

Scratch dials in Surrey

by DEREK RENN

Apart from the Anglo-Saxon dial formerly at Stoke d'Abernon, most scratch dials in Surrey appear to be of late medieval date. Forty-three possible examples from seventeen churches are described and illustrated; two appear to have functioned as calendars as well as clocks.

The scratch dial is an early form of sundial, incised on the wall of a church (or, just occasionally, of a house or barn). It takes the form of a hole for the pointer (or style) drilled either into the face of a stone or into the joint between two stones, from which radiate several scratched lines; sometimes the whole is surrounded by a circle. If a pointer (style) is placed in the hole, the sun will cast a moving shadow so that the dial will mark the passage of time. The scratch dial should not be confused with the Ordnance Survey bench mark, a deeply cut broad arrow of tapering grooves pointing upward to a brass stud on a horizontal line, usually cut only a foot or so above ground level on prominent buildings for surveying purposes. Scratch dials are usually several feet above the ground, and reference to a large-scale Ordnance map will settle any doubtful cases.

The relative accuracy (or inaccuracy) of the scratch dial in measuring time has exercised many writers (Green 1926; Cole *c* 1937; 1938; 1945). It is necessary for the style to point due south for the noon-line to be vertical all the year round, and bending the style downward to be parallel to the earth's axis optimises the accuracy of its measuring powers. Since no medieval style survives, we can only speculate. Medieval man had little need to know the exact time; his life and work revolved around the hours of daylight. If he was paid, it was by the day, rather than the hour. However the priest needed to know the third, sixth and ninth hour (measured from daybreak) in order to commence certain services. For practical purposes these were respectively halfway through the morning, noon and halfway through the afternoon.

Lists of churches with scratch dials have been published for England and Wales by Cole (1934; *c* 1935) and many counties have more detailed descriptive lists. Taking Surrey's neighbours, Hampshire has been treated by Green (1926), Grove (1979) has dealt with part of Kent and Barrett (1962) and Whiteley (1919) with East and West Sussex respectively. In this paper I will discuss the 40 or so dials in Surrey known to me; I have not scrutinised every church in the county, and would welcome news of dials that I have missed.

Scratch dials occur on about a score of churches in Surrey. This figure compares poorly in number with the counties further west – Gloucestershire, Hampshire, Somerset and Wiltshire each have 100 or more churches with dials – and in density with the dials of east Kent and the Sussex littoral, areas just outside the area of fig 1. The relative scarcity may be partly due to extensive rebuilding or repair (particularly near London) as well as to inadequate observation. So far, the Surrey examples lie in a zone along the North Downs, with outliers at Chobham and Lingfield; none seems to be on the county boundaries.

What Surrey lacks in quantity, it makes up in variety. Shere church has at least ten dials, West Clandon, Compton and Send four each, Great Bookham and Lingfield three. Some dials now face north, either on the north wall (Ockham) or inside the church (Great and Little Bookham, West Clandon). Good freestone is scarce in Surrey, and it is surprising that redundant dials were not smoothed away when the stones were re-used.

The inventory below and drawings (traced from rubbings) give a full account of the dials recorded in 1984–5. In the following paragraphs, individual dials are referred to by the reference number only for brevity.

Scratch dials could have been incised at any time after the wall had been built, but they became unnecessary once reasonably accurate clocks were easily available. Weight-driven mechanical clocks were set up in England perhaps by 1280 (Glastonbury: Beeson 1971, 13) and

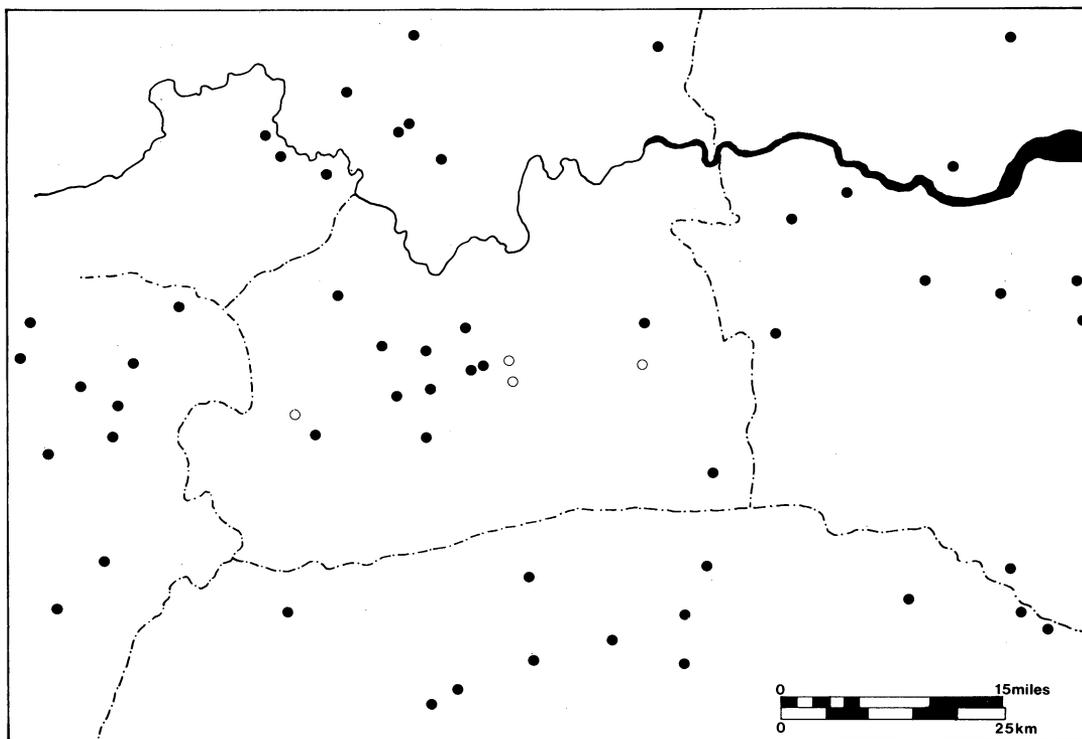


Fig 1. Scratch dials in Surrey and parts of adjoining counties. Open circles denote doubtful examples in Surrey

certainly by 1352 (Windsor Castle: Colvin 1963, 875), but they remained erratic and needed frequent recalibration throughout the middle ages. But by the late 17th century the scientific sundial, with its mathematically set-out construction, can be found on many churches. The primitive scratch dial had a date range of at least 500 years, from the example at Kirkstall, Yorkshire (inscription dateable to 1055–65), to that at Flemings Hall, Bedingfield, Suffolk (brick porch of c 1550: Bruton 1956).

Several Surrey scratch dials are carved on late medieval masonry (12–14, 16–18, 21–23, 26, 28) plus the quasi-dials (20, 24). The use of arabic numerals on (3) suggests a late date, unless it is a secondary inscription. Dial (7) on the only white stone in a late medieval wall, might either be a re-set or perhaps deliberately made to stand out. On the other hand, the cut-down dial (4) must be older than the 15th-century window part of whose splay it now forms.

The one recorded dial in Surrey which was probably Anglo-Saxon was that at Stoke d'Abernon (42), but it fell in 1933 and has been replaced by a concrete disc whose style and rays bear little resemblance to the original, Johnston (1900, 77–8; 1909, 17) and Green (1928, 504) claimed it as Anglo-Saxon because of an 8-fold rather than a 24-fold division of the dial, that is, into the three-hour Saxon 'tide' system rather than the medieval 'hours', but Johnston's sketch (reproduced here as fig 2) is ambiguous. Anglo-Saxon dials are usually at a considerable height above the ground (Taylor & Taylor 1966, 18–25), but the high position of the Stoke d'Abernon dial may not have been original, since it appears to be in the blocking of a narrow window (Radford 1961, 166). But carved discs of this size, standing proud of the face of the wall, are common as Anglo-Saxon dials elsewhere, and I regard dial (42) as originally Anglo-Saxon but with further lines cut later.

The commonest form of dial in Surrey is a circle of about 5cm radius, either deeply engraved or a double line (7, 10, 17, 19, 25, 27) which echo the main group at Shere, but the direction of

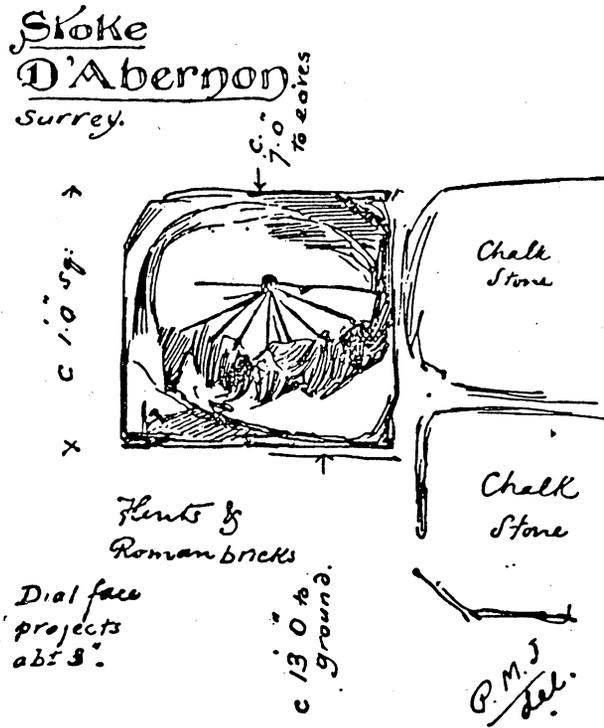


Fig 2. Scratch dial at Stoke d'Abernon, after SyAC, 20, facing p 74

the rays vary and perhaps only (10) at West Clandon, with its lines protruding beyond the circle, really parallels Shere (32, 33). That at Elstead (17) faces east rather than south and can only have worked in the morning light. At Leatherhead and Mickleham there are quasi-dials of the same dimensions as the common form (20, 24), both on 15th-century porch doorways out of the sun and accompanied by a curious graffito in the form of a ring-cross with a long forked tail. One of the dials at Lingfield also faces east (23) with another dial (22) on the south face of the same quoin. These circles are rather larger – about 9cm radius – than those previously described. Chaldon also has a circular graffito of this size (6) but its position makes it a very doubtful dial.

West Clandon has the most elaborate dial in Surrey (11), with three concentric circles divided by 24 equidistant radii, having drilled holes at the intersections, as well as on the arms of an external cross and beside another line at right angles to the cross. This would function best as an equatorial dial, that is to say, one mounted in the plane of the equator with its upright pointer parallel to the earth's axis and not vertical, but even then little more than one-half of the dial would be necessary. A possible explanation is that the dial also functioned as a calendar: a peg was moved daily from hole to hole, the cross marking the point at which the peg progressed to the next circle. Another peg counted the number of complete circuits of the 'board' for the year on the four separate holes, with the odd days as well. In arithmetical terms:

$$24 \times 3 \times (4+1) = 360, + (4+1) = 365$$

This perhaps brings us to the series of dials with a number of small drilled holes, sometimes linked to the style-hole by rays. Cole (c 1935) suggested that these were permanent markers on stones which were periodically limewashed, the rays being repainted (or perhaps lightly scratched into the lime?). At Little Bookham (4) the stone has been trimmed and now has an inner arc of some 20 holes and an outer part-circle of 38; I offer no explanation of the former, but extrapolation of the outer circle produces 50 or so holes, perhaps one for each week of the year.

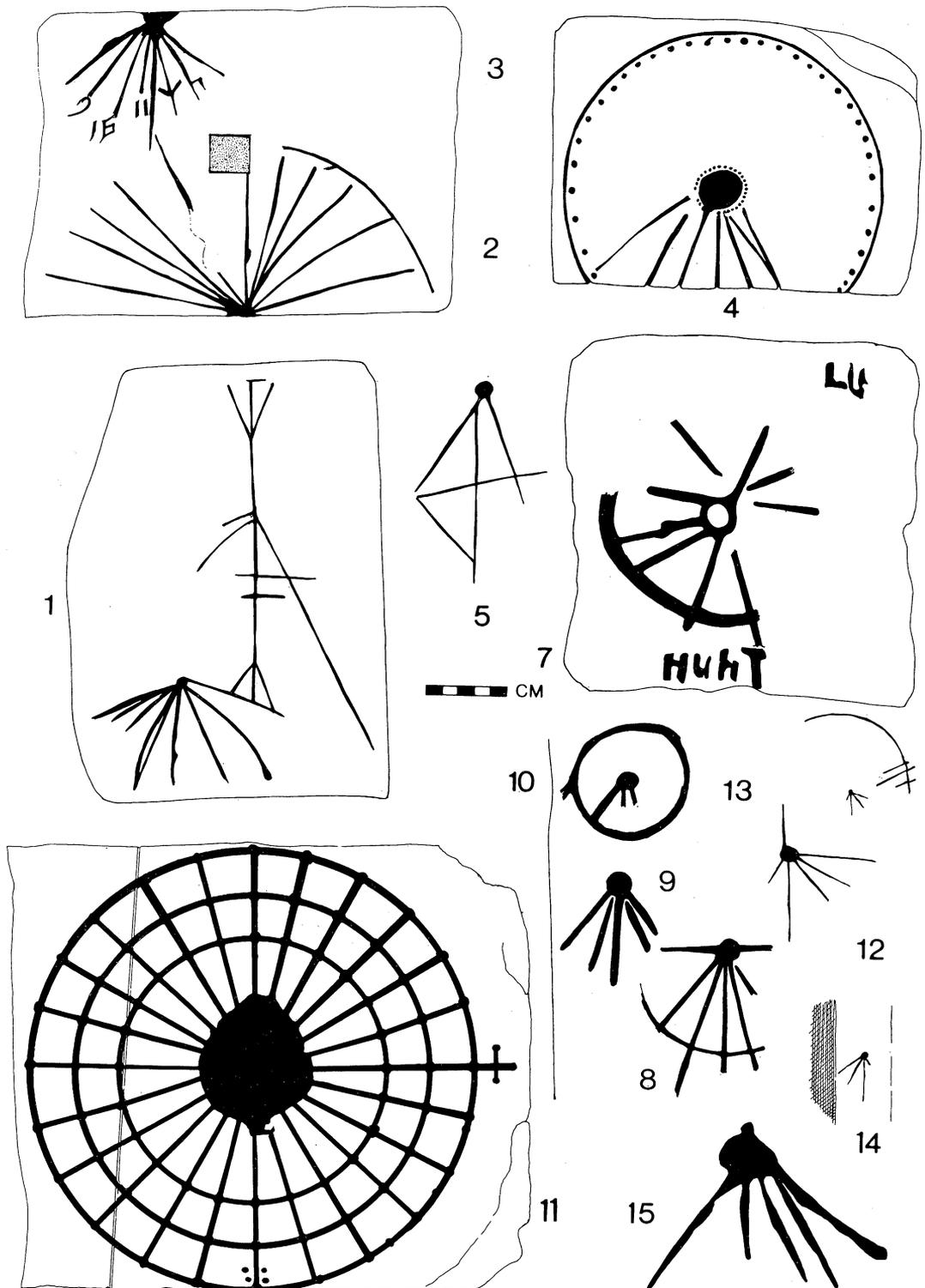


Fig 3. Scratch dials at Great Bookham (1-3), Little Bookham (4), Chaldon (5), Chobham (7), West Clandon (8-11), Compton (12-15)

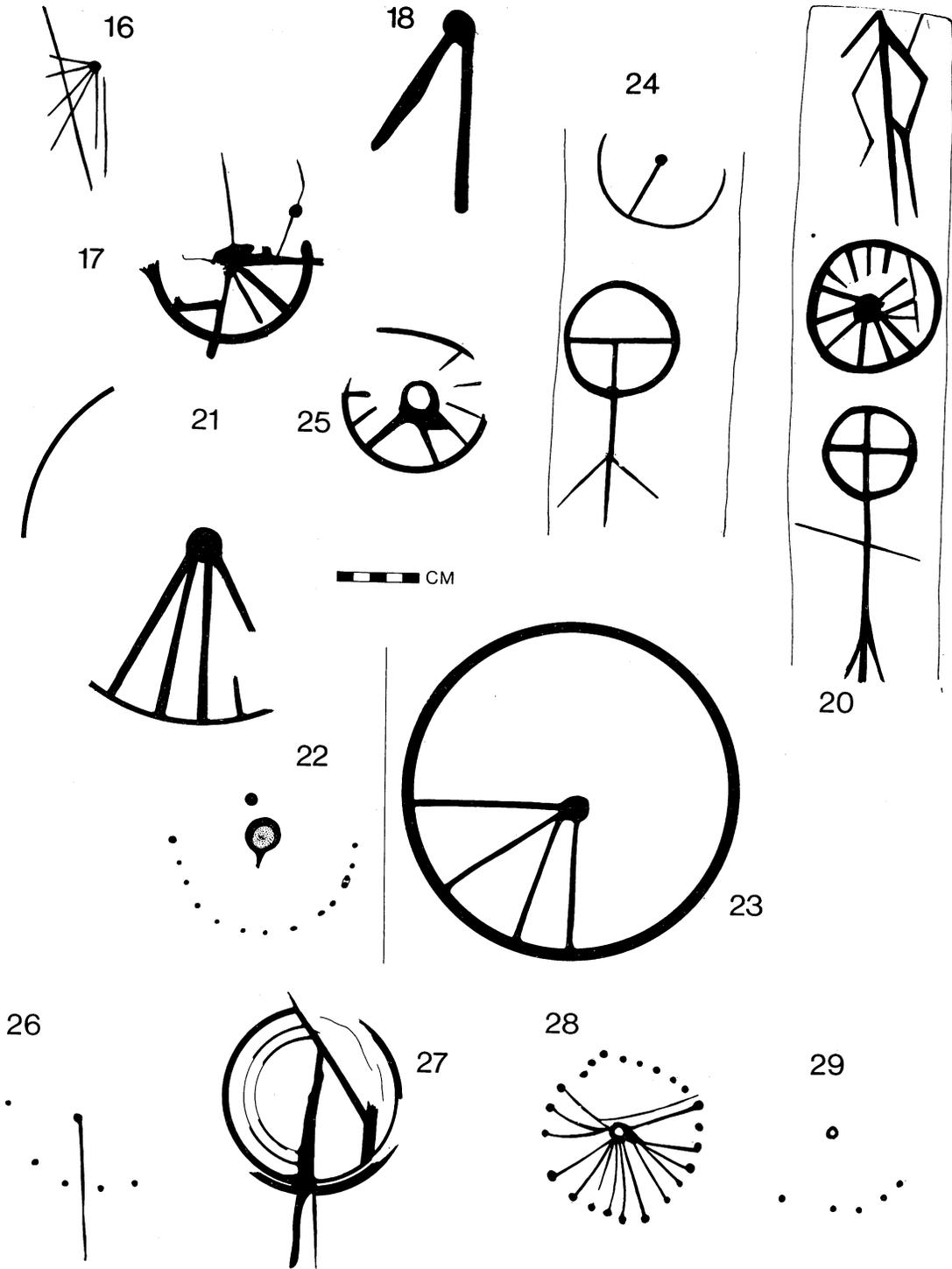


Fig 4. Scratch dials at Coulsdon (16), Elstead (17), West Horsley (18), Leatherhead (20), Lingfield (21-3), Mickleham (24), Ockham (25), Send (26-9)

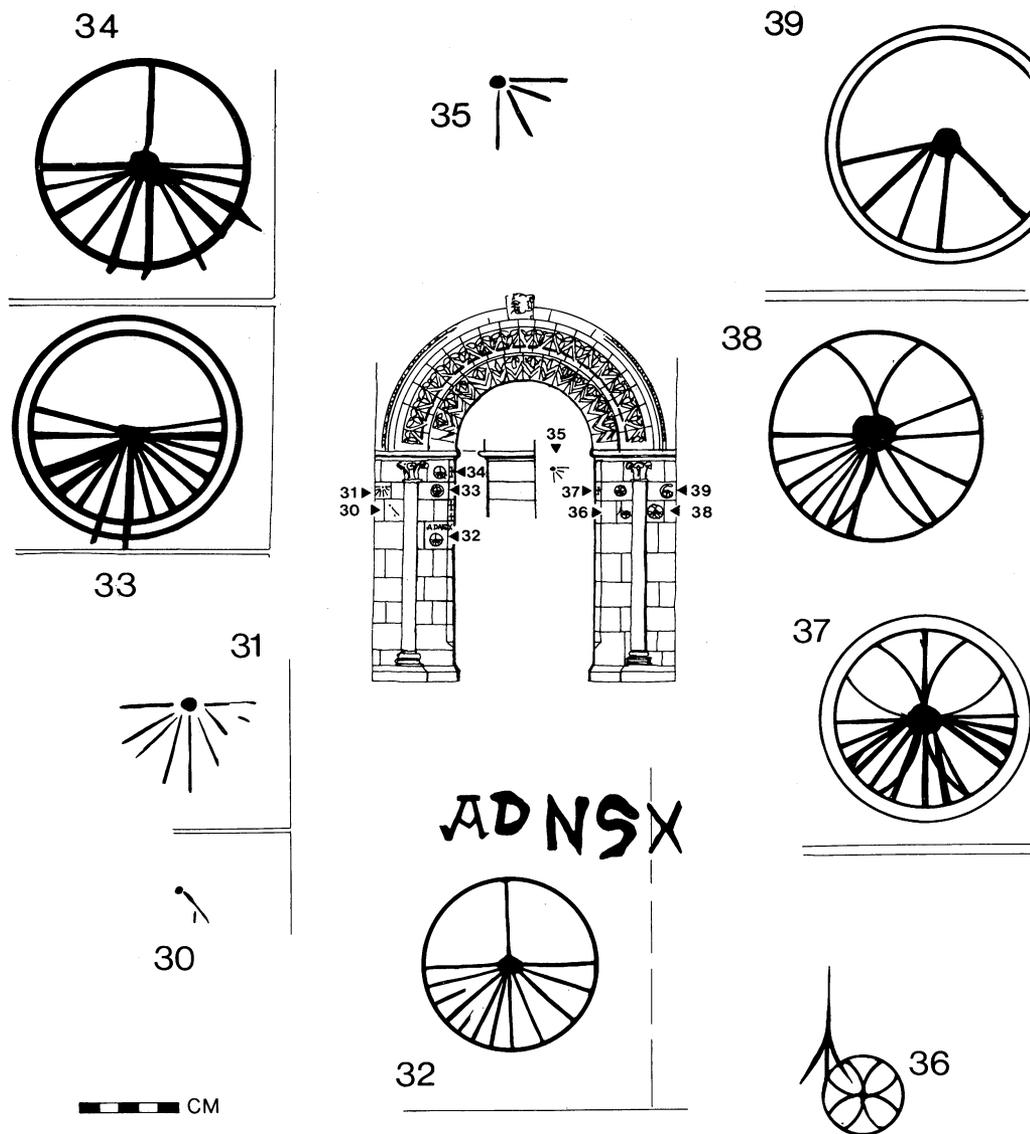


Fig 5. Scratch dials at Shere (30-9); their position after *VCH Surrey*, 3, 433

Send has three dials consisting mainly of holes only; one is a complete circle of 23 holes, many linked to the style-hole by curved lines. The others have five radial holes between about 5 and 9 o'clock (clockface time). These are probably simply hour-marks. These dials may have been so made by using the same instrument to drill the style-hole and all the others, or did the stone flake easily if scratched?

The simplest dial of all in Surrey is that at West Horsley (18), a simple inverted V marking the time for matins and sext or noon. It is carved on a late Perpendicular doorway, and must serve as a warning against any assumption that the more complicated a dial, the later its date. Two of the dials at Compton (13, 14) have lines little more than an inch long, and it is difficult to see what practical use they could serve; they may be idle scratches, but Green (1926, 186-7) saw (13) in

1923. It is surprising that he missed the other, although his note 'no photographs, measurements etc of these dials could be taken' may mean that conditions were unfavourable.

The large number of dials on some churches is puzzling. In Hampshire there are eight examples on one buttress at Herriard (Green 1926, pls 7, 8) and dissimilar pairs on each of four buttresses at Martin in the same county. At Shere, as well as two former dials on a chancel buttress (40, 41) there are ten graffiti on the south doorway (30–39) which might be considered as dials, after discarding the many 'pilgrims' crosses' on the jambs. Six of the ten are circles about 5cm radius (32, 33, 34, 36, 38, 39) apparently similar in size to the missing two (40, 41) with many radiating lines. One circle is much smaller (36) with no prominent style-hole and is probably a 'marguerite' drawn with equal arcs to form a consecration cross. The two adjoining larger circles (37, 38) also have intersecting arc-lines but their many rays as well make them best regarded as scratch dials. Those on the inner order of the doorway (fig 5 for positions) would be shaded by the shaft of the outer order for parts of the day and might have supplemented each other. (35) is a pretty useless dial today. (39) is a scientifically cut dial, with its rays crowding towards noon as they should, and (31) is a very practical-looking dial. Rather than being successive failed experiments, some of these dials may have been used in rotation, having been found to be useful at different seasons, perhaps with differently aligned pointers.

The three on one stone at West Clandon (8, 9, 10) were probably used in succession, as were the two on one stone at Great Bookham (2, 3), upended and recut. All these dials are now inside their respective churches. Those at Great Bookham are (so far) unique in Surrey in that the style-holes are drilled in the edge, not the face, of the stone, and (3) is also remarkable in the use of arabic numbering of the hour-lines. Roman numbering is not uncommon outside Surrey, but the only other arabic numbering that I have come across is at Wixford in Warwickshire.

Inventory

Churches are listed in alphabetical order of parishes, dials being serially numbered throughout. Dials on each church are listed from west to east and from the ground upward. The position of each dial is described (all face roughly south unless otherwise noted) but only those dubious dials (marked with an asterisk * on the list) are described but not illustrated.

St Nicholas, Great Bookham

Three dials on two stones, exposed on the otherwise plastered north face of the south aisle wall. The stones are slightly separated, but form part of the east jamb of a blocked doorway west of the easternmost window. The stones may originally have been quoins of either the older aisle of c 1180 or the porch of c 1380, re-used in the new aisle of c 1440 (Renn 1985).

- 1 Vertical line with forked ends may be a mason's mark
- 2, 3 Note numerals on 3

Dedication unknown, Little Bookham

- 4 Stone trimmed for re-use as part of east splay of 15th century window set in blocking of 12th century arcade. *Surrey Mirror*, 23 June 1933, reprinted in *SyAC*, 41 (1933), 122–3

St Peter and St Paul, Chaldon

Two dubious examples; Chaldon appears on Cole's revised list (c 1935) possibly in error for Compton, which appears on the first list (Cole 1934) but not in the later one.

- 5 South face of west quoin to porch
- *6 Scribed circle (10cm radius) with no divisions and tiny centre hole, low down on east face of west jamb to south doorway

St Lawrence, Chobham

- 7 On single light stone near east end of south aisle wall which is otherwise composed entirely of dark heathstone

St Peter and St Paul, West Clandon

8, 9, 10 Three dials carved on one stone forming the north face of the west jamb to the south doorway

11 Now set in ashlar frame in flint south wall of chancel, but formerly on a buttress further west. Dated c 1180 by Johnston (1900, 74), *SyAC*, 21 (1908), 83–100

St Nicholas, Compton

12, 13 On west jamb of 15th century window at west end of south wall

14 On mullion of same window

15 On east jamb of central 12th century window to south aisle

St John the Evangelist, Coulsdon

16 Doorway at south-west angle of old church seems to have been moved in 1958 and refaced, but still has some trace of the scratch dial recorded as being inside the east jamb of the south doorway

St James, Elstead

17 At bottom of north jamb to 15th century east window

St Mary, West Horsley

18 On east jamb of doorway at east end of south aisle

St Mary and St Nicholas, Leatherhead

*19 On north splay to west window of north porch; deeply cut circle of 4cm radius

20 On south-west chamfer to east jamb of north doorway to same porch

St Peter and St Paul, Lingfield

The local sandstone spalls readily, and many stones have what at first glance looks like a scratch dial. There are three genuine examples:

21 On buttress east of south doorway

22, 23 On south and east faces of the same quoin to the central buttress on the south wall

St Michael, Mickleham

24 On north-west chamfer to south jamb of 15th century west porch

All Saints, Ockham

25 On north-west face of much-patched angle buttress at west end of north wall

St Mary, Send

26 On west jamb of westernmost window on south side of nave

27 On west jamb of south doorway

28 On sill of central window to south side of nave

29 On south face of south-east quoin to chancel

St James, Shere

Ten on jambs to south doorway:

30, 31 Outer order, west jamb

32, 33, 34 Inner order, west jamb

35 East face of west jamb, behind door frame

36, 37 Inner order, east jamb (36 probably a consecration cross)

38, 39 Outer order, east jamb

40, 41(destroyed) 'There are two small dialmarks, $5\frac{1}{2}$ in in diameter on the lower stones of the eastern of the two plaster buttresses on the south chancel wall; and on one of the stones which is a piece of Reigate or firestone is a mason's mark, the letter R upside down' (*VCH Surrey*, 3 (1911), 120)

St Mary, Stoke d'Abernon

42 (see fig 2) Modern disc high on south wall east of porch. Brown (1925, 480) and Green (1928, 504) both say that the earlier dial projected 6in, Green adding that it was much broken about the lower part and that nine lines radiated from the style-hole, five marking the four 'tides' and each 'tide' being halved by one of the other four lines

St Bartholomew, Wanborough

Listed by Cole (1934) but the doorjambs, where a dial might be expected, have been renewed
*43 Possible style-hole with vertical line below, on west jamb of lancet window in south wall

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