BULLETIN
OF THE BRITISH SUNDIAL SOCIETY

ISSN 0958-4315

VOLUME 33(i) - March 2021

CONTENTS

EDITORIAL

Following custom, this first issue of the *Bulletin* of the year incorporates the Annual Report by the Trustees and the Annual Accounts.

We have an excellent selection of articles, opening with a report by David Brown of his exceptionally productive lockdown in 2020. He describes the restoration of all 25 dials cut into the faces of an elongated square bicupola. The restoration required making 25 new gnomons.

Our late member Jill Wilson died leaving an unfinished article and copious notes about Masonic symbols on sundials. Starting with Jill's material and undertaking much additional research, Christine Northeast demonstrates that there are many more symbols than the standard square and compass.

Sue Manston offers another fascinating story that began with a Help and Advice query asking who made a particular sundial. After a good deal of detective work, she convincingly argues that it was made by Francis Barker & Son.

Sadly, we include another obituary by Doug Bateman who writes about Mike Isaacs. Mike, along with his wife Mary, attended many BSS conferences and Newbury meetings.

Frank King

ERRATUM

In the article 'A Beginner's Guide to Delineation' by Frank H. King (*BSS Bulletin*, 32(iv) December 2020), there is an error about halfway down the left-hand column on page 44 where:

$\delta = 50°$, $h = 45°$ and $\phi = 20°$

should have read:

$\phi = 50°$, $h = 45°$ and $\delta = 20°$

TIME FOR RECREATION AND RE-CREATION
Part 2: The Re-birth of a Large Polyhedral Sundial

DAVID BROWN

The BSS Help and Advice desk, efficiently managed by Sue Manston, receives and replies to almost one hundred enquiries per year. Occasionally, when specialist knowledge or skills are needed, the requests are passed on to other BSS members. In May 2019 our Chairman, Frank King, was made aware of a request for someone to restore a rather sad-looking polyhedral sundial that had lost all its gnomons and delineations. Frank asked whether I would attempt it, and sent me the contact details and a photograph, together with some helpful and astute general notes and references to other sundials of the same genre. Little did I suspect at the time what a challenge this would turn out to be, but retrospectively what a great recreation it was to have had during the first pandemic lockdown of 2020. The re-creation of the sundial turned out to be a physical challenge but also a highly satisfying project.

The photograph (Fig. 1), taken by the owner, Ted Stevens, who lives near Gloucester, showed the polyhedron to be a rhombicuboctahedron. It has 26 faces, of which the 25 exposed faces had holes that would have been for gnomons. It seemed to be around 2′ 6″ wide. Frank referred to a similar, but smaller, sundial in Cambridge at the Downing Site (Fig. 2).[1] I had made polyhedral sundials of this shape before but had not worked on one as large as this. Its size, weight, closeness to the ground, distance from home, and the likely time needed to bring it back to life

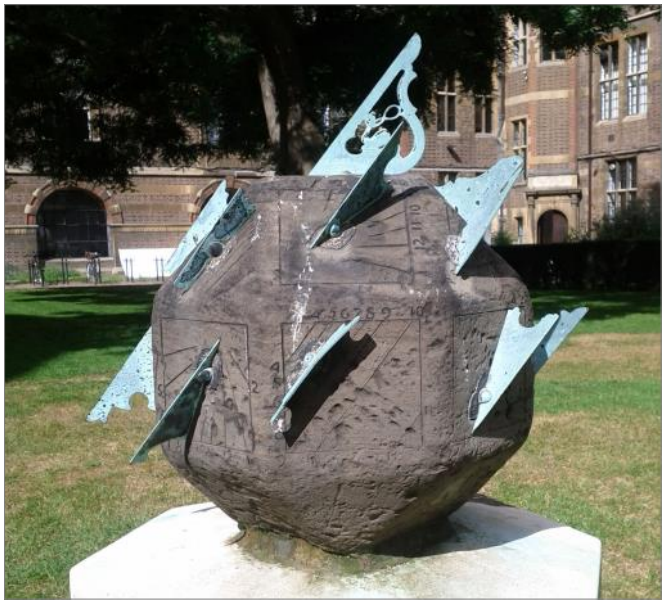


Fig. 2. The Downing Site sundial. Photo: Frank King.

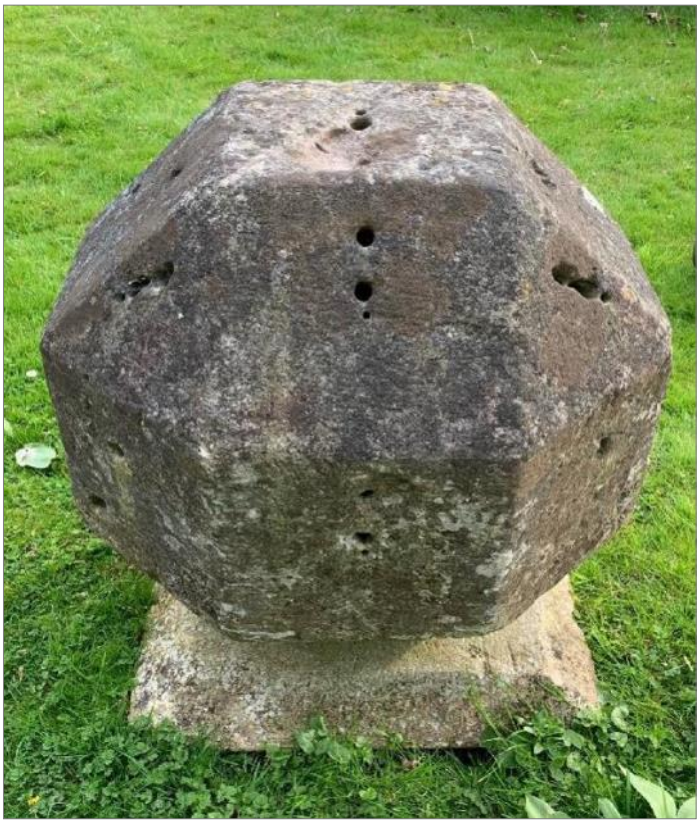


Fig. 1. The sundial in its original condition. Photo: Ted Stevens.

meant that working on it *in situ* was not an option. I arranged a visit to Gloucester, and Ted told me that he remembered that some sixty years ago, as a child, he used to climb on the sundial. It had no gnomons even then. The detailed history of the dial is remembered only sketchily by himself and his relatives: he knew that his grandfather had worked as head gardener at a large property in the Solihull area of Warwickshire. The dial may have originated there, or possibly he had acquired it separately in that area or in Cornwall to which he had retired. The stone appeared to be extensively darkened with grime and algae as well as pitted by erosion and physical damage. There were larger areas of damage to lower faces. Deep and wide gnomon holes in every face were homes to insects, and the uppermost horizontal face in particular had suffered from freeze–thaw erosion from water that collected in the gnomon holes (Fig. 3). We agreed that the dial would have to be moved to my home in Somerset since the work on it would take some time. A notional completion target of Summer 2020 was

Fig. 3. The horizontal face. Note particularly the large water-filled cavity.

thought to be realistic. I suggested that before committing to the restoration, I should make a scale model of the dial, together with an additional supporting plinth (Fig. 4). I made use of photographs I had taken of all the faces so that new gnomon positions could match the old ones wherever possible. For his part, Ted would clean the surfaces as well as he could with a high-pressure water jet. On a further visit to Ted in August 2019, Ted was pleased to see the model as beginning to bring his stone back to life. Some decisions would be deferred, such as whether to include commemorative date curves for family members, and whether paint should be applied to the new incisions.

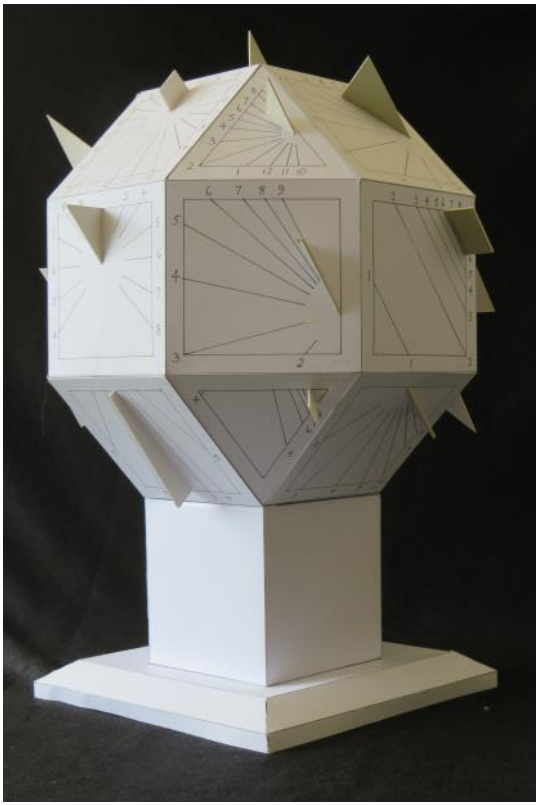


Fig. 4. The card model of the proposed configuration of the sundial.

The edges of the dial were found to be close to 30 cm, so from the pre-decimalisation age of the dial it seems to have been made with edges of one foot. The exact type of stone was uncertain at this time, but it was quite soft, so granite was ruled out, thankfully. Arrangements for the physical removal of the dial were left to Ted. I estimated its weight to be about 650 kg, and Ted was able to find a local firm[2] who could undertake the transport. The site would be a challenging one for a pick-up truck with a crane, being on a hillside with access from a narrow tree-lined single-track lane, but these difficulties were managed and the stone arrived at my home in October 2019. A gantry was brought into use to transfer the stone from the delivery truck to my yard (Fig. 5).

Fig. 5. The gantry supporting the newly-arrived sundial in my yard.

The stone was too large to go into my workshop, so all the work on it had to be done in the open air. Consequently, progress was dictated to a large extent by weather conditions, and with winter approaching, no incision work was carried out until Spring 2020. Nevertheless, using a dilute hydrochloric acid test, I did establish that the stone was not a limestone since there was no effervescence apparent when a small drop of dilute hydrochloric acid was placed on a clean area of the stone. It was, in fact, a very soft very fine-grained light-coloured sandstone. This was further confirmed much later when I found that the sharp edges of my tungsten-carbide-tipped lettering chisels lost their edge much more quickly than I would have expected if it had been a limestone. Similarly, diamond abrasive pads wore out very quickly when used for rubbing the surfaces. With no original features to be preserved, I felt that abrasive cleaning of the surfaces would be acceptable, and I

used a water-fed angle-grinder with diamond pads to do this. All the arrises (edges), which presumably had been sharp initially, had suffered over the years showing many indentations, and it would have needed far too much stone-removal to re-form them, so they were smoothed and rounded. It would have been too destructive to try and remove all the indentations in the surfaces and edges and doing so would have also removed some of the character and history of the dial. Former gnomon holes were also cleaned out to remove as much as possible of the accretions. Algae and grime residues in the deeper surface indentations were also extensively cleaned. A proprietary stone cleaner solution[3] was also applied and the whole surface washed down later with water. The stone was covered for most of the winter months, and exposed in dry weather, and over time it dried out to leave a very light-coloured smooth surface.

Looking ahead to a later stage of the re-creation, I spent some of the winter months trying to track down a possible quarry of origin of the stone. The only way I could do this was to use addresses of sandstone quarries as given in the Natural Stone Directory.[4] I collected about a dozen samples which likely quarries kindly sent to me and eventually decided that the closest match in colour and texture that I could get was 'Dunhouse grey' from Dunhouse Quarry near Darlington in County Durham.[5] I ordered a 30 cm cube for the plinth and a 23 cm square piece, 2 cm thick for inserting in the much-damaged uppermost horizontal face.

Refinement of the detailed design of all the 25 dials was carried out during the winter months and full-scale drawings were made. I decided that all faces would have a border that separated the numerals from the hour lines. The numerals would be in a plain Arabic style and hour lines would radiate wherever possible from a notional circle of consistent size centred on the root of the gnomon and terminate at the border. There would be no subdivisions of the hours except on very few of the faces where hour lines were well separated, and noon would be marked with a 12. There would be no date curves except on the horizontal face where pristine stone was to be inserted. Anything more than this was felt to be unnecessarily fussy. Ted agreed with this approach and agreed that the prospect of adding date curves such as for family birth dates together with the requisite nodus for several dials would over-complicate the dial. The plain gnomons were also cut out at this time from 3 mm brass sheet. As far as possible, they would be positioned over the existing deep gnomon holes, thereby reducing the amount of excavation of stone that would be needed. The existing holes were several centimetres deep. The new gnomon tenons were 25 mm deep with holes drilled through them to provide better anchorage (Fig. 6). Gnomon heights were as far as possible kept to 40 mm for consistency of appearance.

As the Spring of 2020 advanced, the stone continued to dry out and was kept covered when rain was forecast. I was

Fig, 6. Some of the gnomons, still covered in protective plastic film.

glad of the opportunity to concentrate on cutting the dial faces when the first Covid-19 lockdown was introduced (Fig. 7). The stone needed to be rotated and rolled on its supporting wooden pallet from time to time to make it easier to work on the faces. This was done with the willing help of two strong grandsons who live nearby. The cutting of the details of each face took about half a day from start to finish. Gnomon thickness was allowed for. The gnomons could not be fixed yet because the stone still needed to be rolled from time to time to gain access to new faces that still had to be delineated. Location marks were made on each face to indicate the eventual positions of the gnomons. This was quite tricky in some cases where the gnomons were to be fitted in regions where stone was missing because of the cavities left long ago from the previous lead fixings.

During this long dial-cutting process I tried out the painting of one of the smallest and least significant faces – the triangular NW lower face. Whether I used matt black enamel or black acrylic made little difference to the extent to which the soft stone soaked up the paint like blotting

Fig. 7. Working on the sundial. The paint on one face was subsequently removed.

paper and bled into the surrounding areas. Pre-treatment with a stone seal improved matters somewhat, but I was not pleased with the ragged appearance of the incisions when the dried-off surface was rubbed down. I conveyed my misgivings to Ted, and he agreed that the only face that should be painted would be the horizontal one which was to have a new piece of stone grafted into it. The paint on the NW lower face was therefore removed.

The fixing of the gnomons was the next major task. I usually use an epoxy adhesive and stone-dust mix which sets in about 30 minutes. A little tinting paint can be added to create a colour-match between the adhesive and the surrounding stone in the small space between the gnomon and the stone. For a single gnomon in a slate sundial the volume of adhesive would be about 10 ml. Judging by the size of some of the cavities in the polyhedron, I would need many times this volume for each of the 25 dials. A more straightforward solution came from a builder friend who recommended that I try a very strong quick-setting adhesive applied from a long-nosed mastic gun.[6] It sets in about five minutes. Each gnomon in turn was supported in place with wooden blocks as the adhesive was squeezed around its tenon. The adhesive colour was dark grey, so it was not allowed to come near to the surface of the stone. The bottom part of all the deep holes was also filled to within about 5 to 10 mm of the stone surface.

Meanwhile, a solution had to be found as to how to complete the filling of the unwanted cavities in such a way that as far as possible they would be no longer visible. After some research, I came across a helpful firm in Middlesbrough.[7] In return for a sample of the original stone extracted from the horizontal face they sent to me, at small cost, a 10 kg tub of dry stone and hydraulic lime components that would match the sundial in colour and texture. In the event, the resulting mortar matched well in colour, but was much rougher than I wanted for the surface finish. Following the comprehensive instructions they had included, I nevertheless used the mortar to bring the level of the cavities to within about 2 mm of the stone surface. I had collected the stone dust from all my earlier cleaning, shaping and drilling of the stone, so I used some of it to experiment with a finishing mortar by combining the stone dust with lime in the proportion of 3:1 (stone dust:lime). This mortar set firmly and without cracking due to shrinkage provided that the thickness was not more than a few millimetres and that the mortar was prevented from drying too quickly by frequently spraying it with water for at least a day. The result was a good match to the sundial stone in texture but was slightly lighter in colour. My concerns about this slight mismatch were allayed a few weeks later when I delivered the completed job back to Ted, who said that the visibility of the repairs added to an understanding of the history of the sundial as a whole.

The only remaining job was to graft in a new piece of sandstone for the horizontal dial. It was this face that had suffered most from the accumulation of water in the holes left by the lead gnomon fixings which had disappeared long ago. This surface would also be the one that would be most likely to have standing water on it, so a newly-inserted piece of stone would have to be well-fitted. All the dials had a frame separating numerals and hour lines which meant that the stone to be inserted could have its edges corresponding to that frame. A square recess was cut in the horizontal face a little over 23 cm square and 2 cm deep. The 23 cm square of new stone was set into this and bonded with epoxy stone adhesive mixed with stone dust. The edges of the insert and the recess itself were slightly chamfered so that when the adhesive had set there would be a defined border between the grafted stone and the surrounding stone. This border would later be painted black along with all the other details on this face including the numerals. The apex of the triangular gnomon was arranged to be at such a height as to enable it to act as a nodus for three seasonal date curves labelled SS, EQ and WS. The new stone surface and the surrounding surface of the original stone were treated with a stabilising solution[8] before the painting in order to minimise the bleeding of the paint into the dry porous stone (Fig. 8). Paint was not applied to dials on the other faces – they could be read easily in sunlight.

Fig. 8. The completed horizontal face with new stone inset.

Finally, with stone throughout being thoroughly dry, and needing to protect it as much as possible from absorption of rainwater, a stone water-shield coating[9] was applied to all the surfaces. This was perhaps a controversial step since there is a strong opinion that the stone should be allowed to 'breathe'. I felt that the protection of the stone from water absorption and the consequent discoloration of the growth of algae was more important.

The new cubical plinth still had to be prepared. When the sundial was first viewed in Gloucester, it had simply stood on a square stone slab. It was almost impossible to examine the eight lower faces. Ted wanted it lifting up, which is why the cubical plinth was to be added. But whereas the sundial on its stone slab was in little danger of toppling, sitting on a 30 cm cube was a different matter. I drilled a 22 mm diameter hole through the centre of the cube which was

wide enough to allow an 18 mm diameter length of stainless steel studding to pass easily through it. The studding was cut long enough to go almost all the way through the stone base slab and to penetrate the already-existing 12 cm deep hole in the bottom of the sundial. This would give some lateral stability to the whole structure. There was one small snag in this scheme – the hole on the bottom face of the sundial was 40 mm in diameter. The solution I hit on was to screw four spaced-out stainless steel nuts on to the top 12 cm of the studding, thus making a close sliding fit into the base of the sundial.

In the few weeks before the return of the sundial, Ted used local noon data that I had sent him to establish the direction of the local meridian. With a support from a tall tripod, he used the shadow of a long plumbline falling close to the required site and laid the edge of a long plank along it at the critical moment. When he was content that he had a reliable line from repeated observations taken over several days, he sprayed a paint line on the grass. He was able to level and align the foundation slab accordingly. I helped him install the new cubical plinth a week before the dial was returned. With the stainless steel studding inserted in the slab, the new cubical plinth was lowered into position and aligned to the meridian (Fig. 9). Finally, the four nuts were threaded onto the exposed upper end of the studding and all was set for the re-setting of the sundial which was to be done without my being present.

Fig. 9. Positioning the new cubical plinth.

Back in my yard, the sundial was moved to an accessible place for easy access by the transport vehicle. Still sitting on its pallet, it was enclosed in MDF sheeting, with cushioning buffers between the dial and the sheeting made from domestic plastic pipe insulation. The whole package was then wrapped in black cling-film (Fig. 10). There was a

Fig. 10. The completed restored sundial wrapped up for transport.

tense moment when the crane on the transport vehicle had to hoist the whole package high over the front of the truck (Fig. 11). There was considerable relief when it was safely secured on the truck's flat-bed and transported back to Gloucester. That same day, having skilfully but with some difficulty negotiated the narrow, twisting, slippery path leading to Ted's property, the dial had to be hoisted over a fence and down a slope close to its eventual resting place. The outer packaging was removed, leaving the dial at last exposed. Hoisted yet again, it was manoeuvred over the waiting cubical plinth and with deft finger-work on the crane's remote control panel, was carefully lowered on to the stainless steel rod as it was also being aligned to the edges of the cubical plinth (Fig. 12).

Fig. 11. Anxious moments as the sundial is hoisted over the cab of the truck.

Fig. 12. Delicate remote control manoeuvres of the sundial to lower it on to its plinth.

The sundial looked good (Fig. 13) when I visited Ted a few days later. He was well pleased with the re-creation of his sundial and plans to hold a celebratory party later in 2021 – pandemic permitting.

Fig. 13. The re-created sundial finally back in place.

ACKNOWLEDGEMENT

Extensive use was made of the software *Shadows Pro* by François Blateyron.

REFERENCES and NOTES

1. Frank pointed out that whereas the Downing Site dial is an 'elongated square gyrobicupola', Ted's dial is simply an 'elongated square bicupola'. The slight difference between the two can be seen by following the *square* faces down from the top. On the Downing Site dial, the lowest visible face is a triangle whereas on Ted's dial, the lowest visible face is a square.
2. Carriers: M. B. Holder & Sons Ltd., Gloucester.
3. Stone cleaner: Delphis Eco masonry and stone cleaner.
4. Natural Stone Directory, QMJ Publishing Ltd., 7 Regent Street, Nottingham, NG1 5BS.
5. Dunhouse Quarry Works, Cleatham, Darlington, Co. Durham, DL2 3QE.
6. Adhesive: Anchorset Red 300 made by Ever Build.
7. Stone Tech (Cleveland) Ltd, Lee Road, Bolckow Industrial Estate, Middlesbrough, TS6 7AR.
8. Stabilising solution made by Sandtex.
9. Thompson's Water Seal.

david@davidbrownsundials.com

MIKE ISAACS

Sadly, in January this year another of our very early joiners (membership number 126) died, aged 90. Mike and his wife Mary were regular attenders at BSS conferences and Newbury meetings. After Mary died in 2016 Mike continued to attend when he could.

Mike had many overlapping interests and in 1986 was a founder member of the Oxford Branch of the British Horological Institute. He also helped in the revival of the Branch in 2011. Although not active as a clock repairer or sundial designer, Mike had a modest collection of electrical clocks, sundials and scientific instruments. He was a Chartered chemist in the Home Office Forensic Laboratories at Aldermaston where he was involved with the development of the 'breathalyser'. He volunteered at the Newbury Oxfam shop where he tested electrical equipment. It will not surprise members to know that this gentle, unassuming and sociable couple were also enthusiastic folk dancers. In addition, he competed in target shooting for over 70 years.

An unusual legacy is that his son David (who predeceased him) was a top-quality photographer who, probably knowing of his father's interests, photographed many sundials on trips around the world. I am privileged to own one of the sundial-themed calendars that David produced, and several of the images live on in the Society, such as a wonderful picture of the large bronze Folkard and Ward dial in Sydney that appears on the front cover of the June 2009 *Bulletin*, and one of the difficult-to-photograph noon dial by Frank King on the London Stock Exchange. This photograph appears from time to time when noon dials get a mention.

Mike and Mary in 2004. Photo: Richard M. Isaacs.

His son Richard, his daughter-in-law Jennifer, and grandsons Marshall and Alexander (all of Michigan USA) survive him. They have the last sundial he made, a north-facing vertical dial, on their house.

Douglas Bateman

THE TETRACYCLE DIAL

MARK LENNOX-BOYD

In his book *Ars Magna lucis et umbrae*, the great astronomer Athanasius Kircher[1] described the sundial in the gardens of the Quirinale Palace in Rome as the *Meridiana Tetracycla* and so I have named the model sundial I have had made and described here as '*The Tetracycle Dial*'.

Pope Urban VIII (Maffeo Barberini) commissioned the Quirinale dial, which is dated 1628. Teodosio Rossi, a mathematician and disciple of Christopher Clavius and correspondent of Tycho Brahe, was responsible for the gnomonics; in his *Horarium universale perpetuum* (1637), Rossi explains that he himself suggested to the pope the idea of building a sundial for his garden.[2] The then young Francesco Borromini designed the plinth and other features, now sadly lost, but the four niche dials survive. The sundial has been described in the *Bulletin* by Rear Admiral Girolamo Fantoni,[3] although the admiral did not then know about Rossi.

Fig. 2. The model made of maple, birch veneer and bronze. The Polar circles, the Tropics and Equator divisions are just visible.

Fig. 1. The Quirinale dial. Photo: Museo Galileo.

I have been mulling over an idea for several years. The Quirinale dial (Fig. 1) consists of four niches, each providing a sundial read from the tip of a nodus. Two of the niches tell the time according to the system of 'Italian hours' and the other two niches tell the time according to the more familiar system of civil hours. No doubt the pope wished to demonstrate that in exercising his delegated power from God for ordering time he was familiar with both time systems which were currently in use. Italian hours measuring the 24-hour day from sunset were useful in an agrarian society, for anyone could immediately see how many hours of daylight were left for husbandry or travel before nightfall.

Why not, I thought, adopt this design to have four dials with analemmas, corrected for the Equation of Time and longitudinal displacement from Greenwich, two of them working for the days from the winter to the summer solstice, and the other two for the other half year. Thus GMT could be read from the one object with four niches, and I based my design on the coordinates of my home in Lancashire. The mathematics were similar to those

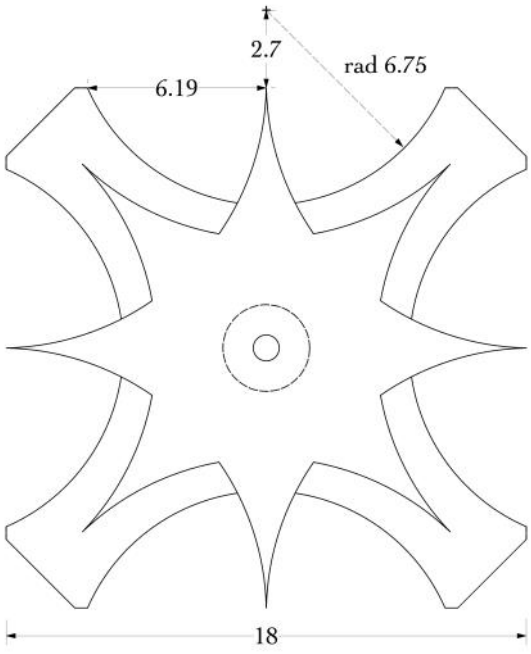


Fig. 3. The bronze gnomons and sun symbol on top of the block of niches. The gnomons are 5 mm thick and chamfered so that they each come to a nodus point on the lower face. Dimensions in cm.

developed for the Holker bowl,[4,5] using corrections calculated in QB64 for nine declinations (not seven as with the Holker dial) to draw polylines inputting *x* and *y* co-ordinates for every quarter hour in a Vectorworks[6] drawing. A polyline is the term used in the program for what might be described as a segmented line. These polylines were

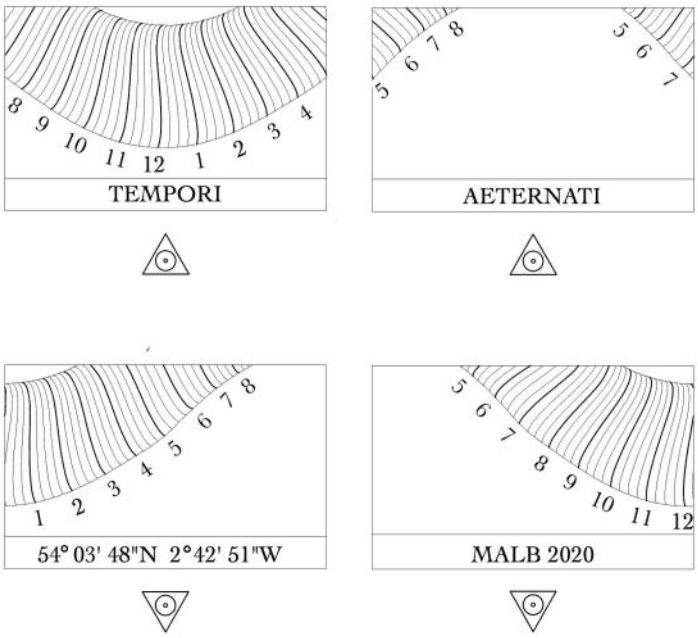


Fig. 4. The four designs for the niches. Note the astronomical symbols for the sun in triangles pointing upwards to indicate dials to be read when days are lengthening and pointing downwards for the other half year when days are shortening.

then modified into spline curves. The process involved much labour.

As shown in Fig. 2 the model is made of maple wood with the niches of birch veneer, onto which have been printed the sundial markings. Above the four niches is a piece of bronze with eight points. This provides four noduses for the four dials but with the other four prongs it can also be seen as a decorative sun symbol. This bronze piece and a section of the top of the block of niches are shown in Fig. 3. Equilateral triangles enclosing the astronomical symbol of the sun can be seen just below the niches in Figs 2 and 4, the triangles pointing up indicating that those two niches are to be read between the winter solstice and summer solstice, triangles pointing down indicating the two niches for the other half year.

There is one further feature. At the head is a sphere, turned from six pieces of maple to show the Tropics, Arctic and Antarctic circles, and the Equator.

The model stands 62 cm high overall. This would be 186 cm at a scale of 1:3, should it ever be made.

Fig. 4 shows the four dial faces in plan form before printing them and later glueing them onto the niches.

The trouble is that I have no client, which is indeed the reason why I have had the model made. If my hope for a client comes true I would envisage that the sphere, whose axis is parallel with that of the Earth, would be engraved so that the oceans are chipped away leaving the land masses proud of the seas, and thus providing on a sunny day an indication of where in the world the sun is rising and setting.

ACKNOWLEDGEMENTS

I am most grateful to the following craftsmen who contributed to the components of the model dial shown in Fig. 2: Nicholas Stubbs who made the carcass, Luke Ham who did the turning, John Huddleston who made the bronze sun and gnomons, and Metroimaging[7] who printed the dial designs onto birch veneer.

REFERENCES

1. Athanasius Kircher: *Ars Magna lucis et umbrae*, 2nd edn, Johann Jansson, Amsterdam (1671).
2. Denis Ribouillault: 'Sundials on the Quirinal: astronomy and the early modern garden', in *Gardens, Knowledge and the Sciences in the Early Modern Period*, ed. H. Fischer, V.R. Remmet & J.Wolschke-Bulmahn, Birkhauser (2016), at *https://core.ac.uk/download/pdf/304667817.pdf*
3. Girolamo Fantoni: 'The monumental sundial in the Quirinale Gardens in Rome', *BSS Bulletin*, 92.2, 10-16 (June 1992).
4. Mark Lennox-Boyd: 'The Holker dial', *BSS Bulletin*, 92.3, 37-38 (October 1992).
5. Mark Lennox-Boyd: 'A scaphe dial for Holker Hall', *BSS Bulletin,* 32(iv), 16-18 (December 2020).
6. *www.vectorworks.net,* 2019 SP6.
7. *https://metroimaging.co.uk*

marklennoxboyd@mac.com

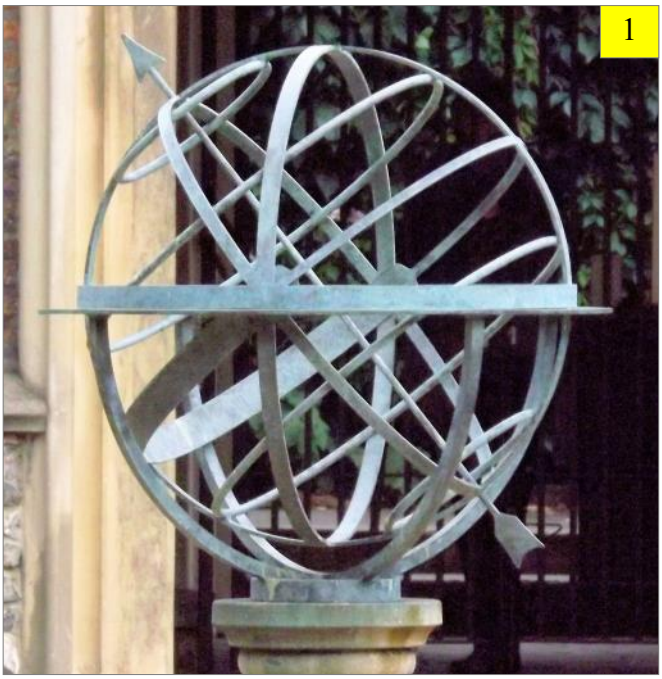
NEWLY REPORTED DIALS, 2020

JOHN FOAD

I would like to thank members for sending reports of a large and varied range of dials last year. Most dated from the last few decades, though two Scottish installations from the 17th century were included (items 14 and 21). For more details of the selection shown below, apply to me or see the 2020 Fixed Dial Register!

First we have five good armillary spheres recently installed in and around London:

1. The dial can be seen from the road but only through gates. It is a fine 8-ring armillary on a baluster-style pedestal with a fluted bowl. SRN 8132, Whitgift Almshouses, Croydon, London, CR9 1SS. Private.



2. The next stands on a simple square-sectioned tapering mount stone in a large grass plot. A plaque on the mount is very worn but appears to give a date of 2008. SRN 8135, University of London, Camden, London, WC1E 7HX. Open.

3. This one is mounted on a short octagonal-sectioned tapering pillar in the pavement just outside the bookshop. SRN 8137, Waterstones, Sutton, Surrey, SM1 1ES. Open.

4. This sphere stands on a short square-sectioned pillar in the heart of the garden. SRN 8138, Eaton Square, Westminster, London, SW1W 9BD. Private.

5. And here is another in the same garden, hidden even deeper in the undergrowth! SRN 8139, Eaton Square, Westminster, London, SW1W 9BD. Private.

Not all equatorial dials are full armillary spheres. Here are three of varied format:

6. This sundial was made by Dr P.G. Arblaster for his home in Lymington in 1991, and later presented by him to the RCP. It would seem originally to have had hour lines and declination lines, but these and any other furniture are no longer visible in the photographs. The base is made from a cast of an ancient piece of mineralised wood from a petrified forest in the Arabian Desert. SRN 8150, Royal College of Physicians, Camden, London, NW1 4LE. Restricted.

7. This 'bow-string' dial was designed by Sir Mark Lennox-Boyd. It is formed from a single sheet of bronze 400 × 400 × 20 mm, and is mounted on a Welsh slate top. The time is shown with longitude correction in Arabic hour numerals divided to 15 and 5 minutes. The dial stands in the family dog graveyard, and the motto around the top of the plinth reads "DIIS MANIBUS CANIBUS" (Roman grave stones were engraved 'In the hands of the Gods' followed by a name). SRN 8175, Whitfield, Wormbridge, Hereford & Worcester, HR2 9BA. Private.

8. The combination here incorporates an equatorial dial disc and a horizontal dial below it, the gnomon of the latter doubling as gnomon for the winter surface of the former. The main dial is a very substantial circular sandstone disc with a coat of arms at the top. It has full hour lines and


8a


8b

short half-hour marks inscribed on its upper (summer) surface, with Arabic hour numerals for 4 am to 8 pm, and a smaller similar set on the lower end of the winter surface. The horizontal dial is a square metal plate set in a black stone base. A dedication plate bears the Equation of Time with longitude correction included. The dial was designed by David Brown, and the stone disc was carved by National Trust masons at Montacute House. SRN 8191, Piles Mill, Allerton, Somerset, TA24 8HP. Visible.

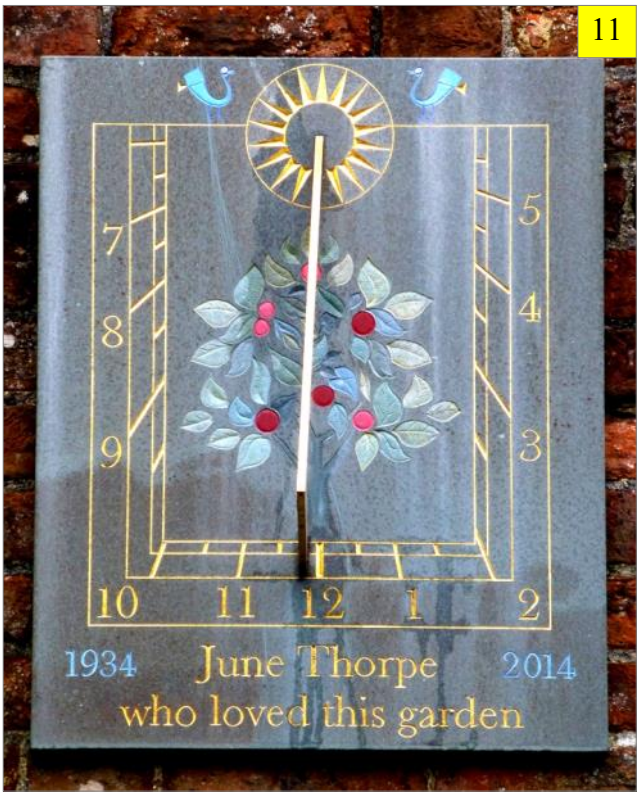
Now for a few vertical dials:

9. This one celebrates the centenary of Staple Inn Actuarial Society. The design reveals an owl, symbolising wisdom, along with small staples of wool, after which the Inn takes its name. The hour lines radiate downwards from an image of the woolsack, and equinox and solstice declination lines are shown. The dial was delineated by Frank King and made by the Cardozo Kindersley Workshop. SRN 8136, Staple Inn, City of London, WC1V 7QH. Private.

10. This dial is mounted on curved brickwork at roof level high above a main door facing south west. It is painted light brick red on a black or dark blue base, with all furniture gilded. The date of the dial is not known, but the building was originally a church, consecrated in 1715 and converted to a theatre in 1972/3. In 2009 the dial was held inside the building, and it was restored in 2010. SRN 8142, St

9

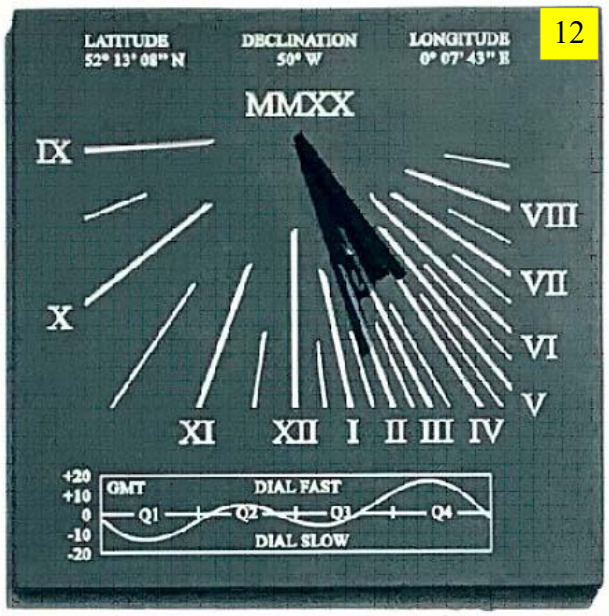

10

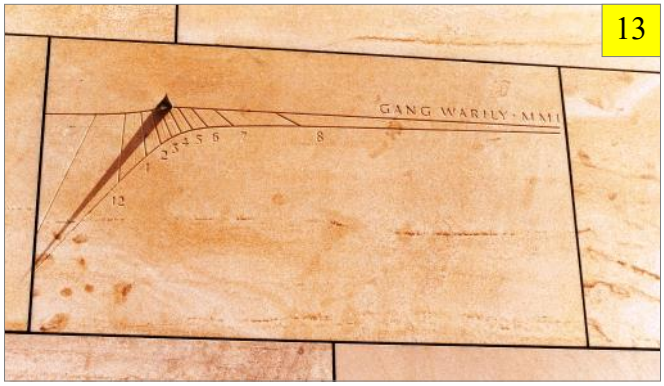


11

George's Theatre, Great Yarmouth, Norfolk, NR30 2PG. Visible.

11. This attractive dial in Elterwater slate has upright Arabic numerals for hours 7 am to 5 pm, divided to half hours. The gilded brass gnomon rises from the centre of an 18-pointed sun. The dial is mounted near the top of a high





wall with a very fruitful espalier pear tree, and in the centre of the dial plate is depicted an echoing tree with red fruit and blue leaves. To each side across the top is a blue bird. Beside an arched opening in the wall below the dial is a plaque with instructions and an EoT graph. The dial was designed by Harriet James. SRN 8192, King John's House, Romsey, Hampshire, SO51 8BT. Restricted.

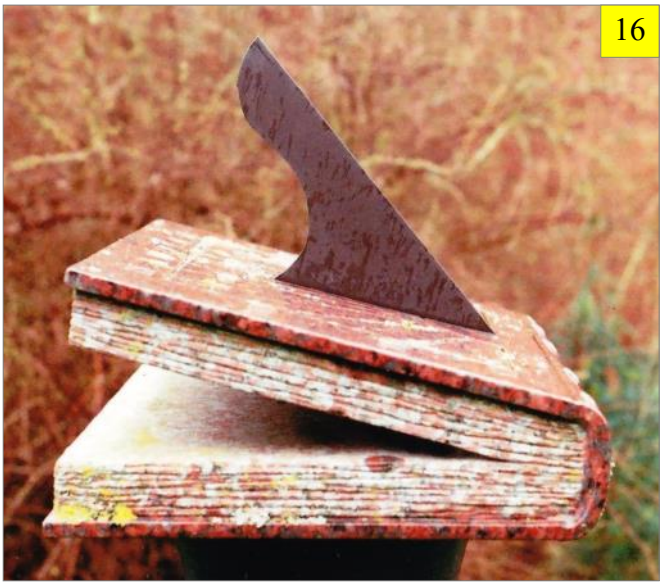
12. This dial was designed by a recent new member, Pete Caldwell. It is of Welsh Blue slate with white engravings, with a galvanised steel gnomon based on the musical treble clef. It bears the Equation of Time, latitude, longitude and declination. See *BSS Bulletin* 32(iv), 32-35 (December 2020). SRN 8190, 10 Atherton Close, Cambridge, CB4 2BE. Visible.

13. The dial is carved into the stone of the north-west Clashach sandstone wall of the museum building. The time is shown with upright Arabic hour numerals, with hour and half-hour lines, bounded by the lines of the winter equinox above and the summer equinox below. The dial was commissioned by the Earl of Perth, and at the top is "Gang Warily", the motto of the Perth family, and the date "MMI". It was delineated by Sir Mark Lennox-Boyd and carved by Richard Kindersley. See *BSS Bulletin* 14(ii), 45 (June 2002). SRN 8165, National Museum of Scotland, Edinburgh, Lothian, EH1 1JF. Open.

14. This is one of a group consisting of a pair of large vertical south-facing dials, and a smaller east-facing one. They appear to be of the same stone as the rest of Parliament House, in keeping with buildings of the same era in Parliament Square, and are believed to date from 1639. It is not easy to view the dials: for assistance contact me or see Report 11887 (in the 2020 Fixed Dial Register). SRN 8179, Parliament House, Edinburgh, Lothian, EH1 1RQ. Restricted.

Some horizontals now, of varied form and scale:

15. This simple dial in a lovely setting is a small square gritstone slab on a short square-sectioned column of Derbyshire sandstone. It has numerals VI - XII - IV - VI, read from the south, with no hour lines or subdivisions. The only other furniture is the indication 'N' below the noon



hour marker. The stainless steel gnomon is a plain unsupported blade. The dial commemorates 50 years' care of the gardens by the Tye family. It was designed and made by Robert Reid. SRN 8154, Lea Gardens, Lea, Derbyshire, DE4 5NX. Restricted.

16. This inclining dial is in the Rom Harré garden to the rear of the college. It is in the form of a partially opened book, with "LINACRE" on the spine. It was designed by Frank Manasek and made by Bill Nutt using red South African granite on a pedestal of 'Absolute Black' Vermont granite. SRN 8162, Linacre College, Oxford, OX1 3JA. Private.

17. This dial is known as Solum and it stretches some 12 metres across the roadway turning circle outside the main station entrance. Hour lines run radially from a central circular raised area to the pavement, and GMT hour numerals for V - XII - V are Portuguese granite blocks on the pavement edge. Thin stainless steel bollards mark the half hours. There are declination arcs for the equinox and summer and winter solstices, the latter being inset in the pavement. The gnomon, some 2 metres high or more, stands in the central circular area and has a horizontal plate nodus. The dial was designed by David Brown. SRN 8131, Walthamstow Central Station, Waltham Forest, London, E17 7LP. Open.

18. Another approach to a large ground-level horizontal can be found in the park surrounding the Imperial War Museum, London. The dial is laid out with a semi-circular seating area to the south. The hour lines on the concrete paving of the north side have been continued as vertical markers against a high brick wall, but this is of course incorrect − they should slope inwards, converging on the intersection of the gnomon with the upwards extension of the wall. The dial is at its best in winter, as in summer it is heavily shaded by a large tree. SRN 8156, Geraldine Mary Harmsworth Park, Lambeth Road, Southwark, SE1 7PW. Open.

19. This 18th century circular dial stands on a square-sectioned sandstone pedestal of slender baluster shape, on three large square sandstone steps, at the junction of Green Lane with Water Street. Patination is heavy and no furniture can be deciphered now, but in 1895 an inscription was just legible "Thos D . . . tt"). Below the sundial on the north side can be seen the old village cast-iron stocks. For more information see *BSS Bulletin* 32(ii), 8-9 (June 2020). SRN 8159, Green Lane, Thornton, Lancashire, L23 1XB. Open.

And lastly a selection of multiple and special dials:

20. The red sandstone Kinloch Anderson Sundial stands in the Sundial Garden of Inverleith Park where it was installed in 1890; it was restored in 2018. Around the top of the chapter ring on the south face is the motto "I number none but sunny hours", and at the top and bottom of the north face is "So passes life / Alas! How swift". See the article on pages 18-22 of this issue of the *Bulletin*, and John Allen's 3-D Photographic Competition entry at *BSS Bulletin* 32(iii), 48 (September 2020). SRN 8178, Portgower Place, Stockbridge, Lothian, EH14 1DT. Open.

21. The cubical stone stands on a slender square-section column with moulded corners. It has dials on the east, south

and west faces and a horizontal dial on the top, with some hour lines still visible on the vertical faces. The only remaining gnomon is that of the horizontal. On the north face is "1660 / H888AD", but there is room for speculation on hidden meanings in the inscription. SRN 8184, Torpichen, EH48 4LX. Private.

22. This is an early 20th century monument to the Davidson family. It is an ashlar sundial on an octagonal base with a barley-sugar column of twisted serpents. A capital with figurative carvings of the four winds supports the square sundial block diagonally, with cherub heads under each corner; there is carving above capped by a ball

23

finial. The west and the south copper gnomons remain. SRN 8185, Faslane Cemetery, Garelochhead, Strathclyde, G84 0EH. Open.

23. Four dials are mounted on an equilateral triangular section slate pillar 3600 mm high. They show morning and afternoon clock time for the first half of the year (above) and the second half (below). Hours are indicated by upright Arabic hour numerals and divided to quarters. The dial is inscribed "Where adults feel like children again", and all furniture is inscribed and gilded. It was delineated by Sir Mark Lennox-Boyd and installed in 2000. SRN 8164, Blackpool Pleasure Beach, FT4 1EZ. Restricted.

24. The dial is in the form of a tetrahedral cairn, with two slate trapezoid dial faces declining + or – 30° and reclining 71.86°, each face being 1500 × 250 mm. A third face has a table of approximate corrections for EoT. The slate was supplied and cut by Burlington and the gnomons are bronze. The dial is calibrated for BST (being covered in snow in winter!) without EoT corrections but with corrections for displacement from Greenwich. The three faces bear the inscription "MONTES AMABAT SEMPITERNOS" (He loved the eternal hills). The dial was designed and delineated by Sir Mark Lennox-Boyd, and engraved by Ben Jones who also helped to build it. See *BSS Bulletin* 27(iv), 2-4 (December 2015). SRN 8170, Tayside. Private.

25. This is an indoor sundial with two projected spots on west and east walls and one catoptric projection from the south. In all the dial has delineation on 24 different surfaces (14 on the floor steps), with skyscapes painted in


24

25

casein tempera. It tells time, date, zodiac, altitude and azimuth of the sun, and times of sunrise and sunset. The installation was completed in 2004. It is in a square tower, 6 metres from floor to ceiling, with sides 3 metres wide. The accuracy varies, from five to 15 seconds when corrected. The motto around the top is "AB ORTU SOLIS / USQUE AD OCCASUM / LAUDABILE NOMEN DOMINI" from Psalm 113:3 (From the rising of the sun (on the west wall) to the setting (on the east wall) Praised be the Name of the Lord). The dial was designed and delineated by Sir Mark Lennox-Boyd. A very full description appears in *BSS Bulletin* 24(i), 23-27 (March 2012). SRN 8167, Villa La Meridiana, Rieti, Italy. Private.

registrar@sundialsoc.org.uk

THE EQUATION OF TIME AT KEW

ANDREW HODGSON

In the period between lockdowns, a friend and I were lucky to visit the Royal Botanic Gardens at Kew on a warm and sunny day in September, 1 September 2020 to be precise.

When I realised it was one of the four magical dates in the year when the Equation of Time is zero and sundials tell the 'right' time, I was excited to find a sundial and show my friend that, contrary to his view, sundials were not 'always wrong'.

We soon found one (Fig. 1), in front of Kew Palace – SRN 5309, a 1959 replica of the original Thos Tompion dial (SRN 3129) – and I was gratified to show my friend that it was indeed plausibly showing clock time (well, to the precision it can be read with and sadly, still an hour 'wrong' due to BST). Let us not speak of the 0.3° of longitude offset (1.2 minutes) from Greenwich, and the fact that the gnomon may be angled for Hampton Court rather than Kew). But, happily, not a 'wonky sundial', this one!

Fig. 1. The replica Tompion dial in Kew Gardens showing 'a little after half past twelve' in a photograph taken at 13:33 BST.

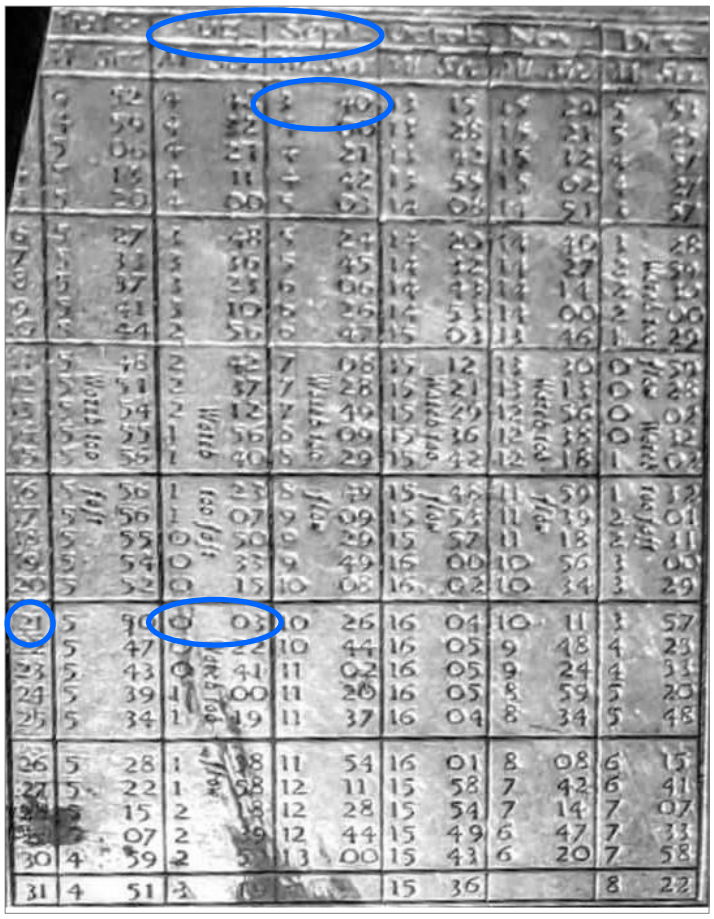


Fig. 2. The 1690 EoT table showing zero-crossing on 21 August, not 1 September.

As I launched into my tutorial on the Equation of Time, I pointed to the engraved tables on the sundial and was briefly nonplussed to see that it gave the EoT for 1 September as 3 m 40 s. We moved on quickly.

I later saw from my photograph (Fig. 2) that the table showed 0 m 03 s EoT on 21 August, 11 days earlier, giving me the clue to the explanation: they had of course faithfully reproduced the engraved table from the original 1690 dial, which was made before Britain adopted the Gregorian calendar in 1752 (though Catholic Europe had adopted it 170 years earlier).

And of course it is anyway a schoolboy error to expect an EoT table several centuries old to be fully accurate, as due to changes in our orbit, the EoT changes over time (though these adjustments are less significant than the 11-day Julian–Gregorian calendar shift).

I think the lengthy engraved text "*This replica of Tompion's sundial was made to mark the visit to Kew of H.M. Queen Elizabeth II on the occasion of the bicentenary of the Royal Botanic Gardens 1959*" could have usefully been shortened a little to include a warning to the casual visitor against using the EoT table as written!

ndrw.hodgson@gmail.com

RESTORATION OF THE KINLOCH ANDERSON SUNDIAL IN EDINBURGH

ALASTAIR HUNTER

The Kinloch Anderson sundial stands in Inverleith Park in the City of Edinburgh. It was presented to the city in 1890 by Councillor Joseph Kinloch Anderson as a gift for the new park, which opened in 1891. Kinloch Anderson Ltd (KA) are a well-known and long-established firm of tailors and kiltmakers still run by the same family since the company's founding in 1868.[1]

In 2002, a new community group called the Friends of Inverleith Park was set up.[2] They saw the need for restoration of the sundial, which by then was in poor condition (Fig. 1). After restoration it looks a great deal better. John Allen has been able to show an excellent stereo image of the sundial as an entry for the BSS Photographic Competition in 2020.[3] This article explains how the restoration came about and describes the progress of the work through to its completion in 2018.

Fig. 1. The sundial in Inverleith Park before restoration. The dials are in poor condition; the stone shows erosion and damage. Photo: Dennis Cowan.

History of the Sundial

In 1886, from May to October, Edinburgh held a prestigious International Exhibition of Industry, Science & Art on The Meadows parkland. It was a grand affair with over 20,000 exhibits. The exhibition was opened by Prince Albert Victor of Wales, grandson of Queen Victoria, and attended by the Queen herself. Two tall stone pillars flanked the entrance carriageway, and a sundial pillar stood at the entrance to the great pavilion. These memorial pillars were designed by Sir James Gowans, Dean of Guild for the city, and architect to the exhibition, and still stand there today.[4]

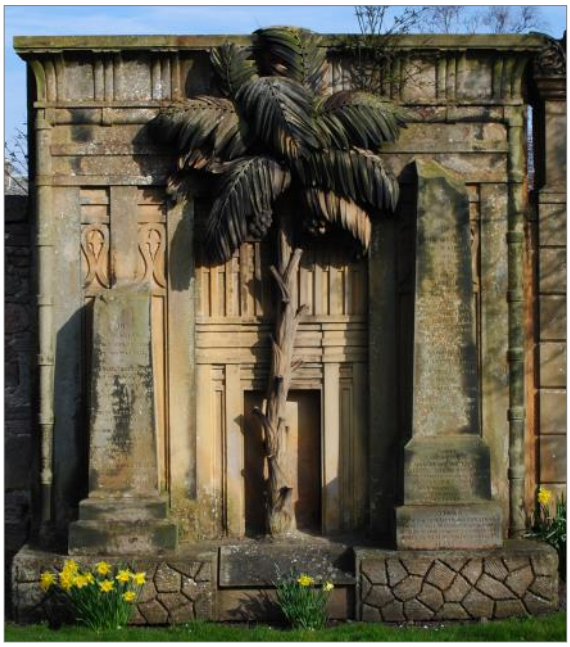


Fig. 2. The spectacular "Egyptian portal to the land of the dead" carved by Robert Thomson stands in Grange Cemetery. The characteristic crazing of the base stones also appears on the plinth of the sundial. Photo: Grange Association.

Four years later, in May 1890, the International Exhibition of Electricity, Engineering, General Inventions and Industry, an even larger event, opened on a site at Meggetland to the west of the city. The famous railway bridge known as the Forth Bridge also opened that year. The Marquis of Lothian, Secretary for Scotland, was President of the exhibition, and the vice-President was the American inventor Thomas Edison. Joseph Kinloch Anderson was vice-Chair and a subscriber to the event's Guarantee Fund. It was truly international and almost three million visitors attended, but the event did lose money.

The sundial that now stands at Inverleith was Exhibit 299D in the 1890 exhibition, on display by Robert Thomson & Sons, Monumental Sculptors and Carvers. The company were known as experts in working with marble, granite, and freestone. A spectacular example of Robert Thomson's work is the headstone in Grange Cemetery (Fig. 2).[5]

Perhaps guided by his colleague James Gowans, or perhaps feeling a responsibility to exhibitors, Joseph Kinloch Anderson decided to acquire Mr Thomson's sundial and present it to the city.

On Wednesday 10 September 1890, *The Scotsman* newspaper reported:

City Council Business "A letter from Mr Kinloch Anderson to Mr J C Dunlop, Ranger of Inverleith Park, was read, in which Mr Kinloch Anderson intimated the presentation by him of a Sundial to Inverleith Park, 'as an expression of goodwill from the Sunny South to the North Side of the City'. (Applause) The Lord Provost said they were much indebted to Mr Kinloch Anderson for his gift. He wished he could have sent a little sunshine along with it. Mr J C Dunlop said that they were still open on the North Side to further contributions. (Laughter)"

Sundial Description

The sundial is in the form of a sculpted pillar about 2.5 metres (8′) tall with four dials like a clock tower. The octagonal baluster shaft rises from a square base and is raised on a square plinth with a distinctive crazed pattern. The capital is a cube truncated at the corners making octagonal faces. The four vertical sides are inset with octagonal dials in marble. The finial is a domed cap.

The inscription on the base reads "Presented by Councillor Kinloch Anderson 1890" (Fig. 3). An inscription on the back reads "R Thomson & Sons". The style of the crazed carving is the same as the carved rustication on the Grange Cemetery headstone, which is also signed. The whole rests on a rough stone foundation.

Financial Arrangements

The Friends of Inverleith Park take a particular interest in the peaceful enclosed area of ground where the sundial stands, known as the Sundial Garden. They were always keen to restore the sundial, and obtained cost estimates, but could not afford to go ahead on their own. In November 2016, Tony Cook representing the Friends met Alastair Hunter at the sundial and discussed possible options. This led to an early approach to the Kinloch Anderson company and to the City of Edinburgh Council about a restoration project.

Fig. 3. The sundial and plinth stand on a rough stone block. Two inscriptions read: "Presented by Councillor Kinloch Anderson 1890", and "R Thomson & Sons". Photo: Kinloch Anderson.

In February 2017, Tony and Alastair were invited to the KA offices to give a presentation on the sundial to Douglas and Deirdre Kinloch Anderson, directors of the company. Alastair showed slides explaining the restoration needed and he advised on who could carry it out. By important coincidence, the 150th Anniversary of the 1868 founding date of the KA company was fast approaching in 2018, and the directors were looking for a focus for their celebrations. They could see an ideal project both for benefit to the public and publicity for the company in the restoration of the sundial.

By December, KA had gained approval and encouragement for the project from Edinburgh Council at the top level. The City submitted a bid for support through grant funding, citing company and community contributions and involvement. Unfortunately, that bid did not succeed, and KA then decided they must go ahead without grant funds.

Restoration Progress

Graciela Ainsworth Sculpture Conservation and Restoration were instructed to carry out the restoration work on the sundial.[6] Macmillan Hunter Sundials would take charge of the gnomonics and the sundial alignment. There were critical details that had to be corrected. The marble dials were badly discoloured and most of the embedded lead, which marked out the delineation and furniture, had come loose or was broken or missing. The gnomons were also missing. Overriding these problems, the

Fig. 4. The incorrect orientation of the sundial. This south dial is facing north. Leadwork is damaged or missing, including the gnomon.

Fig. 5. Surveying a datum line across two fixed fence posts. Azimuth alignment is calibrated against azimuth angle of the sun, measured from the shadow of a vertical straight edge (not shown in the photo).

sundial was the wrong way round, with the south dial facing north (Fig. 4).

Alastair took immediate steps to survey in a datum line on site, ready for re-alignment of the sundial after it was restored. Fence posts that were set in concrete for the green railings provided two fixed reference points. The line between them was taken as the datum line. The azimuth angle of this datum was calibrated by the sun (Fig. 5). After the sundial was removed it could then be re-installed on meridian alignment at a later date, measuring accurately from the datum.

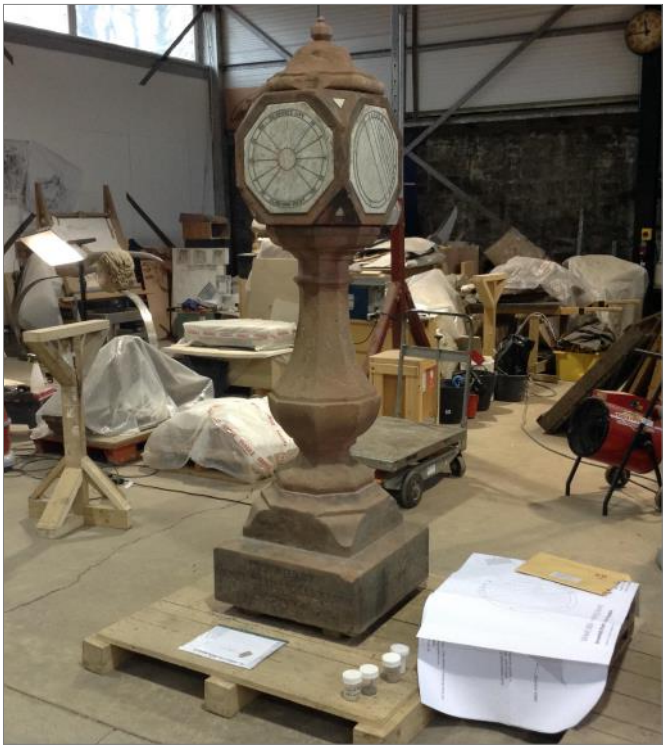


Fig. 6. Conservation work completed on the stone. New finial piece fitted on the domed cap. Marble dials restored. New gnomon designs still to confirm.

Fig. 7. Coloured epoxy simulates the original lead for lines and lettering. New gnomons are in brass and gilded. Mottoes read, on the south dial "I number none but sunny hours." and on the north dial "So passes life Alas! How swift".

In January 2018, the sundial was dismantled, removed from site, and taken to Graciela's workshop (Fig. 6). Work to conserve and consolidate the stone was carried out, and unsightly scars were repaired. A new octagonal top piece for the finial was carved and fitted. The general appearance of ageing of the stone after more than 120 years outdoors was preserved. A heavy new stone was cut that would form

Fig. 8. New deep plinth set on top of the rough stone base, now cut down to ground level. The original plinth being lowered into position and checked with a spirit level.

a stepped plinth and go below the existing one. This would raise the height of the whole sundial and improve the overall scale and proportions. Unlike the old build, which left the bottom of the existing plinth exposed, the new stone would show a clean line at ground level.

The dials were cleaned and marked out afresh. Alastair had already analysed the delineation on each of the dials and found everything correct for 56°, the latitude of Edinburgh. This was a necessary check, and pleasing to find no errors. It indicated that Robert Thomson either knew about delineating sundials, or in 1890 had found someone to do it for him. The new markings followed templates which were drawn at full scale on paper with instructions. The simulated appearance of lead was created with colour-tinted epoxy carefully laid in by hand (Fig. 7).

New gnomons were designed for the South, North, East and West dials. The style edge of each gnomon lies on a polar line, in this case at an angle of 56° to horizontal. The south and north gnomons look antisymmetric, the one pointing down on the south side and the north one pointing up, while the respective hour lines radiate from the gnomon roots. The east and west gnomons are symmetric, with their styles parallel to the hour lines, and the style height determined by hour line spacings.

The sculpted edges of the gnomons were designed as simple curves. This conformed both to the sundial's generally simple style of architecture, and to a view seen on an old postcard of the sundial with gnomons in place. The positions of fixing lugs were matched to existing slots in the dials, and the completed designs were cut by laser in brass. The brass was gilded with a dull finish and the gnomons were carefully fixed in place.

Installation at Inverleith

The council grounds staff cleared away all the shrubby plants from around the sundial base. The rough base stone itself was cut down to a lower height, near to ground level. Then, measuring from the known datum line between the fence posts, an accurate East-West line was carved into the top of the base stone. The new heavy plinth was laid on top of the base, in proper alignment. The original plinth was lowered onto the new one. This was all done first as a dry run and then again with a bed of mortar for each stone. The stones were checked for level at every stage (Fig. 8).

With the plinth stones in permanent and accurate position, the different alignment of the base is evident (Fig. 9). There is no good explanation for this. The base has been placed roughly in line with the path to the garden gate, which may have been done when the park was first laid out. The sundial may always have been on the correct line, but at some point something was rotated by 180°.

The site was ready for laying hard landscape paving and taking down the green railings. The sundial was brought back to Inverleith and lowered into place, checking first it was facing the right way. The procedure was the same as

Fig. 9. The built-up plinth correctly aligned, ready for the sundial. Note the different alignment of the base stone. Photo: Kinloch Anderson.

Fig. 10. The sundial being lowered into position. Hard paving laid and green railings removed. Photo: Kinloch Anderson.

Fig. 11. Douglas and Deirdre Kinloch Anderson (right) and Graciela Ainsworth at the sundial. Mortar joint pointing still required. Photo: Kinloch Anderson.

Fig. 12. The local school pipe band honour the finished sundial. The inscription on the new plinth reads "Restored by the Kinloch Anderson Company 2018".

Fig. 13. New railings installed.

before, a dry run followed by setting on a bed of mortar, and checking for level (Fig. 10). Except for final pointing of the mortar joints, this completed the restoration. Douglas and Deirdre Kinloch Anderson expressed great pleasure, and Graciela was proud of the work of her team (Fig. 11).

Celebration

On Saturday 16 June 2018 a celebration garden party was held for the 150th Anniversary of the Kinloch Anderson company. The Lord Provost of Edinburgh Councillor Frank Ross attended. The local school pipe band played and the newly restored sundial was unveiled (Fig. 12). The inscription on the new plinth reads: "Restored by the Kinloch Anderson Company 2018". An exclusive 'Sundial' tartan designed to commemorate the occasion was used for the unveiling.

The company produced a spread of publications surrounding the event, and erected two information boards, and provided attractive new railings (Fig. 13). Entry to Inverleith Park is free and open to the public all year.

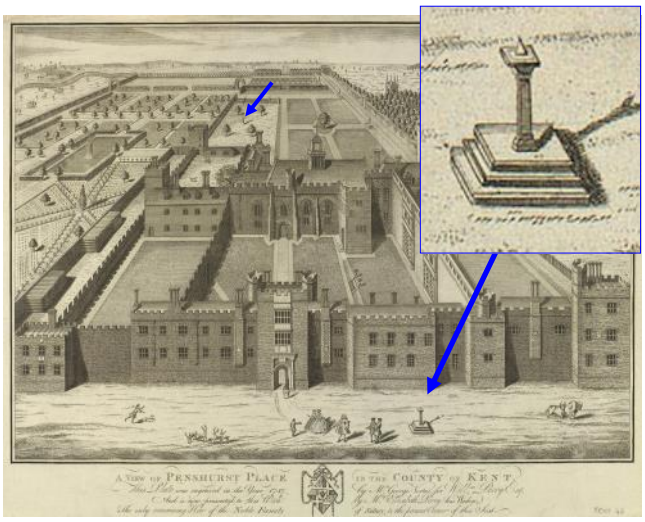
ACKNOWLEDGEMENT

Kinloch Anderson are thanked for their encouragement on writing this article for the BSS.

REFERENCES

1. Kinloch Anderson Ltd. 4 Dock Street, Edinburgh EH6 6EY. *https://www.kinlochanderson.com/*
2. Friends of Inverleith Park. *http://www.friendsofinverleithpark.co.uk/*
3. David Hawker: 'BSS Photographic Competition 2020'. *BSS Bulletin*, 32(iii), 46-48 (September 2020).
4. CANMORE, Historic Environment Scotland: Edinburgh, The Meadows (West), Mason's Pillars. *https://canmore.org.uk/site/125726/edinburgh-the-meadows-west-masons-pillars*
5. Grange Cemetery. 60 Grange Road, Edinburgh EH9 1TT. *http://gaedin.co.uk/wp/cemetery*
6. Graciela Ainsworth Sculpture Conservation Ltd. Bonnington Mill, 72 Newhaven Road, Edinburgh EH6 5QG.

sundials@macmillanhunter.co.uk



Penshurst Place, Kent

This 1747 engraving of Penshurst Place in Kent, courtesy of the Royal Collections Trust, actually features two horizontal dials, though the one in the background (also arrowed) is difficult to see. Today, neither of these dials is present though the owners do have a small brass dial with a Tudor coat of arms, ca. 1600, which is kept safely indoors. Instead, the location is more well known for a multiple stone dial and also for a more modern vertical dial. Check out the Register or make a visit, when conditions allow!

JD

SQUARE AND COMPASSES

JILL WILSON and CHRISTINE NORTHEAST

At the time of her death, Jill Wilson left extensive notes on Masonic symbols found on sundials and also an early draft of an article. Christine Northeast has used, and built on, Jill's material to produce the following.

Of the many types of decoration used on sundials, Masonic symbols are a particular and quite popular subset. They appear on several examples in the Fixed Dial Register, and have been seen on dials in private collections, in museums and offered for sale online. It is sometimes difficult to distinguish between those dials made specially for an individual mason and those made in numbers speculatively in the late 19th and early 20th centuries.

The square and compasses symbol is the one most commonly associated with Freemasonry, but in the earliest example in the Register, on a facet-head sundial at Fingask Castle, Perthshire (SRN 1566, Fig. 1), it is probably rather the mark of the stonemason who made the dial. The date on the dial is 1563; at that time, master masons would have been almost the equivalent of today's architects, and would have commanded respect as being both skilled and the possessors of secret knowledge.

It appears that the dial may have been removed from Fingask Castle,[1] but when it was photographed by Andrew Somerville it consisted of a polyhedral block, eleven of whose faces were marked with hour lines. It was mounted on a cylindrical column and had been given a horse's head finial; both of these were later than the dial itself. The carved date and square and compasses were on one of the proclining faces.

Fig. 2. Square and compasses above a dial at St Mary's Church, Woodhorn, Northumberland. Photo: Frank Evans.

Fig. 1. Square and compasses mason's mark on a multi-faceted sundial at Fingask Castle, Perthshire. Photo: Andrew Somerville.

A more familiar version of the Masonic square and compasses symbol appears above a vertical dial dated 1818 (SRN 0250, Fig. 2)[2] over the south porch of the former church of St Mary, Woodhorn, Northumberland (now Woodhorn Church Museum); no explanation has yet been

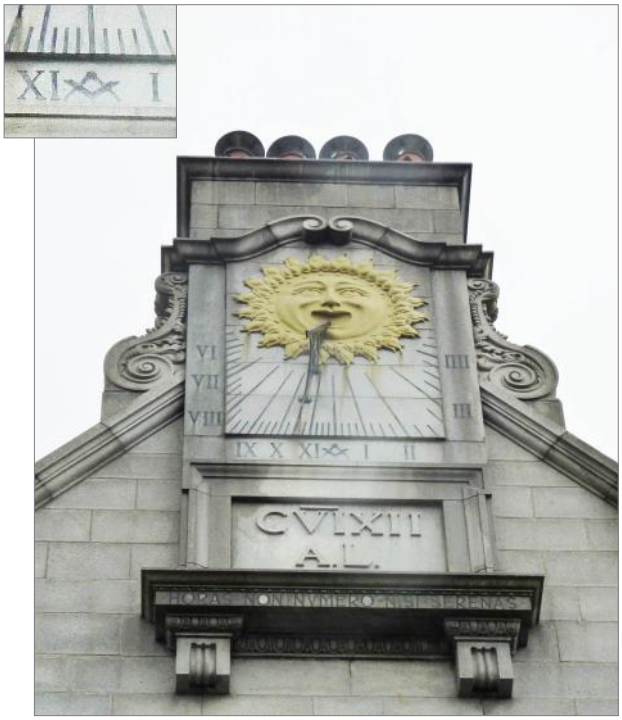


Fig. 3. Dial on the Lodge of the Masonic Temple, Crown Street, Aberdeen. The date AL (Anno Lucis) is given as 5912 (the VI with an overbar means 6000); to convert this to AD (Anno Domini), 4000 should be deducted to give 1912. Inset: close-up of the square and compasses indicating noon. Photo: Dennis Cowan.

found for the significance of this Masonic symbol appearing on the church.

Rather easier to understand is the example on a vertical dial on the gable of the Masonic Temple, Crown Street, Aberdeen, built in 1912, where the square and compasses symbol replaces the noon mark (SRN 0907, Fig. 3). The dial is said to be based on Christopher Wren's design at Morden College, London (SRN 0503),[3] but in accordance with Masonic tradition its date is expressed as 5912 AL (*Anno Lucis*, the Year of Light, equivalent to AD plus 4000).

An even more imaginative use of the square and compasses is on a vertical dial in Cambridge where it forms the gnomon (SRN 4737, Fig. 4). Made by Sally Hersh to celebrate the Millennium, it was the gift of the Isaac Newton University Lodge.

Fig. 4. Square and compasses forming the gnomon of a dial on Cambridge Masonic Hall. Photo: Frank King.

No-one knows for certain about the origins of Free-masonry, and there are various theories, but its present form seems to begun emerging during the first half of the 17th century, and the use of a number of symbols in its ceremonies, as well as the square and compasses, developed from that time. They were adopted from many sources, including the working tools of the medieval stonemason (the gavel or setting maul, the trowel and the ladder);[4] the heavens (the sun, moon and stars); and the legend of Hiram Abiff, the chief architect of King Solomon's Temple, who was said to have been murdered by three fellow masons after he refused to divulge the secrets of a master mason (the coffin, the entrance to the Temple).

1. THE two Pillars called JACHIN and BOAZ, the first signifying *strength* the second *to establish in the Lord.*
2. The Holy Bible opened, as an emblem that it should be the rule of our faith.
3. The Compass and Square, to square our actions, and keep them within bounds, the Master's emblem or jewel, which is suspended with a ribbon round the neck, and always worn when the Lodge is opened, and on public days of meeting, funerals, &c.
4. The Level, the Senior Warden's emblem or jewel.
5. The 24 Inch Gauge, to measure Mason's work.
6. The Key, the Treasurer's emblem.
7. The Sword, presented to the naked left breast of the Apprentice.
8. The Cable, or Rope, put round the neck of every new-made Mason at the time of making.
9. The Trowel, an instrument of great use among Masons.
10. The Gavel, or setting Maul, used in building Solomon's Temple, the first grand work of Masonry.
11. The Plumb, Level, Compass, and Plumb Rule, the Junior Warden's emblem.
12. The small Hammer, to knock off superfluous pieces.
13. The Cross Pens, the Secretary's emblem.
14. A Coffin, with a figure of the maimed body of Hiram (the first Grand Master) painted on it. He was murdered by three Fellow-Crafts, for refusing to reveal the Secret.
15. The Hand Plummet, for taking perpendiculars.
16. The Sun rising in the east, emblematical of the Master-Mason, standing in the east, and setting the men to work.
17. The Seven Stars, an astronomical emblem, frequently engraved on the medals worn by Masons.
18. The Moon, that rules the night.
19. The Candlesticks, placed in a triangular form.
20. The Columns, used by the Senior and Junior Wardens in the Lodge.
21. Two black Rods, carried by the Senior and Junior Deacons.
22. The Three Steps and Pavement.
23. Entrance or Porch to Solomon's Temple.
24. The Terrestrial and Celestial Globes, representing the works of creation.
25. A Machine used by Masons for forming Triangles.
26. The large Rule for measuring the work.
27. The three Step Ladder used in Masonry.
28. Hiram's Tent.
29. The White Aprons and Gloves, emblems of innocence.
30. Eye of Providence, the great superintendent of all the works of the Universe, and Masonry represented as under its immediate influence.

Table 1. 'Description of the regalia and emblematical figures used in masonry, represented in the frontispiece' (from 'Jachin and Boaz').[7]

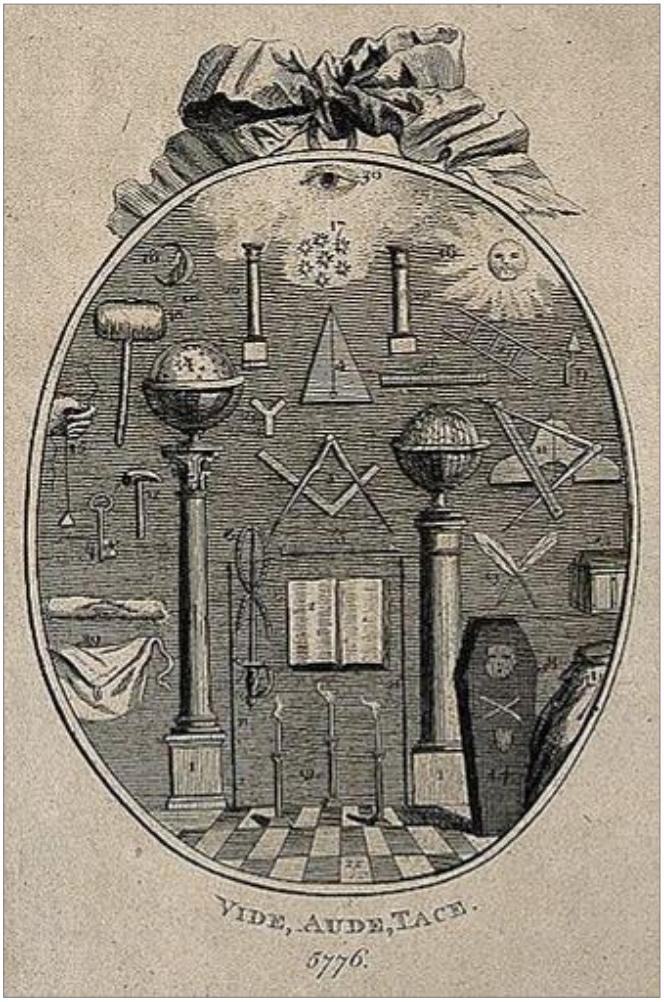


Fig. 5. Symbols in the frontispiece of 'Jachin and Boaz'.[7] *Wellcome Library no. 27184i, Wikimedia Creative Commons.*

Illustrations of the symbols as used in the early days of the fraternity can be seen in several 18th-century books.[5,6,7] One of these, *Jachin and Boaz; or, an Authentic Key to the Door of Free-Masonry*, showed numbered symbols in its frontispiece, and added a listing of all thirty (Table 1 and Fig. 5).

Some of the symbols have changed their meaning within Freemasonry, or have fallen out of use.

Two symbols of importance are the Eye of Providence, or All-Seeing Eye, and the open book, which in the 18th century would have represented the Bible, but might nowadays be the Qur'an, Talmud, Vedas or other appropriate sacred text. The eye with rays of Glory and the book are prominent on a vertical dial at Caldecott in Rutland dated 1935 and commemorating the Silver Jubilee of King George V and Queen Mary (SRN 1378, Fig. 6), and on a circular dial at a school in Sussex (SRN 7195, Fig. 7). In both cases the open book bears the words "Your sunny hours alone I tell", and they are the only two dials in the Fixed Dial Register with this quasi-poetic version of the common "I only tell the sunny hours" motto.

Square dials with a circular motto or chapter ring provide the opportunity of placing symbols in the corners. On the

Fig. 6. Vertical dial on the church of St John the Evangelist, Caldecott, Rutland. Photo: Ian Butson.

Fig. 7. Circular horizontal dial with the Masonic Eye of Providence and open book. Photo: Ian Butson.

example at Caldecott, the upper pair of corner emblems depict the moon and stars, and the sun with rays, while crossed quill-pen feathers are placed at the bottom left, crossed pens being the Secretary's emblem. The bottom right corner is taken by the square and compasses.

Fig. 8. Dial at St Helier, Jersey, signed by 'G. Baker', with Masonic symbols in the corners. Photo: David Levitt.

Another instance in the Register is a horizontal dial at St Helier, Jersey (SRN 4759, Fig. 8), again with a circular chapter ring, and Masonic symbols in the corners (the Eye of Providence, the sun with rays, the square and compasses, and the level, accompanied by trowel and maul). This dial is signed "G Baker / London Fecit", and was probably made in the early 20th century by one of the manufacturers of 'antique' dials.[8] Another dial with exactly the same design, but signed "A Dent / London Fecit", has been seen in a sale.

Fig. 9. Rubbing of the damaged Daniel Nistel dial. Courtesy of Michael J. Harley.

In contrast to the 'antique' dials by 'G Baker' and 'A Dent', a damaged slate dial by Daniel Nistel, in a museum at Ballinode, Co. Monaghan, really was made by a Freemason around the turn of the 18th/19th centuries. In common with many of the previous examples it is square with a circular chapter ring and Masonic emblems in the corners (SRN 5627, Fig. 9). In the NE corner there is a cross with another of the symbols listed in Table 1: a coffin with skull and cross bones on it, representing the body of the murdered Hiram Abiff. Both the cross and the coffin are reminders of mortality. The NW corner contains another skull, and an equilateral triangle with the letter G inside it, for Geometry (i.e. the secrets of the master mason), or God. On the south side there are portions of two inscriptions that have Masonic connections: SAPIENTIA PULCHRITAS & VIRTUS (Wisdom, Beauty and Strength) and SIT LUX ET LUX FUIT (Let there be Light and there was Light, from Genesis 1:3). The dial is signed MADE BY DANIEL NISTEL, these words being split between the NE and NW corners.

Daniel Nistel is known to have joined Masonic Lodge 753 in Rooskey, Cootehill, Co. Cavan in July 1794.[9] He may also be the maker of two other slate dials mentioned in the *Biographical Index of British Sundial Makers*;[10] they were identified as being by 'Daniel Nisdem' and 'Daniel Nisdeal', possibly misreadings of the names on the weathered dials. The former, which appeared in a sale, was dated 1818 and is known to have had a square and compasses in one corner. The latter is held in the Ulster Museum, Belfast, but no details of its decoration are recorded. For more information about Daniel Nistel, see 'Daniel Nithsdale, alias Nistel' by Simon Bateman, after the end of this article.

In addition to registered fixed dials, several items are known from sales listings and from private and museum collections. As suggested above, a number with early dates and otherwise unknown makers' names may well have been produced during the late 19th and early 20th centuries, and one might wonder whether these could have been made to order for members of a Lodge. Although no Masonic dials have yet been found listed in the Pearson Page catalogues, several square horizontal dial plates with a circular chapter ring and emblems in the corners are offered, suggesting that the company would have had no difficulty in supplying them.

A group of five particularly distinctive dials have been seen which, like those by 'A Dent' and 'G Baker', have Masonic symbols in the corners, and spurious makers' names; Fig. 10 illustrates the corners of one of them, and Table 2 lists all five, from which it can be seen that there are some small differences, apart from the order of placement of the symbols.

Figs 11 and 12 show two of these distinctive dials; what is immediately clear is that they have only a few hard-to-use gnomonic features. Hour lines, numerals from 4 am to 8 pm[11] and divisions to five minutes are all squeezed into a rather strange eight-pointed band. There is a vestigial compass rose.

Fig. 10. Close-ups of the symbols in the corners of a dial signed 'Charles Hughes'. NW: Moon and stars; NE: Sun with rays; SE: Crossed keys and level; SW: Square and compasses, star, maul and trowel. Photo: David Saunt.

'Maker' and Date	NW Corner	NE Corner	SE Corner	SW Corner
James Bell, Londini 1734	Sun with rays	Moon and six stars	Square and compasses, trowel and maul	Crossed keys on a level
Thomas Betts, London 1736	Moon and stars*	Square and compasses enclosing a star, trowel and maul	Crossed keys on a level	Sun with rays
Charles Hughes, London 1745	Moon and seven stars	Sun with rays	Crossed keys on a level	Square and compasses enclosing a star, trowel and maul
J Myers, London (undated)	Square and compasses enclosing a star, trowel and maul	Sun with rays	Moon and seven stars	Crossed keys on a level
Thomas Salt, London 1792	Square and compasses enclosing a star, trowel and maul	Sun with rays	Moon and stars*	Crossed keys on a level

Table 2. Masonic symbols seen on five distinctive 'antique' square horizontal dials.
** Not possible to determine the number of stars.*

Fig. 11. Dial signed by 'J Myers, London'. All five dials have the same shaped gnomon, and four fixing holes in the same places. Photo courtesy of the Museum of Freemasonry, London.

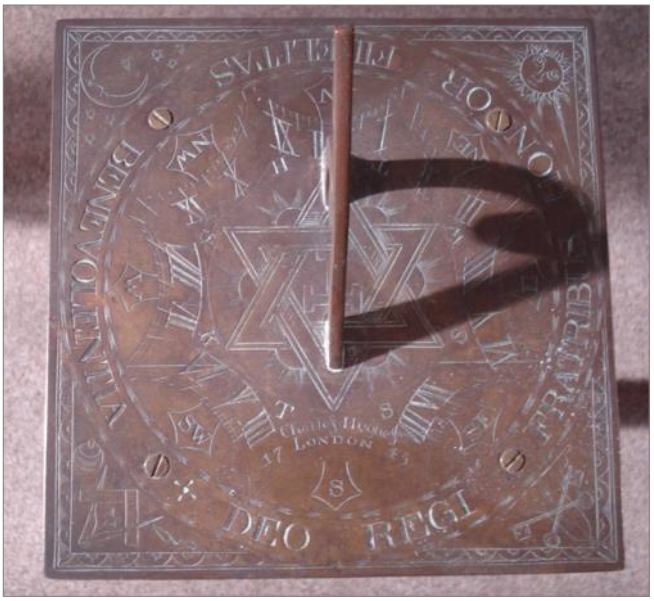


Fig. 12. Dial signed by 'Charles Hughes, London, 1745'. Photo: David Saunt.

Although there are some minor differences in the detail, the design of all these dials is based on the reverse of the jewel (medal) of the Order of Royal Arch Masonry, which relates to the rebuilding of the Temple in Jerusalem in about 520 BC.

The two concentric circles, which in the dials shown in Figs 6–9 hold the hour numbers, here contain the six words DEO REGI FRATRIBUS HONOR FIDELITAS BENEVOLENTIA. These are two triads intended to be read conjointly as DEO HONOR (To God, Honour), REGI FIDELITAS (To the King, Fidelity) and FRATRIBUS BENEVOLENTIA (To the Brethren, Love). This inscription is a translation from the Regius Poem, the first known Masonic text, and the words appear on the reverse of the Royal Arch Mason's jewel.[12]

Within the hour band there are two interlaced equilateral triangles, forming a six-pointed star, for Solomon's Seal or the Shield of David. This is another symbol common in Freemasonry, and is sometimes called a 'hexalpha' or 'hexagram'. In the Royal Arch Mason's jewel, the hexagram extends to the concentric rings.

Under the gnomon there is a 'Triple Tau', the most recognisable symbol of the Royal Arch. It resembles three 'T's joined at the base, giving the appearance of the letter 'T' above an 'H' (see Fig. 13); one interpretation is that the two letters stand for *Templum Hierosolyma* (Temple of Jerusalem), and another that they represent God.

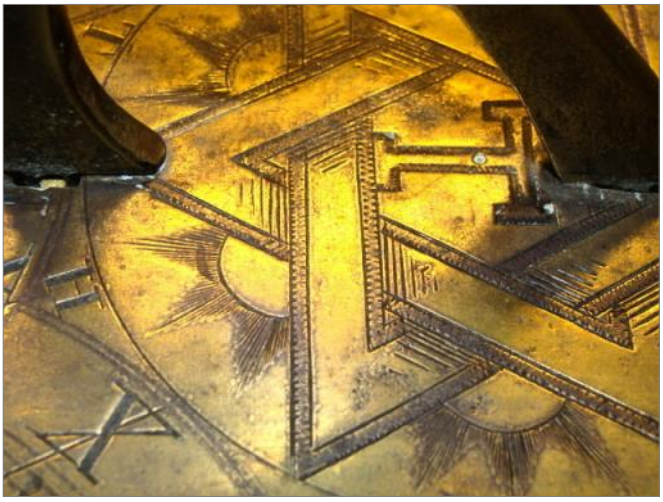


Fig. 13. Close-up of part of the Thomas Betts dial, showing the Triple Tau, with part of the hexagram, sunbursts, enclosing circle and chapter ring, together with the letters T and H. Photo: John Davis.

In the eight angles of the hour band there are the letters HTWSSTKS for 'Hiram, Tyrian, Widow's Son, Sendeth [or Sent] To King Solomon': King Hiram of Tyre sent 'the widow's son' (Hiram Abiff) to be the chief architect of King Solomon's Temple. These letters appear on the Keystone of the Mark Master Masons, an order that is separate from Craft and Royal Arch Masonry in England. The Degrees are closely related in some other jurisdictions, such as in Scotland and the United States, but it seems likely that these five dials originated in England.

The interlaced equilateral triangles appear on another dial that was the subject of an enquiry to the BSS Help and Advice service in 2019 (Fig. 14). Its motto POST TENEBRAS LUX (After Darkness, Light) is reminiscent of the more commonly used Masonic motto LUX E TENEBRIS (Light out of Darkness). It is signed "LAA / Londini" and is another of the 'antique' dials made in the late 19th and early 20th centuries.

Fig. 14. Dial signed by 'LAA, Londini'. Photo courtesy of James Weekes.

In the final example to be considered here, an unusual circular dial is decorated with a wealth of Masonic symbols (Fig. 15). It consists of a slate disk with inset brass ring, on the back of which is a longcase clock chapter ring signed "Phil. Glasco DUBLIN", probably made in the mid-18th century.[13] The front of the ring is inscribed with Arabic numerals read from inside the dial, and the hours are divided to 5-minute intervals at the outer edge, and to 7½-minute intervals at the inner edge. The inscription reads LAT: 52:22 / H*OLDIS / FECIT: 1822.

Fig. 15. Dial by H Oldis. Photo: John Davis.

The slate surrounding the brass ring has been carved to show a 32-point compass rose, and on the slate within the ring there are at least fourteen of the symbols listed in Table 1 (Fig. 16). These include the sun, the moon, the seven stars, the ladder, the three candlesticks, the crossed keys, the trowel, the maul, the square and compasses, the sword and, possibly, the cable. The entrance to King Solomon's Temple, with the Eye of Providence and housing an open book, is flanked by the two pillars Boaz and Jachin. Finally, to the south of the gnomon there is an additional emblem – a boat, or ark. This relates to the Ancient and Honourable Fraternity of Royal Ark Mariners, whose Degree is based on the legend of the building and voyage of Noah's Ark and the Great Flood.

The quality of the engraving and the re-use of a clock chapter ring suggest that H Oldis may not have been a professional dial maker, although the riot of symbols that he included round the gnomon implies that he may have been an enthusiastic Freemason.

Ancient Sundials of Scotland – Masonic Dials?

There are just two references to 'Masonic' dials in volume 5 of *The Castellated and Domestic Architecture of*

Fig. 16. Centre of the dial by H. Oldis. Photo: John Davis.

Scotland. In his general description of lectern dials, Thomas Ross wrote:

"*They are sometimes called masonic dials; but we have not met with any explanation of what is meant by that expression.*"[14]

He did, however, include a 'modern' dial:

"*The Haining, Selkirk. This is a singular modern example* [Fig. 17]*, and may be well called a masonic dial, since it contains various symbols of the craft – an arch springing from Ionic columns enclosing the all-seeing eye within a wreath, the compass, square, and triangle, and various other figures. The dial is the work of a hewer who was employed at The Haining in 1817, the date on the dial.*"[15]

Writing more recently, David Stevenson, in *The Origins of Freemasonry*,[16] speculated on a possible connection between the "remarkable profusion of Scottish sundials, varying greatly in type and complexity" in the 17th century, and the early growth of Freemasonry in that country, and he reproduced some of Ross's sketches.

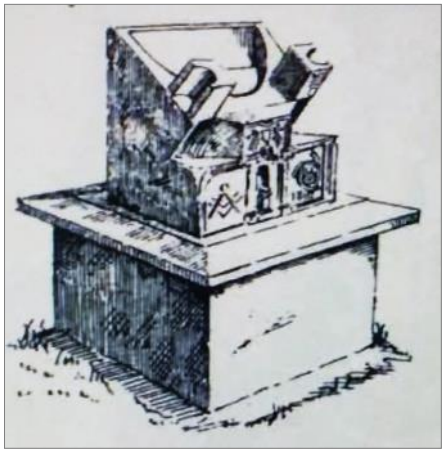


Fig. 17. Ross's sketch of the 'modern' Masonic dial at The Haining, Selkirk (now destroyed).

Stevenson's work was mentioned in *The Ancient Sundials of Scotland* by Andrew Somerville, in his discussion of the possible significance of the symbols found on these dials.[17] He assigned a special code 'SMS' for Sun, Moon and Star, found on the pedestal of five out of the twenty-seven obelisk dials in his catalogue: the example at Kelburn Castle (SRN 1181) is shown in Figs 18 and 19, and was described by Dennis Cowan in the March 2017 *Bulletin*.[18] However, Somerville explained that while the sun, moon and five-pointed star appear frequently on Masonic articles, they are not exclusively Masonic symbols; indeed, on obelisks and lectern dials, hearts are much more common.

Fig. 18. Sun and moon on the 'SMS' Kelburn Castle obelisk dial. Photo: Dennis Cowan.

Fig. 19. Sun and star on the 'SMS' Kelburn Castle obelisk dial. The star, although five-pointed, is not in the form usually associated with Freemasonry today. Photo: Dennis Cowan.

James Stevens Curl extended Stevenson's theme and included many more of Ross's drawings in his lavishly illustrated *The Art and Architecture of Freemasonry*;[19] it would be interesting to know whether Thomas Ross would agree with Curl's conclusion "that such sundials are Masonic cannot be doubted".[20]

ACKNOWLEDGEMENTS

Thanks to staff of the Museum of Freemasonry, London: Diane Clements in 2014 and Andrew Tucker in early 2020, and especially to the Curator Mark Dennis who read a draft during the second lockdown in 2020. Thanks also to John Davis, John Foad, Michael J. Harley and Sue Manston, and to the other BSS members whose photographs illustrate this article.

REFERENCES and NOTES

1. *https://portal.historicenvironment.scot* – ref. LB11635
2. *https://historicengland.org.uk/listing/the-list/list-entry/1304471*
3. Geoff Holder: *The Guide to Mysterious Aberdeen* (2010).
4. Nowadays, the main symbols of the three degrees of Craft Freemasonry are all tools of the stonemason: chisel, rule and gavel or maul (First Degree – Entered Apprentice); level, plumb and square (Second Degree – Fellow Craft Freemason); and scurret or skirret, compasses and pencil (Third Degree – Master Mason).
5. B. and T. Langley: *The Builder's Jewel: Or, the Youth's Instructor, and Workman's Remembrancer*, R. Ware, London (1746).
6. *Mahhabone: Or the Grand Lodge Door Open'd. Wherein is Discovered the Whole Secrets of Free-masonry, Both Ancient and Modern*, Johnson and Davenport, London (1766).
7. A Gentleman Belonging to the Jerusalem Lodge: *Jachin and Boaz; or, an Authentic Key to the Door of Free-Masonry, both Antient and Modern*, W. Nicoll, London (1776).
8. Jill Wilson: 'Identity theft', *BSS Bulletin*, 25(iii), 27-28 (September 2017).
9. Information from Michael J. Harley at *https://sundials-ireland.com*
10. Jill Wilson: *Biographical Index of British Sundial Makers*, 3rd edition, BSS Monograph no.12 (2019).
11. The Myers dial uses IV for 4, whereas the others use IIII. This is one of many tiny differences in detail between the dials.
12. For more information about the Royal Arch Jewel, see *https://westkentmasons.org.uk/wp-content/uploads/2019/04/Explanation-of-a-RA-Jewel.pdf* accessed 12 February 2021.
13. John Davis, personal communication.
14. D. MacGibbon and T. Ross: *The Castellated and Domestic Architecture of Scotland – Vol. 5,* David Douglas, Edinburgh (1892), p.422.
15. Ibid., p.506.
16. David Stevenson: *The Origins of Freemasonry: Scotland's Century, 1590-1710*, Cambridge University Press (1988).
17. Andrew R. Somerville: *The Ancient Sundials of Scotland*, Rogers Turners Books, London (1994), p.252.
18. Dennis Cowan: 'In the footsteps of Thomas Ross Part 18. The Kelburn Castle obelisks', *BSS Bulletin* 29(i), 12-15 (March 2017).
19. James Stevens Curl: *The Art and Architecture of Freemasonry*, Batsford (1991).
20. Ibid, p.51.

chn2@cam.ac.uk

DANIEL NITHSDALE, ALIAS NISTEL

Michael Harley received this interesting further information from Simon Bateman of Sheffield, just as the *Bulletin* went to Press.

Daniel is my wife's 4 × great-grandfather, whose history we have been researching for many years. His surname was actually Nithsdale – 'Nistel' is a phonetic mis-spelling – and he certainly seems to have had a fascinating life.

We are 99% sure that he was the illegitimate son of the grand-daughter of the last Earl of Nithsdale, and that he was born in Cavan in around 1754. We know for sure that he joined the Royal Irish Artillery in 1776 and that he probably saw action in the American Revolutionary War. He was barracked in Waterford and joined one of the local masonic lodges there in 1789 before getting himself involved in a duel a few years later, which (allegedly) resulted in the death of a fellow officer. That prompted both a flight from Waterford to Cavan in 1792-3 and a change of name (from John to Daniel) in an effort to avoid the consequences.

Daniel went on to have three wives and at least nine children after the age of 40, spending a short time in Cavan (where he joined the Rooskey lodge as per Michael Harley's website), followed by twenty-plus years as a tenant farmer in Galloway, before moving to Maryport in Cumbria where he did some work as a school-teacher. He died at the age of about 93 in Maryport, having had the proverbial 'good innings'.

We have first-hand accounts that describe him as a mathematician and a mathematical genius, as well as confirming that, amongst other things, he made a number of sundials. I had not expected any of them still to be around though so coming across Michael's website was a fascinating and very pleasant surprise.

THE 'LARGE ACRES' SUNDIAL

SUE MANSTON

In October 2020, the BSS Help and Advice Service was contacted by John P. Mahoney of Tallahassee, Florida. John wanted to know where to look for a maker's mark on a particular sundial. He had examined the dial in detail and could not find a maker's name on the dial plate or the gnomon, and he wondered if a maker might put their name on the underside of the dial.

The sundial was originally situated at 'Large Acres', Selsey, West Sussex, the home of Edward Heron-Allen FRS (17 December 1861 – 28 March 1943), an English polymath, writer, scientist and Persian scholar who translated the works of Omar Khayyam.

Edward Heron-Allen

Heron-Allen (Fig. 1) was born in London, the youngest of four children of George Allen and Catherine Herring. He was educated at Harrow School, where he developed an interest in classics, science and music. In 1879 he joined the family firm of Allen and Son, solicitors, in Soho, London. The practice office was located close to the violin-making district and Heron-Allen made the acquaintance of Georges Chanot III, a distinguished violin maker. He learnt how to make violins and subsequently produced a book on violin making that was still in print over a hundred years later.

He studied the Turkish language with Garabet Hagopian, the Armenian envoy in London, and Persian with Mirza

Fig. 2. 'Large Acres' estate c. 1930. © English Heritage.

Fig. 1. Edward Heron-Allen c. 1918. Photo: Wikimedia Commons.

Malkom Khan, the Persian Minister in London. He published a literal translation of the *Rubáiyát* of Omar Khayyam (1898) from the then earliest manuscript in the Bodleian Library.

When Heron-Allen's father died in 1911, he retired from practising law and permanently moved to 'Large Acres' in Selsey, West Sussex (Fig. 2). There he produced a book on the history and prehistory of Selsey. He compiled a library of 12,000 books, including a collection of rare books on the violin, which he bequeathed to the Royal School of Music.

Heron-Allen was elected a Fellow of the Royal Society in May 1919 for his work on foraminifera. His foraminiferal collections and associated library were bequeathed to the Natural History Museum, London and are now housed in a special room on the second floor of the *Department of Palaeontology* named *The Heron-Allen Library.*

Heron-Allen also wrote on archaeology, Buddhist philosophy, the cultivation, gourmet appreciation of and culture of the asparagus, as well as a number of novels and short stories of science fiction and horror written under his pseudonym of Christopher Blayre. Another of his interests

Fig. 3. Blue Plaque, Selsey, West Sussex.

Fig. 5. The 'Large Acres' sundial. Photo courtesy of John P. Mahoney.

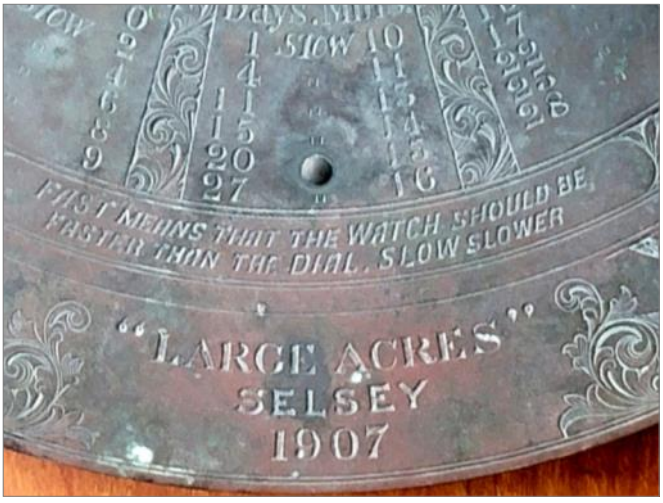


Fig. 6. Sundial inscription. Photo courtesy of John P. Mahoney.

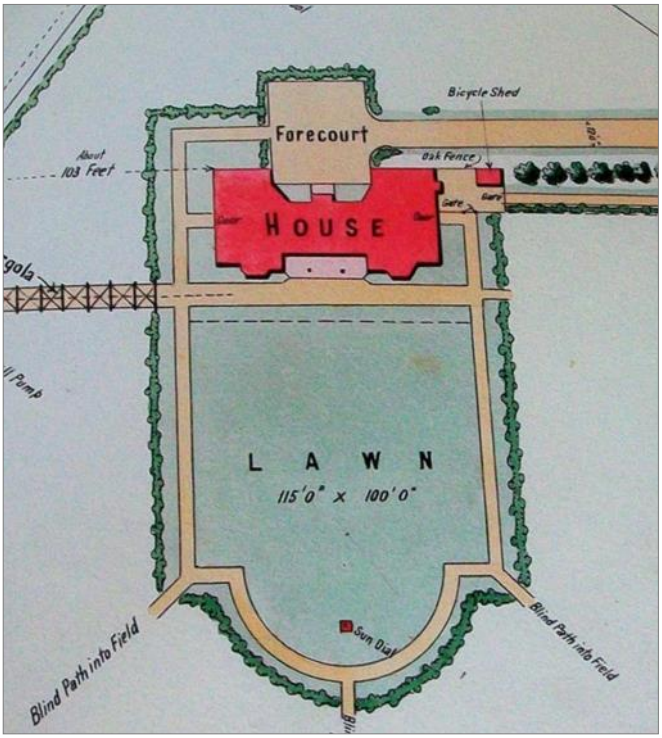


Fig. 4. Diagram of the South Lawn, 1907, courtesy of John P. Mahoney.

was palmistry. He became an early member of the Society for Psychical Research and his books on palmistry made his name in London society. He read the palms and analysed the handwriting of various luminaries of the period and was asked to cast the horoscope of Oscar and Constance Wilde's first son, Cyril.

Heron-Allen was a fellow of the Royal Society, the Linnean Society, the Geological Society, the Zoological Society and the Royal Microscopical Society.[1] He has an 'appreciation society' whose objectives are to study and record all aspects of his life and interests, and to promote his work.[2] He also has a Blue Plaque (Fig. 3) close to where his house used to be. The plaque is on the side of an estate agent's premises at 122 High Street, Selsey, West Sussex.

Fig. 4 shows the layout of part of the 'Large Acres' estate; the position of the sundial can be seen at the bottom of the picture. The entire estate and gardens were bulldozed in 1967, but the sundial survived and is now in a private collection.

The Sundial

Heron-Allen purchased this horizontal, circular brass sundial (Fig. 5) for his new house in Selsey. The inscription is "LARGE ACRES" SELSEY 1907 (Fig. 6). He may have purchased the dial in London where his law practice was situated. Fig. 7 shows Mrs Heron-Allen and friend building the pedestal for the sundial, though in reality they may simply have been posing for the photograph!

The dial is 280 mm in diameter and is delineated for the latitude of Selsey which is 50.73°. There is an 8-point

Fig. 7. Mrs Heron-Allen and friend building the pedestal, 1907. Photo courtesy of John P. Mahoney.

Fig. 9. The noon gap. Photo courtesy of John P. Mahoney.

compass rose and an Equation of Time ring running anticlockwise (Fig. 8). The wording "Fast means that the watch should be faster than the dial, slow slower" is unusual.

There are Roman numerals from IIII to VIII, read from the outside. The hours are divided into 30, 15 and 5 minute intervals, with fleurs-de-lys for the ½ hours. Fig. 9 shows the noon gap and Fig. 10 the gnomon.

The motto is HORAS NON NUMERO NISI SERENAS (part of which can be seen in Fig. 11). This is a very common sundial motto which can be translated as "I count the bright hours only".[3]

Fig. 8. The Equation of Time ring. Photo courtesy of John P. Mahoney.

Fig. 10. The gnomon. Photo courtesy of John P. Mahoney.

Fig. 11. Part of the motto. Photo courtesy of John P. Mahoney.

Fig. 12. The base of the dial showing the three feet. Photo courtesy of John P. Mahoney.

The mushroom 'feet' (Fig. 12) are a security fixing of a type common from the 18th century onwards. They screw into the dial from the back, with the top surface flush with the dial and *almost* invisible (see the three dimples in Fig. 5). The top of the pedestal would be drilled with oversize holes partly filled with wet cement. The dial and fixings would then be lowered into the holes, the final rotation adjusted and the cement allowed to set.

The dial appears to be finely engraved, but it can be difficult to tell just from a low-resolution photograph. Despite the attempts of several people to find a maker's mark, the dial seems to be unsigned.

Thinking that the dial looks to be custom-made rather than mass-produced, I decided to ask John Davis for his opinion on a possible maker. John thought the dial might be an early example of a photo-etched dial, although the details of the 'photo' part of the process are not well known at this early date. He suspected the dial might have been made by Francis Barker & Son, or someone similar. Barker did not always put his name on his dials.

Francis Barker was one of the most prolific and important sundial-making firms of the 19th and early 20th centuries. The firm was established in 1845 at 12 Clerkenwell Road, London. Customers were supplied with individually designed dials, often with specifically written verses. They

FAST MEANS THAT THE WATCH SHOULD BE FASTER THAN THE DIAL.
SLOW, SLOWER.

JAN.		FEB.		MARCH.		APRIL.		MAY.		JUNE.	
Days.	Mins.	Days.	Mins.	Days.	Mins.	Days.	Mins.	Days.	Mins	Days.	Mins.
2 Fast	4	3 Fast	14	4 Fast	12	1 Fast	4	2 Slow	3	4 Slow	2
4	5	20	14	8	11	5	3	15	4	10	1
7	6	27	13	12	10	8	2	28	3	14	0
9	7			16	9	12	1			20 Fast	1
11	8			19	8	15	0			24	2
14	9			23	7	20 Slow	1			29	3
17	10			26	6	25	2				
20	11			29	5						
24	12										
28	13										

JULY.		AUG.		SEPT.		OCT.		NOV.		DEC.	
Days.	Mins.	Days.	Mins.	Days.	Mins.	Days.	Mins.	Days.	Mins.	Days.	Mins.
4 Fast	4	4 Fast	6	1	0	1 Slow	10	11 Slow	16	1 Slow	11
10	5	12	5	5 Slow	1	4	11	17	15	4	10
19	6	17	4	8	2	7	12	22	14	6	9
		22	3	11	3	11	13	25	13	8	8
		26	2	13	4	15	14	29	12	11	7
		29	1	16	5	20	15			13	6
				19	6	27	16			15	5
				22	7					17	4
				25	8					19	3
				28	9					21	2
										23	1
										25	0
										27 Fast	1
										29	2
										31	3

Fig. 13. The Equation of Time table, Francis Barker's 1907 catalogue.

BEST BRASS SUN-DIAL. PLAIN.

FIG. 8.

Plain Sun-dial, to illustration, but without Motto, divided to 5 minutes, 10 in. dia. £3 0 0
" " 12 in. dia. 3 18 0
" " 15 in. " 6 5 0
" " 18 in. " 8 10 0

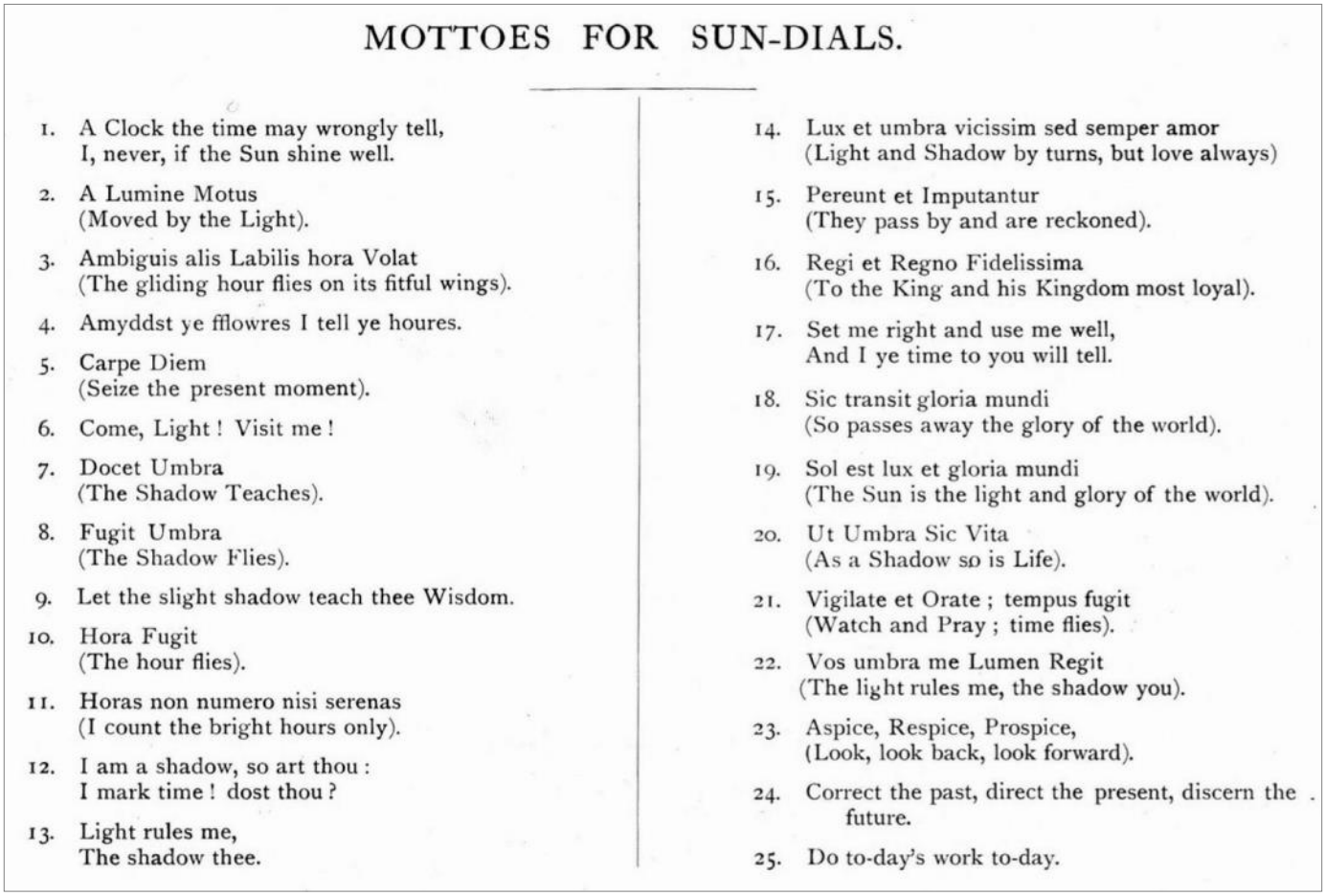
Fig. 14. Plain horizontal dial, Francis Barker's 1907 catalogue.

BEST BRASS SUN-DIAL. WITH EQUATION TABLE

FIG. 9.

Sun-dial, with Equation Table, in columns, divided to 5 minutes, as illustration, but without Motto, 10 in. dia. £5 10 0
" " 12 in. dia. 6 5 0
" " 15 in. " 8 8 0
" " 18 in. " 11 10 0

Fig. 15. Horizontal dial with Equation of Time, Francis Barker's 1907 catalogue.



MOTTOES FOR SUN-DIALS.

1. A Clock the time may wrongly tell,
   I, never, if the Sun shine well.
2. A Lumine Motus
   (Moved by the Light).
3. Ambiguis alis Labilis hora Volat
   (The gliding hour flies on its fitful wings).
4. Amyddst ye fflowres I tell ye houres.
5. Carpe Diem
   (Seize the present moment).
6. Come, Light ! Visit me !
7. Docet Umbra
   (The Shadow Teaches).
8. Fugit Umbra
   (The Shadow Flies).
9. Let the slight shadow teach thee Wisdom.
10. Hora Fugit
    (The hour flies).
11. Horas non numero nisi serenas
    (I count the bright hours only).
12. I am a shadow, so art thou :
    I mark time ! dost thou ?
13. Light rules me,
    The shadow thee.
14. Lux et umbra vicissim sed semper amor
    (Light and Shadow by turns, but love always)
15. Pereunt et Imputantur
    (They pass by and are reckoned).
16. Regi et Regno Fidelissima
    (To the King and his Kingdom most loyal).
17. Set me right and use me well,
    And I ye time to you will tell.
18. Sic transit gloria mundi
    (So passes away the glory of the world).
19. Sol est lux et gloria mundi
    (The Sun is the light and glory of the world).
20. Ut Umbra Sic Vita
    (As a Shadow so is Life).
21. Vigilate et Orate ; tempus fugit
    (Watch and Pray ; time flies).
22. Vos umbra me Lumen Regit
    (The light rules me, the shadow you).
23. Aspice, Respice, Prospice,
    (Look, look back, look forward).
24. Correct the past, direct the present, discern the future.
25. Do to-day's work to-day.

Fig. 16. Table of mottoes, Francis Barker's 1907 catalogue.

also supplied unsigned dials to other retailers who could add the names of their own firms.[4]

Examination of Francis Barker's 1907 catalogue[5] shows that the 'Large Acres' dial was almost certainly made by the firm. The similarities of the decorative features, the shape of the gnomon, the wording of "Fast means that the watch should be faster than the dial, slow slower", the layout of the Equation of Time ring and the motto (number 11 in the catalogue) all point to the dial being made by Barker (Figs 13–16). Note that a brass dial plate with an Equation of Time ring cost more than one without, and a motto was extra.

A similar dial was described by David Brown in his article on commemorative sundials.[6] David's dial is also unsigned. The basic design is in a very similar style to dials advertised by Francis Barker & Son, and it may be an early example of an etched pattern. There are four levelling feet which just penetrate through to the top of the plate. The Equation of Time is given in tabular form around a 16-point compass rose. The months are separated by engravings of flowers.

Conclusion

Eventually, we were able to tell John P. Mahoney that we were almost certain the dial was made by Francis Barker. John appeared very happy with this answer and shared the information with his colleague, David Thompson, who wrote an article about the sundial for the Heron-Allen Society.[7] David was, for many years, Curator of Horology at the British Museum. He agreed that the evidence is compelling to suggest that the dial was indeed made by Francis Barker & Sons.

ACKNOWLEDGEMENTS

Grateful thanks to John P. Mahoney, John Davis and Mike Shaw.

REFERENCES

1. *https://en.wikipedia.org/wiki/Edward_Heron-Allen*
2. *http://www.heronallensociety.co.uk/Heron-Allen.Edward.htm*
3. Mrs Alfred Gatty: *The Book of Sun-Dials*, 4th edition, George Bell & Sons, London (1900).
4. J. Wilson: *Biographical Index of British Sundial Makers from the Seventh Century to 1920*, Third Edition. BSS Monograph No. 12 (2019).
5. Paul Crespel: *Trade Mark London: the Story of Francis Barker and Son, Compass and Scientific Instrument Makers*, available for download from *https://www.trademarklondon.com*
6. D. Brown: 'Remember, Remember …', *BSS Bulletin*, 31(i), 18–21 (March 2019)
7. Heron-Allen Society: *The Large Acres Sundial,* Heron-Allen Society, Chichester, West Sussex, UK, Opusculum No. XXVII, 2019, pp. 49-54.

suemanston@outlook.com

SUNDIALS, GUARDSMEN AND SCARECROWS

VALERY DMITRIEV

It is known that Saint Petersburg is the 'sea capital' of Russia. This was the case in the 18th century under Peter the Great, and so it remains. The main maritime symbol and one of the three main celestial symbols of Saint Petersburg is the Admiralty which has a gilded spire topped with a golden weathervane in the shape of a small sailing warship.

At the beginning of the 18th century, the Admiralty, built in the centre of the city on the bank of the Neva river, was the first and main shipyard of the capital and the fortress with high walls and the canal that protected the city from possible enemy attacks.

The Admiralty is the former headquarters of the Admiralty Board and the Imperial Russian Navy, and is the current headquarters of the Russian Navy. Ships were built at the shipyard until the mid-19th century when it was closed.

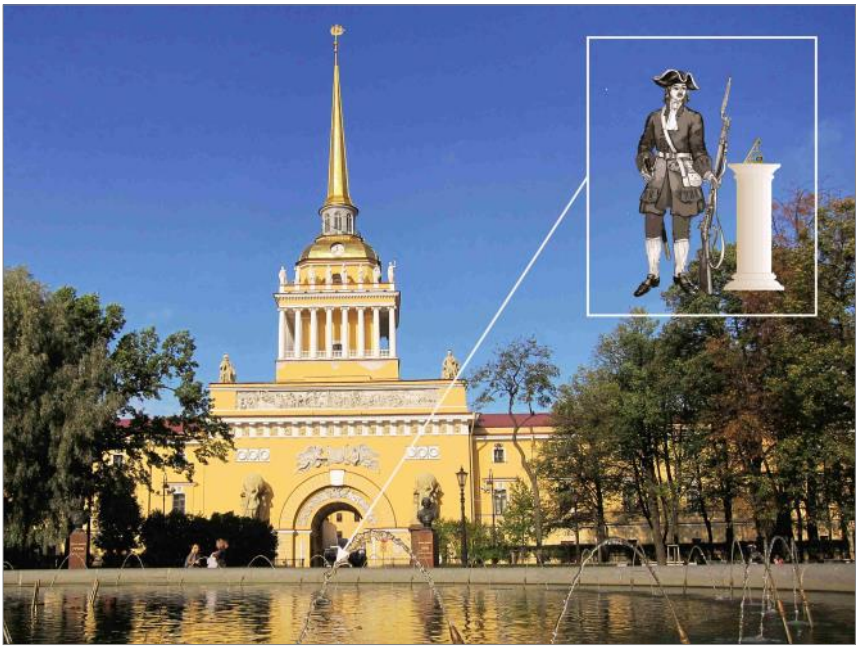


Fig. 1. The Admiralty's sundial.

At the beginning of 2020, I found information about the Admiralty sundial of 1726 in one of the naval archive collections, where it was planned to make a "*large sundial and place it at ground level*".[1] Such an unconventional solution for St Petersburg was not implemented, since in the documents of 1736 it is said that the Admiralty has "*the copper sundial on a pedestal*".[2]

Analysis of materials for the construction and reconstruction of the Admiralty building[3] in 1734–38 allowed me to determine the location of the sundial – in front of the main building (Admiralty tower).[4]

Fig. 2. Sea nymphs at the Admiralty.

It is interesting that the archival documents of the Maritime Department preserved a discussion on the topic of protecting the Admiralty sundial – a rather rare and expensive astronomical device in St Petersburg at that time – from vandals:

"*...guardsmen who stand at the ships are far from the sundial and can't see it, especially at night. A special sentry should be designated for the sundial... from the marine guardhouse*".[5]

Thus, the sentries who guarded the main entrance to the Admiralty also guarded the sundial, since the guardhouse was located under the arch of the Admiralty tower.

In the middle of the 19th century, the ramparts surrounding the Admiralty were destroyed, the outer canal was filled in, and a Boulevard was built on the southern side of the Admiralty. Now the place where the sundial stood is taken by a fountain located at the intersection of two main alleys of the garden that was laid out around the Admiralty in 1874 and named after the Emperor Alexander II.

The possible location of the sundial in the first quarter of the 19th century is shown in Fig. 1.

At the main entrance to the Admiralty there are two sculptural triads of sea nymphs carrying a sphere (celestial or terrestrial, I could not find out). In the absence of the sundial, it forms the 'astronomical' decoration framing the entrance to the main maritime building of Russia (Fig. 2).

Protection of the sundial by sentries at the Admiralty is not a unique episode for St Petersburg in the 18th century. It is known that at the General Building Office, the main architectural and construction organization of the city, there was also a sentry at the sundial.

An archive document has been preserved about this:

"*Children and other people come to the sundial set at the Building Office in the courtyard not to watch the time, but to damage it. ORDER: the sentry must observe that no one should go to the sundial, except those who will watch the time of the dial. Otherwise, the damage to sundial will be charged to those sentries.*"[6]

Along the same line of protecting the sundial from unwanted guests I found a small note in a Russian magazine of the early 20th century:[7]

"*SCARECROW. On some parts of the English coast, new, very simple system sundials have been installed. Flocks of curious gulls, clearly interested in this new invention of people, sit on the wooden covering of the dial plates and interfere with their correct functioning. To get rid of unwanted bird interference, the locals have provided most of the sundials with horrifying scarecrows that keep the gulls at a decent distance*" (Fig. 3).

Whether this invention was effective, I do not know. It is also unknown whether the scarecrows were used to protect the sundial not from birds, but from humans. That is why my next reasoning and reflections are humorous fantasies.

Of course, a vandal or a thief is not a seagull; in the light of day you cannot scare that person with a scarecrow. In the dark or even at night, it is quite another matter when even a brainless creature can play a positive role in protecting the sundial.

Certainly, it is impossible to exclude that there may be citizens who will not be stopped by a scarecrow, but even a live sentry will not be able to bring them to reason. In this case, there is still hope that at least the live sentry will be able to stop them. This would hopefully be useful for preserving historical monuments.

The only thing is that the scarecrow ought to look like a military sentry or policeman, and certainly carry a gun. Then, in the morning, the scarecrow must be removed from prying eyes. If the scarecrow is not removed, first, clothing and makeup will quickly lose their colour and shape in the sun, and secondly, the secrecy will be lost. Anyone passing by during the day would see that the sentry is not real, and the rumour will spread around the city. So, no one will be afraid, they will lose all their fear. And this is unnecessary.

Fig. 3. Scarecrow (from Blue Magazine).

When preparing the article for publication, it turned out that what is shown in the photograph in the Blue Magazine next to the scarecrow is not a sundial on a pedestal. The original information was published in the American magazine *Popular Mechanics*:

"*The erection of scarecrows as a means of protecting fruit or grains from birds is very common, but this is one of the first instances recorded in which such a means has been adopted to protect an object not edible. The scarecrow in question is placed by the sunshine-recording apparatus at Ventnor, Isle of Wight, the working of which had been interfered with by curious seagulls...*"[8]

The caption for the same illustration in *Popular Mechanics* reads: "Scarecrow protects solar recording equipment from the curiosity of gulls."

The updated information enriches the overall picture, but we still do not know very much about the ways in which the sundials were protected in the past, and the problem and question is still open.

ACKNOWLEDGEMENT

My thanks to John Davis and Christine Northeast for information from the magazine *Popular Mechanics* and for help in preparing the article.

REFERENCES

1. *Materials for the history of the Russian Navy* – Материалы для истории русского флота. Ч.5. СПб, 1875, С.352.
2. *Materials for the history of the Russian Navy* – Материалы для истории русского флота. Ч.8. СПб, 1880, С.204.
3. *P.N.Stolpiansky. Old Petersburg – П.Н.Столпянский.* Старый Петербург. Адмиралтейский остров. Сад трудящихся. Пг.1923, С.25.
4. *N.E.Lancere. Main Admoralty – Н.Е.Лансере.* Главное Адмиралтейство, Л.1926. С.12.
5. *Materials for the history of the Russian Navy* – Материалы для истории русского флота. Ч.8. СПб, 1880, С.205.
6. *Russian State Historical Archive* – РГИА Ф. 470. Оп. 5. Д. 370. Журналы за 1753 г. Л. 107.
7. *Blue Magazine* – Синий журнал, №23, 1911, С.9.
8. *Popular Mechanics*, June 1911, p.887.

sundials_spb@mail.ru

IN THE FOOTSTEPS OF THOMAS ROSS
Part 34: Some Sundials from Cupar, Kinross and Alloa

DENNIS COWAN

Preston Lodge is situated in the Bonnygate, one of the main routes into Cupar in Fife. Bonnygate is known to be from the early 16th century and Preston Lodge, which dates from 1623, is its oldest surviving building and sits directly on the street. It is square in plan with two little wings projecting to the south. High on its walls at second-floor level are three single-faced square stone sundials, two facing south and one facing east (Fig. 1). They are thought to be contemporary with the building. If that is so, they could equally be three of Scotland's oldest sundials *in situ*.

In volume 5 of *The Castellated and Domestic Architecture of Scotland*,[1] Thomas Ross simply says:

"*There are three plain dials on this interesting mansion-house* [Fig. 2]*, situated in the Bonnygate. A stone built into the wall contains the motto SAT CITO SI SAT BENE, along with a merchant's mark, and the date 1623.*"

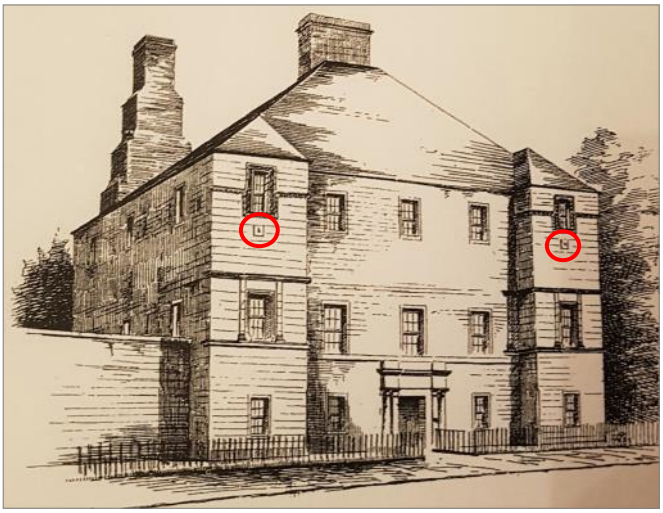


Fig. 2. Ross's sketch of Preston Lodge showing two of the sundials.

Although Ross provided a sketch of Preston Lodge itself, he did not sketch the sundials, although two of them can just be seen on his sketch of the building. The motto on the wall can be translated as "soon enough if well enough". As to the three sundials, as Ross says, they are quite simple, but with bevelled edges. Perhaps uniquely the numerals have been placed on the bevels on all three sundials.

The sundial at the western end of the south wall is a direct south dial, but is slightly canted to the east. It has Arabic numerals from 6 am to 6 pm (on the bevelled edges), and has hour lines and half hour markers. Its sheet gnomon is complete (Fig. 3).

Fig. 1. Preston Lodge today with the three sundials circled.

The sundial at the eastern end of the south wall is similar but has a semi-circle running through the hour lines and has lost its gnomon. It too is a direct south dial but strangely it is canted slightly to the west (Fig. 4).

The sundial on the east wall is a direct east-facing dial also with Arabic numerals, this time from 4 am to 2 pm, again placed on the bevels, but it too has lost its gnomon. In the

Fig. 3. The left-hand sundial on the south face of Preston Lodge.

Fig. 4. The right-hand sundial on the south face of Preston Lodge.

Fig. 5. Preston Lodge's east facing sundial complete with overflow pipes.

bottom left corner there is what appears to be a square mark with possibly initials or a maker's mark, but it is difficult to be sure. There are two rather obtrusive overflow pipes sticking out right above this sundial which from a distance I initially thought were badly placed gnomons! It has been canted relative to the walls in the same way as the first sundial (Fig. 5). This suggests perhaps that the middle sundial is wrong. However, that is not the case. The house faces slightly east of south, so it is the middle of the three sundials that is correct. One wonders why the other two are wrongly canted; were they replaced or re-fixed incorrectly at some point?

Moving westwards to Kinross, which is just over the border in Perth & Kinross, we come to Kinross House almost in the middle of the village. There are two sundials here on the walls surrounding the house and gardens. Ross commented:

"*We are indebted to Mr. David Marshall, F.S.A. Scot., for the following interesting facts regarding the sun-dials here. John Hamilton, mason, servitor to Mr. James Smith, overseer of His Majesty's Works, cut the two sundials still standing on the walls of the office courts to the right and left of the house between 14th April and 24th June 1686. Mr. Smith was son-in-law to Robert Mylne, the king's master mason.*

"*James Anderson, a local mason, hewed the "basses" for the dials* [Fig. 6]."

It is fairly unusual to have a maker's name for ancient Scottish stone sundials, never mind the actual precise dates that they were produced. These two cube sundials with ball finials are identical but do not face the main cardinal

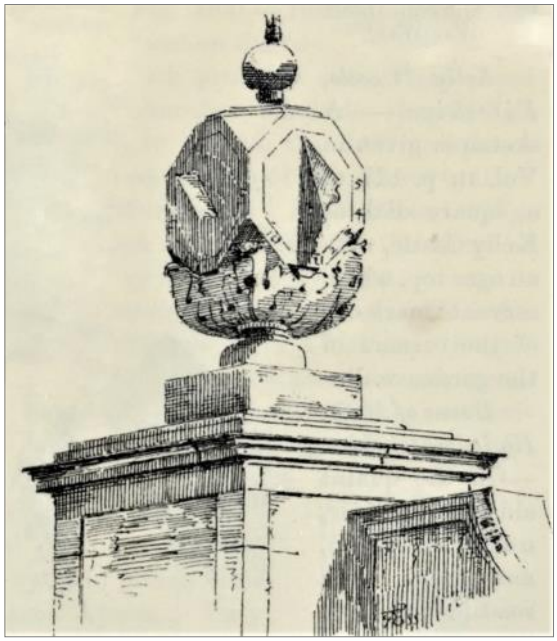


Fig. 6. Ross's sketch of one of the Kinross House sundials.

Fig. 7. Kinross House's left-hand sundial (viewed from outside the walls) showing the declining east face.

Fig. 8. Detail of Kinross House's left-hand sundial (viewed from outside the walls) showing the declining south face.

Fig. 9. Kinross House's right-hand sundial (viewed from outside the walls) showing the declining north and east faces.

points, and instead decline to the SSW, WNW, NNE and ESE. The corners of each face are chamfered into octagons and there are dials on each of the faces with Arabic numerals throughout. All gnomons are complete and the gardener told me they were of lead, but I think it is more likely that they are copper. There are hour lines with half hour markers including three dots and with a ten minute time scale (Figs 7–10).

Kinross House is privately owned and is not generally open to the public, but is available for hire for private functions. However, these two sundials can be easily seen from outside the walls.

Next we continue travelling west to Alloa, the main town in Clackmannanshire, Britain's smallest historic county, where there is a fine diptych sundial on one of the old houses and described by Ross as follows:

Fig. 10. Kinross House's right-hand sundial (viewed from outside the walls) showing the declining south and west faces.

"This very fine dial [Fig. 11] *occurs on the front wall of a house* [Fig. 12] *in the Kirkgate, Alloa. The supporting bracket is quite different from those at Heriot's,*[2] *and so is the ornament along the top. A shield beneath, surrounded with a nicely-carved wreath, bears the date 1695, with the initials of Tobias Baak, or Bachup, and his wife, Margaret Lindsay. He was a mason in Alloa, and built the handsome house, on which the dial occurs, for himself. The Kirkgate*

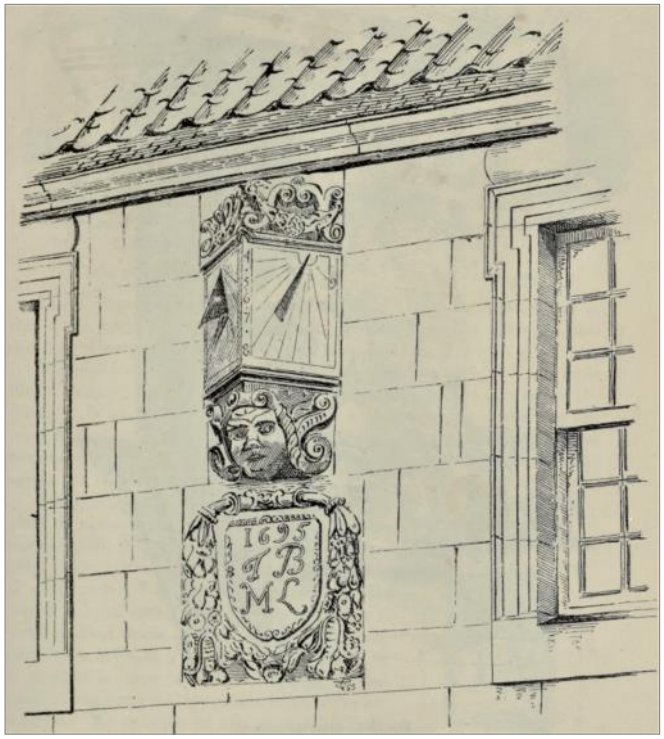


Fig. 11. Ross's sketch of the Alloa sundial.

Fig. 12. The house in the Kirkgate, Alloa with the sundial in the centre of the upper storey.

was at one time the principal street in Alloa, being in the direct route between Stirling and Dunfermline, and doubtless this dial was of considerable importance to travellers two centuries ago."

Typically, the faces are directed to the SE and SW and not unusually are on what was once a main thoroughfare, although it is a very quiet street today. The hour lines are complete with short half hour lines and with a single dot between the hour numerals. There are Arabic numerals with the SE face having 4 am to 2 pm (Fig. 13) whilst the SW face has 9 am to 8 pm (Fig. 14). The face on the supporting bracket for the sundial is rather more grotesque than depicted in Ross's sketch.

Tobias Baak or Bachup or indeed Bauchop was one of the foremost craftsmen of his time in Scotland. He was the architect and contractor for Dumfries Town Hall and supervised a goodly portion of the extension of the town of

Fig. 14. The south-west face of the Alloa sundial.

Fig. 13. The south-east face of the Alloa sundial.

Alloa.[3] When he came to build his own house it was considered that the evil-looking face on the sundial (Fig. 15) was the only authentic petrified portrait of the Devil in existence![4]

Fig. 15. The only authenticated petrified portrait of the Devil in existence!

REFERENCES and NOTES

1. D. MacGibbon and T. Ross: *The Castellated and Domestic Architecture of Scotland – Volume 5,* David Douglas, Edinburgh (1892).
2. D. Cowan: 'The Dyallis of William Aytoun', *BSS Bulletin*, 27(ii), 8-14 (June 2015).
3. From the *History of The Lodge of Alloa No.69.*
4. John Crawford: *Memorials of the Town and Parish of Alloa,* J. Lothian, Alloa (1874).

dennis.cowan@btinternet.com

Postcard Potpourri 54
The Old St Stephen's Church, Robin Hood's Bay

Peter Ransom

This is a lovely picture of this dial, which unfortunately is no longer there. The dial is a vertical south one with two dates on it. At the top the 1864 is flanked by the initials G.W. and W.F. Underneath the gnomon the date of 1736 lies between the initials W.W. and W.R. The church was built in 1821 to replace an earlier church. It closed in 1870 to be replaced by the new St Stephen's Church. It is now in the care of the Churches Conservation Trust and is normally open daily. More information about this rare survivor of an untouched Georgian church, with its box pews, painted plaster walls and maiden's garland can be found at http://wasleys.org.uk/eleanor/churches/england/yorkshire/north_yorkshire/north_yorkshire_two/robinhood_old/index.html

The postcard is used and the postmark is dated 15 August 1917. There is an appropriate motto printed on the back: "Shadow and sun so, too, our lives are made; Yet oh how great the sun, how small the shade." This postcard must have been bought in Robin Hood's Bay, because the following also appears on the back: "To be obtained only from FRANK NEWTON, General Supply Stores, Robin Hood's Bay." I wonder where the dial is now.

ransompeter687@gmail.com

Mystery Sundial Location

Sue Manston

These family photographs were sent to the BSS Help and Advice Service by a lady who wants to know where they were taken. The presence of an armillary sphere made her think the BSS could help, but unfortunately I have not found this dial in the BSS Fixed Dial Register.

The photographs were probably taken in the 1950s and the location seems to be a park or public garden of some kind. It is possible that the wooden bridge has since been replaced.

The lady's relatives hail from south-east London (Peckham, New Cross, Deptford and Rotherhithe areas), although a couple did move as far away as Exeter, so the photographs could have been taken anywhere. If you recognise the sundial, the pedestal, or the park, please send me an email.

suemanston@outlook.com

The British Sundial Society
Report of the Trustees
For the year ended 31 December 2020

The Trustees have pleasure in presenting their report and the financial statements for the charity for the year ended 31 December 2020. The Trustees have adopted the provisions of Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and the Republic of Ireland (FRS 102) (effective 1 January 2019).

Chair's report

TRUSTEES' ANNUAL REPORT 2020

In common with the rest of the world, the Society and its members have been gravely and severely impacted by the Covid pandemic.

Sadly 2020 witnessed the loss of both our April annual conference at York and September Newbury gathering. Sadly 2020 also witnessed the 'there is no alternative' decision to not hold the April 2021 annual conference in Exeter. To lose two conferences, the high points of the Society's annual programme, is a most painful reflection of recent times.

On a less sombre note the Society was able, often due to extra exertions by its volunteers, to maintain the bulk of normal business - including the Bulletin, the website, the Help and Advice service, and dial registers. There were also two new publications - 3rd edition Glossary and 7th edition Fixed Dial Register - as well as additional information on, and upgrade of, the website. It also appears that individual members were able to continue with much of their involvement in individual projects and particular dials.

Covid also affected the Society's formal governance. The pre notified April 2020 annual general meeting could not be held and its business, including the election of trustees, was lost. The trustees, in a force majeure position, immediately mitigated by using their constitutional power to appoint nominated trustees. As it was not practicable to hold a 2020 AGM within the constitutionally required period, a written resolution was moved affording members the opportunity to express their voice on the AGM's lost business.

The trustees will continue to take all reasonable measures both to abide by all constitutional requirements, and where not possible, to mitigate their practical consequence on the effective operation of the Society. The Covid crisis has not affected the Society's finances - which remain capable of supporting current activities and plans for the foreseeable future.

The entirety of the Society's activities are conducted on a voluntary basis by members. On behalf of the whole Society the trustees wish to thank all of those who make the Society what it is. As ever we are limited to the volunteer resources that come forward. If you feel able to help in any way, we would love to hear from you.

Further more detailed information is contained in the sections below.

Jackie Jones, Frank King, Graham Stapleton, Bill Visick, Chris Williams

EXAMPLES OF INDIVIDUAL PROJECTS AND DIALS

Extracts from the 2020 public benefit submission:

*Members constructed new sundials in public locations - Bedlington Market Place (North Yorkshire); National Trust house, Durgan (Cornwall); Wiggenhall School (Norfolk).

*Members' restorations to historic public sundials - Drummond Castle Gardens (Perthshire); Pitmedden Garden, National Trust for Scotland (Aberdeenshire).

*Additional information, analysis and interpretation of items in public collections - Liverpool Museum (Merseyside); Kirkleatham Museum (Redcar & Cleveland); British Museum (London Borough of Camden).

*Research findings on local sundials shared with the community - City of York (North Yorkshire); Thornton (Lancashire); Windsor (Berkshire); Herne Hill (London Borough of Lambeth); Upton (Nottinghamshire); Farnborough (Surrey); multiple locations in Scotland.

*The five-yearly update of the national Register of Fixed Sundials was published, being made available to members and academic bodies. The Register is the largest and most detailed reference of its kind.

*Digital mapping of sundials in the British Isles was continued, enabling members to be Citizen Scientists, reporting extra data for the national database.

*Members maintained the web-based Help and Advice service available to the public.

THE BULLETIN

In 2020, the customary four quarterly issues of the Bulletin were published. Two members of the Editorial Team normally make heavy use of desktop publishing facilities in the University of Cambridge but, since late March 2020, these have been unavailable because they were not deemed to be in a Covid-secure environment.

In consequence, John Davis kindly completed production of the June Bulletin and went on to prepare most of the September issue too. When national Covid restrictions eased during the summer, Frank King set up an adequate, though reduced, desktop publishing suite which he and Christine Northeast have been using.

In 2020, it was not possible to hold the Annual Conference in April or the Newbury Meeting in September, so no associated reports of talks or outings were published during the year.

The Bulletin Team includes John Davis, Frank King, Christine Northeast and Bill Visick, who receive invaluable help from Fiona Vincent who proof reads every issue. The Team freely calls on other members of the Society when special expertise is required. We remain most grateful to all our contributors, without whom there would be no Bulletin.

The Editorial Team

OTHER BSS PUBLICATIONS

During 2020, John Davis, with assistance from Christine Northeast, published a third edition of the BSS Glossary and Sourcebook of Dialling Data as Monograph 13. This has proved very popular.

The Editorial Team

FIXED DIAL REGISTRAR

The seventh edition of the Fixed Dial Register was published, for sale to members only. For the first time all members' reports were shown, including the first 4,000, which had not previously been scanned. The edition was published on USB and DVD, together with the usual A5 Abridged handbook.

The register database was enhanced to provide direct access to reports from the main dial page, and online links to both Bridol and Sundial Atlas.

Thanks to Bill Visick, Bridol had a major facelift, with 2,000 additional dials, and some significant improvements to the presentation.

John Foad

MASS DIAL REGISTRAR

When circumstances allow, work will recommence on digitising the remaining counties currently with paper records only. A start will be made with Devon, where the Registrar lives. If anybody likes working with Access databases and has an interest in mass dials please come forward as there are a lot of records to digitise.

The formerly very active Mass Dial Recording Group may be no more, but there are still interested people sending in records and photographs of mass dials - new and known. Thanks to all of them.

Ben Jones

WEBSITE

During 2020 website usage grew by about 12% over the previous year, faster than in 2019. The majority of visitors are from the UK with strong numbers from other English-speaking countries, but the rest of Europe, China and India are also represented. The most popular areas include BRIDOL, the BSS Horizontal Sundial, and the list of designers and makers (an interesting mix of DIY and the expert), while How Do Sundials Work? and Mass Dials are also of significant interest.

Enhancements to the site during the year include major revisions to BRIDOL: the number of dials has been increased to 4,000 and the front end has been extensively revised to make searching, displaying and navigation easier. Also during the year the little used Members' Area and discussion forum have been retired while the site has been upgraded to use HTTPS, the secure version of the web protocol that not only improves security but also improves its search ranking on mobile devices.

We have plans to add more content to the site: please stay tuned.

Bill Visick

CONFERENCES

The 2020 annual conference at York could not be held because of Covid. It was possible for the Team to so arrange matters that full refunds could be returned to erstwhile delegates and the booking renegotiated with the venue to 2022 - Exeter 2021 already being contractually committed.

The timing of Covid's arrival and the nature of the prevailing restrictions meant, perforce, that the 'no go' point for York 2020 was reached very late in the booking and administration cycle and the conference's successful, financially neutral for delegates and the Society, unwinding involved the Team in considerable additional work and negotiation. In contrast, given the continuing Covid crisis for the foreseeable future, an early decision was taken (in September) not to hold the 2021 Exeter conference. It has, at no cost to the Society, been renegotiated with the venue to 2023.

So, in a nutshell, our 2020 and 2021 conferences have succumbed to Covid but, circumstances permitting, York 2022 and Exeter 2023 are in prospect.

The core Conference Team comprises Doug Bateman, Bill Visick, plus Liz and Chris Williams. In addition Louise Smail and Martin Jenkins are organising the Saturday tours for York and Exeter respectively.

The Conference Team

HELP AND ADVICE SERVICE

The BSS Help and Advice Service has dealt with 91 enquiries in 2020 - about the same as last year. While the majority of queries come from private individuals, we have also been contacted by architects, church wardens, historians, museums, academic institutions, antique dealers, a rotary club and a steeplekeeper.

Queries fell into the following categories: where/what to buy (1), restoration (11), replacement gnomon (3), delineation (14), information about an existing dial (49) and other (13). The 'other' category included requests for BSS Monographs and Bulletin articles, information on dialling scales and moon dials, and a P-G heliochronometer for sale. One particularly strange query involved a 'sundial' which turned out to be a replica Chinese Beat Drum and not a sundial at all!

There were 21 enquiries from overseas: USA (8), Ireland (6), France (2), and one each from Canada, Germany, Netherlands, Singapore and South Africa.

About two-thirds of our replies received an acknowledgement - a thank you or further discussion. Enquiries have resulted in one new member and three articles for the Bulletin.

LIBRARY

Sadly, there is little to report since the lockdowns began. Bromley House is currently on a 'care and maintenance' basis by the staff and hopefully will reopen fully when the Covid crisis is over.

One bright spot in 2020 was that Dr Anja Rhode, senior librarian at Bromley House, gave a short talk via YouTube on 'Treasures of the British Sundial Society Library'. In this, she highlighted four of the Society's books:
*Mrs Gatty, The Book of Sundials
*Warrington Hogg, The Book of Old Sundials and their Mottoes
*Dom Ethelbert Horne, Primitive Sundials and Scratch Dials
*George Gordon, An Introduction to Geography, Astronomy and Dialling (1729)
A blog of the talk, including a link to the YouTube video, can be found at
https://bromleyhouse.org/treasures-of-the-british-sundial-society-library/.
John Wilson

BIOGRAPHICAL PROJECTS
Possession has been taken of the electronic files and the database is being updated with details from the past few years of Bulletins. Since the third edition of the Biographical Index has only been published recently, it is not expected to have an update this decade - there were 12 years between the last two editions. Details of newly discovered makers are being systematically recorded, together with references and downloaded pictures.
Peter Ransom

PHOTOGRAPHIC
The Society's 2020 Photographic Competition was, as usual, envisaged to culminate with voting during the annual conference. As the conference could not be held due to Covid, the competition was moved online. Entries were displayed on the Society's website and members invited to vote.
There were only a small number of entries, probably due to the unavoidably late change in the competition format, but these were of high quality and it was pleasing that a sufficient number of members voted to make the competition worthwhile. Based upon the votes received, certificates were awarded for the first three places.
David Hawker

SALES
There is a slow and steady demand for BSS publications and all orders received during 2020 have been fulfilled. Sales were helped with the publication of the new Biographical Index and Sundial Glossary. However, stock is running low of most of the earlier monographs (with the exception of Nos. 3 and 9).
Elspeth Hill

MEMBERSHIP
The trends of the last few years continued - with circa a dozen new members joining the Society being more than offset by some two dozen members leaving.
At the end of 2020 there were 288 members - 209 in the UK, 39 in the rest of Europe, 29 in the USA and 11 in the rest of the world.
One problem during this Covid year has been contacting members for their renewal subscriptions. A number, often if they work for an organisation, have been working from home and have different email addresses or do not go into work to pick up post. Some have required an awful lot of chasing!
Jackie Jones

OBJECTIVES AND ACTIVITIES

Objectives and aims

The trustees have considered the Charity Commision's guidance on public benefit, including the guidance 'public benefit: running a charity (PB2)'.
The charity acknowledges its requirement to demonstrate clearly that it must have charitable purposes or 'aims' that are for the public benefit. Details of how the charity has achieved this are provided in the Trustees' report. The trustees confirm that they have paid due regard to the Charity Commission guidance on public benefit before deciding what activities the charity should undertake.

The British Sundial Society
Report of the Trustees Continued
For the year ended 31 December 2020

FINANCIAL REVIEW

Reserves

The trustees have considered the level of reserves they wish to retain appropriate to the charity's needs. This is based on the charity's size and the level of financial commitments held. The trustees aim to ensure the charity will be able to continue to fulfil its charitable objectives even if there is a temporary shortfall in income or unexpected expenditure. The trustees will endeavour not to set aside funds unnecessarily.

RISK ASSESSMENT

The trustees actively review the major risks which the charity faces on a regular basis and believe that maintaining the free reserves stated, combined with their annual review of the controls over key financial systems, will provide sufficient resources in the event of adverse conditions. The trustees have also examined other operational and business risks which they face and confirm that they have established systems to mitigate the significant risks.

REFERENCE AND ADMINISTRATIVE INFORMATION

Name of Charity	The British Sundial Society
Charity registration number	1155688
Principal address	99 Western Road Lewes East Sussex BN7 1RS

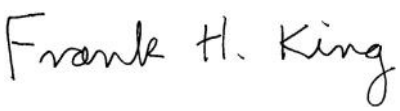
Trustees

The trustees and officers serving during the year and since the year end were as follows:

Frank King
Chris Williams
Jackie Jones
Graham Stapleton
Bill Visick

Secretary	Chris Williams
Independent examiners	Counterculture Partnership LLP Unit NH.204 E1 Business Studios 7 Whitechapel Road London E1 1DU
Bankers	The Co-operative Bank plc PO Box 101 1 Balloon Street Manchester, M60 4EP

Approved by the Board of Trustees and signed on its behalf by



.....

Frank King

The British Sundial Society
Independent Examiners Report to the Trustees
For the year ended 31 December 2020

I report to the trustees on my examination of the accounts of the charity for the year ended 31 December 2020.

Responsibilities and basis of report

As the charity trustees, you are responsible for the preparation of the accounts in accordance with the requirements of the Charities Act 2011 ('the 2011 Act').

I report in respect of my examination of the charity's accounts carried out under section 145 of the 2011 Act and in carrying out my examination I have followed all the applicable Directions given by the Charity Commission under section 145(5)(b) of the Act.

Independent examiners statement

I have completed my examination. I confirm that no matters have come to my attention in connection with the examination giving me cause to believe that in any material respect:

1. accounting records were not kept in respect of the Charity as required by section 130 of the 2011 Act; or
2. the accounts do not accord with those records; or
3. the accounts do not comply with the applicable requirements concerning the form and content of accounts set out in the Charities (Accounts and Reports) Regulations 2008 other than any requirement that the accounts give a 'true and fair view' which is not a matter considered as part of an independent examination.

I have no concerns and have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Counterculture Partnership LLP
Unit NH.204
E1 Business Studios
7 Whitechapel Road
London
E1 1DU

The British Sundial Society
Statement of Financial Activities
For the year ended 31 December 2020

	Notes	Unrestricted funds	Restricted funds	2020	2019
		£	£	£	£
Income and endowments from:					
Donations and legacies	2	2,175	-	2,175	2,538
Charitable activities	3	11,111	-	11,111	30,303
Investments	4	150	-	150	324
Total		**13,436**	**-**	**13,436**	**33,165**
Expenditure on:					
Charitable activities	5/6	(10,914)	-	(10,914)	(36,100)
Other expenditure		(3,006)	-	(3,006)	(4,996)
Total		**(13,920)**	**-**	**(13,920)**	**(41,096)**
Net income/expenditure		**(484)**	**-**	**(484)**	**(7,931)**
Reconciliation of funds					
Total funds brought forward		77,787	7,146	84,933	92,864
Total funds carried forward		**77,303**	**7,146**	**84,449**	**84,933**

Statement of Financial Position
As at 31 December 2020

	Notes	2020	2019
		£	£
Fixed assets			
Tangible assets	11	17,228	17,228
		17,228	**17,228**
Current assets			
Debtors	12	11,744	11,304
Cash at bank and in hand		56,198	61,815
		67,942	**73,119**
Creditors: amounts falling due within one year	13	(721)	(5,414)
Net current assets		**67,221**	**67,705**
Total assets less current liabilities		**84,449**	**84,933**
Net assets		**84,449**	**84,933**
The funds of the charity			
Restricted income funds	14	7,146	7,146
Unrestricted income funds	14	77,303	77,787
Total funds		**84,449**	**84,933**

The financial statements were approved and authorised for issue by the Board and signed on its behalf by:

Graham Stapleton
Trustee

The British Sundial Society
Notes to the Financial Statements
For the year ended 31 December 2020

1. Accounting Policies

Basis of accounting

The financial statements have been prepared under the historical cost convention, except for investments which are included at market value and the revaluation of certain fixed assets and in accordance with the Charities SORP (FRS 102) 'Accounting and Reporting by Charities: Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102) (effective 1 January 2019)', Financial Reporting Standard 102 the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102), and the Charities Act 2011.

The British Sundial Society meets the definition of a public benefit entity under FRS 102. Assets and liabilities are initially recognised at historical cost or transaction value unless otherwise stated in the relevant accounting policy note(s).

Going concern

The financial statements are prepared, on a going concern basis, under the historical cost convention.

Change in accounting policy

There have been no changes to the accounting policies since last year or to policies used by the former charity British Sundial Society (registered charity number 1032536).

Incoming resources

Recognition of Incoming Resources
These are included in the Statement of Financial Activities (SOFA) when:
- the charity becomes entitled to the resources;
- the trustees are virtually certain they will receive the resources; and
- the monetary value can be measured with sufficient reliability.

Incoming Resources with Related Expenditure
Where incoming resources have related expenditure (as with fundraising or contract income) the incoming resource and related expenditure are reported gross in the SOFA.

Grants and Donations
Grants and Donations are only included in the SOFA when the charity has unconditional entitlement to the resources.

Tax reclaims on Donations and Gifts
Incoming resources from tax reclaims are included in the SOFA during the same period as the gift to which they relate.

Contractual Income and Performance Related Grants
This is only included in the SOFA once the related goods or services has been delivered.

Investment Income
This is included in the accounts when receivable.

Investment Gains and Losses
This includes any gain or loss on the sale of investments and any gain or loss resulting from revaluing investments to market value at the end of the period.

Donated goods, services and facilities

Gifts in Kind
Gifts in kind are accounted for at a reasonable estimate of their value to the charity or the amount actually realised. Gifts in kind for sale or distribution are included in the accounts as gifts only when sold or distributed by the charity. Gifts in kind for use by the charity are included in the SOFA as incoming resources when receivable.

Donated Services and Facilities
These are only included in incoming resources (with an equivalent amount in resources expended) where the benefit to the charity is reasonably quantifiable, measurable and material. The value placed on these resources is the estimated value to the charity of the service or facility received.

Volunteer Help
The value of any voluntary help received is not included in the accounts but is described in the trustees' report.

Resources expended

Liabilities are recognised as resources expended when there is a legal or constructive obligation committing the Charity to the expenditure:

Governance Costs
Include costs of the preparation and examination of statutory accounts, the costs of the trustees' meetings and cost of any legal advice to trustees on governance or constitutional matters.

Annual Commitments
There are no annual commitments under non-cancelling operating leases and no capital commitments.

Investments
Investments quoted on a recognised stock exchange are valued at market value at the period end. Other investment assets are included at trustees' best estimate of market value.

Tangible fixed assets

The British Sundial Society Library is stated at valuation based on the 2014 value calculated by Rogers Turner Books.

2. Income from donations and legacies

	2020	2019
	£	£
Unrestricted funds		
Donations received	2,175	2,380
Legacies received	-	158
	2,175	**2,538**

3. Income from charitable activities

	2020	2019
	£	£
Unrestricted funds		
Promoting the Art and Science of Gnomonics		
Day Meetings	-	310
Sales	1,134	410
Subscriptions	9,977	9,704
Events	-	19,879
	11,111	**30,303**
	11,111	**30,303**

4. Investment income

	2020	2019
	£	£
Unrestricted funds		
Bank interest receivable	150	324
	150	**324**

5. Costs of charitable activities by fund type

	2020	2019
	£	£
Unrestricted funds		
Promoting the Art and Science of Gnomonics		
Direct cost		
Bulletin/Publication	9,734	12,164
Day Meetings	-	205
Events	227	22,366
Postal Sales	71	69
Travel	115	150
Somerville Lecture	-	200
Education	-	191
	10,147	**35,345**
Support costs		
Promoting the Art and Science of Gnomonics		
Governance costs		
Accountancy fees	732	720
Legal fees	35	35
	767	**755**
	10,914	**36,100**

6. Costs of charitable activities by activity type

	2020	2019
	£	£
Activities undertaken directly		
Promoting the Art and Science of Gnomonics	10,914	36,100

7. Analysis of support costs

	2020	2019
	£	£
Governance costs		
Accountancy fees	732	720
Legal fees	35	35
	767	**755**

8. Net income/(expenditure) for the year

This is stated after charging/(crediting):

	2020	2019
	£	£
Accountancy fees	732	720

10. Comparative for the Statement of Financial Activities

	Unrestricted funds	Restricted funds	2019
	£	£	£
Income and endowments from:			
Donations and legacies	2,538	-	2,538
Charitable activities	30,303	-	30,303
Investments	324	-	324
Total	**33,165**	**-**	**33,165**
Expenditure on:			
Charitable activities	(35,709)	(391)	(36,100)
Other expenditure	(4,996)	-	(4,996)
Total	**(40,705)**	**(391)**	**(41,096)**
Net expenditure	**(7,540)**	**(391)**	**(7,931)**
Reconciliation of funds			
Total funds brought forward	85,327	7,537	92,864
Total funds carried forward	**77,787**	**7,146**	**84,933**

11. Tangible fixed assets

	Library
Cost or valuation	
	£
At 01 January 2020	17,228
At 31 December 2020	**17,228**
Net book values	
At 31 December 2020	**17,228**
At 31 December 2019	**17,228**

12. Debtors

	2020	2019
	£	£
Amounts due within one year:		
Trade debtors	1,165	1,190
Prepayments and accrued income	10,579	10,114
	11,744	**11,304**

13. Creditors: amounts falling due within one year

	2020	2019
	£	£
Accruals and deferred income	721	5,414
	721	**5,414**

14. Movement in funds

Unrestricted Funds

	Balance at 01/01/2020	Incoming resources	Outgoing resources	Balance at 31/12/2020
	£	£	£	£
General				
General Fund	77,787	13,436	(13,920)	77,303
	77,787	**13,436**	**(13,920)**	**77,303**

Unrestricted Funds - Previous year

	Balance at 01/01/2019 £	Incoming resources £	Outgoing resources £	Balance at 31/12/2019 £
General				
General Fund	85,327	33,165	(40,705)	77,787
	85,327	**33,165**	**(40,705)**	**77,787**

Purpose of unrestricted Funds

General Fund

The purpose of this fund is for the general running of the chairlty

Restricted Funds

	Balance at 01/01/2020 £	Outgoing resources £	Balance at 31/12/2020 £
Andrew Somerville Memorial Fund	5,998	-	5,998
St Katharine Cree Restoration Fund	1,148	-	1,148
	7,146	**-**	**7,146**

Restricted Funds - Previous year

	Balance at 01/01/2019 £	Outgoing resources £	Balance at 31/12/2019 £
Andrew Somerville Memorial Fund	6,389	(391)	5,998
St Katharine Cree Restoration Fund	1,148	-	1,148
	7,537	**(391)**	**7,146**

Purpose of restricted funds

Andrew Somerville Memorial Fund

The Andrew Somerville Memorial Fund is part of the general BSS Assets, but its use is restricted to funding the annual Andrew Somerville Lecture and restoration and educataion grants, should these be made.

St Katharine Cree Restoration Fund

The purpose of the fund is for the restoration of the sundial at St. Katharine Cree Church, Leadenhall Street, City of London.

15. Analysis of net assets between funds

	Tangible fixed assets	Net current assets / (liabilities)	Net Assets
	£	£	£
Unrestricted funds			
General			
General Fund	17,228	60,075	77,303
Restricted funds			
Andrew Somerville Memorial Fund	-	5,998	5,998
St Katharine Cree Restoration Fund	-	1,148	1,148
	17,228	**67,221**	**84,449**

Previous year

	Tangible fixed assets	Net current assets / (liabilities)	Net Assets
	£	£	£
Unrestricted funds			
General			
General Fund	17,228	60,559	77,787
Restricted funds			
Andrew Somerville Memorial Fund	-	5,998	5,998
St Katharine Cree Restoration Fund	-	1,148	1,148
	17,228	**67,705**	**84,933**