

## **Mass Dials in Gloucestershire**

**by Tony Wood**

Mass dials, or scratch dials, are medieval sundials found on churches. Archaeologically they form a large corpus of a single artefact with the advantage that they can be discovered and explored whilst standing up. Chronologically they appear after Saxon dials (c650 – c1050) and before the present day ‘scientific’ dials, with a sloping gnomon, which appeared in the 16th century but which only came to some rural areas in the mid 17th century.

As expected, they usually occur on a south wall and are at chest height being fairly roughly inscribed or carved. Due to re-building they can in fact finish up anywhere, even the north wall or inside the church. Figures 1, 2 and 3 show typical examples in Gloucestershire: at Great Witcombe on the wall to the right of the doorway, at Hardwicke on the tower wall and at Windrush, which is a very rough-cut example, on the right jamb of the south door.

The above outline hides a wealth of questions and indeed caveats and therein lies their fascination. A brief survey in general is followed by a look at those scratch dials on Gloucestershire churches together with a commentary on their features.

The study of mass dials is about a hundred years old. Dom Ethelbert Horne from Downside Abbey in Somerset is usually regarded as the first serious investigator.<sup>1</sup> He published his findings in an illustrated book in 1917<sup>2</sup> and his recordings and research had taken place during the preceding decade following many miles by bicycle whilst carrying a plate camera. He was not the first to note these dials and in fact a fair correspondence exists suggesting origins and functions other than that of a sundial. The scepticism is not entirely extinct<sup>3</sup> as there are some who still regard them as little more than idle scratchings. It must be admitted that a sometimes elaborate construct has grown up around them on rather slender evidence.

The pioneering precedence of Dom Ethelbert is evidenced by the fact that in Germany the first such dials were ‘discovered’ in 1965<sup>4</sup> and French mass dials, whilst apparently not uncommon were barely noticed until about 1935 and then in an English publication.<sup>5</sup> Other Continental countries have them and what the insular English regarded as ‘their’ dials almost exclusively (not present even in Wales or Scotland) must now be thought of as western European at least.

As for their origins, the fact that Gloucestershire, Somerset and the West Country down to the Cornish border were well documented with an abundance of dials led at least one commentator to postulate a ‘Wessex’ origin for them.<sup>6</sup> Current opinion however inclines to mass dials being an import following the Norman Conquest. The presence of Saxon dials provides a complicating factor as Britain’s unique occupation gives us a clear division not enjoyed by France and Saxon dials remain, if not a mystery, then an as yet unravelled story.

The word ‘sundial’ has been used and it is important to understand that although the dial shows a ‘time’ from the sun’s position, this would not be an accurate time of day as we know it. Only those dials with a correctly angled gnomon can do this and the gnomon of a mass dial was perpendicular to the wall<sup>7</sup> and therefore the shadow cannot indicate regular hours throughout the year. The markings on a mass dial are therefore taken to indicate the times of service at the church.

### **What of Gloucestershire?**

The formation of the British Sundial Society in 1989 enabled, at last, all the records countrywide to be gathered together. Previously dials had been noted in county archaeological journals and little correspondence or amalgamation had taken place apart from a book by A R Green<sup>8</sup> concentrating mainly on Hampshire and a listing by county of the churches where dials were to be found by T W Cole in 1935<sup>9</sup> (ref. 5). Remarkably this is still in print but it is only a list of place names with no further details although a good summary of then current knowledge precedes the listing. Gloucestershire provides an entry with 133 churches and it is one of the largest. Gloucestershire’s dials were described and listed in two papers and a note of the Bristol and Gloucestershire Archaeological Society.<sup>10,11,12</sup> The difference between mass dials and Saxon dials was not always recognised,<sup>13</sup> although Horne’s study and publication<sup>14</sup> made a clear

distinction. The two ages of dials are lumped together in some publications and it must be admitted that the matter is not always clear cut as a recent re-assessment by M J Cowham and D Scott of the British Sundial Society is currently under way and has resulted in tentative re-classifications (from mass to Saxon) in some cases. In Gloucestershire, Saxon dials occur at Daglingworth, Saintbury, Coates, Yate, Stowell and Eastleach Martin.

The Mass Dial Group of the B.S.S. maintains an archive register and recorders are active throughout the country. Present day recording has confirmed Gloucestershire's relative abundance and also considerably revised Cole's listing. Most counties now have more dial locations reported but inevitably some dials seem to have disappeared. Given that they face our prevailing wind and weather some extinction is to be expected, at least on softer stonework.

The distribution, design and chronology of mass dials are our three main areas of investigation and Gloucestershire's contribution is as follows:

Mass dial size: They are usually about 150 to 200mm in diameter (attempts to derive a common measure in 'medieval inches' have proved inconclusive), but can vary a great deal. Boddington and 'Sandhurst 2' are small (70mm diameter) whilst Leckhampton is large (400mm). The design of the dial should, one imagines, give a clue to the chronology and to a limited extent this is beginning to emerge. Figs. 1, 2 and 3 illustrate the circles, lines and 'pocks' which are the constituents of mass dials and also the wide diversity apparent.



Fig 1

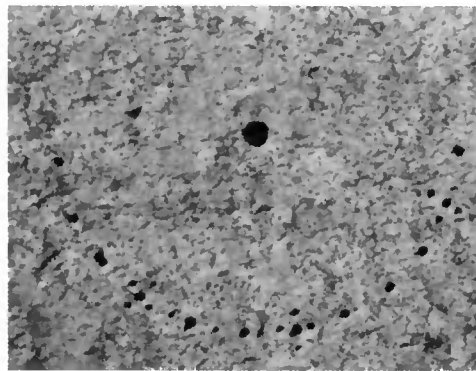


Fig 2



Fig 3

Radial lines filling a complete circle are not uncommon, double (or even triple) circles occur (Fairford, fig. 4) and numerals make an appearance, both Roman (Bibury, fig. 5) and Hindu-Arabic (Alstone and Sandhurst 1, fig. 6). Very simple radial lines only (Windrush, fig. 3) probably represent early dials, numerals fairly obviously representing the later dials.

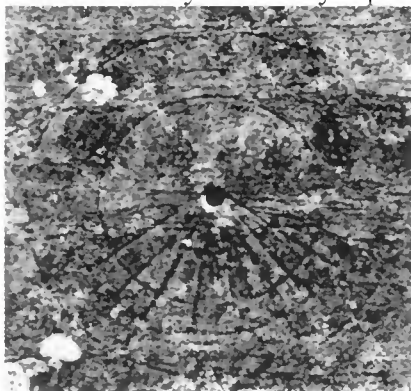


Fig 4



Fig 5



Fig 6

So a time-scale emerges from early (c1100) to late (c1600) with the dials of Great Witcombe and Hardwicke somewhere in between but requiring research to see if any building works can give us a further clue. Dials inside a south porch at least are potentially datable but church leaflets cannot always give the

answers. Avening (fig. 7) has numerals in a 'dot' notation which is most unusual. Hardwicke's beautiful design (fig. 2) uses the quincunx to indicate noon and probably the service times and incidentally confirms that the gnomon must have been horizontal as the dial does not face due south and the noon mark offset corresponds to the angular difference from direct south. As stated, the markings are taken to indicate the times of services and in pre-Reformation times would usually be taken to represent the Offices of the Hours with a principal Mass during the morning in many cases. The bodies responsible for churches varied from Abbeys and Priors to a local appointment. Variation in the services and their times was probably widespread. One confirmatory clue recently discovered is a French mass dial (Mérindol fig. 8) which has the initials P T M N across the top, taken to be Prime, Terce, Meridies and Nones – the names of the Hours of the services, with a local variation of Meridies for Sext. The hours are counted from sunrise and there are twelve to sunset. The principal service appears most frequently to be Terce and a special indication is sometimes made on the dial, appearing lower left for south facing dials. Noon is the one time readily defined and is frequently emphasised in some way, a cross or extended line being not uncommon.

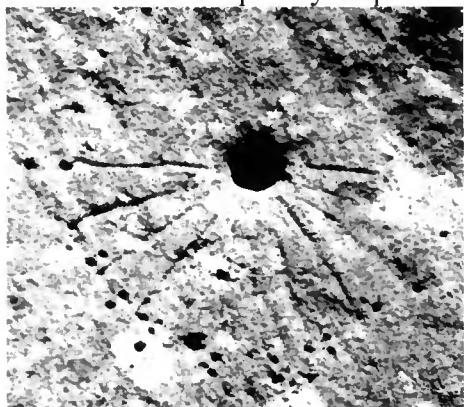


Fig 7

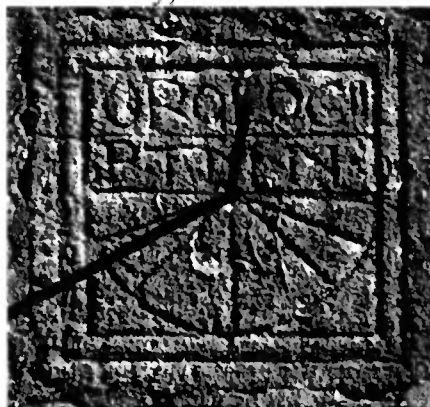


Fig 8



Fig 9

Radial lines appearing above the horizontal cannot receive a shadow from a horizontal gnomon and although they frequently occur must be put down to extensions made in ignorance or as simple space filling. A rare occurrence is a design within the dial (Salperton fig. 9) although a similar one appears at Dinmore in Herefordshire. The possible lettering of n~n below the Salperton dial is also rare.

The gnomon is invariably missing. However a probable stub of iron is visible at Upton St Leonards (fig. 10) and a few others have been noted in other counties.

One unexplained feature is the presence of several dials at a church. Meysey Hampton (8), Great Witcombe (5), Eastleach Martin (4) and Stowell (7) are good examples. Re-building is an obvious cause but imaginative explanations include: 'one for summer, one for winter', 'new vicar, new dial', 'yew tree growing to shadow the original dial'; no written record exists on the matter. A table of dial occurrences is given in the appendix.<sup>15</sup>



Fig 10

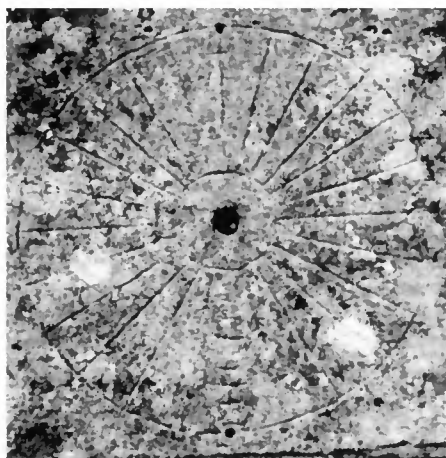


Fig 11

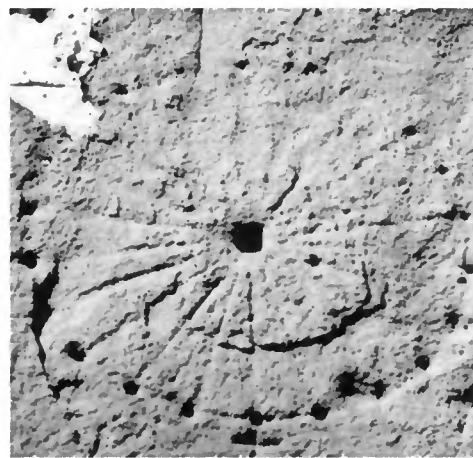


Fig 12

No ruined Abbey or Priory anywhere in Britain has so far yielded a mass dial and they are rare in towns. Two Gloucestershire churches at least have dials from all three traditions (Saxon, 'mass' and 'scientific');

these are at Daglingworth and Eastleach Martin. No regional variation in the design of mass dials can reasonably be detected; in fact, the various arrangements of lines, circles and pocks occur all over the country and attempts to classify them into some rational order have not really been successful (ref. 2 is an example).

Gloucestershire however exhibits one feature of interest in that large mass dials appear to be a local speciality. Dials at Leckhampton, Kemble and Westbury-on-Severn are quite large (400 mm, 620 mm and 305 mm in diameter respectively) whilst the country's largest at 1100 mm is at Badsey, near Evesham, not far away and there is another large one at Leigh in Wiltshire. No others so big seem to have occurred anywhere else in the country. The two Kemble dials and Badsey are quite faint but Leckhampton and Westbury-on-Severn are still in fair condition (figs. 11 and 12 respectively).



Fig 13

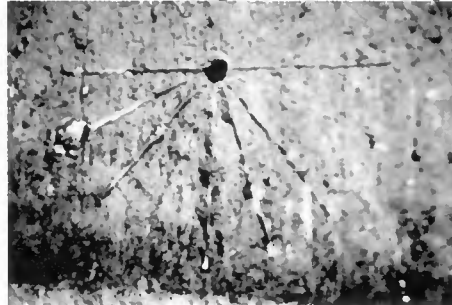


Fig 14



Fig 15

One other dial, unique to Gloucestershire, appears at Sandhurst (fig. 13) which has two other mass dials. Identified by B.S.S. Member B H Morgan during a Society visit to the Church,<sup>16</sup> it is a *horizontal* carving on an interior window sill behind the choir stalls. A well-defined marker line indicates the morning office and probably the mass for the day by using the shadow of the eastern jamb of the window. The present glazing is of stained glass and so the shadow position cannot be seen today. Other sill dials are known but no internal one as elaborate as this.

Mass dials on Roman Catholic churches are most unusual. Pre-Reformation, of course, all churches were Roman Catholic but any dial on a present day Roman Catholic church indicates that it has subsequently passed back to their use after becoming Church of England.

Gloucestershire has one such mass dial at Postlip on the church which is part of the Postlip Hall estate. (Another such dial is on the Roman Catholic church in Cricklade in Wiltshire, and is one of the few mass dials visible to anyone walking down the street by the church). So far no record of a mass dial on a Roman Catholic church has appeared from any other county.

Transitional dials from Saxon to 'mass' and from 'mass' to 'scientific' sometimes occur. A dial over the south door may be a remnant of Saxon tradition as they are not at chest height and possibly derive from the earlier use of a separately carved stone. Examples occur at Harescombe and Hasfield (fig. 14) and are currently regarded as mass dials.

At the other end of the mass dial time scale there is definitely some overlap and 'transitional' dials are known which indicate an attempt to adopt the mass dial tradition to the newer scientific delineation. Sandhurst 1 (fig. 5) retains the circular outline of mass dials but has the variable hour spacing of scientific dials and no evidence of a sloping gnomon. Ampney St Peter (fig. 15) is a full scale church vertical dial with sloping gnomon but the marking out is a uniform circle of dots as on a mass dial. Scientific dials were usually square as demanded by their geometric construction and early examples continued to be carved directly into the stonework, sometimes over two stones, rather than onto a separate stone as occurred later. Such early examples occur at Bourton-on-the-Hill (fig. 16) and Bagendon (now very faint). The Bourton-

on-the-Hill example is properly delineated but retains the circular outline rather than being square and apparently has no numerals.

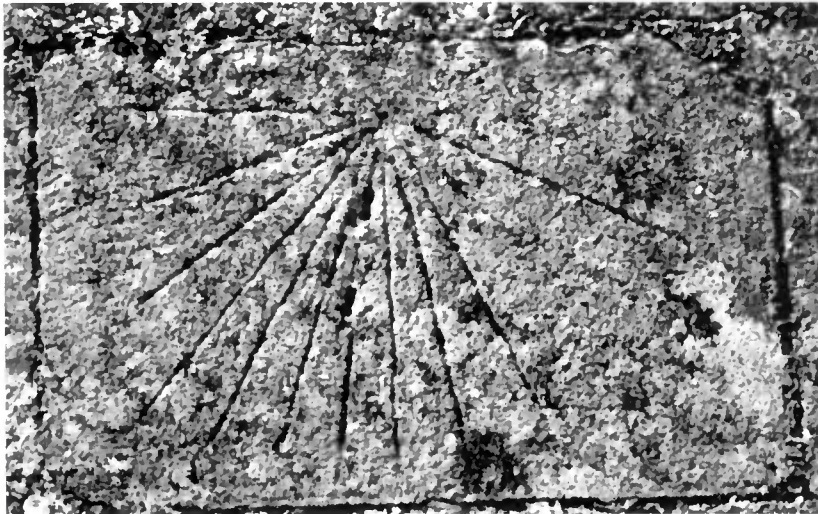


Fig 16

(The dials at Chastleton House (N.T.), a few yards over the border into Oxfordshire provide a good example of the change from a circular design in 1612 with a misguided attempt to delineate the hours, to a fully scientific dial correctly designed and made in 1649).<sup>17</sup>

#### Acknowledgements

Mr C H K Williams: for permission to quote the statistical data prior to publication.

### Appendix 1

Summary of mass dial numbers in Gloucestershire. The study uses the old (1835) definition of the boundaries and parishes of Gloucestershire.

198 churches with dials. A total of 450 dials giving an average of over two dials per church (quite high compared with other counties).

The details of the frequency distribution being:

Number of dials/church	1	2	3	4	5	6 or more
% of churches with dials	42	27	13	9	6	4

The survival rate, based on the hypothesis that *all* 374 medieval churches had a mass dial, works out at 53%.<sup>18</sup>

Three dial categories have been defined: 24hr, 12hr and 6hr (usually morning) dials. Not all dials fall into one of these divisions, 35% of recorded dials cannot be so categorised.

24hr	i.e.	dials with night time markings:	40%
12hr	i.e.	dials with daytime markings only:	44%
6hr	i.e.	dials with morning markings only:	16%

### Appendix 2

#### Churches with mass dials in Gloucestershire

Alderton	Ebrington	Rodmarton
Aldsworth	Edgeworth	Ruardean
Alstone	Elkstone	Salperton
Ampney Crucis	Fairford	Sandhurst
Ampney St Mary	Farmington	Sevenhampton
Ampney St Peter	Great Washbourne	Shipton Oliffe
Arlingham	Great Witcombe	Shorcote
Avening	Guiting Power	Siddington
Awre	Hampnett	Slimbridge
Badgeworth	Hardwicke	Somerford Keynes
Barnsley	Harescombe	Southrop

Barnwood	Harnhill	Stanley Pontlarge
Berkeley	Haselton	Stanton
Bibury	Hasfield	Stanway
Bishops Cleeve	Hawling	Stoke Orchard
Bledington	Hewelsfield	Stowell
Boddington	Icomb	Stow-in-the-Wold
Bourton-on-the-Hill	Kemble	Stratton
Boxwell	Kempsford	Syde
Brimpsfield	Kingscote	Taynton
Broadwell	Lassington	Teddington
Brockworth	Leckhampton	Temple Guiting
Brookthorpe	Little Barrington	Tirley
Chaceley	Littledean	Todenham
Charlton Kings	Little Rissington	Tredington
Chedworth	Longborough	Turkdean
Cheltenham – St Mary	Lower Lemington	Upper Slaughter
Cherington	Lydney	Upper Swell
Chipping Campden	Maisemore	Upton St Leonard
Churchdown – St Bartholomew	Meysey Hampton	Westbury-on-Severn
Clapton-on-the Hill	Mickleton	Westonbirt
Coates	Miserden	Weston sub Edge
Colesbourne	Moreton Valence	Whaddon
Coln Rogers	Naunton	Willersey
Coln St Andrews	Newington Bagpath	Windrush
Coln St Dennis	North Cerney	Winson
Compton Abdale	Northleach	Withington
Cowley	Notgrove	Woolstone
Daglingworth	Oddington	Wormington
Didbrook	Oldbury-on-the-Hill	Wotton, Gloucester - St Mary
		Magdalene
Dowdeswell	Oxenton	Wotton-under-Edge
Down Ampney	Pauntley	Wyck Rissington
Driffield	Postlip	Yanworth
Dymock	Preston (nr Cirencester)	
Eastleach Martin	Priors Norton	
Eastleach Turville	Quenington	

### South Gloucestershire

Abson	Hinton Charterhouse	Tormarton
Bitton	Iron Acton	Tortworth
Frampton Cotterell	Old Sodbury	Wickwar
Hawkesbury	Pucklechurch	Westerleigh
Hill	Stoke Gifford	Yate

- i) Scratch dials in the form of a noon-line are included
- ii) Some of the dials are very faint

### References

- 
- <sup>1</sup> A O Wood: Dom Ethelbert Horne, Founding Father of Mass Dial Studies. *Bulletin of the British Sundial Society, Vol 17(iii)*, September 2005, pp128-129
  - <sup>2</sup> Dom Ethelbert Horne: *Primitive Sun Dials or Scratch Dials* 1st edn. Barnicott & Pearce, The Wessex Press, Taunton, 1917
  - <sup>3</sup> J Kragten: Middelleuse zonnewijzers: waardelos of waardevol (Medieval sundials, worthless or valuable?) De Zonnewisjerkring 1/1986 pp 21-25, Eindhoven

- 
- <sup>4</sup> H Melka & P Starsy: *Maria Koubenec 1899 – 1995* Regionalbibliothek Neubrandenburg, 2000
- <sup>5</sup> T W Cole: *Origin and Use of Church Scratch Dials* (reprint of the original 1935 publication) Pierhead Publications, Herne Bay, 2001
- <sup>6</sup> P R Hamilton-Leggett: *A Mass Dial Bibliography* Personal Communication to the British Sundial Society, 1997, unpublished
- <sup>7</sup> John Hovenden: *Practica Chilindri* c1270
- <sup>8</sup> A R Green: *Sundials - Incised Dials or Mass Clocks* S.P.C.K., London, 1926
- <sup>9</sup> T W Cole: *Origin and Use of Church Scratch Dials* (reprint of original 1935 publication) Pierhead Publications, Herne Bay, 2001
- <sup>10</sup> P Sullivan: Scratch Dials in Gloucestershire *Transactions of the Bristol and Gloucestershire Archaeological Society, Vol 46*, 1924, pp 169-185 + 1 plate
- <sup>11</sup> D P Dobson: Scratch Dials in Gloucestershire *Transactions of the Bristol and Gloucestershire Archaeological Society, Vol 50*, 1928, pp 333-356
- <sup>12</sup> D P Dobson: Scratch Dials – Gloucestershire *Transactions of the Bristol and Gloucestershire Archaeological Society, Vol 63*, 1942, pp 249-250
- <sup>13</sup> M Gatty: *The Book of Sun-Dials* ed. Eden and Lloyd, G. Bell & Sons, London, 1900
- <sup>14</sup> Dom Ethelbert Horne: *Primitive Sun Dials or Scratch Dials* 1st edn. Barnicott & Pearce, The Wessex Press, Taunton, 1917
- <sup>15</sup> C H K Williams: *A statistical analysis of mass dials for all the Counties of England* British Sundial Society – to be published 2007
- <sup>16</sup> J Ingram: Mass Dial Group: Gloucestershire Meeting *Bulletin of the British Sundial Society, Vol 97.4*, October 1997, pp 49-50
- <sup>17</sup> A O Wood: The First Dial at Chastleton House, Oxfordshire *Bulletin of the British Sundial Society, Vol 16(ii)*, June 2004, pp 86-87
- <sup>18</sup> C H K Williams: *A statistical analysis of mass dials for all the Counties of England* British Sundial Society – to be published 2007