

# Brislington Community Museum News

2026 February

(Issue 13)

ISSN 2753-7773

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## St Luke's shards

With kind permission from Reverend Sarah Hancox, vicar of the church of St Luke, Brislington, Bristol, we are able to publish these photographs of both of exterior and interior of the church, and also of shards of stained glass etc, found in the churchyard.

Ken Taylor, chair



The spirelet (with weather vane) was rebuilt after being struck by lightning. When the damage was photographed in 1919, some pictures captured glimpses of the stained glass windows.

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## Contact us

Email us - [secretary@brislington.org](mailto:secretary@brislington.org) - to enquire about any of our community museum's exhibits, to provide feedback or new information etc about them, or to contribute items for this newsletter.

We aim to produce this quarterly, but our schedule is flexible so we can react quickly to urgent important events (also, during quiet times we can focus on other matters such as out-reach activities and sourcing and researching new exhibits).

# Casualties of war

St Luke's is a 15th century daughter church of Keynsham Abbey, and may stand on the site of Brislington's earlier chapel which existed in 1308 (Hunt 1893, part ii, 120-1; and Robert 1308). The Norman font and 13th century preaching cross (Foyle & Pevsner 2011, 417) may be survivals from the chapel.

Stained glass has been in use in ecclesiastical windows in England since the 7th century, but it seems unlikely any shards in this assemblage are from the windows of Brislington's chapel.

The south wall of the south aisle has three windows. That in the Lady Chapel was erected in 1908 as a memorial to Lilian Cooke-Hurle, and features bars of music from her favourite hymn. It depicts the Biblical story where Jesus explained the kingdom of heaven belongs to those who are as children (Matthew 19, 13-15).

It bears the legend: 'This window was destroyed by enemy action and was restored in 1949.' The fragments of the window were salvaged by curate Reverend Shipley

Details of the other two haven't been found in time for this publication. One was a memorial raised in 1890 to Frances Richardson, daughter of vicar and local historian Reverend Alfred Richardson. (Rowe & Williams 1986, 29). A photograph taken by William Winchester in 1919 happens to capture part of the window closest to the west end, but whether this was the Richardson window is currently uncertain.

Some of the shards collected in this study may have fallen to the ground when the older windows were replaced in 1890 and 1908, but much of the glass in the church's windows, including the three windows in the south aisle



Glass fragments were found outside the two large windows at the western end of the south aisle (between the tower and south porch).



The lower part of the stained glass window on the south wall, between the porch and the west end (Winchester 1919b).

just mentioned, was shattered during the Second World War by Luftwaffe bombing.

Brislington suffered extensively during those campaigns - the bomb that caused the war's first fatalities in Brislington fell on the night of 24-25 June 1940 in Glenarm Walk, just 80m southeast of where the glass shards were discovered (this may also have damaged the church windows).

Inside the church, high in the cinquefoil tracery of the south aisle windows, salvaged decorative shards have been re-used. Some of these fragments bear a close resemblance to shards in this assemblage, and it's likely some pieces of glass recovered from the surface of the ground in the vicinity of these windows, do indeed belong with them as part of the same design.

The shards of coloured glass were found during some exceptionally arid weather in August 2021. They were all lying on exposed soil at the west

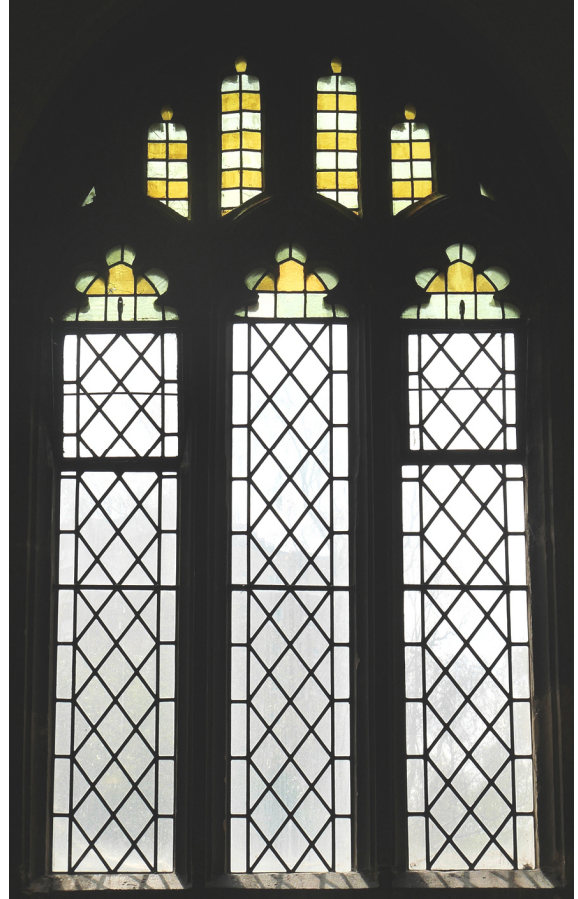
end of the south aisle of the church, and were noticed by Ken Taylor with other local residents.

Mindful that the windows had been damaged in the Second World War, and with a view to preserving these fragile relics, the specimens were collected and gently cleaned with the intention of returning them to church officials. The archive of finds along with photographs and notes describing them and detailing their context were duly handed into the safekeeping of Revd Sarah Hancox, vicar.

In view of the number and rich variety of shards found lying around these two windows, we may wonder how many more lie still in the soil. It's a moot point whether these fragments of Brislington's heritage are safer in the ground, or not. Either way of course, much more may be learned from the collected objects as well as from additional research into the windows before they were destroyed.



The present-day window on the south wall, between the porch and west end (interior).



Remains of the other window lost to WW2 bomb blast (the middle window of the three on the south wall). No shards were recovered from outside this window during this operation).



Detail of the window on the south wall between the porch and west end. These fragments of stained glass were salvaged from the window shattered by the WW2 bombing, carefully selected for suitability, and reused in this high part of the current window. The uppermost parts of the window depicting seraphim escaped blast damage, presumably because those panels had too small a surface area for the pressure wave to buckle and break them).



The 1908 Cooke-Hurle memorial restored in 1949 after WW2 bomb damage. The original work is attributed to Burlison & Grylls (Foyle & Pevsner 2011, 417).

# Stained glass

(The scale in all illustrations shows 1mm divisions.)

The assemblage contains shards that exhibit a wide range of features of stained glass. In addition to the many pieces of uncoloured glass, some are uniformly coloured, a couple are decorated with glass paint, and several feature silver stain - from which the term 'stained glass' originates.

The slightly blue-green tinge of otherwise uncoloured shards can be caused by iron impurities in the sand from which the glass was made, but other additives in the manufacturing process affect colouration.

The addition of different sorts of flux has been charted as a chronological sequence from wood-based potash, which produced a mainly greenish tint (used mostly before 1700), to a seaweed-based alternative producing a bluish tint (from around 1700 to the 1820s), and then synthetic soda which is practically colourless and has been used from the 1820s to the present (Historic England 2018).

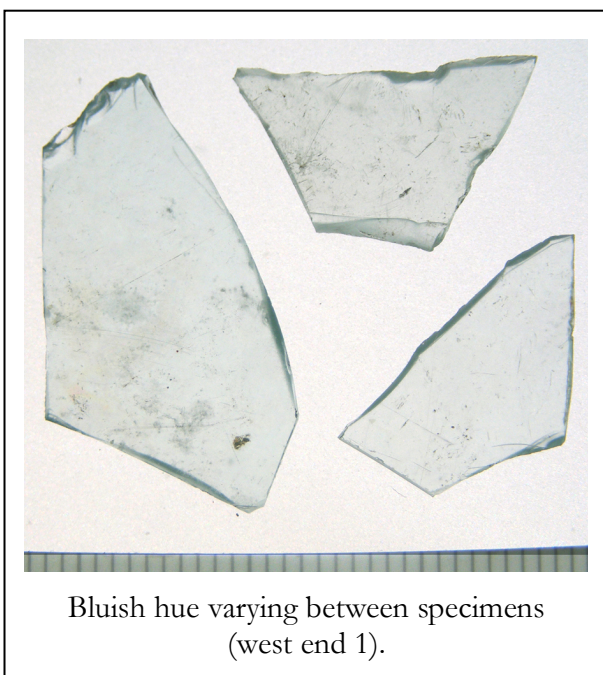
The reduction of impurities in the 1820s, achieved by the introduction of soda-lime-silica

glass, gave the glass enhanced durability. This can be useful in dating buried glass because the earlier glass is more prone to delamination by weathering - the physical destruction of the glass by water and/or chemicals in the soil - a process that often manifests in an attractive iridescence.

The light play of such corroded glass is caused by its surface splitting into ultra-thin flakes or layers, which refract light into rainbow colours.

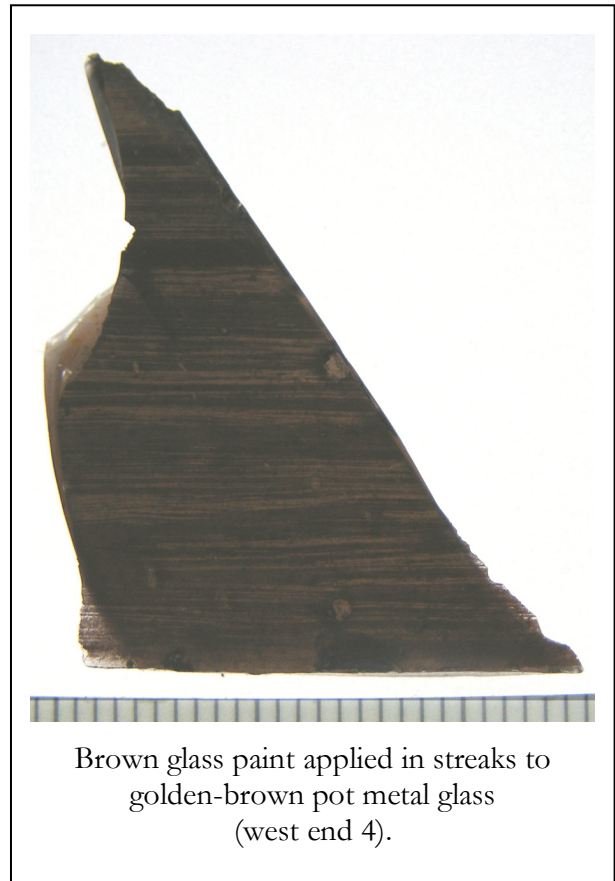
More prominent hues of single coloured glass are known as pot metal glass because the colour (in the form of metal salts) is added to the molten glass in its crucible or 'pot'. This process mixes the colour evenly throughout the glass.

Glass paint consists of powdered glass plus the ingredient/s to provide colouring, and a liquid such as oil or water to make it easy to use. Once a piece of glass is painted, it's taken to a furnace and fired to melt the paint, fusing it onto the surface. Areas where the paint has been applied can be felt by fingertips as being slightly raised above the level of the rest of the glass.





Pot metal glass  
(west end 3).



Brown glass paint applied in streaks to  
golden-brown pot metal glass  
(west end 4).

Silver stain was developed in the early 14th century, and uses a silver compound (such as silver nitrate) to create a range of colours from yellow to orange-red. The powdered silver is mixed with a liquid, such as an oil, which is painted onto the glass and then fired in a furnace. The heat burns the liquid away, and the silver chemicals become infused into the surface of the glass, giving a smooth finish.

In this assemblage, most of the edges of the shards are sharp where they were damaged and broken, but some have distinctive features:

- one shard has an edge that has apparently been milled or ground with a tool to an almost flat surface (with tell-tale scratches of a circular grinding tool)
- one has a bulbous, smooth edge formed when the glass was still molten.
- one has a still-popular technique where a tool with a tough, sharp blade is used to scratch a tiny groove in the surface of the glass, to form a line of weakness along which the glass will snap when gently stressed by bending (this method was introduced in the 16th century, using diamond-tipped cutters).



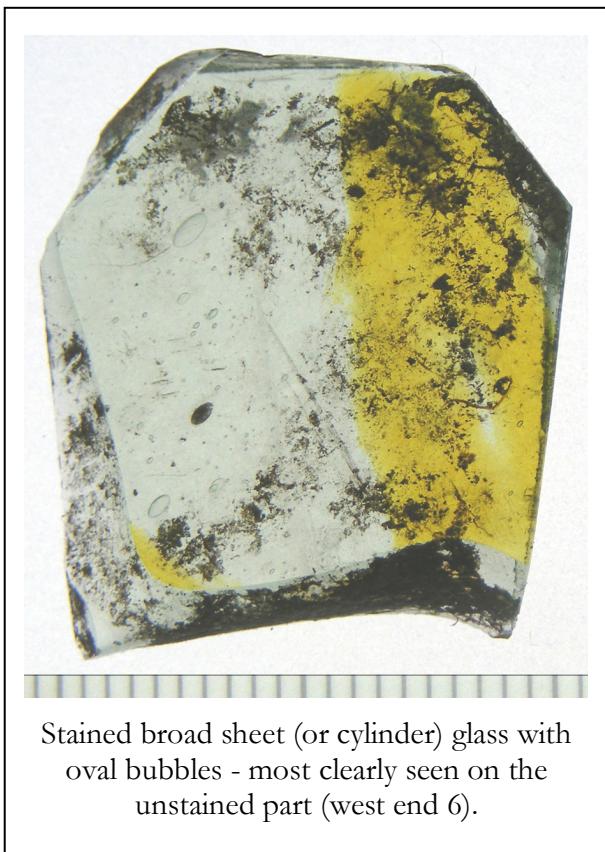
Patches of silver stain on clear glass  
(west end 5).

Modern glass is prized for its unblemished transparency, but older methods of production often allowed tiny bubbles of air into the molten

glass, and they became trapped as the liquid solidified. One technique (broad sheet glass) left bubbles that were frequently not spherical but were stretched into oval shapes - a characteristic that's not uncommon in this assemblage.

To make this glass, the craftsman would use a blow pipe to introduce a single large bubble of air into a mass of molten glass and carefully enlarge the bubble and elongate it into something like a long balloon. The ends were cut away, leaving a tube or cylinder, and the top of this was slit from end to end so the sides of the glass could unroll to lie flat like an opened book. A skilled worker could routinely produce glass as thin as 1.5 mm.

This technique has been used in England since the 13th century, but early results were often little better than translucent. In the 17th century a process known as 'blown plate glass' greatly improved the quality by grinding away surface imperfections, and achieving a mirror-like finish - a feature found on some shards. This is clear evidence those shards weren't part of the original glass in this 15th century church.



Another way of making window glass may account for the rounded, slightly bulbous edge of one shard in this assemblage - a method known as crown glass. Although known on the Continent since the 14th century, crown glass wasn't made in England until the late 17th century.

Again, air was blown into molten glass from a blowpipe, but this time it created a spherical bubble of glass, which was inflated into a thin-walled globe.

Then the glass bubble was pierced at the far end and the hole enlarged while it was all rotated. Centrifugal force stretched the orb into a flat disc that could be over a metre in diameter.

The perceived merits of different glass production techniques led to a hierarchy of artistic treatments in the iconography of 15th century church windows. Crown glass was seen as more prestigious than cylinder glass, and silver stain was even more highly prized. Silver stain was often reserved for the most significant and holy elements of a scene depicted in a window (Patin et al 2022).

It wasn't until the early 20th century that the manufacture of window glass by traditional hand-blown methods was largely replaced by machinery.

Note: all glass shards in this assemblage are flat and have approximately parallel faces (unless otherwise noted).



## South side, west of the porch

Ten shards of glass were found on the south side of the south aisle, to the west of the south porch.

### Blue-green - painted and silver stained

This shard of light blue glass has one flat mirror-like face with many small dimples; the other face (the painted side) is covered with minute striations roughly parallel to an original edge.

Over a distance of 35mm its thickness tapers from the original edge of 3.8mm to 2.4mm. It contains a dozen or so minute bubbles, almost all of which are ovoid - often being twice as long



South side of the south aisle, west of the porch (exterior).

as they are wide. The long axis of the bubbles is at a right angle to the striations.

The original edge appears to have been milled flat, and all along the length of this edge are arced striations that aren't quite perpendicular from flat side to flat side. The arcs are in a roughly parallel series, spaced at an average of approximately two per millimetre.



Curved striations from grinding the edge flat - this is the edge closest to the scale at the bottom of the adjacent photograph (south side 2).

One side of the glass was painted with four brown stripes running perpendicular to the original edge. Three of the stripes begin at the original edge and the longest (around 2mm wide) has slightly overrun into a small blob on the edge itself, covering the arced striations. Two of these stripes run the full length of the shard, while the other tapers slowly and ends. The fourth stripe also tapers but grows wider the further it is from the original edge.

The colouring agent added to this glass paint was probably iron oxide (rust) - it appears black in the photograph as it blocks the light.

On the other side of the glass from the painting, this shard has yellow 'silver stain' covering the area containing the brown lines. It was usual for glass paint and silver stain to be applied in separate operations and to opposite sides of the glass as the techniques could interfere with each other. The side with the silver stain is likely to have been on the outside of the building as it tended to be more resistant than glass paint to damage by weathering (particularly frost).



## Green

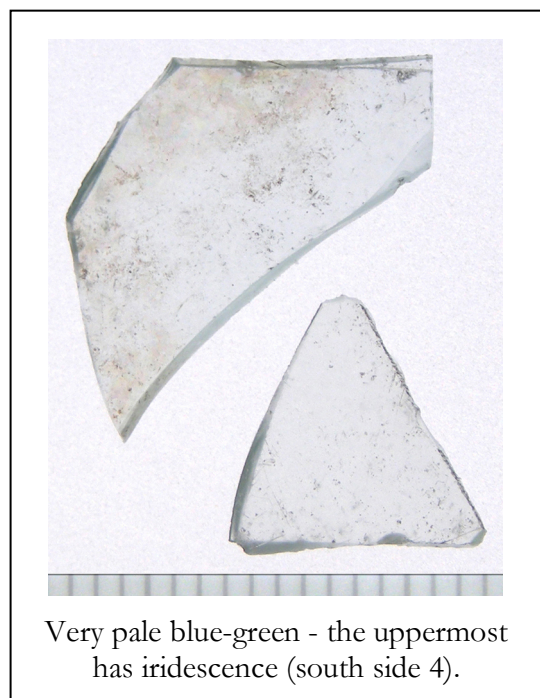
Two shards of pot metal glass, of which the example uppermost in the illustration has one flat mirror-like polished face with one small dimple. The other face is covered in minute dimples. There are four spherical bubbles in the body of this shard.

The lower shard has one undulating smooth face, and the other is covered in minute parallel striations. It has at least twenty bubbles, mostly ovoid, some resembling elongated teardrops up to four times longer than wide. The long axis of the bubbles is at a right angle to the striations.

## Blue-green (very pale)

Six shards, one of which has an original edge that is slightly bulbous and, at 3.2mm, is 25% thicker than the rest) indicating it was manufactured using the prestigious crown glass process. In the photograph (south side 1, page 8), the rim is the lower edge. Other shards, incidentally, may also have been made in the same way, but without the rim it is less easy to identify them.

In the picture below (south side 4) the uppermost shard is iridescent from the effects of delamination.





## Clear

One shard of soda-lime-silica glass was found  
(south side 6).



## West end of the south aisle

Twenty-seven shards of glass and a piece of window lead were found at the west end of the south aisle.

In 1919, on 24 December, lightning struck the church tower causing the miniature spire at the southeast corner to fall. This spirelet was larger than the pinnacles at the other corners as it gave access to the roof from the stair turret.

Debris rained through the roof but fortunately, the two people inside at the time escaped uninjured.



West end of the south aisle (exterior).



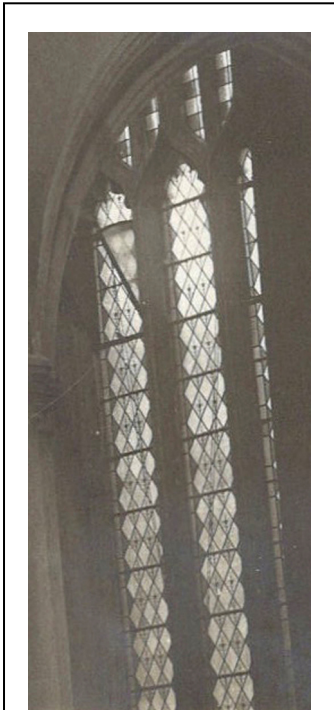
West end of the south aisle (interior).

Local photographer William Winchester, who had a well-established studio in Langton Road, St Anne's, recorded the damage in a series of pictures. Although the windows weren't directly affected, and so weren't specifically documented, parts of both the west end and the south side of the south aisle were incidentally captured in this valuable historical record.

The photographs were printed as postcards and have both been exhibited at Brislington Community Museum ([brislington.org](http://brislington.org)) where they're catalogued with acquisition numbers 231216b2 (west end) & 231216b3 (south side).



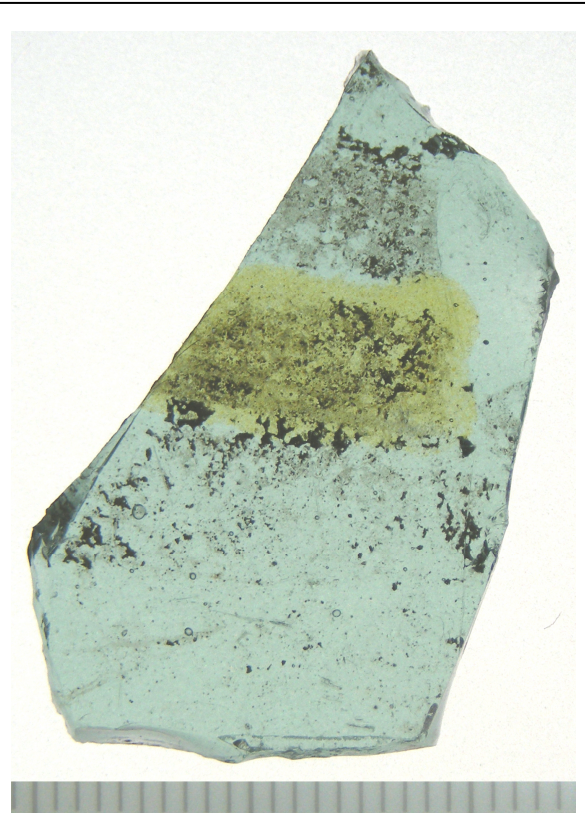
Detail of three of the upper sections of the window at the west end of the south aisle showing the surviving floral patterns that once filled the window (it would be very interesting to know the date of these charming motifs).



The upper part of the west window of the south aisle (Winchester 1919a).

### Blue - silver stained

This shard has a patch of transparent yellow silver stain on a polished face covered with small dimples. There are a dozen or so small bubbles: almost all are spherical.



Blue pot metal glass with silver stain (west end 7).

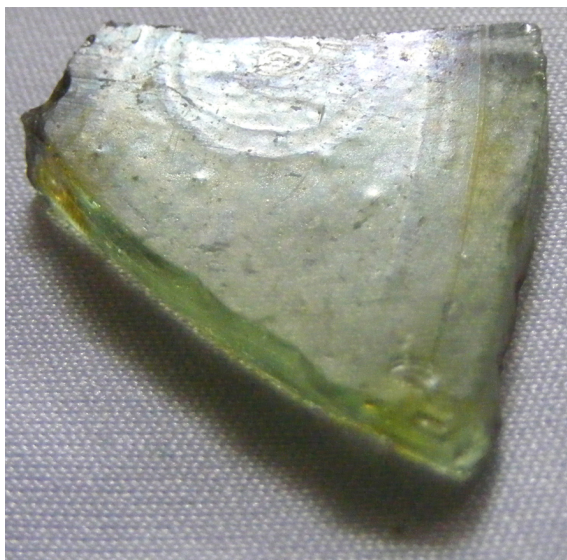
## Blue-green - silver stained

Two shards have patches of transparent yellow silver stain on one of their faces, and these faces also have numerous small dimples. The other, un-tinted faces are relatively smooth and have distinctive circular and rectilinear lines approximately 3mm wide that are particularly smooth and shiny.

One shard (west end 6, page 8) has one rectangular and one gently curving line - possibly a segment of a wide circle very approximately 300mm (12 inches) in diameter. This shard has numerous bubbles of a range of sizes, almost all of which are oval, with the long axis aligned with each other.

The other shard (west end 8, below) has two parallel curving lines - probably a segment of a circle very approximately 600mm (24 inches) in diameter. The gap between those lines is 13mm (0.5 inch) and evenly spaced in that gap is a circle 10mm (0.41 inch) in diameter, containing two or more concentric circles.

This shard reduces steadily in thickness over the course of 22mm from 3.8mm to 2.2mm (58%), and has numerous bubbles, with approximately equal numbers of spherical and oval shapes (the latter all being aligned in the same direction).



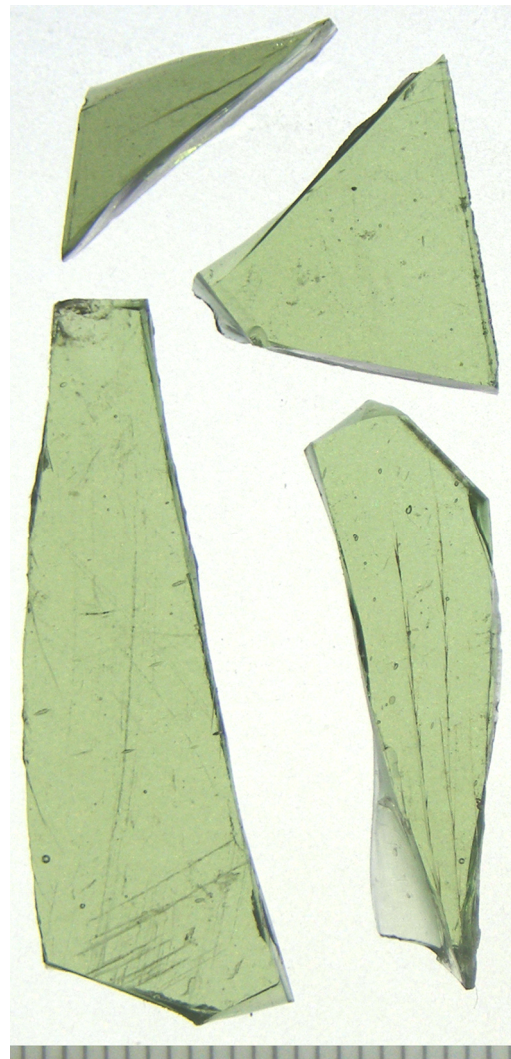
Features perhaps analogous to watermarks  
(west end 8).

## Brown - painted

This shard has one face covered with thin brown paint in numerous narrow streaks such that until it's held to a light source it appears opaque. There are numerous spherical and oval bubbles. This is pot metal glass with a golden-brown colour throughout (west end 4, page 7).

## Green

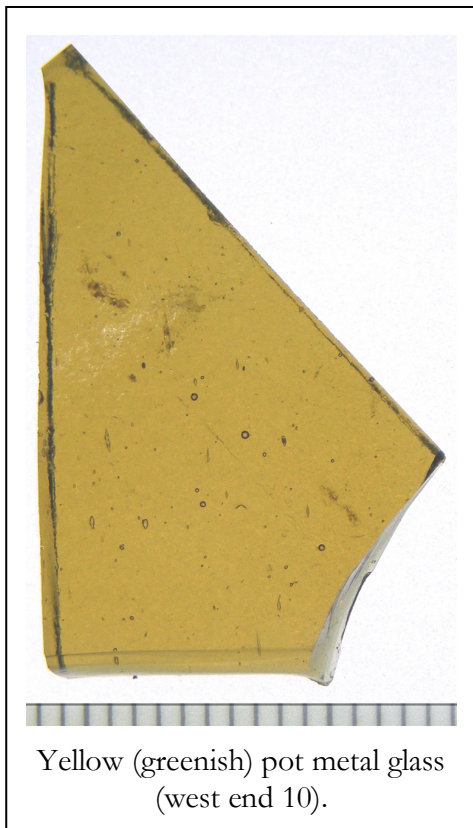
Four shards of pot metal glass: one shard (upper right, west end 9) has one face covered in minute irregular undulations. The other three shards have minute parallel striations covering one face and each has at least half-a-dozen bubbles.



Green pot metal glass  
(west end 9).

## Yellow (greenish)

Two shards, both containing minute bubbles that are a mixture of both spherical and oval (the long axis of the ovals being aligned with each other) and have faces covered in minute irregular undulations. One shard (west end 3, page 7) has one edge that is matt and smooth, unlike the usual glassy lustre of a broken edge - this is likely to be an original edge. This edge is on the left-hand side of the photograph.



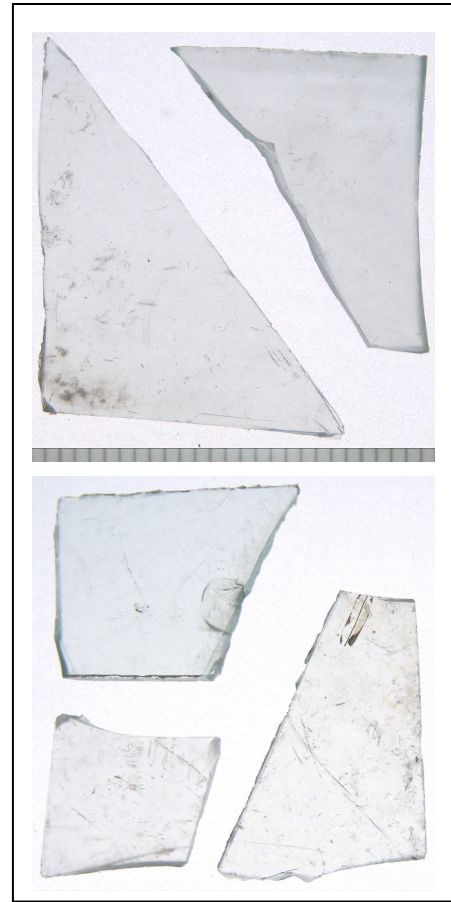
## Blue-green (very pale)

Fifteen shards, three of which are matt on both faces (west end 11).

One has iridescent delamination that extends over all its edges (west end 12). Its golden pink corrosion is so thick it appears opaque in the photograph. Three more have rainbow hues over at least some of their edges (west end 2, page 6).

These and the other eight shards have a range of hues (west end 1, page 6; west end 13, page 16).





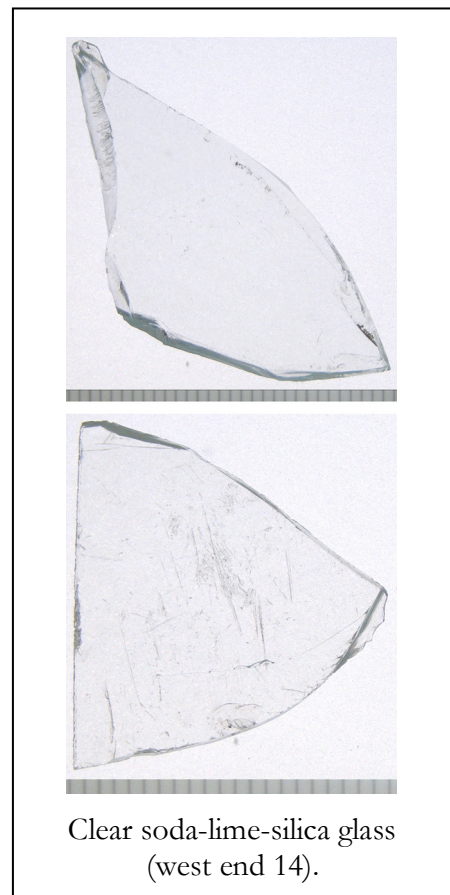
## Clear

Two shards of soda-lime-silica glass (made after the 1820s). The upper shard (west end 14) has one face covered in minute parallel striations, while the other face is covered in minute irregular undulations.

The other shard has one straight edge. On the angle where this edge meets a surface, is a line of tiny indentations.

The row of minute flake-scars appears to be consistent with those that might be made by a cutting tool drawing a linear incision to create a weakness along which the glass should break when stressed.

The width of the line is approximately one tenth the thickness of the glass, so the scored line would have been around 0.2mm deep.



# Lead

A single strip of specialist window lead known as a came (or calm) was found. It has a cross-section in the shape of the letter I, which means it was designed to accommodate one sheet of glass on each side.

It's 57mm long, 6.4mm wide, and weighs 8g. The 'I' is 5.1mm high and has an internal gap of 3.3mm, which indicates the intended thickness of the glass (lead is malleable though, providing some flexibility for varying thicknesses of glass).



Four views of a fragment of lead that joined panes of glass - with a larger view of the scale used in the other photographs (west end 15).

# Interpretation

The descriptions of the shards in this report are intended to inform further research, and the author isn't qualified to interpret the findings but, during the period of study, some thoughts have arisen as to the chronology of the windows, which it seems unnecessary to omit so long as this caveat is observed.

## South side window

Winchester's photograph shows this as a pictorial window featuring a naturalistic flock of sheep in both side panels, with the central pane depicting a figure apparently holding a lamb (a representation of 'the good shepherd' perhaps).

Superficially at least, one shard (south side 2, page 9) resembles glass in the borders to the four angelic figures that have survived in the panels at the very top of this window (with dark parallel lines and golden 'silver stain').

The remaining fragments that are best seen from inside the church could, despite their medieval styling, easily date to the range of the known windows in the south aisle: 1890s to 1910s.

The clear glass (south side 6, page 11) appears to be soda-lime-silica glass, which was introduced from the 1820s. It too may be from the window photographed by Winchester in 1919.

The shards of green pot metal glass must be of 17th century or more recent date, as their mirror-like polish is a characteristic of blown plate glass. So, these two may also be from the window destroyed in the Second World War.

The very pale blue-green shards aren't easy to date, but one of them has the iridescence characteristic of glass produced before the 1820s, and so may be a fragment of an original 15th century window (south side 4, page 10).

## West end window

Winchester's photograph shows this window to be very different from the pastoral scene displayed in the window on the south side. Here, at the top of the lights we find stripes of alternating green and yellow (greenish) rectangles, and diamond-shaped panes below. The latter are either unadorned or contain a floral motif used throughout the window.

The floral pattern has a straight stem rising to a single pair of opposed leaves surmounted by a central bulge from which three short stems emerge, each of which culminates in a flower with five petals. The flower is surrounded by four small dots, each associated with one of the four gaps between the petals.

While still celebrating an aspect of nature, this floral design is stylistically distanced from, for example, the rural idyll of the shepherd with his flock. Its simple repeating pattern is likely to be considerably earlier than such an ornate late 19th or early 20th century picture window.

Most shards may be interpreted as being from the window in Winchester's photograph. The pot metal of green and of yellow (greenish) are probably identical to the stripes at the top (a two-tone pattern bordered the floral panels). And the very pale blue-green shards could be from the unadorned diamond panes. Even the strip of lead could be from this window.

The question of whether the window of 1919 could be a survival from the 15th century or, say, a Georgian replacement, is beyond the capacity of this author to resolve in this report. Expert assessment is needed to evaluate the possibilities.

The presence of clear (soda-lime-silica) glass and the brown painted shard are anomalies that seem best to be explained as contamination from another window destroyed by bomb blast.

## Appendix - measurements

Standard measurements were taken of each shard: its greatest length, thickness, and weight.

Illustration reference	Position in picture	Max length (mm)	Thickness (mm)	Weight (g)
south side 1		22	2.5	1
south side 2		35	3.8	5
south side 3	upper	31	3.9	2
south side 3	lower	32	3.3	2
south side 4	upper	20	1.3	1
south side 4	lower	11	1.3	<1
south side 5	upper	22	1.3	1
south side 5	lower left	21	1.6	1
south side 5	lower right	30	1.8	1
south side 6		26	1.4	<1
west end 1	left	29	1.8	1
west end 1	upper right	20	1.6	1
west end 1	lower right	20	1.1	<1
west end 2	upper	17	1.2	1
west end 2	lower left	18	1.2	1
west end 2	lower right	19	1.2	1
west end 3		49	3.1	7
west end 4		41	3.4	3
west end 5		25	3.8	3
west end 6		29	4.1	5
west end 7		37	3.4	5
west end 9	upper left	18	3.6	1
west end 9	upper right	17	3.5	1
west end 9	lower left	35	3.4	2
west end 9	lower right	39	3.5	2
west end 10		30	3.1	2
west end 11	upper	42	1.8	4
west end 11	middle	39	1.5	2
west end 11	lower	22	1.6	2
west end 12		51	2.2	2
west end 13	upper left	35	1.4	1
west end 13	upper right	27	1.7	1
west end 13	middle	25	1.5	1
west end 13	lower left	16	1.5	<1
west end 13	lower right	25	1.2	<1
west end 14	upper	43	2.8	3
west end 14	lower	25	1.7	2

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- Winchester, William Albert 1919b, *Untitled postcard documenting the interior of the south aisle of the church of St Luke following lightning damage*, Winchester, St Anne's Park (Bristol).
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