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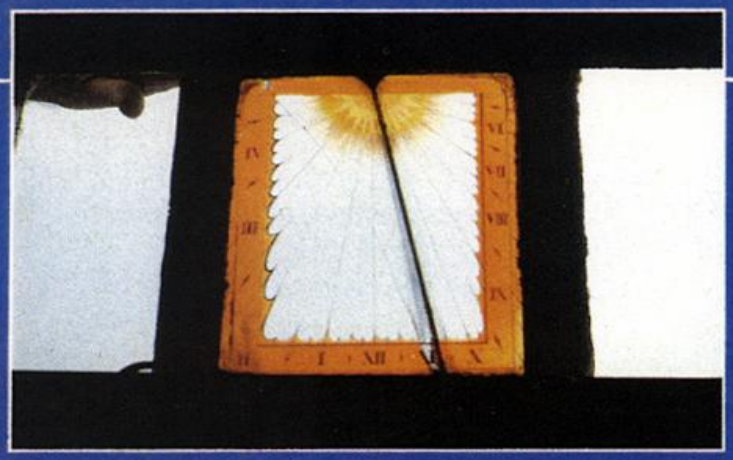
Stained-glass sundials in England and Wales

Sundials

Glass dial, dated 1664, surmounted by a crown, at Widdington Church.

in stained-glass

Christopher St J H Daniel FSA takes us on a conducted tour of stained-glass sundials in England and Wales.

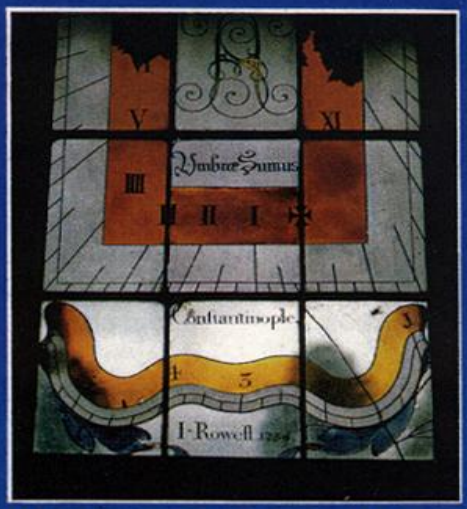


Left: A south-east declining painted-glass sundial at Kersal Cell, near Manchester.

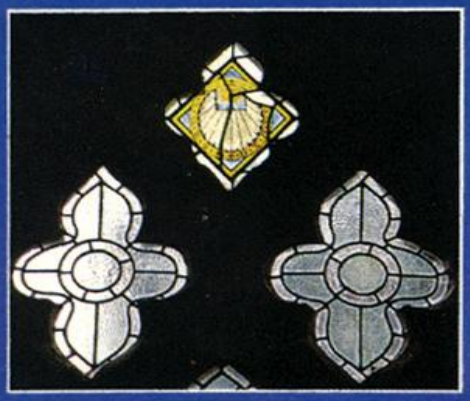
Below: The Winchester College glass dial (17th century) sadly damaged during its history.

The beautiful window at Arbury Hall, containing the sundial by John Rowell of Wycombe, 1733.

Below: The Tong Hall sundial, embellished with the four seasons, by Henry Gyles, c1702. Situated in a window above the main door of the building, this is probably the finest complete glass sundial extant, undamaged and with the gnomon still intact.



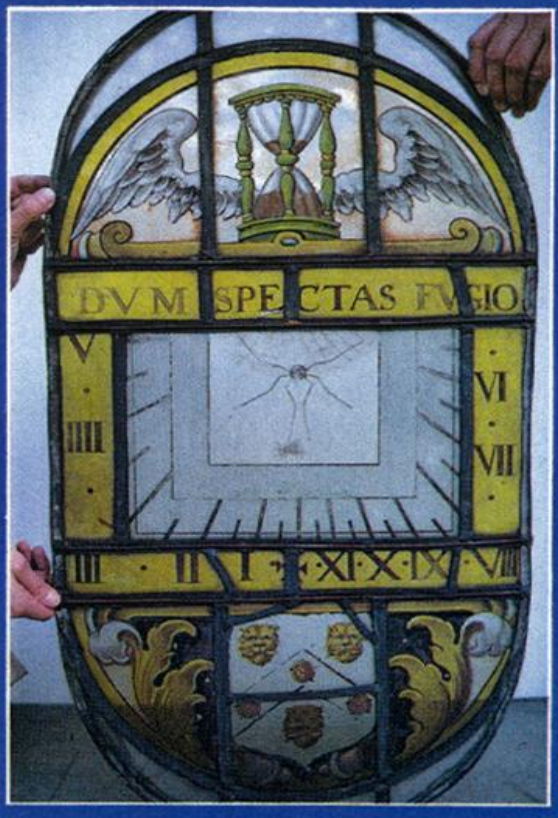
An 18th century glass sundial by John Rowell, dated 1734. It has a second hour-scale giving the equivalent time in Constantinople.



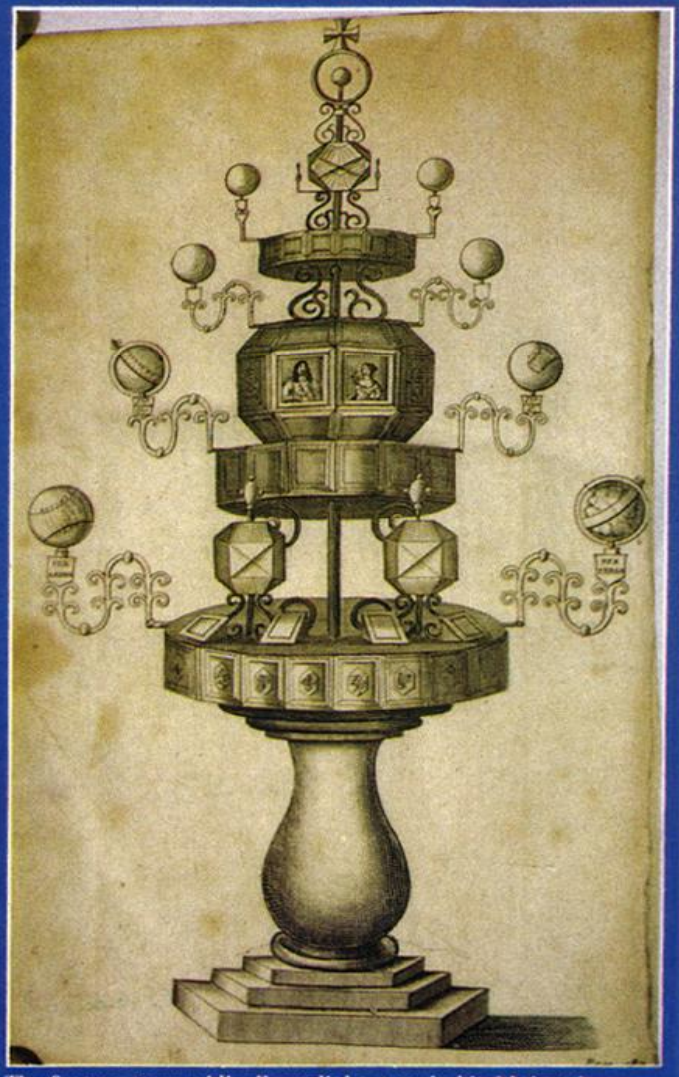
A direct south-facing 17th century glass sundial set high up in a window in Litchborough Church.

Top: The earliest known stained-glass sundial in England, signed by the artist Bernard Dininckhoff, dated 1585, in Gilling Castle, North Yorkshire.

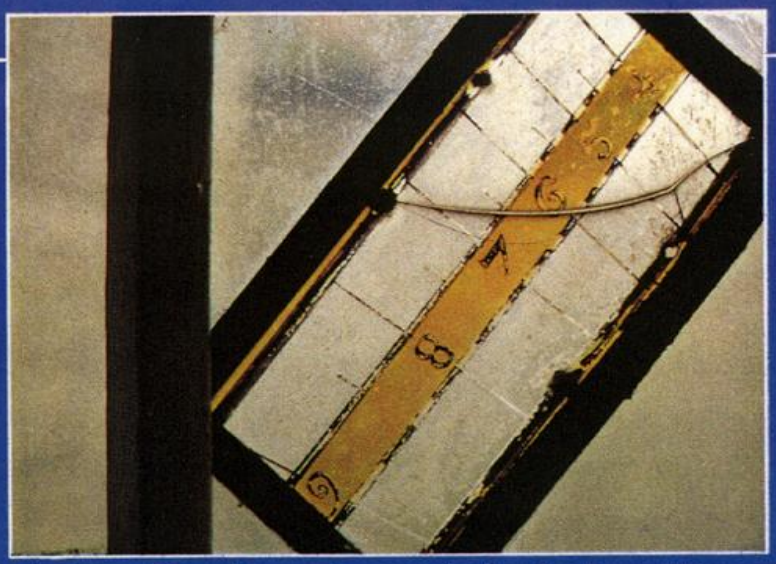
Above: One of a pair of 17th century glass sundials set into the south-facing windows of the master bedroom in Groombridge Place.



The Weavers Company sundial, almost certainly the work of John Oliver, c1669. In 1916 the dial was put in store for safe-keeping during the Zeppelin bombing raids on London. It has now been 're-discovered' and restored, to be placed in the Weavers Company almshouses at Wanstead.



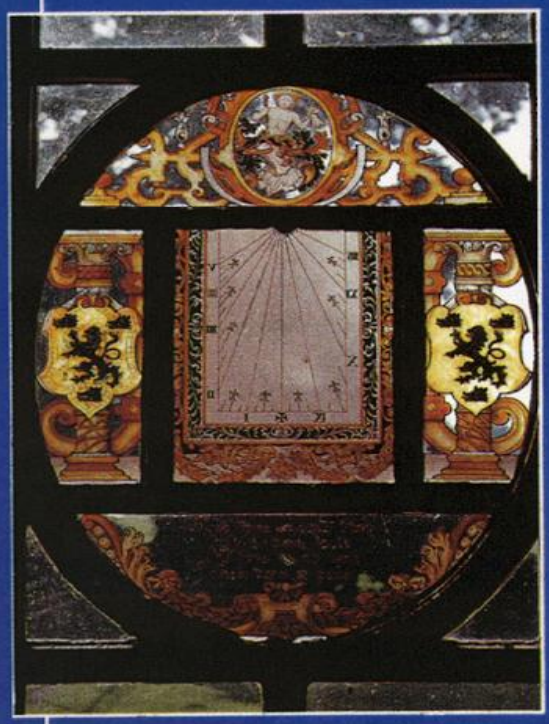
The famous 'pyramidical' sundial set up in his Majesty's Private Garden at Whitehall, 24th July 1669. It was adorned with many painted glass dials.



A direct east-facing sundial set into a stairway window in a farmhouse. This charming little 17th century dial had been in the window of the master bedroom prior to the construction of the staircase.

Right: The ornate 17th century glass dial in the window of W H Smith's Bookshop in Marlborough.

Below centre: A direct west-facing glass dial at Laycock Abbey in the unusual form of a heraldic shield.



A richly embellished 19th century sundial.

Centre right: The only known painted glass sundial extant in Wales, at Tredegar House, Newport. The dial is dated 1672, features the traditional decorative fly and has the motto 'Lumen Umbrae Dei'.

Right: 17th century painted-glass dial in a window of the Museum of the History of Science at Oxford.

Sundials in stained-glass

by *Christopher St J H Daniel, FSA*

STAINED glass sundials by their very nature are fragile instruments and relatively few of them have survived the passage of time intact, if they have survived at all. They usually take the form of a circular, oval or oblong panel of leaded glass, set into a window, with the gnomon attached to the outside of the window-pane. This was usually achieved by drilling two or three holes in the glass, through which screws or bolts would be passed, to secure the gnomon in place. This was a delicate operation which weakened the glass and made the sundial all the more fragile.

The glass itself was prepared in the traditional manner and was backed with a coat of white matt or semi-opaque pigment, upon which the hour-lines and numerals would be painted in black. The numerals, however, would be reversed so as to be read from the inside. Otherwise, in all other respects, the dial would normally conform to the same principles as the vertical sundial.

There were exceptions, such as the inclining painted glass dials incorporated into the fanciful pyramidical sundial, set up in the King's privy garden at Whitehall in 1669. This was made by the Reverend Francis Hall (alias Line), Professor of Mathematics at Liège University, for His Majesty, King Charles II. The sundial was made of stone, iron, brass, wood and glass, and incorporated some 270 individual component dials, including a number of spherical glass dials and painted plane glass dials. This ornate structure very quickly succumbed to the extremes of weather, as well as to vandalism by members of the court. Alas, the dial was not robust enough to withstand such treatment for long and it soon disappeared. Nevertheless it was carefully recorded and written up by its maker in a small work or '*Explication*', published in London in 1673.

Stained glass window sundials, as vertical dials, fall into the same categories, ie primary dials – direct south (facing), direct north, direct east and direct west dials, and also secondary dials, which are those that decline from the north or south cardinal points of the compass towards the east or west points of the compass. Indeed, the majority of vertical stained glass sundials fall into this second category.

As with the art of dialling which flourished during the 17th century and perhaps reached its zenith at the end of the century, stained glass sundials mostly appear to date from this time, when they were particularly popular. Their popularity, however, was not entirely due to the interest taken in science or in the practical determination of time, but rather it was due to the puritanical attitude that developed during the period of the English Civil Wars (1642-1651) and which prevailed in Commonwealth England under the rule of Oliver Cromwell, until the Restoration in 1660 when King Charles II came to the throne. This situation stemmed from the Reformation and took shape from the breakaway of the Church of England from the Roman Catholic Church during the reign of King Henry VIII (1509-1547).

Puritan thinking believed that worship should be as pure and simple as possible and that proper reformation of the church was necessary to achieve this. Zealous advocates of this principle carried it out to extremes in acts of gross vandalism, breaking preaching crosses, removing and smashing church ornaments, and destroying the beautiful religious stained glass in many cathedrals and churches throughout the country. Furthermore, the climate of puritanical prejudice was such that glass-painters, who had already suffered from the effects of the Reformation and the dissolution of the monasteries, found it difficult to make a livelihood, particularly from ecclesiastically controlled sources. Thus it was that they were obliged to turn to secular establishments and to private individuals for employment.

It is in this context that stained glass window sundials gained popularity. The art of dialling itself was a subject with which every well-educated person was expected to be familiar, but it was also a popular pastime for mathematically minded gentlemen. Isaac Newton, Christopher Wren and John Flamsteed, the first Astronomer Royal, all studied and made practical use of this art. Consequently, the painted or stained glass sundial must have presented a highly attractive medium for determining the hour of the day, being both decorative and functional. Furthermore, it had the added advantage that it could be read from within the comfort of the room in which the window was situated, particularly on a cold but sunny winter's morning. This would have contrasted most pleasantly with the necessity of reading a mural dial from outside the building on such an occasion!

Often the sundial would be an integral part of a larger decorative panel, perhaps portraying the heraldic history of the householder's family or having artistic seasonal themes. Sometimes the dial would be the primary feature of the window embellished with the simple decorations or perhaps devices relating to time. These might include a portrayal of the sun, a winged hour-glass denoting the fleeting passage of time, or maybe the armorial shield of the owner. These various decorations were usually applied by the glass-painter in matt and stain with some enamel washes, sometimes in flashed glass* or very occasionally in pot metals*. As a finished article such a sundial was by no means merely a utilitarian instrument, but was often a work to delight the eye in colour and brilliance, fusing mathematical achievement with the skills of the artist and craftsman. Thus the owner of the dial could enjoy the rare beauty of a work of art and science combined.

The puritanical climate that obliged 17th century glass-painters to turn from the church for their main source of employment to universities, civic authorities and private individuals, was also a fundamental cause for the flowering of the stained-glass sundial. Heraldry was the most commonly commissioned alternative to religious work, but glass-painters endeavoured to encourage a demand for other and lesser known forms of stained-glass. Of these, the sundial was perhaps most inspired, in view of the fact that it was also a functional instrument. Advertising in those days was in its infancy, but glass-painters were well aware of its potential and made the most of it to sell their wares. Henry Gyles of York (1645-1709) was one of the most notable glass-painters of his day, but found it very difficult to make a reasonable living except by taking in lodgers. He advertised his skills by having a portrait of himself executed in mezzotint by his friend Francis Place, the well known engraver, being one of the first engravings in that process to be published. Underneath the portrait, he announced:

'Glafs painting for windows as Armes, Sundyals, History, landskipt, & c. Done by Henry Gyles of the City of York'.

He also advertised by letter. Writing to Thoresby, the Leeds antiquary, in 1698, he says:

'...if you have a convenient window for a glass dyall, if you please I will paint you one on sending me directions'.

In a later letter to Thoresby, Gyles wrote:

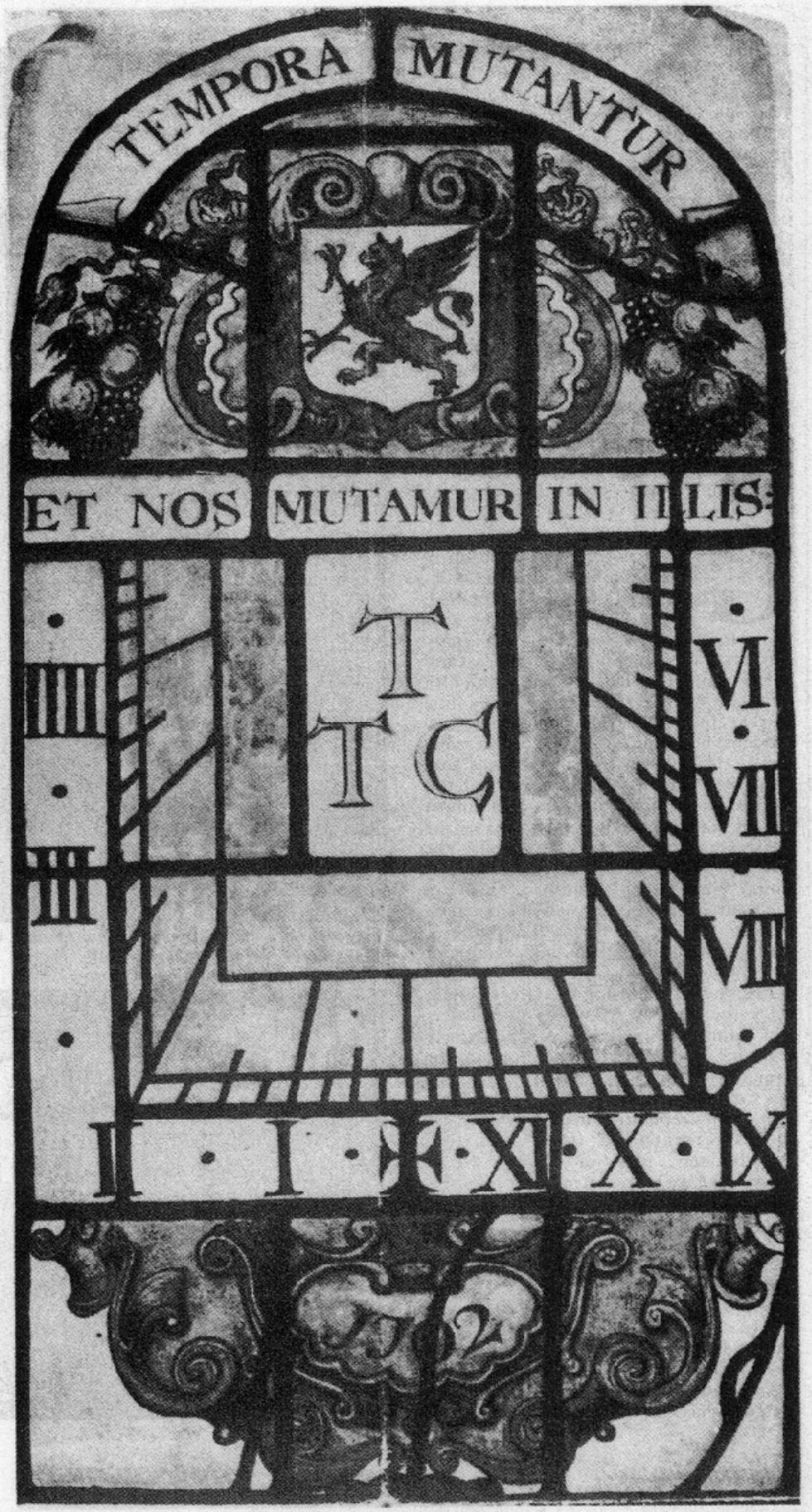
'For glass dyalls according to ye bignesse such as I usually paint upon squares of 10 or 12 inches high, a brass style to 'em I have usually 20 shill'.

It also appears that if he received a commission for a church window or a substantial order of some kind, he would sometimes include a stained-glass window sundial *gratis*, as he did in the case of the

order for the east window of University College, Oxford. Gyles was not alone in advertising his work as a glass-painter, but it is of interest to know that he was obliged to do so.

It is not known when the first painted or stained-glass sundial appeared in Britain. One might speculate that it may have been due simply to the inspiration of a glass-painter who had become aware of the art of dialling. More likely, the idea was introduced from abroad, possibly from the thriving German or Flemish schools of glass-painting. The earliest recorded window sundial seems to have been one dated 1518 in the castle of the Kurfürst von Sachsen in Altenberg, whilst the earliest example intact, dated 1535, is in the Kunstgewerbemuseum in Berlin.

Germany already had a very fine reputation for glass-work as well as for instrument making in the 16th century. Furthermore a number of German stained-glass window sundials have survived from that century. Also in the 16th century, European scholars and craftsmen came to England during this same century, to escape religious intolerance, plague, pestilence and war. Some, however, like Nicolas Kratzer, an astronomer and mathematician, who became 'deviser of the King's horologies', ie sundial maker to King Henry VIII were invited or enticed over if they had some valuable knowledge or skill to offer. Thus it is more than probable that the stained-glass dial was introduced to England through foreign skills, if not directly from German origins. Indeed, the earliest known example of a stained glass window sundial in England is a small glass roundel, only 70mm in ▷



The Gray's Inn Hall stained glass sundial, dated 1702, the year that Thomas Carter held office as Treasurer. The Hall's fine heraldic glass was removed and stored for safe-keeping during World War II. Since the dial is not *in situ* it is to be hoped that it has only been mislaid, and that, as with the Weavers' Company sundial, it will be found and restored to its former glory. The dial would no doubt have been in a prominent central light on the south side of the Hall. The dial could have been the work of Henry Gyles (1645-1709).

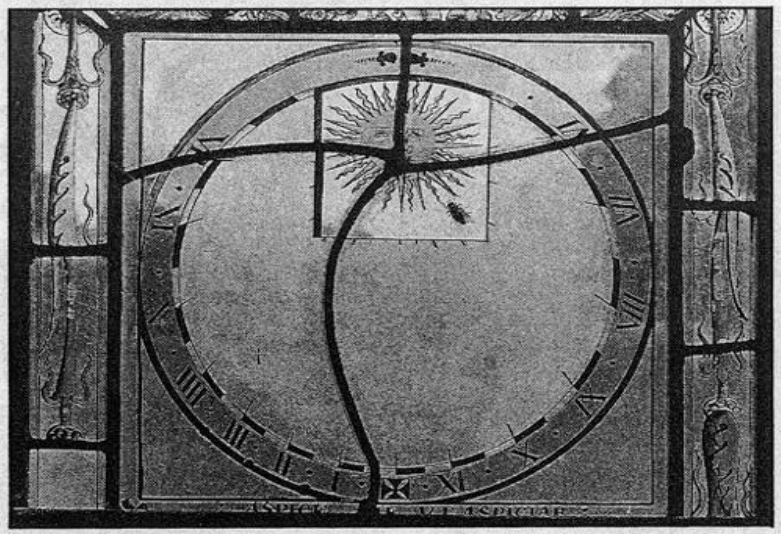
diameter, set into the magnificent south-facing heraldic window in the Great Chamber at Gilling Castle, in Yorkshire. The splendid Elizabethan painted-glass windows portray the genealogy and heraldry of the Fairfax family and are the work of Bernard Dininckhoff, whose signature, with the date 1585 and a tiny portrait of himself, appears just below the sundial. Dininckhoff is thought to have been a refugee from Bohemia, which had been annexed in 1526 and which became part of the great Austro-Hungarian Empire. Dininckhoff achieved a high reputation and was admitted as a member of the York school of glass-painting. A much respected person, he was made a freeman of the city of York in 1586, a year after he completed his great heraldic window for Sir William Fairfax. The small circular sundial must have been the final embellishment to his beautiful glass masterpiece.

Glass dials of the 17th century were notably larger than Dininckhoff's exquisite little roundel. Many were ornate and were beautiful examples of the glass-painters craft. Henry Gyles was the last and only glass-painter left in York in the 17th century. Whilst he executed many fine works, including many glass-window sundials, his name is associated with many more. His earliest recorded dial is that which he made in 1670 for Nun Appleton Hall in Yorkshire. However, it is almost certain that he made what is probably the finest known complete sundial, with the gnomon still in situ and undamaged, at Tong Hall, near Bradford, also in Yorkshire. His beautiful dial at University College, Oxford, protraying the figure of Christ, is also an outstanding example of his craft.

In London, following the Great Fire in 1666, the London Company of Glaziers and Painters on Glass were kept busy replacing the multitude of windows lost or damaged by the flames. One member of this Company was John Oliver (1616-1701) who made a reputation in glass-painting in the aftermath of this disaster. Unfortunately, most of Oliver's works appear to have been destroyed or removed to private collections. Nevertheless, a painted-glass window dial, which may almost certainly be attributed to him, has been re-discovered in the collections of the Weavers' Company. It is known that Oliver was employed in the building of a new city livery hall after the Great Fire and recorded examples of Oliver's work indicate that it was he who executed the Weavers' dial.

Fewer glass dials were produced in the

The declining stained glass window sundial, by Henry Gyles, c1702, above the doorway of the main entrance of Tong Hall.



A fine circular 17th century stained-glass sundial, declining about 15 degrees to the south-west, in St Botolph's Church, Lullingstone. Note the very realistic fly.

18th century, but two fine dials, both by John Rowell of Wycombe in Buckinghamshire, are still extant. One is in the south window of Purley Hall in Berkshire, and another, dated 1733, may be seen at Arbury Hall in Warwickshire. In the 19th century, Charles Kempe revived some interest in stained glass sundials, and produced some charming examples. Unfortunately, most of these have disappeared.

Whilst there are some modern examples of this beautiful craft, there is little serious interest in re-creating these instruments for determining time in a bygone age in a new modern image. The attraction, if there is one, seems to lie in copying the works of the past, rather than in creating something new for the present, since it appears to involve less effort in order to gain some monetary reward.

It is sad to say that, due to the fragile nature of these beautiful examples of the glass-painters art and the mathematical skills of the diallist, few stained-glass window sundials have survived to this day. Due to the avarice of collectors and the carelessness of the owners of the property in which they are situated, fewer dials will survive until tomorrow. England is fortunate that there are still some 30 or so examples extant. Wales has only one left. In Scotland there are no such dials on record. It can only be hoped that in England these works of art and science will be recognised for what they really are and that they will be preserved in situ as an integral part of our nation's heritage. □

* Footnotes

'Pot-metal' glass is coloured throughout, but was often too opaque to admit much light.

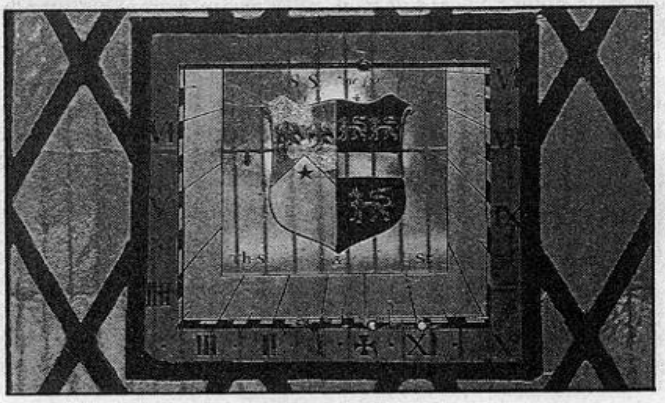
'Flashed' glass is colourless or white glass, which has been coated with a very thin layer or 'flash' of coloured glass. This treatment allowed the admission of light, but also enabled the artist to achieve the required colour.

The author would like to thank the owners and various responsible authorities, particularly the Rt Hon the Viscount Daventry of Arbury Hall and the Trustees of Gilling Castle, for being allowed to photograph the stained-glass sundials in their care, reproduced here in these pages. *The checklist, given at the end of the article, is the first such list of its kind to record all stained-glass sundials* in situ, *known or believed to be still extant in Britain. The author is endeavouring to compile a complete register of these dials and would welcome any amendments or additions.*

List of known stained-glass sundials in windows

	COUNTY	PLACE	DATE	MAKER
1	AVON	Nailsea Court	c1646	—
2	BEDFORD	Chicksands Priory	—	—
3	BERKSHIRE	Bucklebury Church	1649	'S.S.'
4	BERKSHIRE	Purley Hall	1734	John Rowell
5	ESSEX	Widdington Church	1664	—
6	GLOUCESTER-SHIRE	Berkeley Castle	17th c	—
7	GREATER MANCHESTER	Kersal Cell	17th c	—
8	HAMPSHIRE	Winchester College	17th c	—
9	HEREFORDSHIRE	Ledbury Church	17th/18th c	—
10	KENT	Lullingstone Church	17th c	—
11	LONDON	Blackheath	1815	William Doyle
[*] 12	LONDON	Grays Inn Hall	1702	—
13	LONDON	Dulwich	1981	Gay Ogg
14	LONDON	Weavers Company	c1669	[John Oliver]
[*] 15	NORFOLK	Merton Church	—	—
[*] 16	NORFOLK	Great Witchingham Hall	—	—
17	NORTHAMPTON-SHIRE	Adstone Farmhouse	17th c	—
18	NORTHAMPTON-SHIRE	Litchborough Church	17th c	—
19	OXFORDSHIRE	Oxford: Convocation Ho	17th c	—
20	OXFORDSHIRE	Oxford: Convocation Ho	17th c	—
21	OXFORDSHIRE	Oxford: Hist. of Science Museum	1648	—
22	OXFORDSHIRE	Oxford: Hist. of Science Museum	17th c	—
23	OXFORDSHIRE	Oxford: Hist. of Science Museum	17th c	—
24	OXFORDSHIRE	Oxford: University College	c1687	Henry Gyles
25	SHROPSHIRE	Henley Hall	c1875	Charles Kempe
26	STAFFORDSHIRE	Leigh Park Hall	1664	—
27	SUSSEX E.	Groombridge Place	c1670	—
28	SUSSEX E.	Groombridge Place	c1670	—
29	WARWICKSHIRE	Arbury Hall	1733	John Rowell
30	WILTSHIRE	Lacock Abbey	17th c	—
31	WILTSHIRE	Marlborough W.H. Smith Bookshop	17th c	
32	YORKSHIRE N.	Gilling Castle	1585	Bernard Dininckhoff
33	YORKSHIRE N.	Nun Appleton Hall	1670	Henry Gyles
34	YORKSHIRE N.	York: Grey Court College	17th c	—
35	YORKSHIRE W.	Tong Hall	c1702	Henry Gyles
36	WALES, GWENT	Tredegar House	1672	—

[* *Not officially recorded*]



A heraldic glass dial, dated 1649, in Bucklebury Church.