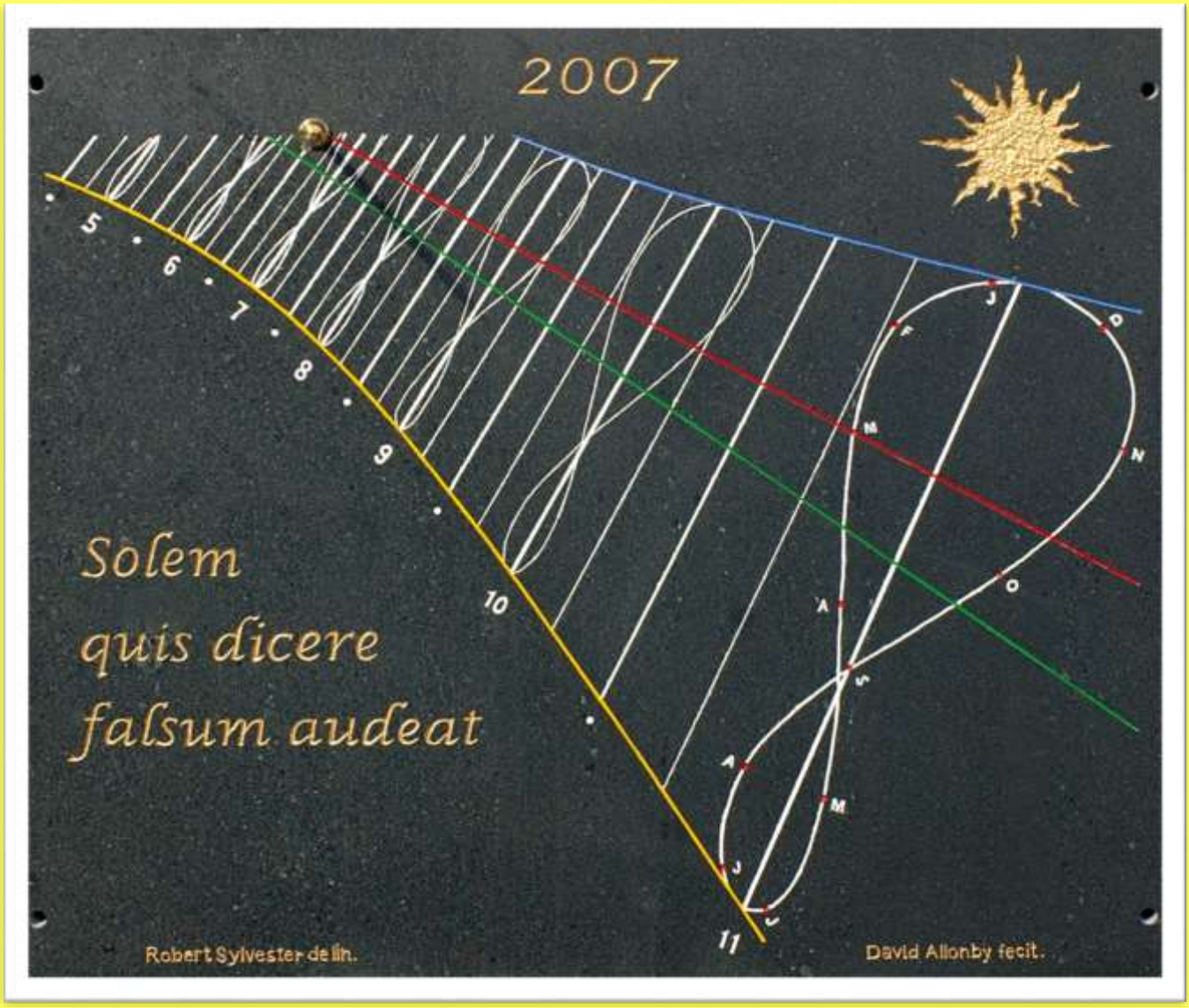
BSS Bulletin 30(iii)

The British Sundial Society

BULLETIN



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NOTES FOR DIAL RECORDERS

I am grateful for the number and quality of dial reports that members send in, whether updates to dials already recorded, or new sightings. If you have never sent me a report, please don't be reluctant to get started. The report form can be downloaded from the Society website, www.sundialsoc.org.uk. Go to Sundials / Fixed Dial Register / Report Form, log in with your user name and password and click on 'MS Word' in the second paragraph of the Dial Recording Forms page. Alternatively, just contact me and I will send you a form.

Emailed reports with digital photographs are welcomed and indeed preferred, though the traditional paper in the post is still used by many and is also very welcome. If using email, attach the report as an MS Word document, and photographs as jpgs. It is helpful if you put the dial location in the email Subject Line, together with the SRN if known. In more detail:

Email

- Subject Line: Include the location briefly, and the SRN if you know it.
- Content: There is no need to give any message but of course put in anything you wish to say.

Report

- Format: Attach as an MS Word doc or docx, or compatible format, NOT as a pdf, please.
- Name: Can be what you like, but it is helpful if you use the same as the email subject line.
- Addenda: Exceptionally you may wish to add a further sheet or sheets giving greater detail, using the same name as the main report plus 'b', 'c', etc. Addenda may also be jpegs (eg of text) or Excel spreadsheets, but please only use if they add significantly to your report.

Photographs

- Format: Please send as attachments to the email. Do NOT embed them in the email - they are difficult to extract for the Register structure.
- File type: Please send jpg files only, NOT jpeg, tiff, bmp, pdf or any other graphic format.
- Resolution: As it comes out of the camera. I used to ask members to reduce the file size to around 0.5 MB but this no longer applies, and high resolution photographs are often very helpful.
- Name: There is no essential format for the name, but please make the names of all the photos with one report start the same. For example, IMG_56789.jpg, IMG_1234.jpg etc is fine, as are Ruston.jpg, Ruston sig.jpg, Ruston pedestal.jpg. But please avoid choosing names that do not start with the same few letters, such as Gnomon.jpg, Plate.jpg, Pedestal.jpg.

John Foad

***Front cover**: The magnificent double horizontal dial made by Henry Wynne for Richard Maitland, Earl of Lauderdale, c. 1680. Its location had been unknown since 1966 but it was auctioned in August 2017 by Thomas N Miller Auctioneers, Newcastle. It was described as part of John Davis's talk at the Norwich Conference (see Report page 42). Picture courtesy of Alistair Scott.*

***Back cover**: This fine dial (SRN 8046) was found last summer by Maureen Harmer at East Ruston in Norfolk. It is a detailed copy of the one at Barrington Court in Ilminster (SRN 0040). The latter is believed to have come from Scotland around 1910. For further information and another view of the dial, see page 16. Photo: Maureen Harmer.*

Editorial team: John Davis, Frank King,
Christine Northeast and David Brown

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CONTENTS

EDITORIAL

This issue of the *Bulletin* is a little thinner than normal, principally because relatively few articles were submitted for publication this time.

We are therefore most grateful to our regular authors, many of whom have written two articles!

The Editorial Team are always on the look out for new authors and welcome Kevin Fuller whose first article for the *Bulletin* is in this issue and tells a story set in Bristol. John Davis also writes about Bristol and the two articles elegantly complement one another.

We are hoping that there are numerous articles in preparation and look forward to receiving them. The extensive spell of sunshine this summer should have produced a bumper crop of sundial photographs for members to write about!

The first article in this issue is by Anthony Turner who provides us with an expert enquiry into the history of a fine art component of a glass sundial. A painting now in Vienna has proved to be an inspiration to several artists and it is rewarding to spot the differences in the details of the numerous photographs in the article.

It is possible that many BSS members are either unaware of the Society's library in Nottingham or know of it but have not visited it. We are therefore most grateful to John Wilson, the Society's Librarian, for his article which gives an account of the library and the notable building in which it is housed. Like many old buildings, this one is undergoing repairs.

Since the publication of the June issue we have learned of the sad death of one of our senior members, Ian Wootton. With some input from Ian's family, Doug Bateman has written an obituary that gives some insight into the many skills that Ian possessed and the major contribution he made to the Society.

Frank King

ON THE ORIGINS AND MEANING OF A SUNDIAL CENTRE PANEL

ANTHONY TURNER

The sundial once at Nun Appleton Hall, Yorkshire (Fig. 1), is one of the most notable of surviving English, painted-on-glass, window dials.[1] It was completed in c. 1670 by the York glass painter Henry Gyles (1646–1709), probably to a command from Thomas, 3rd Lord Fairfax (1612–71).[2] Three decades after his death, the Hall was sold in 1707 to the clothier Sir William Milner (1662–1740) who demolished it, but apparently preserved the dial which remained *in situ*, remounted in the vestibule of his new house, until removed to The York Art Gallery to which it was bequeathed in 1983.[3] There it remains, but now in storage.

The Nun Appleton dial is the largest, 32 inches high by 19 inches wide (81.2 cm by 48.3 cm), of the several dials known by Gyles and is composed of thirteen pieces of glass. The hour lines are drawn around a central rectangular image of a putto holding a dial, which is the main subject of this note, while in the outer corners are depictions of the four seasons flanking verses drawn from Ovid's *Remediorum amoris*.[4] Several dials by Gyles are known,[5] he advertised construction of them on his trade card, charged 20 shillings (gnomon included) for a ten- or twelve-inch square example, and gained a substantial part of his income from them.[6] Designs were probably made to order and could be repeated as is shown by a second example (described below) of the Nun Appleton dial centre, now in a private collection. That some standardisation was applied is also suggested by the fact

Fig. 2. Gnomon of the Nun Appleton dial, York Art Gallery, inv YORAG 1420b.

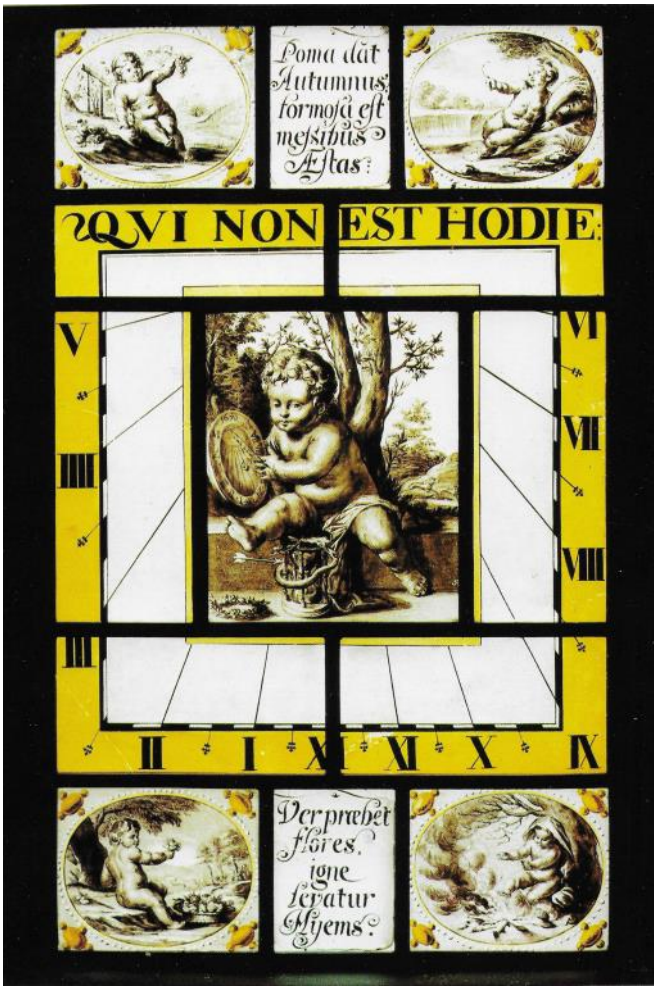

Fig. 1. Painted on glass dial by Henry Gyles for Nun Appleton Hall c. 1670. York Art Gallery, inv YORAG 1420a.

that the gnomons depicted in the two centre panels are virtually identical to the surviving gnomon from the Nun Appleton dial (Fig. 2).

The privately owned second centre panel (Figs 3 and 4), painted in monochrome sepia like the Nun Appleton example, is 10½″ high by 8⅛″ wide (26 cm by 21.7 cm). It is contained in what is probably an early 20th-century lead frame, essential to the stability of the object as it now has three heavy fractures. The Nun Appleton dial centre and the privately owned dial centre are basically identical, although there are some miniscule differences. The laurel wreath in the lower left corner of the Nun Appleton example is completely independent of the frame, but cropped in the

Fig. 3. Centre panel from a painted on glass dial by Henry Gyles, obverse. Private collection.

Fig. 4. Centre panel from a painted on glass dial by Henry Gyles, reverse. Private collection. Photo courtesy of Bonhams, London.

privately owned example; there are tiny differences in the depiction of the leaves and boughs to the extreme right of the tree in the background landscape behind the coursing greyhounds; there is less space between the putto's right foot and the arrow in the Nun Appleton piece than in the privately owned specimen; the edge of the dial itself is cropped in the latter but not in the former. None of these differences (there may be others) is of any significance, and the first and the last may simply be the result of the lead frame covering a part of the painted surface. Both images are dated 1670 on the dial held by the putto although whether this is the construction date, rather than the design date, for either of them must remain an open question.[7]

While the Nun Appleton dial has a clear provenance, even if a few grey areas remain, less is known about the dial centre in private hands. Having been in the collections of the Time Museum, Rockford, Illinois, it was sold out of the collection at Christie's in 1988.[8] Purchased by the Italian engineer, Giancarlo Beltrame (1925–2011), it remained in his collection[9] until this was dispersed in c. 2013 when the dial centre was sold at Bonhams, London where it was purchased by the present owner.

Like so many decorative objects in the 16th to 18th centuries, the design of this dial centre is only partly original to Gyles or an earlier designer. The ultimate source of Gyles' centre panel is an anonymous Venetian painting, 'The little tambourine player', now in the Kunsthistorisches Museum, Vienna (Fig. 5).[10] This painting, once in the collection of the Archduke Leopold William in Brussels, was long attributed to Titian, for example on one 17th-century engraved version of it. However, it has since been demoted, and is now ascribed to Francesco Vecellio.[11] An engraving (Fig. 6) by Pieter van Lisebetten (1630–78) after David Teniers[12] has been suggested as the source for Gyles dial,[13] but there are closer models. The Venetian painting has the putto facing towards the viewer's left as in the two versions by Gyles. Much of the background is also very similar but there are major differences. The putto in the original version is denuded, is playing a tambourine and has no attributes lying on the ground before him except a flower to the left and a sprig of leaves in the centre. In the right background a greyhound is coursing a hare. All this is much the same in the Teniers/Lisebetten version except that the image is reversed, the hare and greyhound do not

Fig. 5. 'The little tambourine player', anonymous, Venetian School, ascribed to Francesco Vecellio, c. 1530, now in the Kunsthistorisches Museum, Vienna.

Fig. 6. 'The little tambourine player', engraved by Pieter van Lisebetten after David Teniers. Wikimedia Commons.

Fig. 7. 'The little tambourine player', engraved version by Jacob Matham. British Museum inv. 1870,0625.686.

appear, and the putto has a considerably older face. Neither version, however, includes the hour-glass encircled by a serpent, the wreath of flowers, the arrow nor the sundial which all appear in both Gyles' versions.

Some of these attributes, however, are included in another engraved version of the Archduke's anonymous painting, by Jacob Matham (1571–1631), a pupil and collaborator of the remarkable engraver Hendrick Goltzius (1558–1617). Matham's version (Fig. 7) is inscribed "Titianus Inue[nit]", "I. Matham sculp[sit]" and, beneath the image, are the verses,

> *Vt flos irriguis subito marcescit in horis*
> *Sic celeri fugiunt mortalia tempora cursu*
>
> (As the watered flower sprouts, it withers with the hours
> So the course of human time flies rapidly away)

and the name 'C. Schoneus'.[14] These lines, entitled '*In picturam puerum* (on the picture of a child)', come from the collected works of Cornelius Schoneus, *Terentius Christianus, seu Comoedia sacræ, tribus partibus distinctæ, Terentiano stylo… Adiecti sunt liber elegiarum et alter epigrammatum*, 1629 (The Christian Terence, or a sacred comedy in the style of Terence, in three separate parts... To which is added a book of elegies and other epigrams). Schoneus (1540–1611) was a humanist teacher in Gouda and the lines therefore supply a bracketing date of 1610 to 1630 for Matham's image.[15]

In this version, which is reversed from the original and so also from Gyles' glass-paintings, the putto continues to hold a tambourine, but his left leg now stretches out over a neatly depicted hour-glass encircled by a serpent which is nibbling at a leaf lying on top of the glass. An arrow immediately beneath the putto's heel is embedded by its point in one of the five turned pillars of the hour-glass frame. A floral wreath lies on the ground in the front right corner, while what looks like a rattle and an overturned ink-pot (?) lie in the left front corner; the greyhound courses his hare in the background.[16]

In Matham's hands the original Italian painting, which celebrated through the symbolism of the tambourine and the hare, dance and rejoicing,[17] bacchic rites and so sensual, and carnal pleasure, has been transformed into a *vanity,* a *memento mori*, in which the pleasures of the tambourine are contrasted with the arrow of death piercing the hour glass that measures out remaining days, the abandoned wreath and rattle, and the greyhound that has so nearly overrun the lascivious hare.[18]

Matham's engraving is close to the two dial centre panels by Henry Gyles both in the details of its execution of background details such as the leaves on the trees and the treatment of their bark, and in the inclusion of the *vanity* symbols, the hour-glass with its arrow and serpent, and the floral wreath. The major difference is that to strengthen the *memento mori* message and perhaps for the pleasure of elegantly including an instrument within an instrument, the putto in Gyles' version now holds a vertical sundial. A minor difference is the erasure of the rattle and ink-pot, and a trivial one is that the putto is now pudically draped. In this context of morality, the hare and the greyhound take on a new meaning. Sensuality, the hare, is now being actively chased from the scene.

Of the possible source for Henry Gyles' dial centres the engraving by Matham is the closest and the most likely to have been the one he used. How could he have had such detailed knowledge of it? Gyles was the most parochial of artists, hardly ever leaving his native Yorkshire except for one trip to London. The answer lies in the international

book and print trade, and more particularly in the activities of his friends who energetically supplied him with such items, thus enabling him to build up a substantial collection of books and prints from which to nourish his imagination and borrow motifs.[19] The reviver of glass-painting in England after the Civil Wars, Gyles' isolation was only apparent and continental print sources for several of his fifty-odd surviving works have been identified. Although primarily local in appeal, but spreading to commissions in London and the university cities, Gyles' work, as his two surviving sundial centres amply display, had its roots in the mainstream of Italian painting and Flemish engraving from the late Renaissance.

REFERENCES and NOTES

1. Conveniently reproduced in Christopher St.J.H. Daniel, 'Shedding a glorious light, stained glass window sundials', *Country Life,* 26 February 1987, 72–76 reprinted in *BSS Bulletin,* 19(ii), 69–73 (June 2007). It was earlier the subject of a note by A.O. Wood, 'Small mystery in York', *BSS Bulletin* 14(i), 27-8 (March 2002) where it is reproduced in black and white. For general accounts of painted on glass dials see Hans Behrendt, 'Glas-sonnenuhren: Bestandsaufnahme alter Schrieben', *Schriften für Alter Uhren,* xii 1972–73, 109ff; Christopher St.J.H. Daniel, 'Sundials in stained-glass', *Clocks Magazine* April 1988, 30–37, John L. Carmichael, 'Stained glass Sundials', image archive *http://www.advanceassociates.com* which offers illustrations and full bibliography for the dials inventoried.
2. For Gyles, see Trevor Brighton, 'Henry Gyles' in *Oxford Dictionary of National Biography* (2004) and the extensive account in J.T. Brighton, 'The Enamel Glass-painters of York 1585–1795, Thesis submitted for a D.Phil in History, in the University of York, 3 vols, York (1978), accessible at *etheses.whiterose.ac.uk*. The Nun Appleton dial is described in detail as Inv VI, 155-57. See also the comments on Gyles in Geoffrey Lane, 'Glass sundial makers of 17th century London', *BSS Bulletin,* 18(i), 41-7 (June 2006).
3. This date was communicated to me by the communications assistant of the York Museums Trust Nicola Lyons who states that the dial was bequeathed. Wood however (ref. 1), 27 states that it was donated to the York Art Gallery via the York Glaziers' Trust in 1986.
4. Ll. 187-88.
5. Three are listed by Daniel (ref. 1), 76, and others have been attributed to him.
6. Brighton (ref. 2), i, 123.
7. This therefore calls into doubt the attribution of the order made in the first paragraph above.
8. Christie's South Kensington, *Time Measuring Instruments from the Time Museum, 14 April 1988*, London 1988, 40, lot 73.
9. Mara Miniati (ed.), *Orologi e strumenti della Collezione Beltrame*, Florence 1996, 32-3, N° 35, illustrated on the back cover.
10. Inventory N° GG 96.
11. Wood (ref. 1), probably following Harold E. Wethey, *The Paintings of Titian: complete edition*, London 1969, pp.208-9 and plate 181, tells us that it was 'in all probability' by Francesco Vecellio (c. 1475-1560). He was Titian's elder brother. In his youth a soldier, he was active as a painter in the middle decades of the century.
12. It is item 71 in David Teniers, *Theatrum pictorium. In quo exhibentur ipsius manu delineatæ, eiusque curâ in æs incisæ Picturæ Archetipæ Italicæ, quas ipse Ser[enissi]mus Archidux in Pinacothecam suam Bruxellis collegit,* Brussels 1660.
13. By J. A. Knowles, *Walpole Society,* xi 1923, 54 and 61.
14. Matham's engraving is clearly reproduced with helpful commentary in Caroline Joubert, *Images de la destinée, gravures des XVI et XVII siècles*, Catalogue of an exhibition in the Musée des Beaux Arts de Caen, 29 March – 10 June 1991, Caen 1991, 61 and 65 n° 76.
15. This is conventionally dated to *c. 1*595, *New Hollstein* N° 165.
16. For the sake of completeness the existence of a late 18th century reversed version of Matham's print by L. Blau (visible at SIRBeC schede SRL – H0110-17322), may also here be noted.
17. As in *Judith* iii.7, 'and they received, him … with garlands and dances and timbrels (tambourines)' or *ibid*, xvi. 2 'Begin unto my God with timbrels'.
18. This reinterpretation of the original Italian painting may be ascribed to Matham himself, or, as Joubert (p. 65), suggests, may derive from a lost prototype of which the Vienna painting is a variant.
19. Brighton (ref. 2), i, 111.

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SUNDIALS AT THE CHELSEA FLOWER SHOW

DOUGLAS BATEMAN

At the Chelsea Flower Show this year, several dial makers were exhibiting their wares, ranging from the world-renowned company David Harber to smaller one-man bands. The Harber reputation is such that, with co-sponsor Savills, they engaged a garden designer Nic Howard, and contractor Langdale Landscapes, to create a show garden that featured many pieces designed specifically for the Flower Show. Although they were disappointed at being awarded only a Bronze medal, there is no doubt that the garden attracted a lot of publicity, and my impression was that it received as much TV attention as some of the Gold awards. After jostling with the crowds, I managed to get a reasonable view of the garden (Fig. 1) and, later, a picture of David Harber with the very eye-catching sculpture Aeon (Fig. 2). Just one armillary dial, however, was exhibited on their trade stand (Fig. 3), possibly reflecting that sundials are a less significant part of their business. Of particular interest is a large orrery that they have been commissioned to make, with the planetary motions being designed by well-known BSS member Chris Lusby Taylor, who informs me that the gearing design is both original and highly accurate. We await with interest the completion of this project.

Fig. 1. A view through the tunnel of sculpture from the crowd. A water cascade over stainless steel is on one side.

Fig. 2. David Harber with the sunburst sculpture, which attracted a lot of media attention.

Fig. 3. The Harber trade stand with just one armillary dial. Photo courtesy of David Harber Sundials.

Border Sundials from Abergavenny (Figs 4–6), on the other hand, had about eight dials on display, ranging from three armillary dials and an attractively coloured vertical dial, to several nicely made 'solid' horizontal dials. The business thrives, having exhibited at Chelsea for over 15 years, and this year won a 4-star trade stand award.

Another stand, Martin Cook Studio, showing garden artworks, had three dials on display, all on carved slate. Their speciality is fine calligraphy, indeed, the main emphasis was on lettering on stone and slate (see Figs 7 and 8). Martin Cook is proud of the list of prestigious clients, ranging from the Great Court in the British Museum, to 10 Downing Street. Private clients were many, including, appropriately enough, garden expert Alan Titchmarsh. He works with his son, who is the latest in a family of carvers going back 250 years.

Caroline Dear of Stonecraft also had dials on display (Fig. 9). BSS experts would describe these as basic, but all were correct in having the 6–6 hour lines going across the root of the gnomon. However, the emphasis of the stand was mainly on working in stone, such as Portland stone ornaments and pedestals.

Websites: *www.davidharber.com*
www.bordersundials.co.uk
www.martincookstudio.co.uk
www.caroline-dear.co.uk

Fig. 4. The Border Sundials stand.

Fig. 7. Garden artworks by the Martin Cook Studio.

Fig. 5. A Border Sundials horizontal dial.

Fig. 8. Martin Cook with a slate obelisk that can be set up as a noon dial.

Fig. 6. The Director of Border Sundials, Capel Hanbury Tenison, with two potential customers.

Fig. 9. The Stonecraft stand by Caroline Dear, primarily concerned with carved Portland stone and pedestals.

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A COUPLE OF CUMBRIAN DIALS
Part 1: The Ambleside Dial

SUE MANSTON

By coincidence, two sundials in Cumbria came to my attention at roughly the same time. The first dial, described in this article, is now housed in the Armitt Museum in Ambleside. It sits on a 'dial post' which once crowned the Ambleside Market Cross.

The second dial, the subject of a query received by the BSS Help and Advice Service from a Penrith resident, is described on pages 19–22 of this issue of the *Bulletin*.

The Ambleside Market Cross

Ambleside's Market Cross was built in 1651 at the north end of the present Market Place by Gawen Braithwaite of Ambleside Hall. The previous year the town had been granted its market charter and two fairs by Lady Anne Clifford, Sheriffess of the County of Westmorland.[1] This consisted of a weekly wool market and cattle fairs at Whitsuntide and October.

There is a popular misconception that Ambleside has a solely rural past, but in fact it was highly industrialised. Much of the production and processing of wool within south Westmorland had been under the control of the great Cistercian Abbey of Furness. The area enjoyed considerable prosperity, with farming an important component. The fells were cleared of trees to make more land available for sheep, and grazing land began to be controlled with the dry stone walls which are such a distinctive feature of the landscape today.

Ambleside and its surroundings grew as a focal point for the local woollen industry and as an industrial centre. By the 16th century there were several fulling mills on Scandale Beck. Hundreds of small foundries were built to smelt the abundant supplies of iron ore, fuelled by the equally abundant charcoal from the dense woodland. Slate quarrying supplied local building needs. Mining activity expanded as large amounts of copper and lead were found, and successful trades developed in cloth, bark, corn and paper.

The dissolution of the monasteries by Henry VIII led to major changes in local land ownership and tenure, with most of it divided into small farms by 1550, owned or rented by local people. Several local families, including the Braithwaites, were quick to take advantage of the newly available land and to benefit from the expertise and business connections of their monastic predecessors.

The Braithwaites

The Braithwaites, a highly influential family in the area, made their wealth through the woollen industry, trade and agriculture. The family is first recorded in Ambleside as working the new fulling mill by Upper Stock Gill Bridge some time before 1453. By 1508 the family owned four mills and effectively held a monopoly on fulling in the town.

The Braithwaites built Ambleside Hall on Smithy Brow, a small promontory between Stock Gill and Scandale Beck. The best description of it at the height of its prosperity comes from the 1653 will and inventory of Gawen Braithwaite. This shows that the Hall was a house of some thirteen rooms, with a myriad of outhouses, brewhouses and larders. The estate beyond included five barns loaded with hay, wool, malt and grain. The quantity of barley malt held in his barns suggests a considerable brewing industry. The Hall itself no longer exists, although the present building on the site possibly retains some elements of the old building.

Fig. 1. Bridge House, Ambleside.

The Braithwaites also built Ambleside's famous landmark, Bridge House, in the 17th century (it is reputed to be the most photographed house in the Lake District). It was built to access Shaw Wife Orchard on the other side of the beck and to store apples. The house is now owned by the National Trust (Fig. 1).

The Dial Post

Gawen Braithwaite (1583–1653) built the Market Cross to mark the grant of the Market Charter. Originally situated at the north end of Market Place, the Cross comprised an octagonal base of Brathay Flags (slate) rising in three steps, a plain obelisk of sandstone and an inscribed dial post.

Fig. 2. Illustration of Ambleside Market Place by George Seaton. Courtesy of the Armitt Museum.

The dial post and its inscription are described at the end of the 17th century by the antiquary the Rev. Thomas Machell (1647–1698) on his travels around Westmorland.[2] He noted the inscription was "upon the dial post on the cross in Ambleside". But by 1806 we know, from a water colour drawing of Ambleside Market Place by George Seaton (Fig. 2), that the dial post was missing.[3]

The Victorians carried out significant building work in Ambleside, and in 1863 the Market Cross was removed from its site in Market Place to make way for the Mechanics' Institute. It was re-erected in 1885 and since then has been moved a number of times; its present site is at the junction of Rydal Road and North Road (Fig. 3).

Fig. 3. The Ambleside Market Cross today.

The slate steps, which are not original, are approximately 1.0 metre in height. The sandstone obelisk is the original and measures 2.1 metres in height. The dial post on the top is a replica, but the original (now in the Armitt Museum) is 25 cm high. It is not clear whether the sundial was ever on top of the Market Cross; it would have been 3.35 metres from the ground so it seems highly unlikely! It is puzzling why Machell referred to a 'dial post' if there was no dial present.

The next we hear of the dial post is its appearance in the grounds of Calgarth Park where, in 1928, it was recognised from Thomas Machell's description. A photograph taken at the time shows a sundial on top of the dial post (Fig. 4). Bruce Logan Thompson[3] noted that "the stone is a good deal worn, so much so that the coat of arms upon the shield is difficult to make out". He also wrote "It is possible that the Calgarth dial actually surmounted the Ambleside shaft, but it must have been a very awkward height".

Fig. 4. Sundial at Calgarth Park. Courtesy of the Armitt Museum.

Calgarth Park, Windermere, is a Lakeland villa in the Georgian style, built by Richard Watson, Bishop of Llandaff, in 1789. Bishop Watson was an eminent man in his day and Wordsworth, Coleridge and Southey were all visitors. So it seems likely that the dial post was acquired by the Bishop at

Fig. 5. Clockwise from top left: the North, West, East and South faces of the dial post.

some time between 1789 and 1806, perhaps to adorn his garden. It is also possible that Bishop Watson mounted the sundial on the dial post at this time.

Calgarth Park became a hospital during the First World War and in 1920 it was a children's orthopaedic hospital. Then in 1970 it was converted into retirement flats. During the extensive building works the sundial was demolished and the fragments consigned to a skip. The dial post was rescued by a builder and given to Mr Edward van Zeller of Kendal. Mr van Zeller kept the dial post in his garden for many years, then took it with him when he moved to Ashford in Kent. When the family moved back to Cumbria they decided the dial post needed a secure and permanent home in Ambleside, so in 2017 it was placed on permanent display in the library of the Armitt Museum.[4]

The dial post is a large, sandstone cube topped with a brass sundial. The cube measures 25 cm on each edge and bears the inscription 'GB' for Gawen Braithwaite, the Braithwaite coat of arms and the date 1651. It also carries the motto 'VITA VT HERBA' (*All flesh is grass,* Isaiah 40:6) which is the family motto and a near-anagram of the name Braithwaite (Fig. 5).

The Sundial

The sundial is a copper alloy, probably a brass with a low zinc content judging by the green patina (Figs 6 and 7).

The dial is octagonal and measures 18.5 cm across the flats. The Roman numerals are read from the inside and show hours from IIII to VIII. The numerals are small and almost certainly punched, which is a feature of early dials (Fig. 8). There are marks for each 1/4 hour with alternate segments hatched — another sign of an early dial.[5] The dial plate measures between 1 and 2 mm in thickness where it is exposed at the south end. The heads of the retaining nails are different sizes, indicating that they are probably hand-made.

Unfortunately the gnomon is broken, but from what is left it appears to be a casting with an angle of around 52º (the latitude of Ambleside is 54.4º N). It is a knife-edged gnomon with a width at the base of 4 mm (Figs 9 and 10). There is no noon gap. The hour line angles appear to be

Figs 6 and 7. The octagonal sundial.

Fig. 8. The punched numerals and hatched 1/4 hour segments.

Figs 11 and 12. The name G. HAYTON and VITA……A.

Figs 9 and 10. The knife-edged gnomon.

correct for the latitude of Ambleside; they have a single origin which is slightly offset towards the south from the centre of the dial.

Most of the inscription is illegible, although with a little imagination it is possible to see the family motto 'VITA VT HERBA'. There is also the name G. HAYTON — a common surname in Cumbria and possibly the sundial maker (Figs 11 and 12). These characters also appear to be punched, with a different size of lettering. The possession of a full alphabet of punches (not just I, V and X) is significant as they were time-consuming and expensive to make, and may point to a goldsmith or silversmith as the maker.

Conclusion

Most of the features described above indicate that the dial is very early — the first half of the 17th century or even possibly the late 16th century. The Braithwaite family started to decline after the death of Gawen in 1653, and Ambleside Hall and its estate were eventually sold off. The

dial may have the Braithwaite family motto, another detail which suggests it was made before Gawen's death. Perhaps the sundial was originally in the grounds of Ambleside Hall, eventually appearing many years later at Calgarth Park. It certainly seems unlikely that it was ever atop the Ambleside Market Cross.

ACKNOWLEDGEMENTS

Many thanks to Deborah Walsh and staff at the Armitt Museum for their information about the Market Cross and the Dial Post. Also thanks to John Davis for his help and advice with the dial.

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BUTTERFIELD DIAL GNOMONS

MIKE COWHAM

The gnomon of a sundial is frequently its most decorated part, often being finely pierced and engraved. Portable dials, too, have many exceptionally interesting and decorative gnomons.

In this instance we look at Butterfield dials whose moveable gnomons are generally quite ornate and usually have a bird as a pointer to the scale of latitude, indicating the angle by its bill. However, there are a few such dials that did not use a bird as the pointer. A few of the variations in design are shown in this short article, some French, some English and one Russian. The metal used for these dials was usually silver or brass. All of these dial gnomons are hinged so that they may be folded flat for fitting in their carrying cases.

Fig. 1. A fairly standard Butterfield dial in silver by Michael Butterfield.

Fig. 2. The bird used to point to the latitude scale.

Fig. 1 shows a fairly standard Butterfield dial, made in silver by Michael Butterfield around 1690, and its gnomon is shown in Fig. 2. The bird, whose bill is used as a pointer, is typical of such dials, and its latitude scale covers the range from 40° to 60°, in 1° steps, as in most examples. However, the types and postures of the birds have often been varied.

The bird was placed on both sides of the gnomon, but in nearly all cases it was made with the latitude scale on only one side. Putting the same scale on two sides, with identical alignment, would probably have proved rather difficult. The gnomon of the dial by Nicholas Bion (Fig. 7) seems to have been placed upside down, perhaps later, as the scale appears to have been reversed.

The birds were usually joined together by a rivet, normally in a gilt metal, that formed the eyes. The curved slot in the gnomon would then travel up and down around this rivet. As this could cause some movement in the horizontal direction, its lower point bearing is a finger that slides, as necessary, through a loop on the dial's surface.

A French dial by Timotheé Collet from Paris, dated 1663, therefore before the Butterfield dials, shows a simple hinged gnomon but does not use a bird as a pointer (Fig. 3). It would also have had a plumb bob but that is now partly missing. It has three chapter rings for 44°, 48° and 52° and its gnomon arc stretches from 35° to 50°.

Some of the variety in Butterfield dial gnomons is illustrated below; several of them have different types of bird, some chubby, some long necked and some with long bills. The dates given for each are only approximate. Of particular interest are those dials with non-bird supporters such as the Lion by Bizot (Fig. 12), the Dolphin(?) by Le Maire (Fig. 13), the Leaf by Chevalier (Fig. 14) and the Swan by Le Febvre (Fig. 15). The English dials by Thomas Heath have a bird with a crest, possibly a jay (Figs 17 and 18). The final example (Fig. 19) is by Samoilov who was an instrument maker working at Izhora Works near Odessa in Russia, probably around 1700.

Fig. 3. A pre-Butterfield dial by Timothée Collet with a hinged gnomon.

Fig. 4. Dial by Michael Butterfield, Paris.
It is quite a chubby bird. Scale 40° to 55°.
c. 1690.

Fig. 5. Dial by Michael Butterfield, Paris.
c. 1690.

Fig. 6. Dial by Michael Butterfield, Paris.
Its beak is rather high!
c. 1690.

Fig. 7. Dial by Nicholas Bion, Paris.
Inverted gnomon, scale 35° to 60°.
c. 1710.

Fig. 8. Dial by Sautout-Choisy, Paris.
With a long-necked bird.
c. 1710.

Fig. 9. Dial by Thomas Haye, Paris.
Scale 35° to 60°.
c. 1710.

Fig. 10. Arabic dial by Le Maire Fils, Paris.
c. 1710.

Fig. 11. Dial by Michel Cadot, Paris.
c. 1730.

Fig. 12. Dial by Bizot à Paris.
With lion supporter.
c. 1720.

Fig. 13. Dial by Le Maire.
With dolphin's tail as pointer.
c. 1710.

Fig. 14. Dial by Louis Vincent Chevalier.
With a leaf supporter.
c. 1780.

Fig. 15. Dial by Le Febvre.
With a swan as supporter. Scale 40° to 57°.

Fig. 16. Dial by Richard Whitehead.
With just a bird's head and neck.
c. 1680.

Fig. 17. Dial by Thomas Heath, London.
Bird with a crest. Scale 40° to 54°.
c. 1730.

Fig. 18. Dial by Thomas Heath, London.
With a very simple bird gnomon. Scale 45° to 56°.
c. 1730.

Fig. 19. Dial by Samoilov, near Odessa, Russia.
Now lacking its beak. Scale 40° to 66° in 2° steps.
c. 1700.

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IN THE FOOTSTEPS OF THOMAS ROSS

Part 24: The Carberry House Sundials

DENNIS COWAN

Carberry House, variously named Carberry Mansion or Carberry Tower Mansion House or Carberry Tower, is in East Lothian a mile or so south-east of Inveresk, which is itself a similar distance south-east of Musselburgh.

The original part of the house dates from the 16th century but many additions were carried out in the 18th and 19th centuries. The 16th Lord Elphinstone married Lady Mary Bowes-Lyon, sister of the Queen Mother, in 1910 and they made additional improvements to both the house and estate.

Lady Mary died in 1961 and she bequeathed the house to the Church of Scotland who used it mainly as a conference centre. It has since been sold on twice and is now a hotel.

When Thomas Ross visited, he found what he thought was the capital of an obelisk sundial. In volume 5 of *The Castellated and Domestic Architecture of Scotland*,[1] he comments that:

"*There are two companion dials in the grounds of Carberry Tower. Of one dial* [Fig. 1] *only the octagonal capital is old, the pedestal with the curved neck being quite modern, and clearly not according to the original design, as this is evidently the capital of an obelisk dial, and a very remarkable one it is, being pierced quite through in the*

Fig. 1. Ross's sketch of the Carberry obelisk dial prior to restoration.

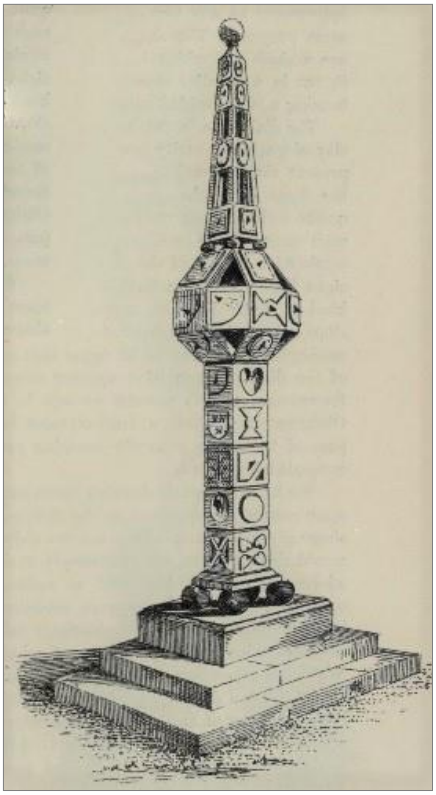

Fig. 2. Ross's sketch of the Carberry obelisk dial after restoration with a new finial and shaft.

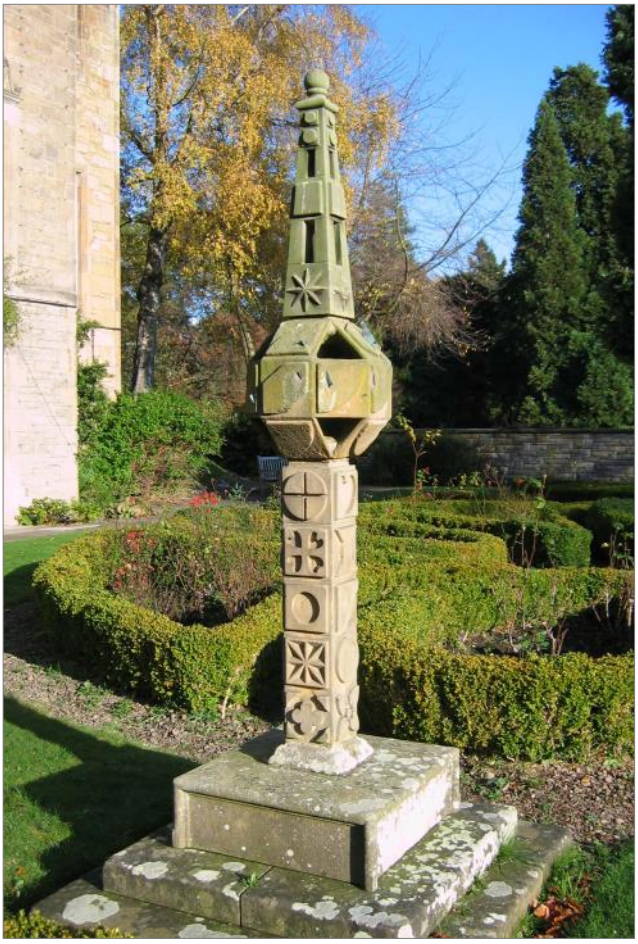

Fig. 3. The Carberry obelisk dial today.

Fig. 4. The finial of the obelisk today showing no evidence of any gnomons or furniture.

manner shown. The raised plaques on the faces are of uncommon shapes. A wooden pin or dowel, the rounded end of which is seen on the top, goes down through the capital into the necking, and the rounded bead seen between the two is of wood. The total height of the dial as it now stands is about 6 feet. [Fig. 2] *shows an attempt to restore it to something after its original design, the idea of the open obelisk to suit the open capital being taken from Polton.[2] The capital is 17 inches high, and the faces of the octagon measure about 6 inches wide by 6 inches high.*"

When Ross refers to the open obelisk above, he was presumably referring to the open finial of the obelisk. According to Historic Environment Scotland, the work to restore the sundial to something after its imagined original design was carried out to Ross's specification.

As Ross intimates, this obelisk sundial is like no other obelisk dial in Scotland in that the capital is hollow. The faces have been carved in relief as it would obviously not have been possible to carve them in the usual manner. Perhaps this influenced the uncommon shapes mentioned by Ross.

Fig. 3 shows the dial today and at first glance it looks the same as it was after Ross's intervention. However, it is no longer mounted on four balls as it was in Ross's day. Rather more difficult to see are the gnomons on the finial in Ross's sketch in Fig. 2. Looking at the finial today in Fig. 4, it appears that they never existed as there is no evidence of the gnomons nor of any hour lines or numerals.

Fig. 5 shows the capital today and it can easily be seen that it is hollow as described by Ross. Unfortunately, most of the gnomons have gone with only a couple and some stubs

Fig. 5. The hollow capital of the obelisk dial today.

remaining. Hour lines and numerals are not evident but a close inspection reveals some very faint remnants of each.

The shaft today looks much newer than the capital and finial, but I have been unable to uncover any evidence that suggests that it has been replaced again. I have seen a photograph from 1961 in which it appears to be the same as today. In any case, if it is a new replacement it is faithful to Ross's sketch.

There were two dials at Carberry House, and of the other one Ross says:

"*This is one of the most quaint and interesting dials* [Fig. 6] *we possess. The support – a short rounded column – has for its capital a graceful female bust presenting one face to the north, and another (the one shown) to the south, with the Ionic volutes and abacus so frequent in Renaissance work. On the top rests the dial-stone, fashioned to contain upright, reclining, and horizontal dials. There is also an upright round dial at the shoulders of the bust pendant from the volutes. Altogether there are thirteen dials on the structure. The base and steps, as is so*

Fig. 6. Ross's sketch of the second Carberry dial.

frequently the case, are set diagonally. The measurements of the dial are height of steps, 18½ inches; shaft and base, 20½ inches; bust and abacus, 13½ inches; total to the top of abacus, 4 feet 4½ inches. Above this the dial-stone is 10½ inches high by 10⅞ inches on the face, and 11 inches in width on the sides. The pendant dials are 5 inches in diameter, and the lower step is 2 feet square."

Ross also provided an architectural drawing of this dial and it is shown in Fig. 7. Neither Fig. 6 nor Fig. 7 shows the numeral for 6 pm. Perhaps it was carved later. Fig. 7 has a small error where the numeral for 2 pm was placed next to 1 pm, making it look as if it was 12 in addition to the cross patty for noon.

This dial was originally sited in the walled garden at Carberry and was reported to be missing, but it eventually turned up in Darras Hall north-west of Newcastle and fairly near to that city's airport. According to Somerville,[3] it made its way to Darras Hall in 1984. However, it was subsequently acquired by the National Museum of Scotland and is now on display with other sundials in the Chambers Street museum in Edinburgh (Fig. 8).

It is not unlike a lectern sundial but it has a horizontal dial on top. As Ross says, it has thirteen dials in all including two on the pedestal and all of the numerals are Arabic, with a cross patty for noon on the south-facing vertical dial. Above this dial face is a fine polar dial (Fig. 9).

The gnomons which have been replaced are in good condition. Altogether the Carberry dials are a very nice pair of dials. It's a pity that they have been split up.

Fig. 7. Ross's architectural drawing of the second Carberry dial.

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Fig. 8. The second Carberry dial on display at the National Museum of Scotland in Edinburgh.

Fig. 9. The south face of the second Carberry dial today.

A COUPLE OF CUMBRIAN DIALS
Part 2: The Penrith Dial

SUE MANSTON and JOHN DAVIS

The BSS Help and Advice Service was asked for an opinion on a sundial bought at auction in Carlisle. It was discovered in a box of mixed metal and brass objects that was put into the auction by a family with roots in the Carlisle area. The box was bought for the princely sum of £10! The new owner, Ian Hoffmann, wanted to know if the dial was genuine and if we could make sense of the very ornate inscription. So we were approached for our expert opinion and, after several emails, Ian agreed to send his dial to John for closer inspection and X-ray fluor-escence (XRF) analysis.

Fig. 1. General view of the dial.

Dial Description

The dial shown in the general view of Fig. 1 carries the date of 1695 and there was initially some question whether this was 'right' or if it was yet another of the 20th-century dials which bear false dates. The extremely florid engraving of the signature and motto could have been taken as an attempt to produce an 'olde worlde' style but further investigations convinced us of its authenticity and an interesting history.

The plate is quite accurately 6″ square (153.5 mm) and is a nominal 1/8″ thick – significantly more than the average for a dial of that period. This gave an initial indication that the plate could have been made as one of a pair prepared for making a lantern clock – further support for this hypothesis is given below. The basic dial delineation is from a single origin (offset from the plate centre slightly towards the south by 30% of the radius) and thus there is no noon gap. This point is marked but it is not a through-hole as it often is on London-made dials. The delineation is from IIII to VIII hours and divided to half-quarters (7½ minutes) which would have been rather obsolete by that date. The half-hours are marked by very prominent trident marks formed from a large dot – made by a spade drill – and some engraved lines (see Fig. 2). They seem similar to the type of half-hour marks seen on clock faces of the period but, so far, we have been unable to match them to any particular clockmaker working in the Cumbria area.[1]

The main circles of the chapter ring are also seen in Fig. 2 and it can be seen that they are deeply and confidently engraved, with the groove having near vertical sides. This suggests that they have been made with a trepanning tool or, perhaps, on a lathe; again, support for the work of a clockmaker.

The angles of the hour lines were measured by importing the photograph of Fig. 3 into a CAD system. There was some uncertainty in this as the noon line is not precisely at right angles to the VI–VI line and some allowance had to

Fig. 2. Close-up of trident half-hour marks and profiles of chapter ring circles.

Fig. 3. Photograph of the dial plate taken perpendicular to its surface.

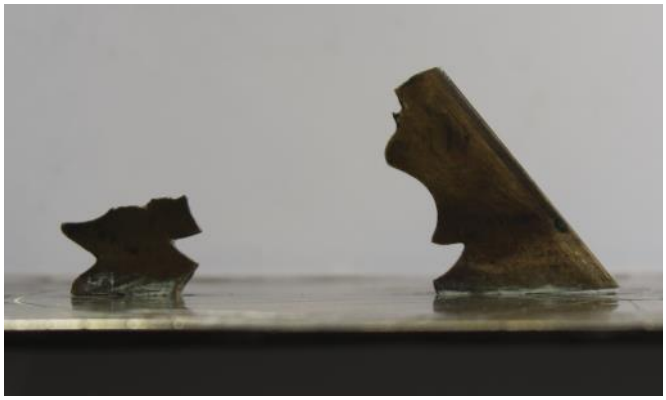

Fig. 5. Side view of the remains of the gnomon.

Fig. 6. Close-up of signature and motto.

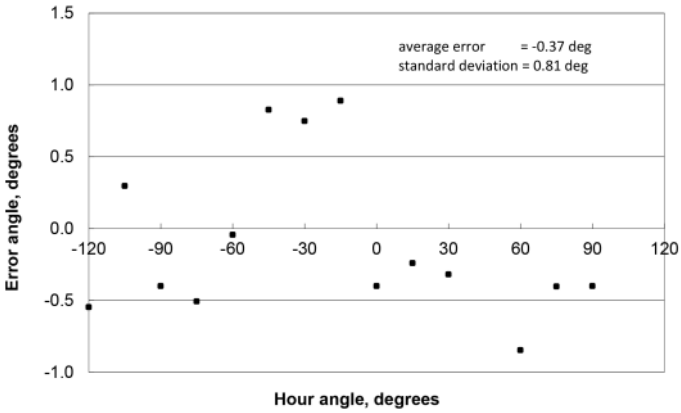

Fig. 4. Error profile for the hour line angles of the dial for a best-fit latitude of 55°.

be made for this. These angles were then compared with the theoretical values derived for a range of assumed latitudes and the differences (errors) are shown for the best-fit latitude of 55° in Fig. 4. Considering the spread of the errors this can be regarded as a reasonable match to the value of 54° engraved in the central circle of the dial.

The gnomon is unfortunately broken but two pieces remain, rather loosely held by their hammered tenons. It has a very blunt knife-edge and the profile can be seen in Fig. 5. The angle cannot be measured with any accuracy but is certainly around 53.5°, i.e. reasonably appropriate for the dial. It is apparent that the piercing would have had a rather interesting shape. The thickness of the pieces was in the range 1.87 to 1.93 mm, i.e. significantly less than the thickness of the dial plate and so it had not been cut from a pre-prepared plate.

In contrast to the well-controlled and professional-looking engraving of the basic sundial, the motto and the signature show a unique and quite extraordinary style, leading to the view that they are the work of another, amateur, hand – see Fig. 6. If the florid swirls of the motto are ignored, it may be read as

Ut Hora Sic Vita

(*Life is as an hour*) which Mrs Gatty calls "the most common of all mottoes in England" and to which she devotes two pages of examples, starting in 1643.[2] The signature is read as

Lawrance Swarbricke

which initially caused some problems as no clockmaker, let alone sundial maker or instrument maker, of that name is recorded in any of the standard sources. But then an entry for a Lawrence Swarbreck was found in the Index of Mathematicians.[3] Since he was described as a supervisor of excise in Penrith, with dates of "before 1690" to "after 1717", it seems highly likely that this is our man and that he commissioned a dial from a local clockmaker and then customised it himself. An Excise Officer is just the type of

Area	Cu	Zn	Sn	Pb	Ag	Ni	Fe	As	Sb	Bi	Comments/Others
Dial plate (back)	76.4	17.3	1.1	3.5	0.08	0.10	0.92	0.40	0.17	nd	cleaned spot
Dial plate (back)	77.6	14.6	1.1	4.2	0.08	0.11	1.46	0.59	0.17	nd	uncleaned
Dial plate (front)	74.6	17.1	1.3	4.8	0.09	0.10	1.14	0.48	0.21	nd	uncleaned
Gnomon (E)	69.2	22.3	1.4	3.3	1.99	0.09	0.75	0.29	0.24	nd	uncleaned
Gnomon (W)	73.7	18.1	1.7	4.2	0.10	0.12	1.44	0.13	0.28	nd	uncleaned

Table 1. Alloy compositions of the dial components as measured by X-ray fluorescence using a Niton XL3t GOLDD^{++} analyser with a 50KeV primary beam, calibrated against the CHARM set of Certified Reference Materials and with a 65 second sampling period. nd = not detected.

numerate and practical man who might be interested in a sundial. The Swarbreck (or Swarbricke) name was, it seems, a fairly common one in the region around Poulton-le-Fylde, Lancashire, at this time so it may be that Lawrance travelled with his job.[4]

Further research by Ian Hoffmann[5] has found that Lawrence Swarbreck was posted to Penrith as an excise man c. 1708 and was there until at least 1715. He had a wife, Elizabeth, and they had a son William (born 1708 but died 1712) and a daughter Mary, born 1710. Another daughter, Margaret, whose birth hasn't been traced, died in 1715 by which time Lawrence is described as "supervisor of excise" which may have been a promotion.

It transpired that Ian, the owner, also lives in Penrith, and the value of 54° on the dial compares well with the actual value of 54.66° N for Penrith. So it appears that the dial has not travelled very far in 300 years and, after a spell in the Carlisle area, it has now found its way home.

Metallurgy

The metallurgy of the dial plate and the remains of the gnomon were analysed by X-ray fluorescence in the standard manner.[6] A mechanically cleaned spot on the back of the dial was measured together with an uncleaned spot adjacent to it and an untouched – but previously polished – area opposite it on the front of the dial. The east and west faces of the larger fragment of the gnomon (uncleaned) were also analysed. The results are shown in Table 1, expressed in wt%. They are much as expected, showing a composition typical of a cementation brass of the period with a medium level of zinc (Zn) but with quite high lead (Pb) levels. The amount of iron (Fe) is also rather high and may have led to difficulties in machining due to hard spots. At this date, it is unclear where the brass would have been sourced from but it may have been local as it was too early for the Bristol industry to have been at full production.[7] Very similar alloy compositions, including the key trace elements (Ni, As, Sb etc.) have also been found in small 18th-century 'windowsill' dials thought to have been supplied by clockmakers to accompany longcase clocks for the purpose of resetting them so it is possible that we are beginning to see the development of a pattern of brass supply to English clockmakers.

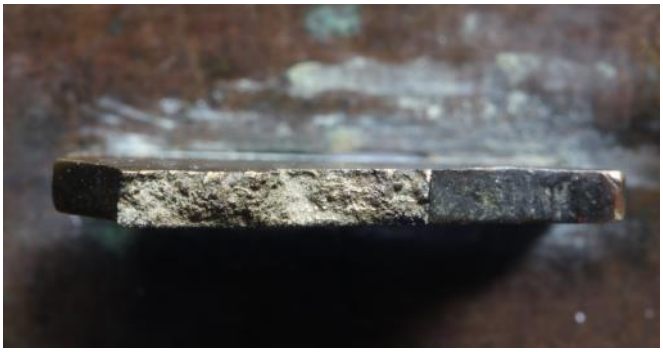

Fig. 7. Close-up of the broken end of the gnomon.

The composition of the gnomon shows a significant variation between the two sides despite its relative thinness. This is undoubtedly due to its being cast in an open sand mould and solidifying slowly from one side. Further evidence for this is given by the microstructure of the cross-section of the broken edge of the gnomon, shown in Fig. 7, where relatively large equiaxial crystals are clear.

The Future

The future of the dial is not yet decided but one possibility is that it will be given or loaned to a Penrith museum as an example of the local industry and history.

Summary of Parts 1 and 2

It is unusual for two previously unknown, 17th century sundials to come to our attention at the same time. Both are from the same county, from towns only 30 miles apart. They have a few similarities such as the cast, knife-edged gnomon, an origin just south of the dial's centre and Roman numerals read from the inside of the dial. But otherwise they are very different. The Ambleside dial has a thin plate,

with punched numerals and letters whereas the Penrith dial has a relatively thick plate and is engraved. It appears that the first may have been made by a goldsmith or silversmith, and the second by a clockmaker. Both dials have travelled and now found their way back home. We hope the BSS Help and Advice Service will continue to bring such interesting dials to our attention.

ACKNOWLEDGEMENTS

We are very grateful to Ian Hoffmann for allowing his dial to be analysed and described in this article. Many thanks also go to Brian Loomes and Frank King for their advice.

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THE BRITISH SUNDIAL SOCIETY'S LIBRARY

JOHN WILSON

In the very centre of the City of Nottingham, no more than 300 metres away from the Council House, there is a rather insignificant-looking door sandwiched between a charity shop and a newsagent (Fig. 1). Go through the door and you will find yourself in one of Nottingham's best-kept secrets – Bromley House Library. The house was built in 1752 for the Smith family, a notable Nottingham family of bankers. They lived in the house for many years and their bank was about 200 metres away. This is now a branch of NatWest Bank, and is known as Smith's Bank Branch.

Fig. 1. The doorway of Bromley House on Angel Row, Nottingham.

In 1816, the Nottingham Subscription Library was founded, using a rented house in Carlton Street. By 1822, the Smith family placed Bromley House on the market and the Nottingham Subscription Library purchased the freehold of the property. The Library was, and is, a noted institution in Nottingham and became a centre for both literary and scientific endeavour. There are important connections with George Green, the Nottingham mathematician. Members of the BSS who attended the BSS Conference at Nottingham in 2015 will recall the visits to Green's Windmill (unusually, a working mill in the heart of the city) and to Bromley House where there is a brass meridian line let into the floor of one of the rooms (Fig 2). There is also a heliochronometer in the garden at the rear of the library.

The British Sundial Society's Library is housed in the Thoroton Room at Bromley House (Fig. 3). The collection occupies two bays of shelves on either side of the 18th-century fireplace and two locked cupboards beneath the shelves in which the more valuable BSS books are kept. Members of the BSS

Fig. 2. The meridian line at Bromley House.

Fig. 3. Part of the BSS Library.

may visit the library to inspect the books, but the books are for reference only and may not be borrowed. Bromley House is within walking distance of the Nottingham Railway Station and BSS members will be made very welcome. Please make yourself known to the staff and preferably bring your BSS membership card. The Bromley House Library website is *www.bromleyhouse.org*. A catalogue of the Library's collection of books is available through the website, and this includes the British Sundial Society collection. Just put 'sundial' into the search line and this will bring up most of the titles in the BSS collection.

At present, there is a major programme of restoration at Bromley House which it is hoped will be completed by the end of 2019. This will inevitably involve some disruption, and indeed a recent survey has highlighted a problem in that one of the floor beams in the attic is decayed. Unfortunately, this is just above the Thoroton Room, so there is now a support (Fig. 4) which should prevent the ceiling from collapsing anywhere near the BSS books! Some of the BSS books have already been taken from the shelves and stored in the locked cupboards. During the work on the roof and the attic, other book stock may have to be stored temporarily in the Thoroton Room. However, it should still be possible to consult the BSS book collection. As the BSS Librarian, I will be liaising closely with the management of the Bromley House Library during the restoration project. If you plan to visit Bromley House, please contact me for the latest information.

librarian@sundialsoc.org.uk

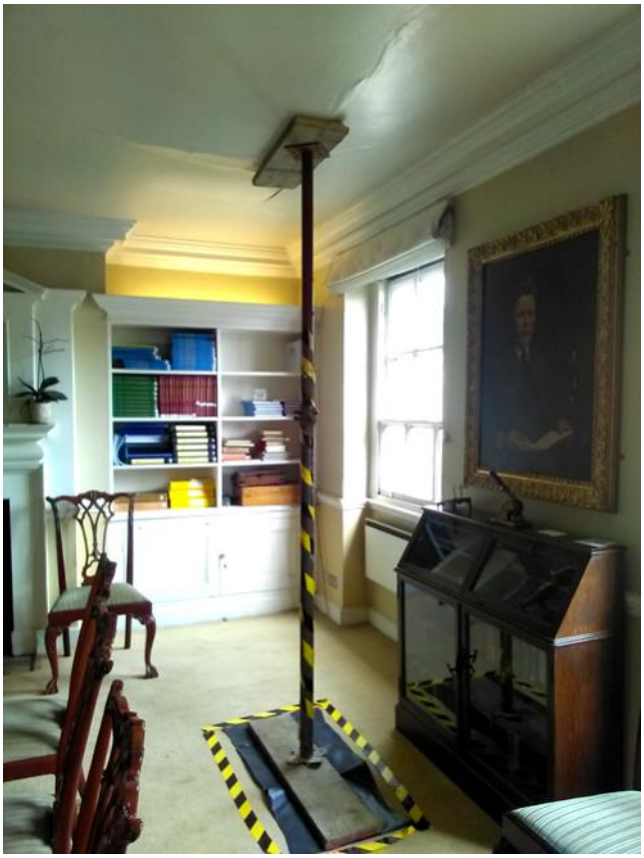

Fig. 4. The temporary ceiling support in the Thoroton Room at Bromley House.

THE MYSTERY OF THE LUMBUTTS SUNDIAL

ROBERT SYLVESTER

Being the BSS Sundial Registrar has its moments. When a number of reports seem to refer to the same dial, but are quite different, the matter involves investigation at ground level. I answered an appeal by our current Registrar to clarify several sites in my native Yorkshire, and chose to investigate a location in Calderdale where two reports of seemingly identical dials were located at either Lumbutts or Mankinholes, hamlets near Todmorden. It is an area I was unfamiliar with, but after checking each location and asking the residents, it was obvious to me that they were one and the same dial, and that it was on the former Co-operative store in Lumbutts (SRN 7409; Figs 1 and 2).

I discussed the sundial with the new owner of the property who was proud of his acquisition and who hoped, when time permitted, to restore the dial to its former state. The dial is well known in the area and the local paper ran a feature on the achievement of what was regularly visited by walking groups since its creation in 1864. Even Mrs Gatty mentions this dial which lends it a degree of respectability. The entry, with its incorrectly transcribed motto, in *The Book of Sun-Dials* reads:

> HOW LONG IS TIME? ASK THOU OF ME:
> HOW FLEET IS TIME? I ASK OF THEE.
>
> *On a wooden dial attached to the wall of an old house in the village of Lumbutts, among the hills near Todmorden.*[1]

Fig. 1. The sundial affixed to the front of the former Co-operative Building in Lumbutts.

Fig. 2. The Lumbutts sundial in 2014.

I wrote up a report on it but was unable to clarify who the maker was as we had no record of J. Whittaker, thought to be a local lad.

I concluded that it was a well-made dial and initially I did not question its accuracy. I naïvely thought that anyone who would mark on the dial its exact location to the nearest arc-second (53° 42′ 26″ N, 2° 4′ 12″ W) must surely know what he was doing. The dial was delineated as a direct south-facing vertical; canting the dial to face direct south avoided the complications of changing the delineation to take account of the wall's declination.

The original gnomon had long been lost and the now-detached replacement that I was shown when I visited in 2014 had clearly been made by an unskilled hand.[2]

As time wore on, I began to feel uneasy about it as some of the hour lines did not ring true. I generated the dial using the 'Shadows' computer program by François Blateyron[3] and was shocked to discover that most of the hour lines were misplaced, not just by a small amount: they were

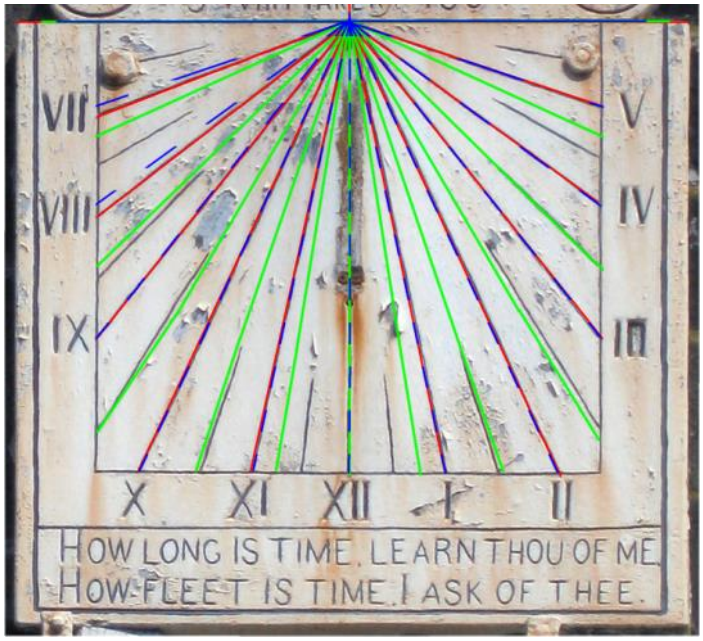

Fig. 3. Hour lines on the Lumbutts sundial.
Photo: Margaret Ribchester, 2012.
Red: as measured on the dial photograph by the author.
Blue: as calculated by the 'Shadows' program for a horizontal dial at 53° 42′ 26″ N.
Green: as calculated by the 'Shadows' program for a vertical dial at the same latitude.

Hour	VERTICAL DIAL Measured on dial photo (Sylvester)	HORIZONTAL DIAL Calculated by program (Blateyron)	VERTICAL DIAL Calculated by program (Blateyron)
6 am	180.0°	180.0°	180.0°
7 am	160.0°	161.6°	155.6°
8 am	142.7°	144.3°	135.7°
9 am	129.2°	128.8°	120.6°
10 am	115.5°	114.9°	108.8°
11 am	102.6°	102.1°	99.0°
Noon	90.0°	90.0°	90.0°
1 pm	77.8°	77.8°	80.9°
2 pm	64.8°	65.0°	71.1°
3 pm	51.2°	51.1°	59.3°
4 pm	35.6°	35.8°	44.2°
5 pm	17.8°	18.3°	24.3°
6 pm	00.0°	00.0°	00.0°

Table 1. Measured and calculated hour-line angles. The reference 0° angle refers to the 6 pm line.

grossly in error. After much heart searching, I was struck by a thought: what would I find if I generated the hour line spacings for a *horizontal* dial at the same latitude? As soon as I did this, I discovered that the lines fitted almost exactly, as can be seen from Fig. 3 and Table 1. The maker had used the line spacings (probably derived from a Ready Reckoner) for a horizontal dial and assumed that the dial could just be propped up vertically and it would function correctly. This is not the case except for a very few locations, i.e. any site which lies on the 45 degree lines of latitude north or south (though the southerly location is almost entirely sea).

I contacted Frank King who, working from photographs, thought that all that needed to be done was to set up the dial as a horizontal and paint out the hour numbers and repaint them in reverse order. I had to break the news to him that the original numbers were not painted on wood but carved into the dial which was, in fact, made of stone.[4] We might have had more luck if the dial were relocated as a horizontal dial at the same latitude but in the southern hemisphere. This presented us with another problem: the line of latitude for 53° 42′ 26″ S is almost wholly sea! The only land at this new location is a remote spot near to Tierra del Fuego or on the Shag Rocks near South Georgia (population zero). However, we could surely increase the range of locations if we abandoned the horizontal idea and set it up as a recliner.

All attempts to find out about the maker proved futile until I stumbled upon a reference on the Internet.[5] Here I was to learn that James Travis Whittaker MD (1842–95) was the son of lock keeper Ely Whittaker. According to the 1861 census, he lived at Gauxholme Lock House with sisters Mary Travis (1836–93) and Emma (1849–1937), a throstle doffer.[6] He was a polymath with a wide range of interests, a schoolmaster at Waterside Factory School (1861), and a school teacher at Lumbutts Factory School. He designed and installed the Lumbutts sundial opposite the school room. He was also active in the Unitarian Sunday School. He never married. Around 1865 he left Lumbutts, and went to Glasgow where he studied medicine and surgery at the University whilst teaching at elementary school during the daytime. He qualified as a doctor and worked in public institutions before going into private practice in Glasgow. He moved to Tillicoultry near Stirling and then to London where he died of acute bronchitis in Kilburn.

I tentatively approached our Biographies lady Jill Wilson, mindful that although we now had information, none of it was about his sundial interests and I questioned whether she should use it as he had got his sums wrong and can scarcely be classed as a sundial maker of note. She was happy to include his biographical information in the next edition of her *Biographical Index of British Sundial Makers* and gave me a fascinating overview of where her researches often led her. At least, if another sundial turns up with J. Whittaker inscribed upon it, we now know something about the fellow.

So far, I have yet to hear from the new owner since his initial email acknowledgement of our meeting, and felt it

wise not to tell him that his sundial was wrongly delineated. If he does get in touch, we could suggest that our Society could guide him in constructing a properly laid out dial if he had the motivation to do so. Meanwhile, I am left wondering whether I am the only person in a century and a half who has spotted that this is really a non-dial!

ACKNOWLEDGEMENTS

I am indebted to Dr Frank King and also our Registrar John Foad, who have assisted in solving this mystery, for their help and comments.

REFERENCES and NOTES

1. Mrs A. Gatty and H.K.F. Eden & E. Lloyd (eds): *The Book of Sun-Dials,* 4th edition, Bell & Sons, London (1900), p.284.
2. The gnomon that I was shown in 2014 seemed too large, and the angle to the dial face was wrong: I measured it at 42.5° when it should have been nearer the co-latitude of 36°, and this led me to think that the maker did not understand the basics of dialling. Although the locals at that time told me that this gnomon was intended as the replacement, Google Street View (as of 2016) shows yet another gnomon in place on the dial, this time long and spindly.
3. 'Shadows' program by François Blateyron. *https://www.shadowspro.com/en/index.html*
4. This is what the new owner told me and he has had a ladder up against the house to inspect the dial in detail, something I would not expect Mrs Gatty to have done!
5. Malcolm Bull's Calderdale Companion website. *http://www.calderdalecompanion.co.uk/*
6. A throstle doffer changed the bobbins of thread for the 'throstle' spinning machines in a textile mill.

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Holiday Sundial – Ahakista, West Cork, Ireland

Peter Meadows

Just outside the village of Ahakista on the Sheep's Head peninsula in West Cork, Ireland, is a sundial garden memorial to those who lost their lives in the Air India flight explosion on 23 June 1985. The flight was from Canada to India via London and most on-board were Canadian citizens of Indian origin. The plane was approaching south-west Ireland when the explosion took place.

My wife and I visited on a warm summer's afternoon just a few days after the 33rd anniversary of the disaster. As can be seen from the photograph there are fine views out towards the Atlantic Ocean.

The horizontal sundial (SRN 3936) is some two metres across with the inscription "TIME FLIES / SUNS RISE AND SHADOWS FALL / LET IT PASS BY / LOVE REIGNS FOREVER OVER ALL" around the edge of the dial.[1] Also included is a plaque giving the equation of time to convert local to Greenwich Mean Time and a declination line for 23 June with the time of the disaster indicated.[2] The sundial was designed by the Cork sculptor Ken Thompson and delineated by Owen Deignan. Around the northern half of the sundial is a large semi-circular wall giving the names of all those on-board and in many cases their photographs. There is also a garden stretching a short distance back towards the road.

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1. This dial was referenced and the motto explained in J. Davis: 'A gamble that paid off: a horizontal dial by Chadburn Bros, Sheffield', *BSS Bulletin*, 30(i), 2–5 (March 2018).
2. *https://www.sundials-ireland.com/cork/ahakista.htm*

peter@petermeadows.com

IAN WOOTTON

It is sad to report the death of one of our longstanding members at the age of 97. Many members will recall his quiet charm and active support, rather belying considerable intellect. I am happy to say that I kept contact with Ian and his wife Veryan after his health slowed him down, and even then I did not make much of a connection with his career in pathology. His family have sent more information revealing just how much he was recognised, nationally and internationally. Within a hobby, members do not usually reveal their academic or business achievements, and as an exception we can look with some awe at Ian's background and qualifications, such as Professor Ian David Phimester Wootton MA, MB, BChir, PhD; FRSC, FRCPath, FRCP. After work in the Royal Army Medical Corps and postgraduate studies in New York, he joined Hammersmith Hospital as a research assistant, ultimately rising to take the Chair in Chemical Pathology. His work led to the many blood tests that we nowadays regard as routine, and he was a founder member of the Association of Clinical Biochemists. Later in life he held the role of Chief Scientist for the Department of Health and Social Security from 1972-73 although he always claimed to prefer pathology to politics!

His wife and inseparable companion of 67 years, Veryan, died 5 years ago. Also a PhD biochemist, she worked with Sheila Sherlock studying liver metabolism in prisoners of war in post-war Germany. Their elder son became Professor of Medical Physics at Hammersmith and their younger son became Associate Professor of Laboratory Medicine in Melbourne, while both their daughters had distinguished careers as teachers. Ian's seven grandchildren have produced four great-grandchildren at the most recent count.

Ian's lifelong interest in navigation (from boat building) prompted him to join the Society close to the beginning (membership no. 172), and he soon took part in running the Society. He sat on Council and became the first (formal) Registrar. For this he took records in the register that had been developed by David Young and determined that what was needed was a relational database: he introduced the computerised system that we still use today. He was keen to incorporate exact latitude/longitude and OS Grid references of every sundial in the British Isles and had algorithms for generating them if not already supplied (and often correcting them). He put another hobby, bookbinding, to good use, by generously giving his time to bind the entire set of *Bulletins*, the NASS *Compendium* and many of the Dial Reports for the BSS Library until 2010. Some 15 years ago a subcommittee was formed to update our original very brief constitution, and after making quite good progress it was discovered that the Charity Commission had brought out a model designed to help small societies. The subcommittee reached an impasse as to which version to adopt. Ian was brought in as a wise head to make a recommendation. He opted for the official model, but the other work was not wasted because much of it could be 'mapped' into the model. Of course, the constitution has since been updated again into a more robust version to keep up with the times. Although Piers Nicholson pioneered the development of a website for sundials, Ian took on the job of developing a site specifically for the Society. The website has had several iterations since then, and it could be said to be another fitting memorial to Ian's expertise. I remember visiting Ian and Veryan when he told me that he had become unhappy with the Windows operating system and as an intellectual challenge had decided to install the Ubuntu operating system. I'm told that such a task is not for the faint-hearted!

John Davis

From the group photograph taken at the September 2008 Newbury Meeting, Mary Hare School. Left to right: Peter Ransom, Ian Maddocks, Ian Wootton, David Young, Ben Jones, Martin Jenkins.

John Davis

Ian examining one of the dials exhibited at the September 2008 Newbury Meeting.

Finally, some of us will remember with pleasure when he and his wife hosted Council meetings at their charming cottage in Goring overlooking the River Thames.

Douglas Bateman

JOHN WRIGHT OF LONDON AND BRISTOL

The beginning of the scientific instrument trade in Bristol

JOHN DAVIS

Master–apprentice links are the key to understanding the development of the scientific instrument trade in England. This is especially true in London, where the formal guild structure with its good record-keeping has allowed the developments to be reconstructed in detail. It is more difficult to follow the development in the provinces though in a recent article on Joshua Springer of Bristol,[1] his informal apprenticeship to John Wright, originally from London, was mentioned. At that time, there were no known dials by Wright (there are none recorded in the BSS Register of Fixed dials and none in the listing of museum specimens[2]) but a dial plate with some unusual properties has now surfaced, prompting this article.

Fig. 1. The John Wright dial plate.

Biographical

Care needs to be taken when researching 'John Wright' as it is a common English name and the *Index of British Mathematicians*[3] (which lists all known workers with mathematically-related occupations) has no fewer than twenty-two examples in the 17th and 18th centuries. One of these is listed as both a mathematical instrument maker and a teacher of land surveying and he might well be our man: his dates are listed as "before 1740" to "after 1781" though no location is given. This source also gives a John Wright ("before 1755" to "after 1775") as an excise officer in Bristol and it is just possible that this was the same man.

Clifton's more restricted scope in the *Directory of British Scientific Instrument Makers*[4] has just two John Wrights (father and son, I and II), of whom the first (known to be working in 1756 until about 1759) is the person of interest here. He was apprenticed in the London Guild of the Merchant Taylors to Benjamin Cole, being made free in 1760,[5] and initially worked for Cole & Son, before moving to Bristol. (John II was in turn apprenticed to his father but, perhaps surprisingly, remained in London where he was trading as an Optician in 1763.) Benjamin Cole I had originally trained in lapidary but became a famous mathematical instrument maker with many apprentices and at one time he worked for Thomas Wright (fl. 1718–47),[6] the successor of the great John Rowley, Master of Mechanics to the King. As John Wright's father is given as another John he cannot have been Thomas Wright's son though it is quite possible that he was a relative.

E.G.R. Taylor[7] lists only one John Wright whom she says was a land surveyor (fl. 1740–61) who published a book in 1761 titled *Land-surveying new Methodized, containing the Description and Use of the Catadioptric Sector, Catoptric Square, Pocket Trigonometrica and Arithmetrica Circus and Rectangle Protractor*.[8] She implies that he was a teacher but that he developed his own instruments including a form of the octant and other devices depending on mirrors. As no location or personal details are given, it cannot be certain that this is the same John Wright but the details do seem to fit. Taylor also mentions a William Wright (William II in Clifton) working in Bristol in c.1720–30 which is an alternative origin for the dynasty.[9]

The best source of information on John Wright of Bristol is undoubtedly Alison Morrison-Low's book (developed from her PhD thesis[10]), *Making Scientific Instruments in the Industrial Revolution*, where he appears numerous times.[11] John Wright's address in Bristol, from 1756 onwards, was

Fig. 2. John Wright's signature.

"The Sphere & Hadley's Quadrant, near St Stephen's church". His initial offering was of a very wide range of mathematical, philosophical and optical instruments in silver, brass, ivory and wood. His success is shown by the fact that by 1758 a robbery from his shop was of a glass case two feet long containing 12 dozen steel bow spectacles and numerous other objects.[12]

John Wright worked in Bristol until 1759 when Joshua Springer, who had worked for him, took over the shop and continued the business.[13] Springer moved to newly-built premises at 2 Clare Street in 1774 until his retirement in 1808 when the business was bought by R & C Beilby, who are described elsewhere in this issue.[14] After them the business was run by their foreman John King (later with his son of the same name) from 1821 and together with his son-in-law James Blake Gardiner. But Gardiner was declared bankrupt in May 1867[15] by which time another long-lasting optician's, Husbands and Clarke, had taken over the business at 2 Clare Street.[16] Thus it can be seen that a linked string of at least seven businesses can be traced from John Rowley at the end of the 17th century until Husbands and Clarke dissolved their partnership in 1870.

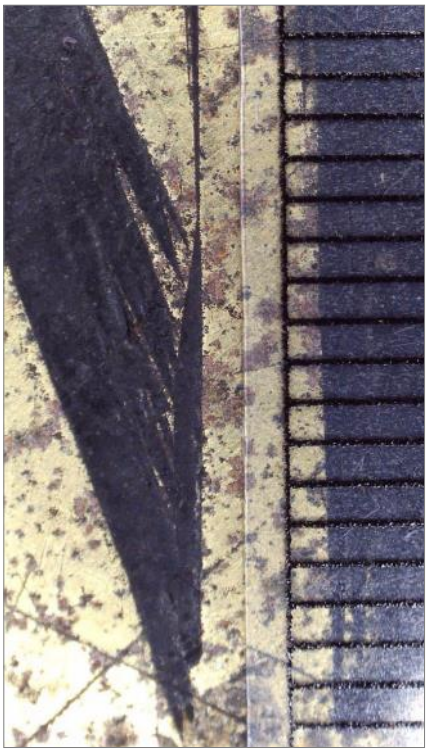

Fig. 3. Close-up of the fine line engraving. The scale rule on the right has a spacing of 0.5 mm and the fine line of the 'V' was measured at 117 µm. Notice also the various scratches in the lacquer and resulting discolouration of the brass.

The Dial Plate

The dial plate shown in Fig. 1 appeared as part of an assorted lot in a recent country house auction in Staffordshire. It is signed simply "*J^o Wright* LONDON" (Fig. 2) and is remarkable for its well-preserved appearance, strongly suggesting that it has never been installed outdoors. It measures 201.5 mm square (approximately 8″) and is about 1/8″ thick (see below).

Its layout is quite conventional though it is engraved with much delicacy, apparent here because it has not developed a patina. Indeed, some of the fine engraved lines (see Fig. 3) have been measured with a width of just 0.12 mm and details of the engraving method can be seen. Fig. 4 shows the way in which a number zero has been formed by two slightly curved sides subsequently closed by a stroke at the top.

Fig. 4 (a & b). Photomicrograph of 40 (minutes) and an enlargement showing the manner in which the '0' has been engraved.

Fig. 5. One of the half-hour fleur-de-lys markers, showing its construction.

Reverse-engineering of the delineation shows that it has been made for a latitude of 51.5° ±0.5° which would suit either London or Bristol.[17] It is not dated but the inclusion of 'London' in the signature suggests that it was made prior to Wright's move to Bristol in 1756, though it is possible that he continued to use this location later on – his origins and training in London are explicitly included in his early Bristol advertisement.[18]

As well as the unpatinated or oxidised surface, the use of the dial indoors is indicated by the fact that the engraving is filled with a black wax. On the broad strokes of the Roman numerals, this fill is generally flush and smooth with the dial surface but there are small sections where the fill is slightly incomplete, though it still obscures the multiple parallel strokes of the graver. It is generally thought that most or even all horizontal dials originally had wax-filled engraving but it is very rarely observed now.

The dial layout is a conventional London design. Surprisingly, the pair of dots (or small pinholes) usually seen at the 'toe' of the gnomon and marking the twin origins of delineation are absent. The outer chapter ring is delineated from III:44 am to VIII:16 pm, a span which would be appropriate for latitudes up to 56.5° N. It is divided to two-minute increments, labelled in 20s and with a fleur-de-lys half-hour marker based on a circular spot made mechanically and enhanced by graver strokes (see Fig. 5). The Roman numerals are arranged to be viewed from the outside which was the latest London fashion and

Fig. 6. Engraving of the compass rose 'feathers', avoiding the area covered by the gnomon. Notice also the imperfections in the lacquer covering.

only adopted by Thomas Wright late in his career. The inner chapter ring is divided to half-quarters in the traditional manner.

The compass rose is separated from the chapter ring by a decorative border of running wheatears (or oak leaves) as was traditional on dials from members of the London guilds – it must have been time-consuming to engrave. The compass rose itself has only eight labelled points but the infill is again carefully engraved in a 'feather' design (see Fig. 6). It is noticeable that this engraving is economically absent in the centre where it would be covered by the gnomon supporter and unseen. Provision for attaching the gnomon is a simple pair of screw-holes with no provision for alignment pins or screws into the supporter: on a relatively small dial, these were clearly deemed unnecessary.

One unusual feature of the dial plate is the 'extra' set of three oblong holes or slots in a circle just outside the compass rose. One is at the south point and the others are 120° apart. As the plate already has a normal set of four holes in the corners for attaching it to a pedestal, it seems unlikely that the additional ones were for a pedestal, especially as it has been used indoors. What were they for? Their elongation would allow the plate to be rotated slightly around its centre and this must surely be a clue. One initial idea was that it might be an early version of the 'housewife's trick' for accommodating an equation of time (EoT) adjustment.[19] However, the maximum rotation that the slots would allow if they contained screws of an appropriate diameter is around 5° which is equivalent to only around 25 minutes, rather less than the +16 to –14 minute range of the EoT. A second thought was that it might be linked in some way to the magnetic variation – if the dial was fixed to a board, such as a plane table, which was aligned N–S with a magnetic compass then it would need a slight adjustment in order to be placed in the true meridian. This idea is attractive knowing Wright's interests

Maker	Area	Cu	Zn	Sn	Pb	Ag	Ni	Fe	As	Sb	Bi	Au	Comments/ Others
John Wright	Back (cleaned spot)	74.7	21.6	0.29	2.40	tr	0.03	0.46	0.49	0.02	nd	nd	
	Back (uncleaned)	75.7	20.8	0.30	2.05	tr	0.04	0.54	0.57	0.02	0.01	nd	
	Front (centre, uncleaned)	72.0	24.3	0.37	2.77	0.07	0.04	0.41	nd	0.03	nd	nd	
	Front VIII	72.1	19.9	0.72	5.00	0.13	nd	0.77	0.68	0.03	nd	nd	3 mm spot, wax infill
Joshua Springer*	Back (cleaned spot)	74.6	21.4	0.39	2.35	0.07	0.06	0.42	0.58	0.02	0.02	nd	

*Table 1. Alloy compositions of the John Wright and Joshua Springer dials, in wt%, as measured by X-ray fluorescence using a Niton XL3t analyser. In general, an 8 mm diameter spot size was used. For the wax infill, approximately 65% of the analysed area was wax-filled. *The analysis for the Springer dial reported here is updated from that in ref. 1 which was produced by an earlier, less sensitive, analyser. nd = not detected; tr = trace.*

as a land surveyor and in improving instruments. A serious objection, though, is that the magnetic variation in London in the late 18th century was around 15° W so the elongation of the holes would not allow sufficient rotation although it might, perhaps, accommodate the *change* in variation from one location to another, or over time.[20] Other ideas are still being sought but the link to an indoor dial in pristine condition may well be part of the solution.

Metallurgy and Construction

The alloy composition of the plate was measured by X-ray fluorescence in the established manner and the results are shown in Table 1.[21] Also shown for comparison is one of the dials by Joshua Springer mentioned earlier. It was originally thought that the shiny appearance of the Wright dial might be due to gilding but, as the table shows, there are no traces of gold (Au) at all. Instead, the brass dial has been polished and then been given a very thin coating of lacquer which has protected it from natural oxidation. This lacquer has failed in places, particularly near the NE edge and in the various scratches and blemishes which can be seen in Figs 5 and 6, leading to a brownish surface. If the dial had been subjected to weathering for any significant period, the lacquer would have failed completely. As the lacquer is composed mainly of organic compounds formed from the lighter elements (hydrogen, carbon, oxygen, nitrogen etc.) which do not give measurable X-ray signals, its presence cannot be seen in Table 1. Similarly, the black wax, which is considerably thicker, is not immediately apparent though an increased level of the heavier elements (e.g. lead (Pb), iron (Fe) and silver (Ag)) can just be discerned.

The alloy of the Wright dial plate is a mid-zinc leaded brass with a very low silver (Ag) content. It is likely that this brass was fairly standard amongst the London instrument makers at the time. In comparison, the slightly later Springer dial is highly likely to use brass from the local Bristol smelting works[22] and although in general it has a very similar composition it is noticeable by having a slightly higher silver content and also a measurable bismuth (Bi) level.

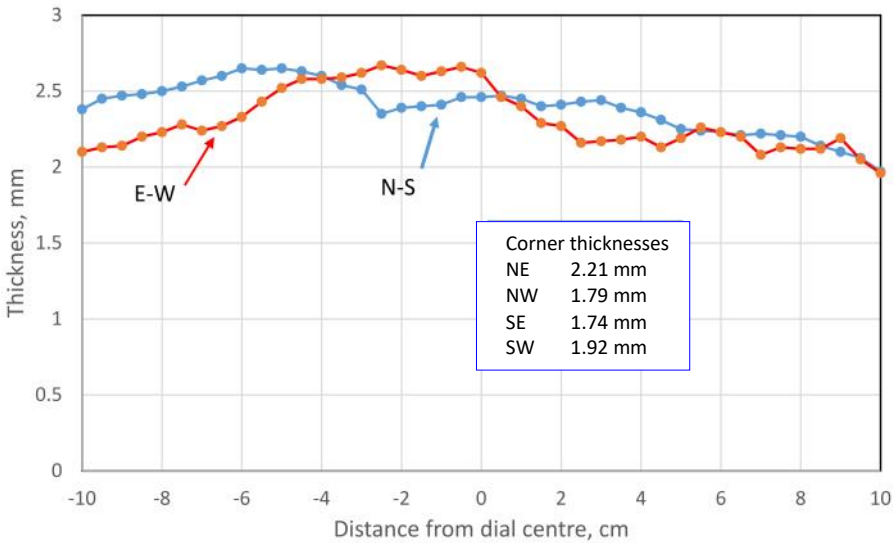

Fig. 7. Plot of thickness variations of the dial plate in the E–W and N–S directions, with individual values for the four corners.

The variations in the thickness of the dial plate were measured with a dial gauge and are shown in Fig. 7. They can be compared with those of other provincial dials from the same period published previously.[23] Although the plate feels completely uniform when handling it, there is a variation of around one millimetre between extremes with a tendency for the centre to be thicker, as might be expected for a hand-hammered plate. Nevertheless, this is quite an acceptable quality for brass of the period.

Conclusions

The discovery of a rare dial plate from John Wright, before he began his career in Bristol which initiated a long line of instrument makers there, has filled in a 'missing link' in the development of dialling styles. Its unusual features (polished with wax infills and intriguing slots) have raised puzzles for which there are as yet no firm answers.

ACKNOWLEDGEMENTS

I am grateful to Kevin Fuller for pictures of the Beilby dial which prompted my interest in John Wright.

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4. G. Clifton: *Directory of British Scientific Instrument Makers 1550–1851*, Zwemmer, London (1995).
5. Clifton (*ibid*.) gives the date of Wright I's freedom as 1760 in his entry which looks too late as he had already been in Bristol for four years then. In the entry for Benjamin Cole, she gives a date of 1750 which probably is the start of a normal seven-year apprenticeship.
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8. Details of this book are difficult to find. It was published one year too late to appear in R.V. & P.J. Wallis: *Biobibliography of British Mathematics and its Applications, Part II*, but it was mentioned in a contemporary book on land surveying (B. Talbot: *The Compleat Art of Land-measuring; Or, A Guide to Practical Surveying ... The Second Edition, Etc,* T.&W. Lowndes (1784), p. 113 in a section discussing instrument accuracy).
9. Taylor (note 7), p. 167.
10. The thesis is online at *http://etheses.whiterose.ac.uk/14003/1/270096.pdf*
11. A.D. Morrison-Low: *Making Scientific Instruments in the Industrial Revolution*, Ashgate, Aldershot (2007), *passim.*
12. Morrison-Low, *ibid*., p. 217.
13. For Springer, see ref 1.
14. Kevin Fuller: 'The Ingenious Beilbys and a dial made in Bristol', *BSS Bull.*, 30(iii), 34–36 (September 2018).
15. *http://microscopist.net/GardinerJB.html*
16. The latter part of this story is detailed at *http://microscopist.net/HusbandsH.html* (the microscopes produced by the firm are of particular interest to collectors in the field).
17. It was found that the E–W line is at 90.7° to the N–S one so the precision of the reverse engineering is poor.
18. *Felix Farley's Bristol Journal*, 13 March 1756, reproduced in Morrison-Low (ref. 11), p. 223.
19. The 'housewife's trick' is a pejorative term coined by A.P. Herbert to describe a method of turning a horizontal dial around its centre once a day to allow for the variation of the equation of time. Although, gnomonically, this is totally unjustified, it does not produce the gross errors that might be expected. See Chris Lusby Taylor: 'The Housewife's Trick', *BSS Bull*., 21(iii), 46-48 (September 2009).
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The "Ugly, Decapitated, Terra Cotta Sundial" of Ruskin Park

The somewhat unflattering description quoted above appears in *Lambeth's Open Spaces: An Historical Account*, by Marie P.G. Draper (London Borough of Lambeth, 1979). She was clearly unimpressed by this rather striking feature of Ruskin Park, South London, but it is not without interest and is, indeed, Grade II Listed.

The sundial was originally erected in the garden of a house in Denmark Hill, and an inscription recorded the fact that "Here stood the house where Mendelssohn wrote the Spring Song 1842". Sadly, the dial, the inscription and the house have all now disappeared.

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SUNDIAL AT THE FRIENDS' MEETING HOUSE, BRANT BROUGHTON, NORTH KESTEVEN

JOHN WILSON

Recently, my wife and I went on an excursion to North Kesteven in Lincolnshire, organised by the Thoroton Society of Nottinghamshire (*www.thorotonsociety.org.uk*, Nottinghamshire's premier archaeological and antiquarian society). In addition to visiting St Helen's Church, Brant Broughton, with its well-known pair of sundials (SRNs 4398 and 4399), we visited the Brant Broughton Friends' Meeting House, which was founded in 1701. To my surprise, there was an excellent, and very clear, sundial attached to the gable end of the building, which had once been a stable (Fig. 1). The lady talking about the history of the Friends' Meeting House, herself a member of the Religious Society of Friends, informed me that the sundial had been installed in 1780, along with a mounting-block and other alterations to the Meeting House, which had been paid for, they believe, from a legacy.

Fig. 1. The dial on the gable end of the Friends' Meeting House at Brant Broughton.

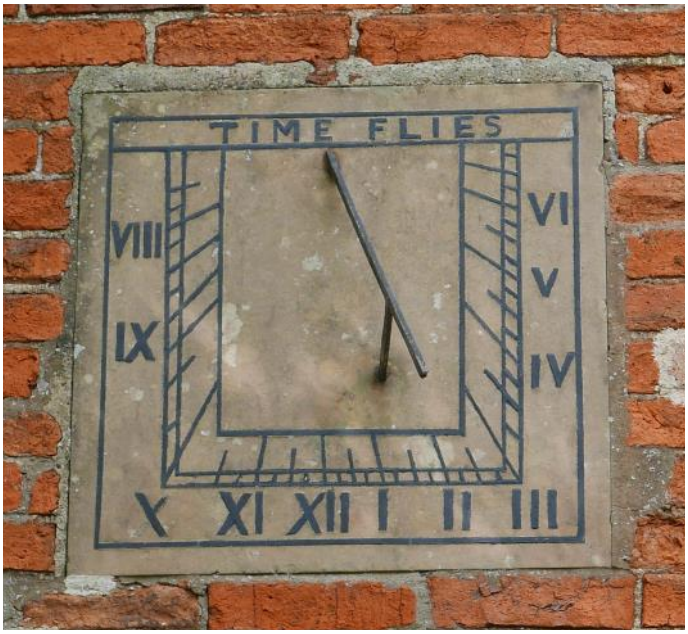

Fig. 2. The dial.

The dial (Fig. 2) is simple, plain and unadorned, in keeping with a Quaker property, and is in excellent condition. The Roman numerals are very clear. There is a small amount of damage to one of the numerals. The dial plate is made of stone which is set into the brickwork of the wall. It has a square-section rod gnomon whose offset suggests that the wall declines a little to the west of south. The hour lines, half- and quarter-hour lines appear to have been painted by someone who is not a skilled diallist. Some marks are missing, some are too long, and many are badly aligned. In particular, the noon hour line isn't vertical as it should be, but its lower end is probably close to the correct position.

Although it was a sunny afternoon at the time of our visit, there were too many trees to the south for the gnomon to cast a shadow. Presumably they had not been there when the dial was installed.

The dial is not visible from the road and it is necessary to enter the garden at the rear of the Meeting House to see it. There is no maker's name or initials on the dial, and the maker of the sundial is not known. If anyone has any idea as to who the maker might have been, I would be delighted to know.

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THE 'INGENIOUS BEILBYS' AND A DIAL MADE IN BRISTOL

KEVIN FULLER

John Davis recently described a horizontal dial made, circa 1800, in the Bristol workshop of Joshua Springer.[1] Springer made scientific instruments in Bristol from 1759 until about 1810 whereupon Richard and Charles Beilby took over the business at number 2 Clare Street, Bristol. There are only a few known examples of the range of scientific instruments made by either Joshua Springer or the Beilbys in existence and the output of these workshops must have been small. It is of interest therefore to come across a horizontal dial made by the Beilby brothers, adding to the knowledge of the provincial makers of that time.

Fig. 1. Beilby glass, circa 1770, in the Wilfred Buckley Collection at the V&A. Above: Glasses and decanter, left: a wine glass signed "Beilby" near the rim (items ref C 623 – 1936). Copyright Victoria and Albert Museum.

The Ingenious Beilbys

Little is known about Richard and Charles Beilby and their scientific instrument making business in Bristol. Records show that they took over from Joshua Springer in 1810 and operated for just 10 years. In 1820 their foreman John King took on the business which later became part of Husbands and Clarke optical and scientific instrument makers.[2]

It has been a delight to trace the ancestry of Richard and Charles and discover that they are direct family descendants of the 'Ingenious Beilby' family of enamel glass engravers from Newcastle and Birmingham.[3] Dubbed the 'Ingenious Beilbys' by contemporary writers, the family of five boys and two girls were born between 1734 and 1749 and achieved greatness. William and Mary Beilby were the finest enamel glass engravers of the time and today examples of their glass are housed in major collections throughout the world.[4] See Fig. 1 for some examples. All of the brothers helped in the glass making and copper engraving business in Newcastle and Birmingham. Ralph Beilby managed the copper engraving side of the business with his youngest brother Thomas. They employed the well known writer and illustrator Thomas Bewick.

The youngest son from this family was Thomas Beilby (1747–1826) who was the father of ten children. He was a skilled enamel engraver, trained making decorative boxes in Bilston, Birmingham, and was also a skilled copper engraver and artist. In addition, he also taught art and drawing and appears to have made clocks and watches with his brother Ralph. In his last will and testament he refers to scientific instruments so he must have been engaged in the use and possible making of these. Thomas's sons Charles and Richard had the business in Bristol. Charles Beilby was born in 1785 and died in 1862, and Richard Beilby was born in 1786 and died in 1860. It is likely that they learned their basic trade from the family business, while their eldest brother Thomas (b. 1781) stayed in Birmingham with their father to run the main business. It is not known what level of support Richard and Charles had from the Birmingham firm, but the influence must have been significant unless, of course, they struck out on their own. Clearly, however, the business did not thrive because by 1820 the boys were back in Birmingham, presumably helping out their father

Fig. 2. An overall view of the Beilby dial.

and eldest brother with the main business. The father Thomas died in 1826.

Charles Beilby lived in Long Ashton, near Bristol, during the times that the business was operating and married Caroline Palmer and had six children. It is not known where Richard lived or if he married. In 1832 Charles emigrated to Paddington, New South Wales, Australia with his wife and children. The whereabouts of Richard is unclear but he might have travelled and lived in Ireland. Thus this dial, which is the only recorded horizontal dial by these makers, is significant in the context of the fascinating Beilby family story.

The Dial

The brass dial (Fig. 2) is rather basic and of the London design. It simply signed *Beilby Bristol* (Fig. 3) and is undated, though it is almost certainly between 1810 and 1820. The dial is 10 inches in diameter, the plate is 5/16 inches thick and the gnomon with an unpierced profile is set at an angle of 52°. It retains its original greenish patina but is quite legible with the leaf design neatly engraved.

Fig. 3. The Beilby signature. Note also the zig-zag border between the compass and the chapter ring.

The main chapter ring, naturally with Roman numerals orientated to be read from the outside, runs from III:40 to VIII:20, divided to individual minutes and numbered in 20s. The inner chapter ring is simply divided to quarter-hours. It is notable that the half-hour markers at this relatively late date have been simplified to diamonds (one large and one small for each half-hour) and, in a similar economy of engraving effort, the border between the compass rose and the chapter ring is now a zig-zag pattern (see Figs 3 and 4).

The gnomon is very solid and of a simple design. It appears to be original (the dial is attached to a block of wood so it is not possible to inspect the gnomon fixing on the underside) and is without any side supporters. This is rather puzzling as the decorative infill in the centre has a blank square where a supporter might have been expected to cover it. Perhaps the dial maker changed his mind on the design.

It is not known if the dial was engraved in the Beilbys' workshop (either personally or by a worker) or if it was bought from a London maker. Considering they were

Fig. 4. The north side of the dial, showing the noon gap, the diamond half-hour markers and also the un-engraved square around the centre of the dial for a 'missing' gnomon supporter.

part of a family copper engraving business it is most likely that they had the dial engraved on site or in the Birmingham firm.

Conclusions

This rare dial is unexpected evidence of a connection between scientific instrument making and decorative glass engraving. It shows that, by the early 19th century, a standard pattern had become established for most quality horizontal dials.

ACKOWLEDGEMENTS

The Trustees of the Victoria and Albert Museum are thanked for permission to reproduce the images in Fig. 1.

REFERENCES and NOTES

1. J. Davis: 'Joshua Springer of Bristol – An eighteenth-century provincial dialmaker' *BSS Bull*., 28(iv), 12–16 (December 2016).
2. Online essay by Brian Stevenson (January 2017) at *http://microscopist.net/HusbandsH.html* gives a chronology of scientific instrument makers in Clare Street, Bristol. See also James Rush *A Beilby Odyssey,* Nelson & Saunders (1987) and James Rush: *The Ingenious Beilbys*, Barrie & Jenkins (1974).
3. Online research at *Ancestry.com* and notes made by Hubert Noel Beilby (1952).
4. For a spectacular example at the Fitzwilliam Museum, Cambridge, see *http://webapps.fitzmuseum.cam.ac.uk/explorer/index.php?oid=25890*

Kevin Fuller is a retired Civil Engineer; land surveying was an important part of his early career. Following from this he always had an interest in the history and development of surveying instruments. This has naturally extended to an interest in all dials and navigation devices and to joining the BSS. He can be contacted at *kevinfuller390@btinternet.com*.

Postcard Potpourri 44 — Fritwell Manor

Peter Ransom

I found this postcard of interest because it features a dial that is not in the Fixed Dial Register!

From enlarging the scan of the postcard, which is a photographic one, it is clear that the dial declines to the east as the 6 am line is not horizontal and the 5 pm line is the latest hour line in the afternoon. Most of the gnomon is unfortunately absent.

Fritwell Manor is a house in Fritwell, Oxfordshire, about 2 miles north-west of junction 10 on the M40. It is a Grade II listed building and in 1520 it was owned by Margaret Boleyn, the grandmother of Anne Boleyn who was one of Henry VIII's less fortunate wives. You can see 45 pictures of Fritwell Hall by searching for it at

http://www.englishheritagearchives.org.uk/

The postcard, one in the Fourshire Series, states that the photograph was taken by Percy Simms of Chipping Norton. His photographs are part of the Packer collection of 55,000 now in the Centre for Oxfordshire Studies. Frank Packer and his son Basil had a family photography business in Chipping Norton for over 60 years from 1910. The postcard is unused, so dating it is a bit problematic, but it looks to be from around the 1930s.

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