THE RESTORATION OF THE SUNDIAL AT STUTTON HALL, SUFFOLK

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Stutton Hall is a Tudor house beside the estuary of the river Stour about five miles to the south of Ipswich. John Julius Norwich described it as "Not a classically beautiful house, more a commodious residence suitable for a comfortable but unambitious country gentleman."[1] The original gentleman was probably Sir John Jermy, born c. 1496, who may have built the hall as early as 1530.[2-6] He was ambitious enough to commission some wonderful decorative brickwork for the chimneys of the house and for the pinnacles on the gateway and crenellated garden walls.

Fig. 1. The Tudor gateway at Stutton Hall with its restored sundial.

Sir John came from a line of lords who had manors in Norfolk and Suffolk. Through his marriage to the daughter of Sir Thomas Tay in about 1525 he probably acquired the Stutton estate and other land in south Suffolk. He was knighted at the coronation of Anne Boleyn in 1533, died in 1560 and had a grand funeral in London.[5] Anne Boleyn was born in Norfolk but spent some of her childhood at Erwerton Hall, four miles east of Stutton Hall, which was the home of her aunt. Erwerton (sometimes Arwerton) has a gateway (Fig. 2, without a sundial) which is very similar to, but not as decorative as the one at Stutton Hall. Pevsner and Norwich date it to 1549.

At Hampton Court Palace there is a much grander brick gateway known as Anne Boleyn's gate which bears the famous astronomical clock made for Henry VIII. Hampton Court was originally built for Cardinal Wolsey who came from Ipswich. He lived at Hampton Court from 1514 until 1528 by which time he had fallen out of favour with Anne and Henry for failing to persuade the Pope to annul Henry's marriage to Catherine of Aragon. Henry VIII moved into Hampton Court and started building Anne Boleyn's gate[7]. It was finished in 1540 but by that time Anne had been executed. There is a story that she asked for her heart to be buried in Erwarton Church.[8]

The sundial (BSS SRN 4490) at Stutton Hall is set into the semi-circular pediment of the south side of the Grade II* listed gateway which leads into a walled garden next to the house. The dial appears to be part of the original gateway. It could possibly be a later addition but the brickwork is built around the dial stone rather than cut away to fit it. Each brick course on the pediment has a different arrangement of brick sizes which accommodate the sundial. In contrast, the courses below the pediment are much more regular (see Fig. 3).

The sundial stone is wedged in place with bits of broken brick tile which match the thickness and colour of the tiles capping the moulding immediately below it. This again suggests that the dial is contemporary with the gateway.

There is also a sundial (Fig. 4, BSS SRN 5573) set into the brickwork of the gateway at Bruisyard Hall, another Tudor house, about 15 miles north-east of Stutton Hall, near Saxmundham. That Hall was originally an Abbey of the Order of the Poor Clares, dissolved by Henry VIII in

Fig. 2. The gateway at Erwerton Hall.

Fig. 3. The Stutton Hall sundial before restoration.

Fig. 4. Bruisyard Hall, Suffolk.

J. Davis

Fig. 6 (below right). Possible rounded bowl of '6' in the 6 pm position, top right corner of the border, enchanced with pencil.

1539 and given to Nicholas Hare.[9] The dial has been heavily restored but the remains of the gnomon show a fimbriated bottom edge similar to that at Stutton Hall and a similar positioning of the hourlines low on the stone.

Both the Bruisyard and Stutton Hall sundials were painted onto the stone rather than carved, as were the Turnbull dials at Corpus Christi College, Oxford, which date from the late 1500s.

BSS member John Davis first recorded the sundial at Stutton Hall in 2000 and Ian Butson later approached the owner who was keen to restore it. As the gatehouse is listed, planning permission had to be obtained.

Fig. 5. After cleaning. The border and hour lines are enhanced with pencil.

The sundial (Fig. 5) is on a 24″ square piece of high-quality, hard, fossiliferous limestone, 1″ thick. The stone is in good condition with no cracks. It is similar to Purbeck limestone but could have been brought by sea from France.

The gatehouse faces 3° East of due South. The easterly edge of the sundial stone is canted out from the brickwork and the dial faces within 0.5° of due South. There appears to have been some movement in the structure of the gatehouse as the stone now reclines by 2.77° and sags by 0.79° on the Eastern side.

The iron gnomon plate (Fig. 7) is pitted, 2-3 mm thick, with a distinctive semi-circular nodus cut out of the upper edge. Its two tenons are fixed into slots in the stone with lead plugs. The decorative fimbriation cut out of the lower edge of the plate is partly broken or corroded away. Before restoration, the upper edge of the gnomon plate was tilted by 2.44° to the west of vertical.

Fig. 7 (far left). The gnomon removed for realignment and repainting.

Fig. 8. Notched tenons on the gnomon.

At first sight the sundial appeared to be blank. I started to clean away the coating of three different kinds of lichen on the limestone using water and a toothbrush. A symmetrical set of radiating hour lines and a border appeared (highlighted with pencil in Fig. 5). Each line was 2-3 mm wide, rounded in profile and raised from the surface by about 1 mm. These lines may have been scored into the stone when they were laid out. As the dial was painted the scored lines perhaps filled with paint which protected them from the elements while the stone surface around them eroded. Samples of lichen were inspected under a microscope but there was no sign of any remaining paint pigment. The lichen may have metabolised the pigment over the centuries.

Some other raised shapes are visible outside the border of the hour lines. These could be Arabic hour numerals, with a date or motto across the top. They are less well preserved than the hour lines. Perhaps the pigment used for them was less durable.

Pencil rubbings of these possible shapes were taken and photographs taken in different lights were digitally enhanced with various effects (e.g. black & white, increased contrast, reversed out) but nothing further was visible.

The original hour lines are correctly delineated for a dial facing due south. It was interesting to discover that the layout is such that the lines for 9 am and 3 pm exactly meet the lower corners of the rectangular border. The nodus is positioned so that a declination curve for the winter solstice, if extended, exactly meets the upper corners of the border. This suggests that the maker of the sundial was experienced in sundial design.

With no other evidence as to the original appearance of the sundial I drew up the design for the restoration based on known Tudor sundials including the Turnbull dials at Corpus Christi College, Oxford, and those made by Nicholas Kratzer (1487- c.1550). He was employed at Henry VIII's court as "Devizer of the King's Horologies". He designed clocks and sundials for the King and was lecturer in astronomy at Oxford for Cardinal Wolsey for whom he made a portable sundial. Kratzer has also been credited with introducing monumental stone sundials to Britain which were made for colleges and churches in Oxford and elsewhere.

After submission of a report on the recording and cleaning of the sundial along with the proposed design, the planning authorities granted permission for the sundial's restoration.

Loose pointing around sundial was raked out and it was repointed with a 3:1 washed white sand and hydraulic lime mixture to match that used on the restoration of the brick pinnacles on the gatehouse and garden walls.

The misalignment of the sundial caused by movement in the structure of the gatehouse produces some minor inaccuracies in time-keeping in the early morning and late afternoon. As it is not clear how the sundial stone is built into the brick gable and how much it is supporting or is supported by the brick, realigning the dial could have involved major rebuilding. It was decided to correct only the angle of the gnomon by removing the original lead plugs holding it into the sundial stone. Some fibrous material was removed with the plugs suggesting that the gnomon had originally been secured with wooden wedges before lead was poured in on either side to fix it. The gnomon was cleaned of an old grey undercoat and repainted with rust-inhitibiting black paint, then reset by hammering the original lead back into the stone and adding some new lead.

The tenons on the gnomon had been notched by their original maker to provide a better key for the lead (Fig. 8). The tenons were bent away from the main plate suggesting that the gnomon had been knocked or deliberately bent at some stage.

I repainted the sundial with Holkham linseed oil paints which have traditional pigments in a titanium oxide base. They are easily mixed and blended so colours could be adjusted on site to suit the surroundings. The colour scheme partially imitates that on the Corpus Christi sundials as well as picking up some of the tones from the surrounding brick of the gateway. The sundial was laid out in pencil using the remaining original hour lines and adding any missing ones at the correct theoretical angle for the location and orientation of the sundial.

The shapes of the hour numerals imitate those used by Hans Holbein to date his portraits of Tudors of the 1530s and 40s. I also looked at the numerals, colours and a sunburst on one of the earliest stained glass English sundials of 1585 from Gilling Castle, Yorkshire (Fig. 9). A sunburst was added to the Stutton Hall sundial design in the absence of any clear evidence of a date or motto which may have been painted across the top of the sundial.

C. Daniel

Fig. 9. The stained glass sundial at Gilling Castle, Yorkshire which is dated 1585.

The shapes of the zodiac sigils used in the restoration imitate those on the Corpus Christi dials and on two dials at the Villa Barbaro in the Veneto, built by Palladio in the mid-1500s for Daniele Barbaro, ambassador for the Venetian Republic to the court of Elizabeth I.

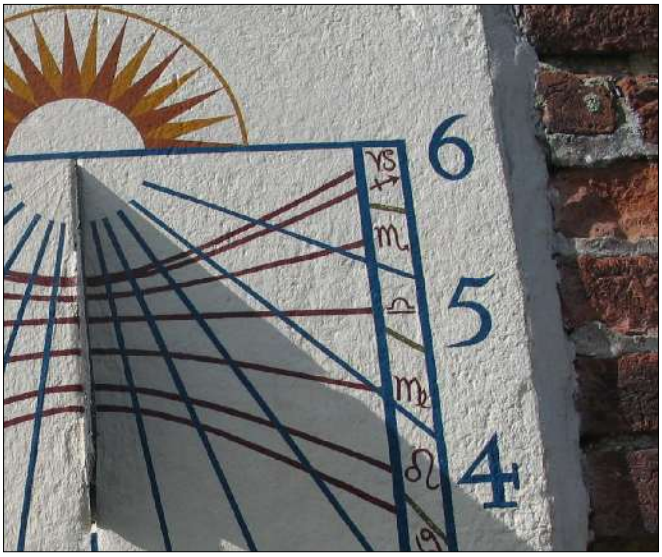

Fig. 11. The shadow of the notch or 'nodus' on the gnomon lies on a declination curve indicating that the sun will soon enter Virgo. Photograph taken 20 August, 2010 at 16:52 BST. Equation of Time 3m 24s dial slow. Longitude correction 4m 35s fast.

REFERENCES

1. John Julius Norwich: *The Architecture of Southern England*, Macmillan, London, 160, (1985).
2. Eric Sandon: *Suffolk Houses. A Study of Domestic Architecture,* Antique Collectors Club, 210, (1977). He writes: "The inner [side of the gatehouse] has a more correct classical arch, flanked by coupled fluted pilasters with a semicircular pediment above, all originally in stucco as high as the entablature. If Copinger is right, the manor had passed to Sir John Jermy by 1542 and if, as supposed, he was the builder of the Hall then the gateway must have been part of the job done in the '40s".
3. N. Pevsner: *Suffolk (Buildings of England)* 2nd edition, revised Radcliffe, Yale University Press, 450, (2002): "Built, it is said, by Sir Edmund Jermy in 1552." (DoE)
4. *The Early Jermys of Suffolk* at http://jermy.org/valdar.html
5. *The Early Jermys of Suffolk,* an extensively researched family tree at: *http://www.btinternet.com/~johnmillman/jermyhomepage.htm* with references.

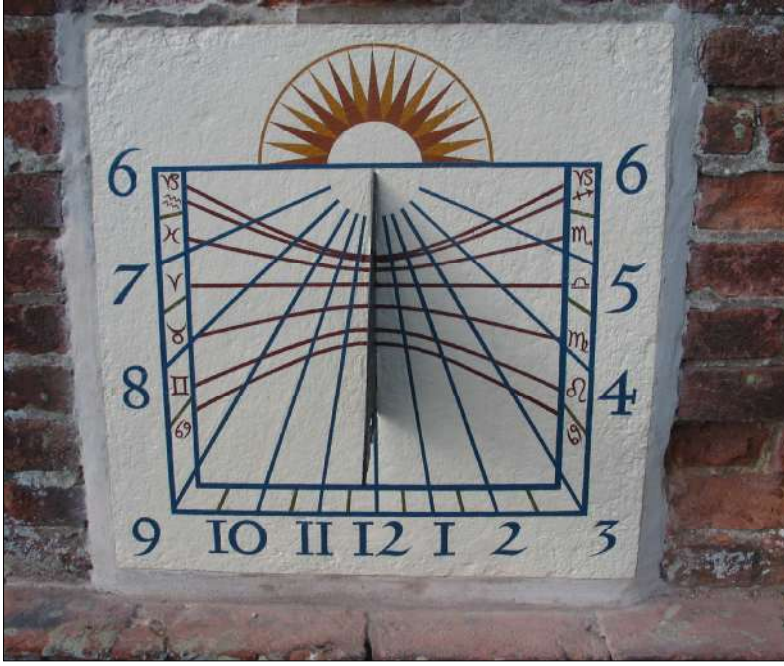

Fig. 10. The restored sundial.

6. Nathaniel Lloyd: *A History of English Brickwork.* H. Greville Montgomery, London, 312-313(1925) has a photograph of the gateway at Stutton Hall with the caption "c. 1530" but does not give a source for this date.
7. *http://en.wikipedia.org/wiki/Anne_Boleyn*
8. *http://en.wikipedia.org/wiki/Erwarton* and *http://www.myshotley.com/shotley-history.html*
9. William Page (Ed.): *A History of the County of Suffolk: Vol. 2*, Victoria County Histories, Institute of Historical Research, London 131-132 (1975).

ACKNOWLEDGEMENTS

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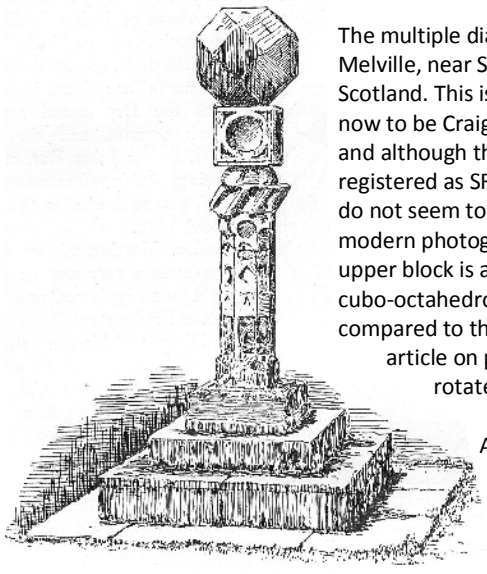
Harriet James makes and restores sundials from her home in Wiltshire. She originally trained as an orchestral horn-player. After taking signwriting and lettering courses she began to carve letters in stone and developed an interest in sundials. She has won several highly commended prizes for new and restored dials in the BSS Design competitions. Examples of her work can be seen on her website at *www.sunnydials.co.uk*.

A Polyhedral Dial



The multiple dial at Mount Melville, near St Andrews in Scotland. This is believed now to be Craigtoun House and although the dial is registered as SRN 1501 we do not seem to have a modern photograph. The upper block is a rhombic cubo-octahedron but, compared to the one in the article on p. 22, is rotated by 45°.

After Gatty.