. Lead sills, dating from YGT restoration of 1974. Tied to external ferramenta as nII; additionally, there are two 3/8" square bars in each light at the divisions, also date from 1974. The window is now leaded in ¼" flat beaded, also 1974.

Catalogue of glass

Notes

- a) **panel divisions and dimensions** see above and diagram.
- b) **panel numbering:** see diagram - CVMA system has been used - see appendix. The numbers which follow in square brackets are those of Jones' numbering system.

As a general comment, the 15c white glasses are fractured, though we know that the those in worst condition were removed in 1974. The restoration work of Burlison and Grylls is distressed to replicate the condition of the original at 1877.

c) This window was recorded by the Revd. J Fowler FSA, and his drawings were published with his articles in the Yorkshire Archeological Journal 1870. No tracings by Burlison and Grylls have been found. It is possible that they did not record this window as Fowler had recently done so.

1a [7]

A nimbed and mitred Bishop, white robed, with crozier in right hand sitting on wide throne turning to his left. Characteristic Burlison and Grylls coloured bar border, alternating with white glass. White glass, yellow stained. c19.

2a [4]

The Annunciation. Angel stands on the left, robed in red and white, staff in right hand, scroll in left, with the inscription AVE MARIA GRATIA P(LENA) The Virgin on right turning towards him. Dove, as representation of the Holy Spirit, descending between them; all against a blue stickwork diaper ground. Pot metals for robes and ground; predominantly white glass, yellow stained. Apparent pigment loss in places due to omission/distressing of trace lines to emulate condition of c15 glass elsewhere. c19

3a [1]

The Death of the Virgin

"The Virgin, blue robed, lies on a bed. She holds a rod. Behind the bed are two figures, the nearer of whom may be intended as John. Before the bed is a figure seated on the ground holding a book, probably intended as Peter. On the pillars are two figures; St George, armed and killing a dragon on the left, and St Christopher carrying the infant Christ on the right." Red diaper ground. Mainly Burlison and Grylls; some c15 century fragments in canopy.

N.B. Jones noted also a c15 St Christopher. This glass can also be seen in the slide photographs thought to have been taken by Peter Newton at around the same time, and which now form part of the church's record. The face and possibly lower parts of this figure are now modern replacements. It is known that YGT replaced some of the white glasses in worst condition.

1b [8]

Sainted bishop as 1a, but facing front, with crozier in left hand: mainly Burlison and Grylls, with further interventions dating from the 1970 restoration. One c15 piece was noted to the viewer's left of the bishop.

N.B. Jones noted also c15 border. There are now several c19 abraded pieces, inserted here at the time of the YGT restoration, and we assume these to occupy the positions of c15 glass prior to the restoration, though the photographs referred to at 3a, above, are not sufficiently clear to date the glass or see the detail.

2b [5]

The Nativity

"Canopy and pillars as [1b]. Mary sits on the left robed in white and gold, nimbed, with the Saviour on her knee. She has a loose head covering. From the Fowler tracing it would seem that the child was suckling, and held a small orb in one hand, but this is no longer clear. In the foreground, a figure in a blue robe, presumably

Joseph, is crouched over a staff. The ox and the ass are visible in the bed on which the Virgin is seated. Behind is a fence of wattles, and above is the star of Bethlehem, set in the red background." ¹³ Some pot metal for robes; mainly white glass, yellow stained c.15. Jones notes 'some cracking of the glass, similar to that found in panels [3b and 3c], and it is possible that this glass was some of that replaced by YGT, after Jones' visit.

3b [2]

The Assumption of the Virgin

A vesica shaped golden mandorla containing the Virgin, who is robed in white with gold decoration. There are four half angels supporting the mandorla. In the border shaftings there are two figures; on the left St John with the poisoned chalice, on the right the figure is very blurred but it may be the figure of an Apostle.

1c [9]

Sainted bishop, as 1a except that the bishop faces half left . Mainly c19. with some original pieces; an area to the bottom right has been filled by YGT with c19 extraneous abraded fragments.

2c [6]

The Resurrection

Christ, dark red robed, is emerging from the tomb, centre. Around the tomb are four soldiers, three sleeping, the one on left awake and astonished. Against a blue diaper ground, with canopy work.

'The figure of Christ is now very fragmentary, with little painted detail left. The head and nimbus had crumbled completely and have been replaced by a piece of c19 glass'¹⁴. Pot metals for robe and ground, mainly white glass yellow stained. Estimated at over 50% c15, remainder Burlison and Grylls, some extraneous c19 material dating from YGT restoration.

3c [3]

Coronation of the Virgin

The Virgin is on the left, blue robed, white cloak. Christ is on the right, red robed, white cloak. Christ holds a crossed staff with Resurrection banner in his left hand, right hand raised in blessing set against a red diaper ground, and canopies, as 3a On the pillars are two figures; St Lawrence on left, and St Stephen on right. Mainly c15; also Burlison and Grylls, and several new painted pieces dating from YGT restoration, including St Stephen and the lower part of St Lawrence.

Condition

¹³ Jones p.36

¹⁴ YGT post conservation report

a) condition of glass

We know something of the condition of the glass and the work carried out by YGT from the post conservation report. "The present restoration has preserved the design of the glass as found. Due to the unstable character of some of the medieval glass, it was found necessary to 'triple plate' (i.e. sandwich the glass between two layers of clear sheet glass) these pieces. In some cases it was necessary to replace small pieces of medieval glass which were found to be beyond recovery. New insertions of toned c19th glass and modern antique were made to replace the lost glass. The paint on much of the c19th restoration glass was found to be unstable. This was therefore refired and some of the painted lines were reinforced with new paint, this being fired during the refiring process. The work was carried out by G King and Son, Norwich, in conjunction with the same work required on the c19th glass of the 2nd window from east. This work was carried out under a separate grant scheme and has already been reported on." ¹⁵ ¹⁶

The long term effects of refiring previously fired glass are not known. The plates referred to are holding the badly fractured glass in place, preventing loss, but the effect on the glass within the microclimate of the plates is again not known, and it is possible that they are continuing to deteriorate within the space. Unplated pieces have continued to deteriorate. Considering that the worst affected pieces in 1974 were removed, the remaining c15 glasses are at varying stages of deterioration, manifested as the fractures described in detail in Dr Martlew's report on nII.

The exterior surface of the c15 glasses has corrosion micropits, but no cracking was noted.

b) condition of pigments

See 'Condition of glass', above. Long term effect of refiring pigments not known.

c15 pigment

Lost and unstable throughout.

i) All pigments applied to this glass are metallic oxides. Back painting was noted in areas on c15 glass. Painting on the external surface was probably originally extensive, now lost, but this was not possible to determine from our inspection.

ii) Generally, pigments have been lost from the internal face of the glass, due to lifting of paint from the glass surface, and in the process of deterioration outlined by Dr Martlew, where the surface of the glass has been lost, taking the painted detail with it.

c19 pigment

These are apparently stable. We have not been able to differentiate at this stage between pieces of glass by Burlison & Grylls repainted and refired by Dennis King

¹⁵ post conservation report by Christopher Wardale of YGT, dated March 1974

¹⁶ correspondence exists in the YGT archive between Peter Gibson of the Trust and Dennis King of G King & Son, who carried out the work. It would appear that this discussion was inconclusive as to whether or not the original Burlison and Grylls work had been fired. In our opinion, the paint was more probably underfired, and had become detached in the damp conditions we know existed in the building over the period from 1880-1970

and pieces not refired in this way, nor was it possible from our inspection to note any difference in their condition.

c) deposits

Internally, the window throughout is covered with a loose deposit of fine dust and cobwebs.

d) Condition of leadwork

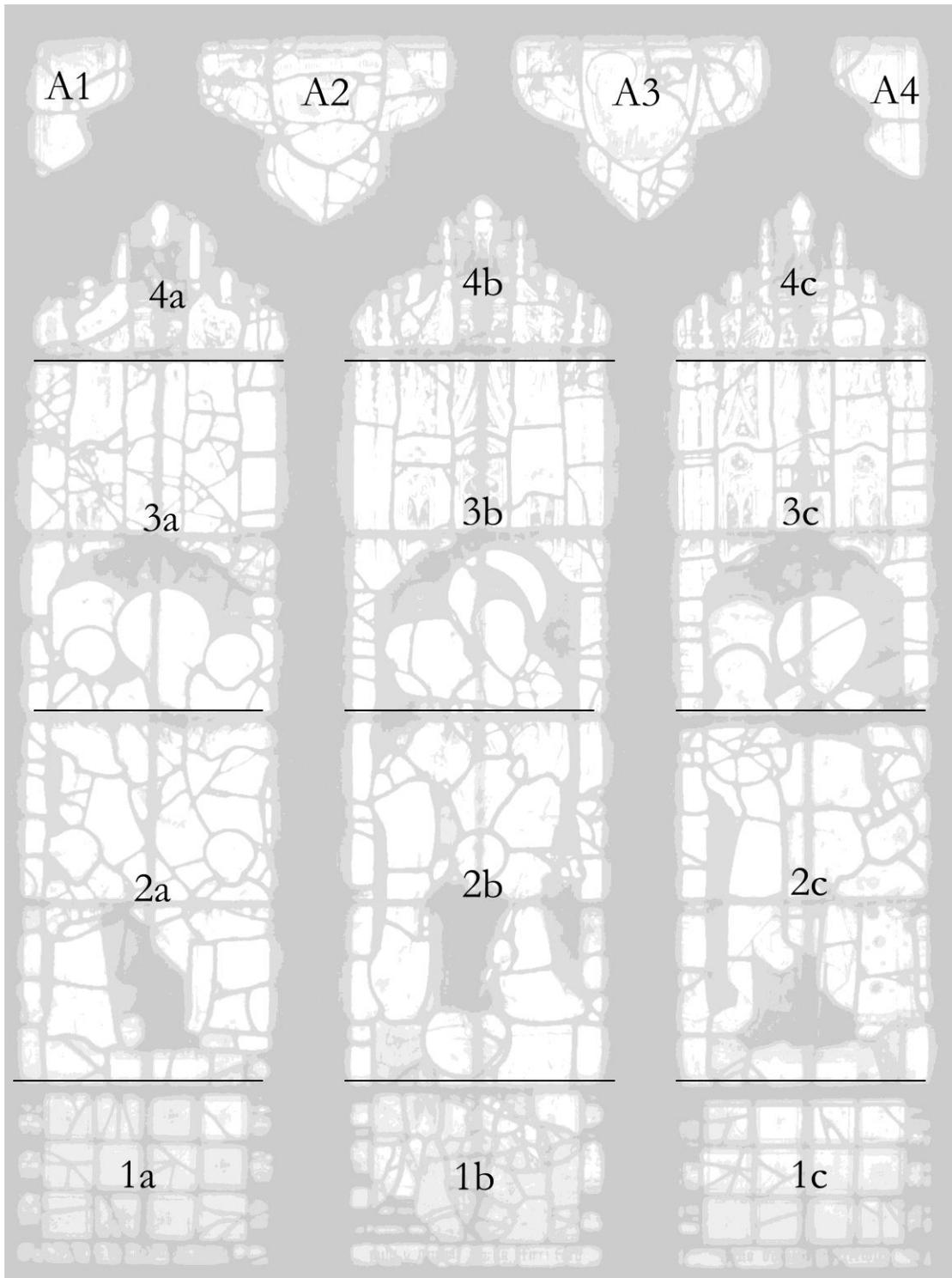
Structurally sound. Waterproofed with butyl mastic glazing compound, apparently sound.

e) fixings / ferramenta

All apparently sound. The base of the upright stanchion was cut short of the stone at the 1974 restoration. It is not known if the horizontals were tipped with non-ferrous material at that time, but the metalwork appears to have been treated with metal paint, and there is no visible sign of damage to stone work arising from the ferramenta.

The mortar is failing externally at the joint at cill in *b* light and this could be a source of water ingress.

Thornhill nIV



Savile Chapel south wall second from east: nIV [Jones' window II]

This window, dated to 1447 by the commemorative inscription recorded by Whitaker, was restored by Burlison and Grylls c 1880, and again by YGT in 1974.

Sizes

Each of the three main lights measures approximately 17" x 83" each in four panels, with divisions at 14", 42" and 69" from sill. Lead sills dating from YGT restoration of 1974.

Tied to external ferramenta, as nII, characteristic of Street's reorderings and assumed to date from the 1887 restoration; each light has a single ½" square stanchion set arriswise with fleur de lys finial: five knuckled horizontals each ½" x ¾". As nIII, there are now two additional ⅜" square section bars per light, internal at divisions, dating from the YGT restoration. Leads now 3/16", ¼" and 5/16" flat, also 1974

Tracerics

A1 and A4 6½" x 12" (max.)

A2 and A3 17½" x 15½" (max.)

Catalogue of glass

Notes

- a) **panel divisions and dimensions** see above and diagram.
- b) **panel numbering:** see diagram - CVMA system has been used - see appendix.
- c) **inscription**

The continuous text running across base of all three lights reads:

ORATE P(RO) ANI(MA) THOME SAVIL//MILITIS QUI HANC CAPELLAM
FIERI FECIT// ANNO DOMINI MCCCCXLVII

// indicates panel division

- d) **Thornhill Tracings**, pre- 1877 restoration, exist for all main subjects in this window, and tracerics A2 and A3

- e) As a general comment, the 15c white glasses, are fractured, though we know that the those in worst condition were removed in 1974. The restoration work of Burlison and Grylls is heavily distressed to replicate the condition of the original at 1877.

MAIN LIGHTS

1a

Decorative filling of painted white glass squares with characteristic Burlison & Grylls painted colour bar border. Commemorative inscription at base. No medieval glass

was noted, and the present writers consider this panel is probably entirely the work of Burlison & Grylls.

2a / 3a

St Mary Cleophas, Alphaeus wearing a purple cap, and four children, all nimbed; canopy work above, with blue diaper ground. mainly c15. some Burlison and Grylls work, and later interventions 1974.

4a top of canopy, red diaper ground

1b

Donor panel; commemorative inscription at base

On the right there is a knight in armour kneeling On left, a richly dressed lady, with arms of Savile on her gown. In the centre, a lectern with an open book. From the date of this window, thought to be Sir Thomas Savile and his wife Margery. Though somewhat jumbled, no glass later than the window date was noted, other than an *in situ* repair to the dress of the female figure. This repair must postdate 1974, and has been effected in c19 abraded glass, almost certainly by YGT.

2b /3b St Anne, Joachim with purple cap, the Virgin and the Infant Christ. – canopy work as 2a/3a above, with red diaper ground. Predominantly white glass, yellow stained., some pot metals for robes and ground. Mostly c15; some Burlison and Grylls restoration work.

4b top of canopy – blue diaper ground

1c – as 1a. Commemorative inscription at base. Burlison and Grylls work; one of c15 painted glass square noted top left as viewed.

2c/3c Maria Salomas, Zebedee wearing purple cap and their children – canopy work above, blue diaper ground. High proportion Burlison and Grylls restoration.

4c top of canopy, red diaper ground

TRACERY

Inspection of tracery internally limited by height:

A1 A4 each contain a many-pointed star or sun burst on a fern-like diaper. A4 entirely c19

A2 A Trinity shield supported by angels. White glass, yellow stained. Mainly c15..

A3 A Resurrection shield supported by two angels. Apart from face of the angel on the right which is c15, remainder c19, presumed Burlison & Grylls.

a) condition of glass

Generally, as nIII. We know something of its condition from YGT's post conservation report, which is broadly similar to that for nIII.

"Within the window there was found to be much c19 restoration glass.....due to the unstable nature of some of the medieval glass, these particular pieces have been 'triple plated' i.e. sandwiched between two pieces of clear sheet glass. It has been necessary to replace some of the Medieval glass with toned c19th glass and modern antique glass as the original glass had crumbled to a state which made it impossible to recover the glass. Due to the unstable nature of the paint on the c19 restoration glass, this glass was refired, and in some cases the painted lines were reinforced with new paint which was fired during this refiring process."

The effect of refiring the c19 glass on its structure is not known. As with the YGT restoration of nIII, the plates are holding the badly fractured glass in place, preventing loss, but the effect on the glass within the microclimate of the plates is unknown and it is possible that they are continuing to deteriorate within the space. We assume, given their condition at the date of our survey, that unplated pieces have continued to deteriorate. The worst affected pieces in 1974 were removed; the remaining c15 glasses are at varying stages of deterioration, manifested as the fractures described in detail in Dr Martlew's report on nII.

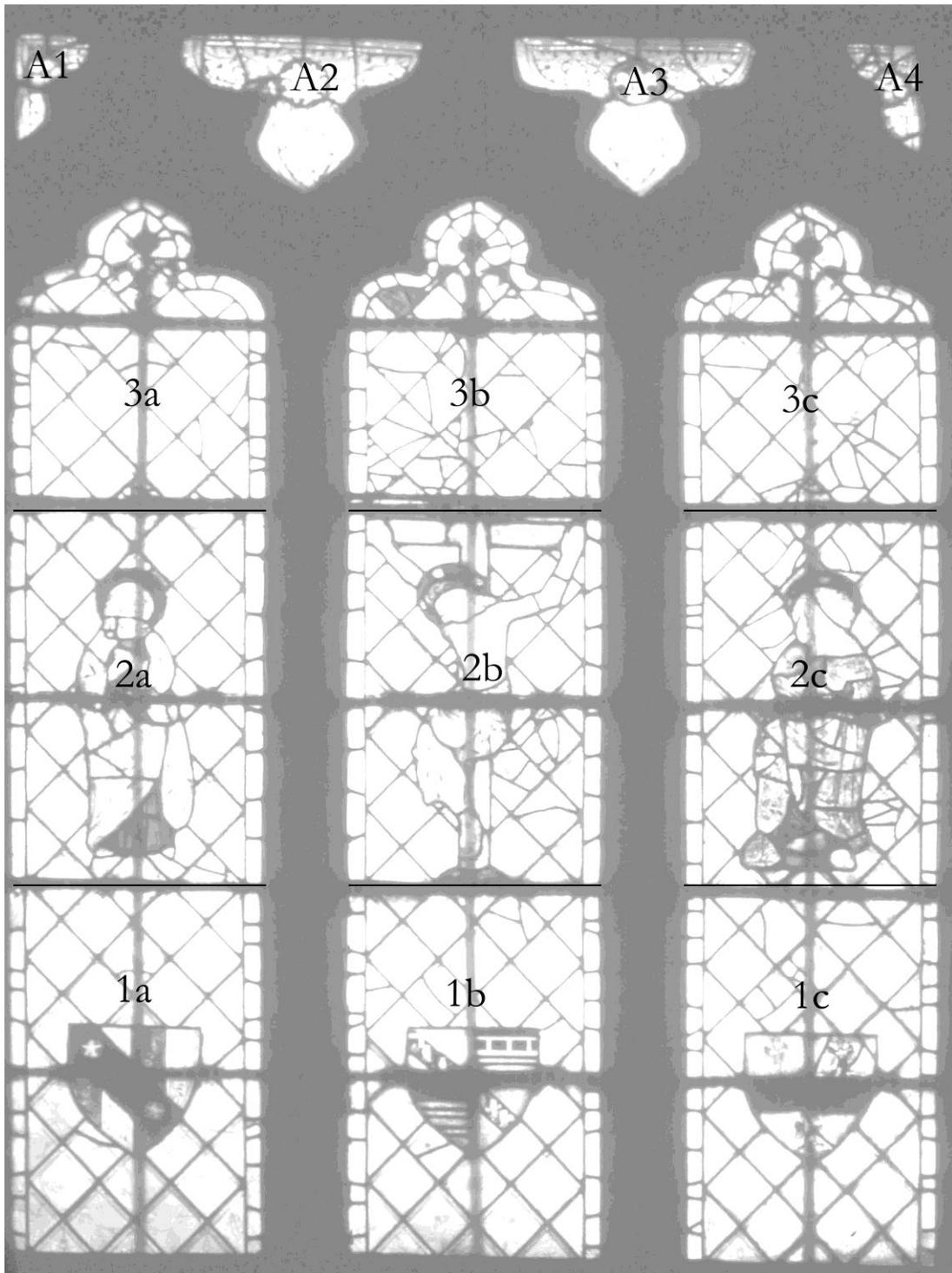
As nIII, the exterior surface of the c15 glasses has corrosion micropitting: no cracking was noted.

b) condition of c15 and later pigments

As nIII, some glass has been repainted and refired; the long term effect of refiring is not known. No back painting was noted on this window.

c) deposits as nIII**d) Condition of leadwork as nIII****e) fixings /ferramenta as nIII**

Thornhill nV



Savile Chapel north wall third from east: nV [Jones' window I]

Crucifixion with the Virgin and St John.

There are no tracings of this window, and Jones suggests that it is not possible to be certain as to its state in 1877. A high proportion of the glass is c19 restoration work. "If one assumes that...Burlison & Grylls were dealing with a window containing St John and a fragmentary Virgin, then the reconstruction of the central crucifixion involving the three figures would appear to be iconographically valid." Stonework of this window assumed to be 1447.

Sizes

Three light window, single cusps: each main light measures approximately 17" x 73" in three panels, with divisions at 27½" and 56" from sill. Tracery lights A2 and A3 17" x 14"; A1 and A4 6" x 11".

Leadwork 3/16" flat, dating from Burlison & Grylls restoration
Tied to external ferramenta as nII.

Catalogue of glass

Notes

- a) **panel divisions and dimensions** see above and diagram.
- b) **panel numbering:** see diagram-CVMA system has been used - see appendix. The numbers which follow in square brackets are those of Jones' numbering system.
- c) the figures are set against a painted quarry ground. Most of these quarries are c19 are restoration; a foliar design in *a* and *c* lights, and a floral design in *b* light.

1a Dransfield shield – paly sable and argent, on a bend gules three stars of six points or – against painted quarry ground
White glass, yellow stained. c19.

2a

The Virgin, standing half right, red-nimbed, with a blue robe and white cloak with gold flowers. Pot metals for robes; predominantly white glass, yellow stained. Head and some upper parts of the figure are c15; remainder Burlison and Grylls. 1877-80

3a painted quarries Burlison & Grylls 1877-1880.

1b 'Quarterly Savile and Thornhill with a label of three points' against a painted quarry ground – foliar motifs. Burlison & Grylls 1877-80

2b The Crucifixion against a painted quarry ground. Several c15 quarries were noted to the right of the figure, otherwise Burlison & Grylls 1877-80

3b

painted quarries floral motifs, almost all c15.

1c

Leeds shield 'argent, a fess gules between three eagles displayed sable' on ground of painted quarries with foliar motifs. Mostly c15.

2c

St John Evangelist, standing half left, red nimbed, with a red robe and white cloak, holding book in left hand. Pot metals for robes. Most of the figure, including face and several quarries all c15.

3c As 3a: some c15, remainder Burlison & Grylls 1877-1880

A1 five petalled flower against 'seaweed' foliar ground. Date not determined due to lack of daylight.

A2 sunburst against foliar ground as A1. Date uncertain.

A3 fleur de lys against foliar ground as A1. Date uncertain

A4 as A1

a) condition of glass

As a general comment, the 15c white glasses are fractured. The restoration work of Burlison and Grylls is apparently distressed to replicate the condition of the original at 1877, and it may be fair to assume that the Burlison & Grylls work is representative of the appearance of the c15 at that date.

Jones (p17) notes in 1971 the existence in panel 2c of 'a number of small cracks which are not impact breaks'. These are the internal fractures noted by the present writers throughout this series of windows, and reported on in depth by Dr Martlew.

Moreover, one piece of murrey glass forming the nimbus of the Evangelist in 2c is now holed, and not by impact. This indicates amount of deterioration in the structure of the glass between 1971 and the present. Sub-surface corrosion i.e. original surface now lost, in the form of a brown crusting was noted in some pieces of the shield in 1c and the robes of the Evangelist. Several leaf lead repairs were noted on c15 white glasses. The cause could not be determined conclusively from site inspection; we consider, from the appearance of the glass, that these repairs may be a response to internal fracturing rather than impact or pressure breakage.

b) condition of c15 and later pigments

As nIII

c) deposits

As nIII

d) Condition of leadwork

Dating from 1877-80. Generally structurally sound; some torn perimeter leads, separation from the mortar which is a strong cementitious mix.. (The mortar has been patch pointed at some date with trowel mastic internally, and the whole suggests movement of the stonework of the mullions.)

e) fixings /ferramenta

untreated since installation, other than perhaps painting as part of general *in situ* maintenance. No visible damage to stonework at present was noted.

5. Recommendations

This survey has shown that the c15 glass and pigments all four windows are in a state of advanced deterioration. Previous interventions, Leslie Jones' thesis and the existence of tracings provide evidence that this is progressive, and Dr Martlew's report explains the science of deterioration of the white glasses, those most badly affected.

We know that some 30 years ago some of the glass in nIII and nIV had to be replaced following removal for releading; we would argue that the glass noted as in similar condition in nV is a reason to intervene sooner rather than later in the case of that window or there will be the prospect of removal of more glass, as with nIV and nIII.

nIII, nIV and nV, the three north wall windows, are for the moment structurally sound in terms of the leadwork, and all could be removed for conservation work.

For the material survival of this glass, the careful cleaning and removal of all surface accretions is indicated, as these layers trap any moisture against the glass, and provide nutrition for microbes. For the long term survival of the glass, it should be protected, as the great east window, from environmental hazards, and the introduction of an isothermal glazing system in each case is indicated. Our recommendation is therefore as for the east window, where we wrote in 1998:

The main problem identified by this survey is that of lost and unstable pigments. Although the substrates are in good condition compared with the earlier York glass at the church, there are early signs of deterioration.

Isothermal glazing is internationally recognised as the best means in principle of retarding deterioration to glass, and to pigment. Given that the lead matrix is structurally sound, and would in any case no longer need to fulfil the function of weatherproofing the building, the panels could be mounted into frames with a minimal amount of intervention. A maintenance and monitoring programme could be considered. Suitable protection against impact damage should also be retained.

Since that date, new research in the field of glass science strengthens the argument in favour of a system of isothermal glazing, in that it provides a *flow* of air around the conserved glass. Although the precise nature of the deterioration is due to its chemical composition, the glass has deteriorated as described in Dr Martlew's report due to moisture attack over time. While adjustments in the internal environment might be effected in a number of ways – increased controlled ventilation and maintenance of a constant low temperature – it is now known that deterioration of glasses of all types occurs at even low levels of relative humidity in controlled museum conditions. Isothermal glazing prevents the formation of condensation settlement on the surfaces of the conserved glass and thus retards further deterioration by removing the condensation element of moisture attack. Moreover, new research in the field of glass science appears to indicate that the *flow* of air around glass may also be a significant factor in slowing the rate of deterioration, for any given chemical composition.

The recommendations for nIII, nIV and nV are for a full isothermal glazing system.

Provisional outline method statement for nIII, nIV and nV

All main lights and tracery panels to be removed from stone, crated and transported to the studio, the openings to be temporarily boarded. Removal of ferramenta for blasting to derust and treating with rust-inhibiting system such as zinc rich primer and top coat micaceous oxide. Possible cutting at cill of nV to match nIV and nIII.

A full assessment to be made of the existing condition of each panel: rubbings, photographs and diagrams to record cracks and breaks in glass, corrosion, paint condition and previous restorations.

Pigment and corrosion deposits to be examined under microscope: appropriate cleaning methods determined and work carried out.

Possible partial releading of some panels for removal of leaf lead leads where possible: edge bonding with use of conservation grade resin such as Hxtal NYL-1, missing areas, if any, to be cut in and painted to match, possible use of moulded external plates for mechanical support only if advised. In any releading, leads to be of same weight and profile as those being replaced.

New perimeter leads to all panels, 'Barley method' glazing into U channel manganese bronze frames

Fabrication of leaded external glazing; proposal would be for kiln distorted panes to design of external ferramenta are suggested, as for the great east window.

Fixing of external glazing in current glazing groove pointed in lime mortar mix; lead cills to replace existing ones as necessary. Internal mounting of stained glass.

Refixing stainless steel guards

Photographic, diagrammatic and written record of conservation work to be created and deposited with the appropriate authorities, in accordance with any grant conditions.

The east window is more problematic and our suggestions here are tentative at this stage. Removal might be attempted, but there are clearly concerns about any further vibration or pressure on this severely degraded glass.

One possibility for exploring the practicable options might be a careful attempt to remove the damaged panel 3a from the interior of the building (it likely that the ferramenta were installed prior to the glazing. This would permit a better assessment of the risk of removal more of the glass for work such as attempting the removal of the putty repairs etc. cleaning and framing off site. At the time of writing, we are not confident that safe removal is possible.

Dr Martlew suggests that the *status quo* may be preserved for a while by protecting the glass from impact, wind-induced stresses and from excessive vibration. This window is currently protected against impact by new wire guard, though the protection these provide against wind pressure and vibration must be negligible.

Polycarbonate might be substituted for the wire guards, which would provide impact and pressure protection; ideally some means of utilising existing drilled holes in stonework to avoid further vibration should be explored. With an air gap, this might provide some circulating air to the external, less degraded surface. A further possibility for the main lights only is to explore the feasibility of removal of the lead sills and opening up a small gap in the head by removal of mortar, lead, and / or glass, combined with sealed external sheet glazing, using the rebates created in the 1950s at the time external glazing was previously installed. If an air flow could thus be achieved with minimal disturbance to the glass, this would, in effect, be an isothermal system which might help retard the ongoing deterioration.

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