ISSN 1478-7008

The investigation and analytical survey of SILBURY HILL

Archaeological Investigation Report Series AI/22/2002

ENGLISH HERITAGE

The investigation and analytical survey of

SILBURY HILL

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County:	Wiltshire
District:	Kennet
Parish:	Avebury
NGR:	SU 1001 6853
NMR No:	SU 16 NW 21
SAM/ RSM No:	234567
Date of survey:	May-August 2001
Surveyed by:	David Field, Graham Brown and Bernard Thomason
Report author:	David Field
Illustrations by:	David Field
Photography by:	David Field and Graham Brown

Frontispiece: Silbury Hill seen from the Kennet valley near Avebury (Photo: NMR 81/2779)

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Summary

Analytical earthwork survey and investigation of Silbury Hill and its surrounding landscape has provided detail about construction and use of the monument and helped place it within the context of its local environs. Digital modelling of the surrounding valley floor not only helped to emphasise the enormous size of the mound, but also its liminal lowland setting on dry land immediately adjacent to water. Whether this water flowed freely or intermittently during the period of construction is unknown.

Survey reveals that in plan the form of the mound is dictated by a series of radial spines or spokes from which straight horizontal sections emanate in a similar manner to a spider's web. The summit of the mound is sub-square rather than circular and the base possibly nine sided. It reveals too that the model of tiered construction proposed by Richard Atkinson may need to be modified and that the 'terracing' could be part of a spiral. A ramp leads from the penultimate ledge almost to the summit and while this could have been an original feature it could equally have been of late construction. A number of deliberately constructed platforms occur around the lower slopes. These cut into the original profile of the mound and therefore post-date its construction. Collapse of the excavation tunnel dug by John Merewether, and reinvestigated by Atkinson, into the centre can be detected on the surface. Earthworks on the summit include a tree-planting ring around the lip and a possible remnant of the spoilheap associated with the 1776 shaft.

The old ground surface is visible as a break of slope for much of the circumference of the mound several metres above the present fence, while to the north and east of the ditch remnants of chalk deposits lying on the valley floor and representing the old ground surface still exist.

The presence of significant amounts of Roman artefacts from the site generally, and medieval pottery found in Atkinson's trenches on the upper ledges indicates significant Roman and early medieval episodes and a newly recorded enclosure situated to the south of the A4 might date to one of these periods. Despite occasional fairs etc, the principal post medieval use of the area was for flood meadows. Many scars on the surface of the mound have been left by archaeological excavation.

INTRODUCTION

The enormous earthen mound known as Silbury Hill, situated in the heart of the Marlborough Downs in Wiltshire, has for long provided an archaeological enigma. While among the earliest of archaeological sites to be observed and commented upon, it was only during the latter half of the 20th century that excavations provided any evidence of its true date. Even then its purpose was sought chiefly in the notion of it being an enormous burial mound and that the remains of some important person lay at its heart. This inability to provide answers has perhaps encouraged an air of mystery, and allowed a flood of alternative explanations based on a mixture of historical geography, metaphysics and legend. In the past the mound has been considered to cover the burial mound of a royal person, a constituent part of the Avebury temple, a temple to Mercury, a mound for assemblies and law making, or a platform for astronomical observations or for druidical sacrifice or beacons. It has been thought to be dedicated to the sun, to represent the earth, to be the motte of a castle, and identified as Cludair Cyvrangon, the heaping up of the pile of assemblies of Welsh legend (e.g. Jackson 1862, 333: Long 1857, 339-40; Smith 1861, 179-80).

In modern times the site achieved much attention when, during the late 1960s, it featured as the first televised archaeological excavation. An extensive campaign by the late Richard Atkinson was watched by millions enthralled by the possibility of witnessing a discovery to rival that of Tutankamen.

Today the mound attracts visitors from right across Britain and indeed the World, and there is rarely a time when people are not present. Some think it a curiosity worth a few minutes stop on the tourist trail from London to Bath. Many more consider it to have spiritual significance, being the 'omphalos', or navel, the centre of the spiritual world; or a sacred 'eye' or pregnant earth goddess (e.g. Dames 1976). In fact, as many people appear to make the pilgrimage to it today as ever did in the past, and while certainly an archaeological monument of first importance and whatever its original purpose, part of its *present* significance is as a modern temple.

The site, together with its immediate surroundings, was investigated and surveyed during the summer of 2001. The large flat topped conical mound is of great proportions, and is surrounded by a wide ditch often flooded in winter that is partially interrupted by two 'causeways'. This has been extended in the west to form a sub-rectangular 'tank' or cistern, usually referred to as a ditch extension. Since the Roman period London to Bath roadways have used the mound as a waymarker and the later, modern, highway has encroached on the southern ditch quite considerably. The monument, with surrounding ditch, often said to be the largest humanly constructed mound in Europe, is part of the well-known Avebury World

Heritage Site. It lies a little over 1km south of Avebury village, while 1km to the east and west lie the respective hamlets of West Kennet and Beckhampton. The major road, the London to Bristol A4 passes immediately south of the mound. The site, National Monuments Record No SU 16 NW 21, is located at NGR: SU 1001 6853 in the parish of Avebury. It is in guardianship, a Scheduled Monument, number 21707 (County Number WI 2) and is recorded in the Wiltshire County Sites and Monuments Record as no 102, 102/325.

*Fig. **1** Silbury Hill in the early morning mist.*

GEOLOGY, TOPOGRAPHY

Topography and drainage

Silbury Hill lies on the valley floor of the River Kennet at a point where the capacity of the stream is increased by contributions from a small tributary together with water from a spring where the stream dramatically changes its course (Fig 2). The River Kennet itself ultimately rises at Broad Hinton, 8.5 km to the north of the site and takes in a number of small winterbourne tributaries as it flows south through Winterbourne Bassett, Berwick Bassett, Winterbourne Monkton and Avebury. At Silbury it gathers momentum as it is joined by a small brook that rises in the Beckhampton-Devizes valley, probably giving its name to the former village in passing, and which passes immediately north of Silbury Hill, flooding the monumental ditch every winter. To the south of Silbury Hill, a spring referred to as the Swallowhead, is located at the mouth of a narrow steep-sided, but now dry, coombe and together with the north flowing drainage pattern on the dip slope it has influenced the dramatic change of course eastwards through West and East Kennet, Overton, Lockeridge and other villages towards Marlborough.

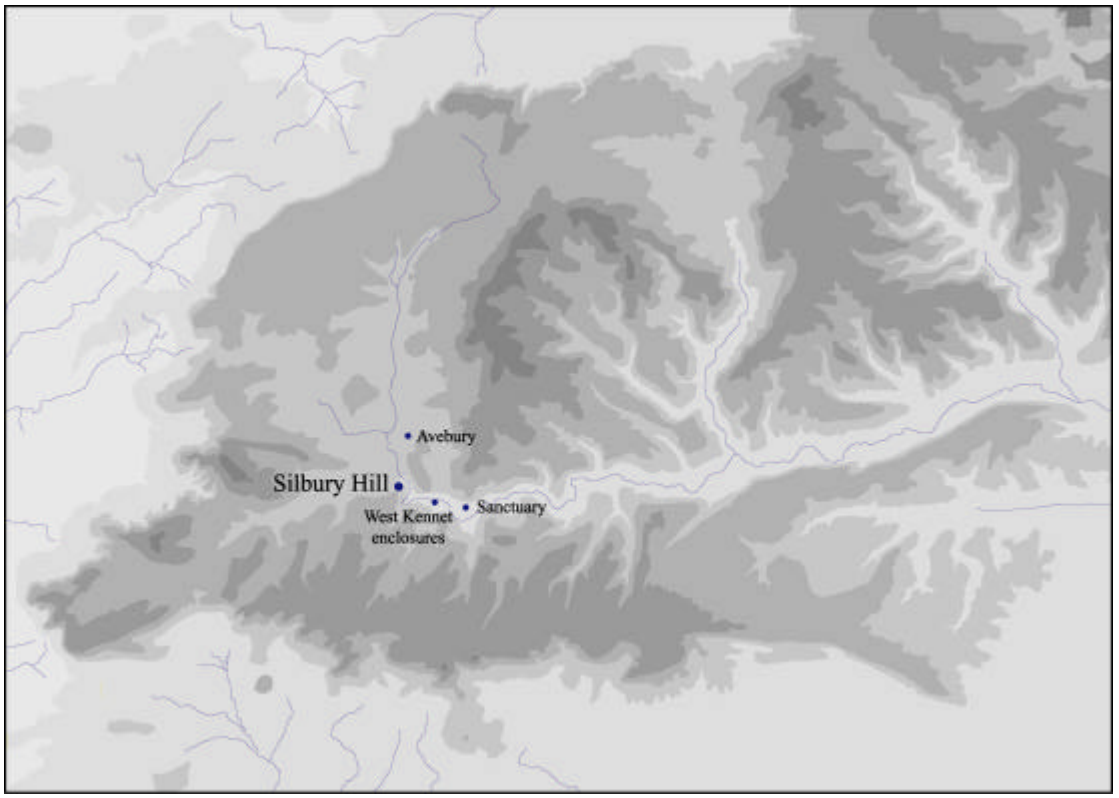


*Fig **2** The location of Silbury Hill within the Marlborough Downs*

The activity of the various fluvial elements at this confluence has eroded a natural amphitheatre into the landscape, partially enclosed by the dominant Waden Hill in the east, the Beckhampton Downs in the south, and Folly Hill to the northwest.

The surrounding terrain is one of undulating chalk, the location being at the interface of both Middle and Upper Chalk with the extensive Lower Chalk plateau. The latter can be traced to the north and northwest as far as Swindon, and being devoid of flint lenses is better for cultivation than the Higher Chalk, as the fields of neighbouring villages testify, for they appear to have been cultivated since at least the medieval period if not from considerably earlier. To the south and west of the site, weathering of the Higher and Middle Chalk has resulted in a pattern of broad interfluves intercut by deep coombes of asymmetrical cross-section, the result of differential thawing, spring sapping and solifluction during the post glacial period.

Sarsen boulders occur quite naturally across this terrain, many having slumped into valley floors as part of the solifluction process and many of these have been and continue to be, cleared by local farmers.

Geology

The underlying rock is Cretaceous White Chalk. Waden Hill to the north-east and Beckhampton Down immediately south fall within the Middle Chalk division, and there is a small capping of Upper Chalk at the southern end of Waden Hill and also some 300m distant as Beckhampton Down stretches southwards towards the escarpment. To the northeast deposits of Middle Chalk survive as Folly and Windmill Hills, though the area is essentially part of the extensive Lower Chalk plateau that extends northwards towards Swindon.

According to the *Geological Survey of England and Wales Sheet 266,* 1st terrace gravel lines the sides of the Kennet Valley and some of its tributaries, particularly that of the Beckhampton Brook and although it is difficult to be certain, the mound appears to partially overlie the junction of Middle Chalk with terrace gravel. As mapped, the terrace is overlain by a strip of alluvium marking the extent of fluvial meandering of historic times. This is particularly marked around the west and north sides of the mound (where the meadow may have been floated). Prior to its recent canalisation close to the foot of Waden Hill, the Kennet appears to have meandered considerably, for the early maps available for inspection coupled with local memory make it clear that the stream formerly ran closer to the centre of the valley.

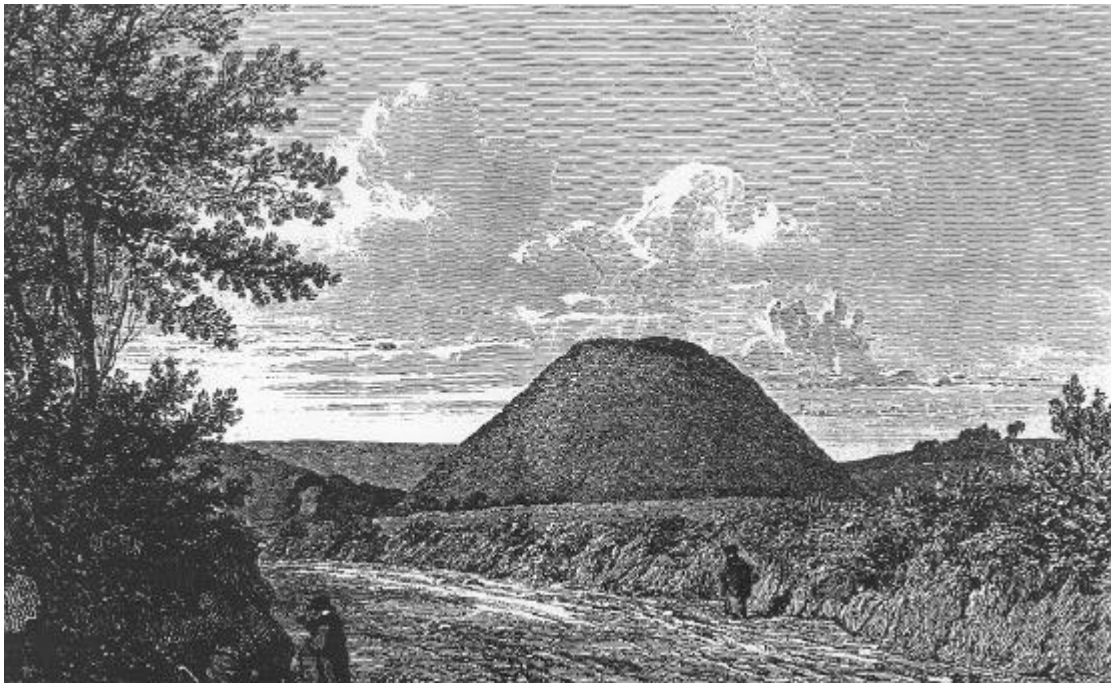


*Fig.**3** Silbury Hill as illustrated by Sir Richard Colt Hoare in 1821, viewed from the turnpiked highway.*

LANDSCAPE HISTORY

The origin of the place-name remains uncertain. Aubrey recorded the local tradition that King Sil or Zel was buried there on horseback and the mound raised over his grave (Fowles 1980, 680-2). Aubrey himself, however, preferred other explanations and compared the name to Silchester, believing it to be linked to that of the Roman town (ibid 680-1). Whereas Silchester was '*Sili's castrum…… Silbury might be his monument or mausoleum'.* Writing almost 80 years later Stukeley (1743, 41), by contrast, believed the name to be Saxon in origin and interpreted it as *'the great or marvellous hill…'* . Subsequently while Long (1857, 337) and Smith (1861, 148) both noted that their contemporaries linked the name with Solis-bury, the mound of the Sun, they preferred to concur with Stukeley. According to more recent workers (Gover *et al* 1939, 295) the first reference to Silbury Hill is in an Assize Roll (No 1005m.117) dating to 1281, where it is referred to as *Seleburgh*. They hedge their bets about the meaning of the name but in contrast to the views of earlier antiquaries suggest that it may derive from Old English Sele' meaning 'hall', perhaps an interesting interpretation in view of the early medieval evidence uncovered by Atkinson (below).

Being situated close to the main highway between London and Bristol the monument could not fail to be noticed sooner or later. The mound appears to have been noted by the earliest Antiquarians and travellers. Leland (Toulmin Smith 1964, 81) noted its presence during his *Itinerary* in *c.*1545 *'Kenet risithe north northe west at Selberi; Hille botom, where hathe be camps and sepultures of men of warre, as at Aibyr; a mile of, and in dyvers placis of the playne. This Selbyri Hille is about 5. Miles from Marlbyri'.*

William Camden too, noted it in his great work *Brittannia* published in 1607 (Gough *trans* 1806, 136) *'Here rises Selbury, a round hill terminating in a point, which both its shape and the settlement of the soil shows to be artificial. Many such both round and pointed, are to be seen in these parts, and are called Burrowes, or Barrowes, probably thrown up in memory of soldiers slain thereabouts….though I rather think that this Selbury made for a boundary, if not by the Romans, at least by the Saxons, like the ditch called Wodensdike….'*

The archaeological importance of Silbury Hill, however, appears to have been first recognised by John Aubrey. In his *Monumenta Brittanica* (Fowles 1980: Jackson *ed*, 1862, 316) Aubrey records how, in 1663, Charles II diverted his attention to Avebury whilst *en route* to Bath, an event still remembered by local people over 60 years later (Stukeley 1743, 43 reporting on accounts of the 1720s) and *`As his Majesty departed from Avebury to overtake the Queen: he cast his eye on Silbury Hill about a mile off: which he had the curiousity to see, and walked up to the top of it, with the Duke of York. Mr Charleton and I attending them'* (Jackson 1862, 316: Fowles 1980, 22).

Ogilvie's map of the London to Bristol road (Ogilvie 1675) depicts Silbury Hill as a steep conical mound unfortunately without further detail, with the road curving around it. Two local side roads form junctions opposite the monument (the line of one of these still visible on the ground as a soil mark) one marked 'to ye Devizes'. Buildings are depicted on either side of the road between the mound and the site of the present Beckhampton roundabout, which would suggest that the village of Beckhampton was formerly spread alongside the Beckhampton Brook for a considerable distance (see also Brown 1996). Indeed the brook is likely to have provided the focus of the village.

Stukeley spent a considerable amount of time in the area and his illustrations and observations remain of prime importance. He recorded how *'Lord Winchelsea, Lord Hartford, and the ladys came one day to visit the Druid as they called me; I treated them on the top of Silbury with a bowl of punch*' (Lukis 1887, 246). He observed too that Silbury stood *'exactly south of Abury, and exactly between the extremities of the two avenues….'* (It doesn't exactly. There is some 250m latitude between Avebury and Silbury Hill). More importantly he refers to Mr Halford (?Holford), then lord of the manor, who in March 1723 *'ordr'd some trees planted on this hill, in the middle of the noble plain or area at the top, which is 60 cubits diameter…'* (1743, 41). Or in another version ' *…ordered some trees to be planted at top, for which purpose they sunk a great hole in the midle of the area and filled it with mould, for the hill is composed entirely of chalk*.' or *'in digging at the top to sett some trees'* (Lukis 1887, 245).

These early observers also add a touch of colour to their descriptions and from these we gain just a little insight into how the locals perceived parts of their landscape. It is thanks to Aubrey, a local antiquary writing in *c*1663, that we know something of local traditions *`No history gives us any account of this hill. The tradition that King Sil (or Zel as the country folk pronounce it) was buried here on horseback and that the hill was raised whilst a posnet of milk was seething* ' (Fowles 1980, 680-1). And again in a deleted sentence *`The country folk do call it Zelbury Hill and tell a story that it was raised over King Zel's grave'* (Fowles 1980, 682).

Stukeley felt it *' no difficult matter to point out the time of year when this great Prince died, who is here interr'd viz about the beginning of our present April. I gather it from this circumstance. The country people have an anniversary meeting at the top of Silbury-hill on every palm-Sunday, when they make merry with cakes, figs, sugar, and water fetch'd from the Swallow-head or spring of the Kennet……I took notice that apium grows plentifully about the Spring-head of the Kennet.…To this day the country people have a particular regard for the herbs growing here, and a high opinion of their virtue.*' He continued *'This spring was much more remarkable than at present, gushing out of the earth, in a continued stream. They say it was spoil'd by digging for a fox who earth'd above, in some cranny thereabouts'*

(Stukeley 1743, 43-44). Evidently the tradition survived, for a letter to the *Salisbury Journal* in May 1892 refers to the tradition of eating figs on top of Silbury Hill (Devizes Museum Cuttings 4:155). Such traditions may have been quite widespread at one time in Wiltshire. Long, for example, (1857, 340) quoting Colt Hoare (1821, 80), confirmed that a similar tradition surrounded Cley Hill near Warminster.

Similar festivities appear to have been a feature of the mound itself. The *Bath Journal* for 7th September 1747 announced *'At King Cool's Theatre at Celbury-Hill (Silbury) near Marlborough (which is the most beautiful and magnificent mount in Europe) the 12th and 13th days of October, will be Bull-Baiting, Backsword Playing, Dancing, and other Divertions. The second day will be Wrestling, a Smock and Ribbons run for, and Foot-Ball Playing, eight of a Side. At this entertainment the Company of the Neighbouring Nobility, Members, Clergy, and the Rest of the King's Friends is desired; and as eleven years ago about Six Thousand People met at the said Hill, the Publick-Houses had not proper accommodation, therefore several Booths will be erected'* (Devizes Museum Cuttings 13:263).

Stukeley was also at pains to lay bare misconceptions about the monument amongst other Antiquarians. *'(Mr Twining thinks Silbury erected in honour of Titus the emperor) and that a stile leading up to it* (Silbury) *is called by his name; I enquired about this stile in Abury town, and found it called Coiter's Stile', and a lane so denominated from a blacksmith who came and lived there from Salisbury'* (Letter, Dr Stukeley to Roger Gale, Bath July 22, 1723 Surtees Soc, 246).

Having observed the tree-planting episode (see above) he recovered a number of artefacts, amongst them a bridle turned up by the workmen (below), that he attributed to the legendary burial of King Sil. Douglas (1793, 161), however, recorded that *'The bit of a bridle discovered by Stukeley, and his assertion of a monarch being buried there, has only the pleasure of conception to recommend it; it is not likely the monarch would have been buried near its surface, when such an immense mound of earth had been raised for the purpose; and the time in raising it would not agree with the nature of a funeral obsequy, which must require a greater degree of expedition'* Subsequently Tucker (1851, 298) suggested that Stukeley may have been duped by *'the cunning John Fowler'* (one of the workmen) and that the bridle was not Roman and that it may not have come from the hill at all.

Aside from the sketches of the Avebury monuments by Aubrey and Stukeley, the earliest depiction of the area appears to be Thomas Alexander's plan prepared in 1733 of *'Avebury Great Farm belonging to Richard Holford Esq who is lord = Royal of Avebury'* (*sic*: WRO 1553/71). This refers to Silbury as Zilbury and depicts it as a truncated conical mound, but adds no other detail. Unfortunately the area immediately around the site is not illustrated, as it then formed part of a separate estate.

The Inclosure Award (WRO EA Avebury) announced in 1792, utilised a plan by B Haynes surveyed in 1794 and provided a *' Plan of the New Allotment and Exchanged lands in the Parish of Avebury…'*. It depicts Silbury Hill bounded around the quarry ditch edge and labelled as owned by Adam Williamson. The water from the Beckhampton Brook was evidently channelled to flood the meadows during early spring, while the meadow to the northwest (Silbury Meadow) divided between Peter Holford, James Sutton and the Duke of Marlborough who shared responsibility for repairing the hatches. The meadow to the east was retained by the Holford and Tanner families.

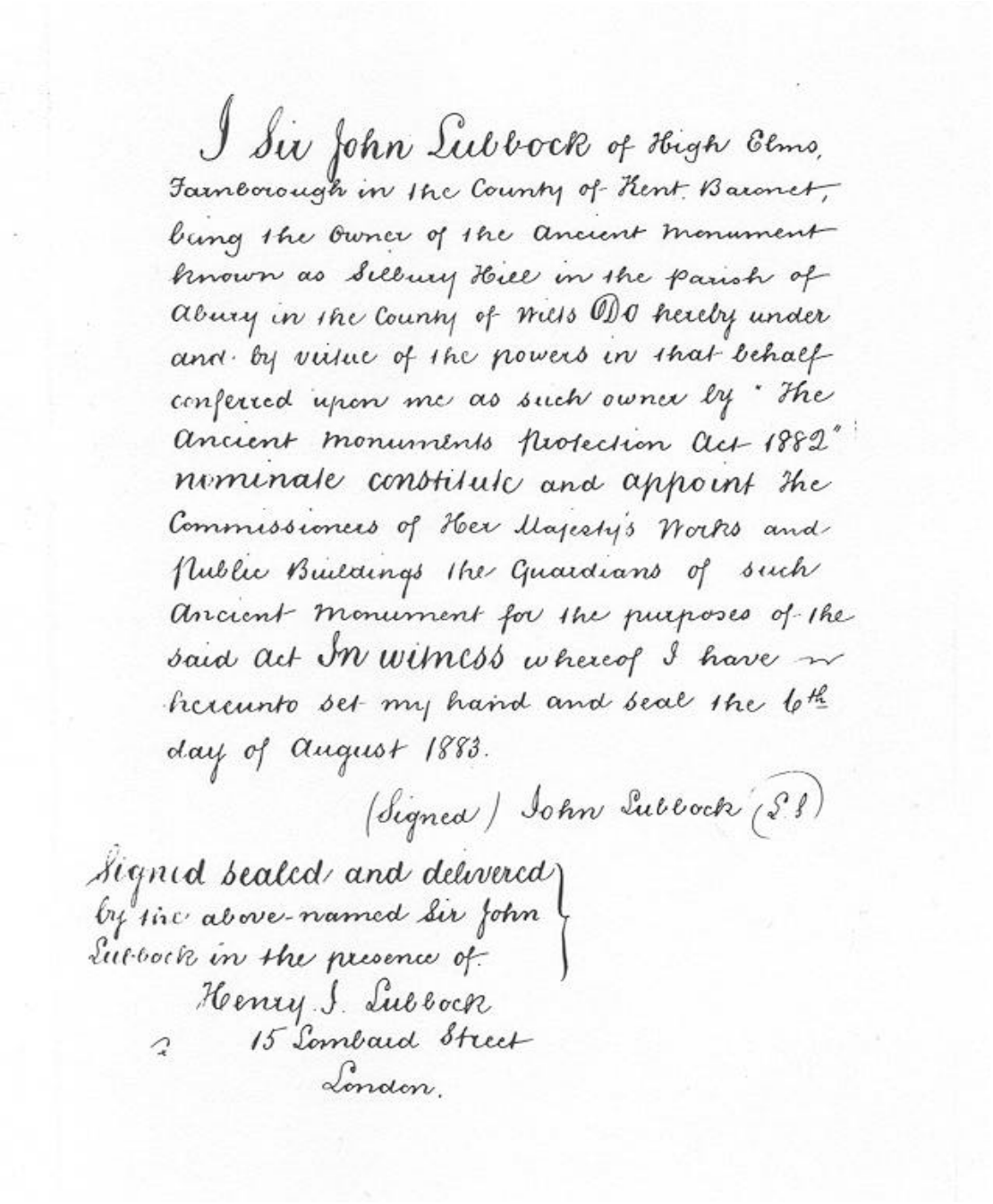
A further *Map of Avebury* thought to date to before *c*1795 (WRO Ms 2027) indicates that Silbury Meadow was tithe free. This is of some interest in that it may indicate an early ecclesiastic i.e. monastic interest in the site (probably Stanley Abbey e.g. Birch 1875, 249)), though the matter has not been pursued here. A series of straight boundaries depicted here, as well as in the adjacent meadow to the east of Silbury Hill, may have been drainage ditches, while the manner in which a series of strip fields on the lower slopes of Waden Hill are depicted suggests that they may have been lynchetted at that time.

The Avebury Tithe Award of 1845 (WRO TA Avebury) depicts Silbury Hill and its quarry ditch as a boundary with the meadow to the west referred to as *Silbury Mead*, then as now in pasture. To the east lay North Mead, also in pasture, with the stream taking a slightly different course to the present, passing across the highway and being joined by another tributary emanating from Swallowhead in Lower Meadow, which was also pasture.

A pencil sketch in the British Museum depicts a meeting of the Wiltshire Archaeological Society at Silbury in 1859 (ten years after the tunnel excavation) (Briggs 1987, 123-4). Over 100 people are shown ascending the hill by way of the route shown on Aubrey's sketch and assembling on the summit, with horses and carriages waiting at the base. The illustration makes it clear that the great scar on the west was present at that time. In 1879 the Society visited the site again (Anon 1881, 21) by which time Sir John Lubbock, then the Society's President had persuaded the landowners *'to apportion Silbury and a small plot immediately around it as a separate lot' when the estate was put up for auction* (Anon 1881, 21). Having purchased the site himself, he immediately placed it within the nation's guardianship (WRO 3293/1: and Fig 4).

The 1st edition Ordnance Survey 25" surveyed in 1885 and published in 1886-1887 sheets 28/13, and 14, depicts the Hill as a hachured mound with a ledge close to the summit, the path in the position noted by Aubrey (see below), a hard line perhaps indicated a fence around the summit and with a trig point placed just off centre. To the south of the Highway, which here braids into two tracks, the position of a Roman well is marked. This was discovered some years earlier and depicted on Smith's (1884) map of the area. The 1900 and

1924 Ordnance Survey editions exhibit little change. The evidently now canalised Beckhampton Brook flowed to the north of the Silbury ditch through a sluice, before joining the Kennet.



I Sir John Lubbock of High Elms, Farnborough in the County of Kent Baronet, being the Owner of the Ancient Monument known as Silbury Hill in the Parish of Abury in the County of Wilts DO hereby under and by virtue of the powers in that behalf conferred upon me as such owner by "The Ancient Monuments Protection Act 1882" nominate constitute and appoint The Commissioners of Her Majesty's Works and Public Buildings the Guardians of such Ancient Monument for the purposes of the said Act In witness whereof I have hereunto set my hand and seal the 6th day of August 1883.

(Signed) John Lubbock (S.)

Signed sealed and delivered by the above-named Sir John Lubbock in the presence of:

Henry J. Lubbock
15 Lombard Street
London.

*Fig **4** Document presenting Silbury within Guardianship (WRO 3293/1).*

ARCHAEOLOGICAL BACKGROUND

In his general plan of Avebury (Anon 1862: Fowles 1980, 48-9), Aubrey depicted *'Selbury or Silbury hill'* as a truncated conical mound with a *circular* ditch set around its circumference (Fig 5). A pathway is shown ascending the mound in a remarkably similar position to that of the path today. The highway passes close by the southern lip of the ditch and a little south the '*Fluvius Kynet'* flows parallel to it and is shown, incorrectly, continuing towards Beckhampton.

Unlike Avebury, which Aubrey accurately surveyed with a plane table (Welfare 1989), Silbury did not command the same attention. Aubrey subsequently lamented not having taken some basic measurements `*I am sorry that I did not take the circumference at the bottom and top and the length of the hill, but I neglected it, because that Sir Jonas Moore, Surveyor of the Ordnance, had measured it accurately and also took the solid content, which he promised to give me, but upon his death, that (amongst many excellent papers of his) was lost'* (Jackson 1862, 332: Fowles 1980, 682). Aubrey's sketch, however, does depict the mound and illustrates the relationship between it and the other Avebury monuments, the stone circles, avenue and Sanctuary. Although small, this is the first illustration of Silbury Hill, depicting a simple flat topped conical mound, surrounded by a ditch and importantly with a path to the summit in approximately the same position as the present one (Anon 1862: Jackson 1862, opp 320: Fowles 1980, 48-9, 683).

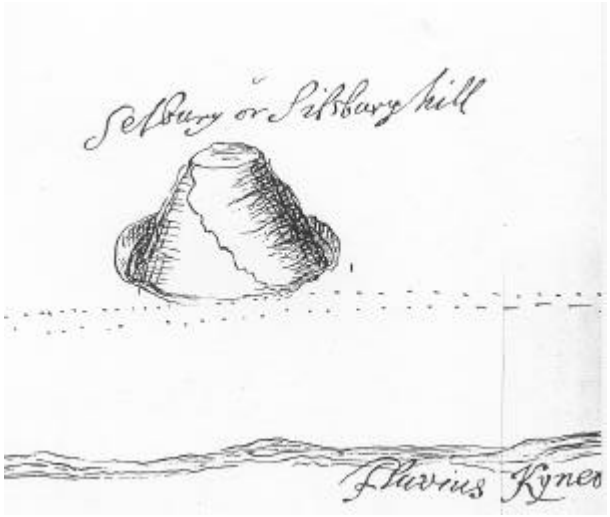


*Fig **5** Aubrey's sketch of Silbury Hill*

In contrast, Stukeley's achievement was enormous. Not only had he a superb eye for landscape and archaeological detail, but sketching, depicting, and mapping such features without as much assistance as an Ordnance Survey map was a considerable and difficult task. His illustrations *'A view near the spot of the termination of Bekamton avenue July 19 1723', A prospect of Silbury hill from the Springhead of Kennet River 13 May 1724', ' Silbury Hill July 11 1723'* and *'The Geometry of Silbury Hill'* (1743) depict Silbury Hill as a simple

truncated cone often with little other detail, but variously with an indication of the terrace close to the top, with the path in the position previously depicted by Aubrey, and with the Roman Road close to the base.

There was evidently some activity on the summit at this time and it may be that Richard Holford, the lord of Avebury Manor, aimed to use the mound as part of a designed landscape, an eyecatcher or mount, as there are references to path construction and tree planting. Stukeley (1943, 41) recorded that *'workmen dug up the body of the great king there buried in the centre, very little below the surface. The bones extremely rotten, so that they crumbled them in pieces with their fingers…..Some weeks after I came luckily to rescue a great curiosity which they took up there; an iron chain, as they called it, which I bought of John Fowler, one of the workmen: it was the bridle buried along with this monarch, being only a solid body of rust. I immerg'd it in limner's drying oil, and dry'd it out carefully, keeping it ever since very dry. It is now as fair and entire as when the workmen took it up….. There were deers horns, an iron knife with a bone handle too, all excessively rotten, taken up along with it…..Our bridle belonged to the harness of a british chariot….'* He wrote to Roger Gale on July 22, 1723 the account differing in detail '*..in making a way up Silbury hill, by Mr Holford's order, they found a strange iron chain of an unusual bulk, make, and unaccountable use, on which we must summon a cabinet councill of antiquaries to deliberate. In digging at the top of it to sett some trees, they took up the bones of the great king buryed there, and a Roman coin or two, which I doubt not were dropped by accident….'* (Lukis 1887, 245). The fate of the bridle is unclear for according to an entry in his diary a little over thirty years later Stukeley could only exhibit a drawing of it. *'Feb 1759 - I exhibited (to the Antiquarian Society) a drawing of the British bridle dug up with the king's body at Silbury hill, in March 1723. I exhibited the bridle itself, and many prints of Silbury hill, the largest tumulus we know of….Mr Halford* (Holford) *ordered a tree to be planted at the top, which discovered the king's bones, bridle, and knife with a bone handle. I gave a large discourse upon it, and the curious contrivance in the bridle, of throwing the reins more outward than in our modern way, which gives a much greater power in governing the horse……'* (Lukis 1872, 275)

The accounts differ in detail; in particular, it is unclear whether the bridle was found on the slopes or ledge, while making a path *to* the summit, or with the interment found while planting a tree *on* the summit. Equally there is some uncertainty whether the planting was of trees (plural) that would imply more than a single cutting, and may even help to explain an apparent tree ring around the lip of the summit (below), or of a single specimen planted in the centre.

Samuel Lewis (1840), a topographer, considered the mound of sufficient interest to warrant some measurements. *'In the vicinity of Avebury are several barrows, and among them the very large and remarkable one, close to the turnpike-road called Silbury Hill, which covers an area of five acres and thirty four perches, and exceeds in dimensions every similar work in*

Great Britain, being 2027 feet in circumference at the base, and 120 at the summit; its sloping height, 316 feet, and its perpendicular height, 170.…'

The site has been excavated on at least six occasions. Jackson's annotations to his edition of Aubrey's Wiltshire Collections provide the date of the first, 1776 (Jackson 1862, 333), but unfortunately no clear record of this episode appears to exist. Two almost identical contemporary accounts have, however, been traced. One in the columns of the *Bristol Journal*, the other the *Salisbury and Winchester Journal*. Under the heading Monday's Post the latter reports *'Silbury-Hill, the largest tumulus or artificial mound of earth in this kingdom, supposed to be of between 3 and 4000 years duration, was begun to be opened by the miners of Mendip, on Thursday last. They have made a hole at top of eight feet square. The Antiquarians promise to themselves wonders from the bowels of this mountain! It is situated between Devizes and Marlborough'* (The *Bristol Journal* Saturday November 2, 1776 Vol LXI, p3). The other (*Salisbury and Winchester Journal,* Monday November 4, 1776 Vol XLI, No 4, p3) is almost identical.

A third, again almost identical account, was placed in *Bingley's London Journal*. This is the version quoted by Jackson (1862), but it, and indeed any other journal of that date has proved difficult to trace. The British Library holds copies of the journal between 1770-1775, as does Cambridge. The British Library report no holdings at their back up libraries and no known UK location for it. Neither can any location of the journal for the period after 1775 be identified.

None of these contemporary accounts mentions 'The Antiquarians' by name and the Salisbury version differs only in that it gives the date that excavations commenced *'the 31st ult'.* The 'correspondent' would appear to have sent out what amounts to a press release. Against the background of the developing events of the American War of Independence, antiquarian pursuits may have appeared to some quite frivolous and two weeks later, on Monday November 18th, a letter to the printer of the latter journal was published that mocked the purpose of the investigators (see Appendix). This was followed in turn on December 2nd by a letter of support (see Appendix). Thereafter the columns fall silent.

The only further available details are those of the Rev James Douglas who recorded the excavations in his *Nenia Britannica* seventeen years later and who named the protagonists. *'The great hill of Silbury, generally considered as a barrow, was opened under the direction of the late Duke of Northumberland and Colonel Drax, under the supposition of its being a place of sepulture. Miners from Cornwall* [the contemporary accounts say Mendip] *were employed, and great labour bestowed upon it. The only relic found at the bottom, and which Colonel Drax showed me, was a thin slip of oakwood: by burning the end of it in a wax taper, we proved it not to be whale-bone, which had been so reported; the smell of vegetable substance soon convinced the Colonel of his mistake. He had a fancy that this hill was raised over a*

Druid oak, and he thought the remains of it were discovered in the excavation: there was, however, no reason for considering it to have been a place of sepulture by the digging into it' (Douglas 1793, 161). The Silbury Hill artefacts are not mentioned amongst the antiquities in the Duke of Northumberland's collection at Alnwick Castle (Bruce 1880) and it would appear from this that it was Drax who retained them.

The Duke of Northumberland had a reputation at court for interest in science and as a Trustee of the British Museum was well-versed in Antiquarian pursuits, while his steward too took a keen interest in such matters and was a member of the Society of Antiquaries. The Duke's wife, Elizabeth Seymour, spent most of her early life on her family estate at Marlborough in Wiltshire and must have known Stukeley, for he stopped at the house in the 1720s, and famously depicted the house and gardens in his *Itinerarium Curiosum* of 1776 (Field *et al* 2001). Her father, Lord Hertford, had been keenly interested in local antiquarian diggings and was President of the Society of Antiquaries. Of greatest significance, however, is that the Duke was a coal-owner with experience of exploring geological strata for new seams and was therefore able to provide knowledge and advice on the best method of excavation. (Colin Shrimpton, Archivist at Alnick Castle, kindly made a search of the relevant documents but found no reference amongst archived material to the event. He was able, however, to provide extremely useful information that informed the above paragraph).

He almost certainly would have seen the second volume of a new journal concerned with antiquities, *Archaeologia*, which in 1773 published an article about tumuli on the Russian steppes, many of which when opened produced rich grave furnishings. In particular his eye may have caught an illustration of the largest of these mounds, a barrow of Silbury-like proportions situated near Tomsky, which was opened by an officer and troops sent by the Russian court (Fig 6). The diggings found burials then interpreted as those of a prince, his princess and his horse. Both human skeletons lay between sheets of gold; the male draped in a gold bordered and jewel bedecked cloth; the female similarly accompanied by gold and jewels (Demidoff 1773). Just three years before the investigation of Silbury, the paper will almost certainly have caught the Duke's imagination.

The Drax family originally hailed from Yorkshire, though, unable to accept the Commonwealth, along with colleagues sold their estates in 1647 and emigrated to Barbados. There Drax invested in sugar and having made a considerable sum, purchased estates centred on Charborough in Dorset and returned to England. The estate passed to Henry Drax who in turn died leaving two sons; the elder Thomas inherited the estate, the other Edward had time on his hands. The family almost 'rebuilt' Charborough parish church in 1775, the year before the Silbury excavation. Edward eventually took over the estate when Thomas died in 1790 and made improvements to the grounds, building a tower there in 1790 (Hutchins 1868, 499). Significantly, the Drax family also held lands in Wiltshire, at

Maddington, Tilshead (Crowley 1995, 206-7, 268), Etchilhampton (Crittall 1975, 73), Bratton (Pugh 1965, 161), Coate near Devizes, Bishops Cannings (Pugh 19537, 190), and will have been very familiar with the huge mound situated by the highway near Avebury.

It may be the lack of fabulous finds that inhibited publication, for further progress on digging the shaft was evidently not reported. The mocking critique in the *Salisbury and Winchester Journal* (Appendix) coupled with personal pressures: the Duke of Northumberland suffered the loss of his wife in December of 1776, and was engaged in arranging the funeral at Westminster Abbey and other associated events just before Christmas (*Salisbury and Winchester Journal* Monday December 23, 1776), while the following year the fact that, despite a commendable campaign, his son was criticised for his lack of action when engaged in the war with America may have resulted in a preference to remain out of the limelight.

*Fig. **6** Mound near Tomsky, Russia, published in Archaeologia 1773. Note the tree lined path to the summit.*

Two pen and ink wash illustrations made by an unknown artist on September 2nd 1788 (Figs 7 and 8: Gough Maps 231 fol 216 Bodleian Library) just twelve years after the episode, indicate that the Hill was recovering. The pictures illustrate some unusual lines of vegetation that could be the effect of access to the hill and of spoil being casually dumped over the edge. In particular, a ramp leading from the uppermost ledge almost to the summit (see below) is depicted unusually sharply and could have played a role in the operations of the miners. The same feature is depicted, though less dramatically, in the illustration prepared by Crocker for Colt Hoare (fig 3 above: Hoare 1821).

*Fig **7** Pen and ink illustration of Silbury Hill from the east 1788 (Copyright: Bodleian Library, University of Oxford, Gough Maps 33, folio a)*

*Fig. **8** Pen and ink illustration of Silbury Hill from the west 1788 (Copyright: Bodleian Library, University of Oxford, Gough Maps 33, folio 10b).*

Merewether lamented the lack of record on this and in 1849 said that mounds of spoil still survived that *' the excavators had not taken the trouble to throw in..'* (Merewether 1851, 74). This is supported by an illustration by William Lukis made on 6th August 1849 after the visit to Silbury of the Archaeological Institute and which depicts a shaft open to a depth of c ¼ of the depth of the mound (Devizes Museum DD14: original now rediscovered in Guernsey Museum by Brian Edwards, see Pitts 2001; also Edwards 2001). Merewether (1851, 74) recorded the testimony of two local men, one Richard Maskeln, of Beckhampton, then aged eighty, *'who had often heard his father tell of the miners out of Cornwall that cut into Silbury hill; they went, as he heard, down to the bottom, and they found "a man."* The other was John Blake, of Avebury, then aged ninety-five years, who *'states that he recollects when the miners from Cornwall dug into Silbury hill; it was when he was keeping company with his first wife, and was about twenty years of age. He went with her to see the place, and they cut her gown. They went down to the bottom, and found a man'*. Aware that flint diggers on the local downs often came across skeletons Merewether was cautious about these tales, suggesting that it may have been what the locals had wanted to believe, although Smith later (1861, 154) questioned the grounds on which Merewether rejected their testimony.

Subsequently the mound lay undisturbed for over seventy-five years until increasing interest and enquiry coupled with appropriate opportunity resulted in a further bout of investigation. Having decided upon Salisbury, Wiltshire, as the venue for its annual meeting and in response to the requests of interested members, the Central Committee of the Archaeological Institute arranged for an investigation into the mound to take place during 1849.

Richard Faulkner of Devizes and Henry Blandford, a civil engineer from Rowde nearby, experienced in the construction of cuttings and embankments for railways, undertook a preliminary investigation that involved preparation of a plan and the excavation of some exploratory trenches to determine the position of the old land surface (Tucker 1851). The resulting plan (Tucker 1851, fp 297) depicted the base of the mound as a pecked line, together with the position of the ditch in the east and the base of the quarry extension on the west (Fig 9). In the north the Beckhampton Brook bounded the site. Two profiles, one west-south-west to east-north-east, the other almost north to south, were drawn and these simply depict a flat-topped straight-sided mound.

Blandford and Faulkner were subsequently employed to drive a tunnel, 6' 6" (2m) high and 3' (0.9m) wide along the old land surface towards the centre of the mound during the summer of 1849. According to Merewether (1851, 75) this started from the westernmost of two causeways across the ditch situated to the south of the mound. Work proceeded round the clock on a shift system, commencing in the chalk bedrock and inclining upwards, finally breaking through into the old land surface at a distance of 33 yards (30.1m) (Merewether says

75 feet (22m)) from the tunnel entrance. From this point it was necessary to use props to support the roof. Here the mound was composed of *'brownish earth chalky rubble'* (Merewether 1851, 75) and the level was subsequently followed towards the centre of the mound. Finally a number of cuts at right angles were made to investigate the centre (Fig 10).

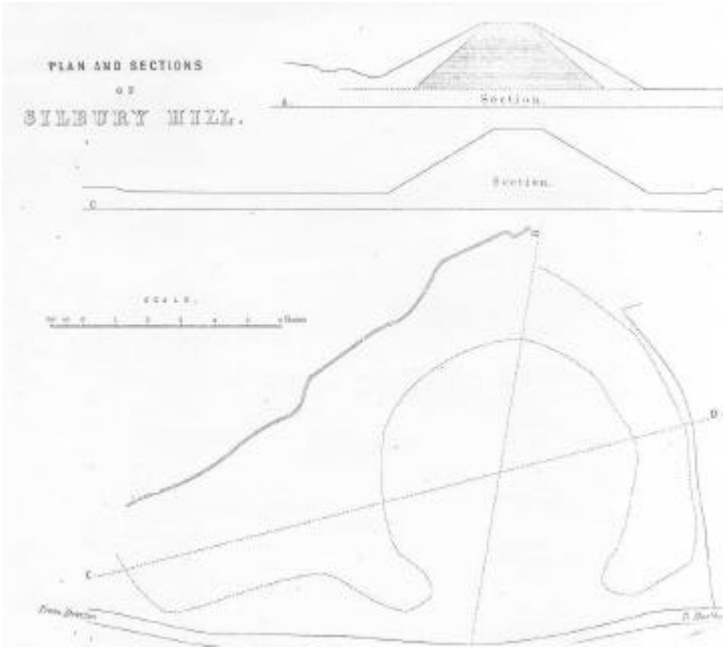


*Fig. **9** Blandford's plan of Silbury Hill (Tucker 1851).*

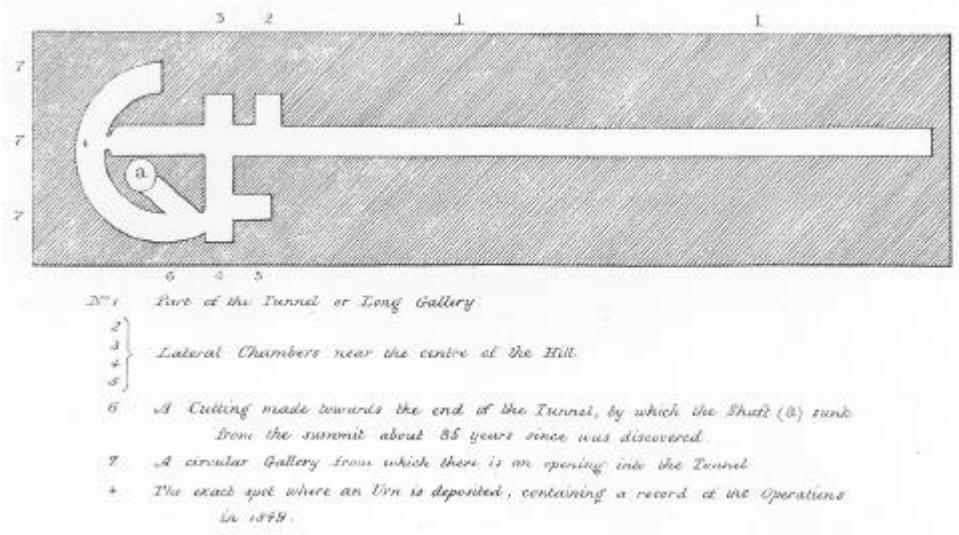


*Fig. **10** Plan of Blandford's tunnel (Tucker 1851)*

At the centre of the mound *'sods of turf and moss in layers appeared to be of the greatest thickness; ….curving layers of turf lying one over the other… The turf was quite black, as was also the undecayed moss and grass which formed the surface of each layer, and amongst it were the dead shells etc….'* (Tucker 1851, 301). Merewether (1851, 76) added that there were *'great quantities of moss still in a state of comparative freshness'* and that it still retained its colour. He believed this material together with the freshwater shells had come from a '*moist'* location (Merewether 1851,75), and thought that it must have derived from west, north or east sides of the hill where the Beckhampton Brook flowed past the foot of the mound. Sealing the turf stack was a dense black layer of organic material containing fragments of small branches and emitting a *'peculiar smell'*. According to Merewether at *'many places'* on this primary mound fragments of plaited grass or string were discovered.

'On 4th August some sarsen stones were found in one of the lateral excavations on the east side; they were much worn and similar to those found in the surrounding fields.' (Tucker 1851, 300). Merewether says *'many sarsen stones were discovered, some of them placed with their concave surface downwards, favouring the line of the heap…. as is frequently seen in small barrows and casing as it were the mound. On the top of some of these were observed fragments of bone, and small sticks, as of bushes…and two or three pieces of the ribs of either the ox or red deer….also the tine of a stags antler…'* (Merewether 1851, 80)

They confirmed that the dark streak representing the old turf line was unbroken wherever investigated and there was consequently no cut for a central grave (Tucker 1851, 301). The only finds were some fragments of antler and a few animal bones, evidently from the mound matrix, as Tucker comments that they *'may have been thrown up with the earth from the meadow below when the hill was formed'* (Tucker 1851, 301), along with a single deer tine found in the chalk rubble (Merewether 1851, 75).

Excavation at the centre continued until 30th August when all concerned were satisfied that the old ground level had been satisfactorily explored. A piece of the original buried turfline is preserved in Devizes Museum (Catalogue vol 2, 833). The tunnel was finally closed at the end of September before winter set in. It was evidently not backfilled but some of the props were withdrawn and a wall of bricks constructed close to the entrance and the mound made good (Tucker 1851, 302).

For Blandford, the excavations had disproved the idea that a burial lay at the centre. They disproved too, the idea that that the mound lay over the Roman road. Instead, as Stukeley had earlier observed, the road took care to avoid the mound and the mound was therefore of earlier date than the Roman period (Tucker 1851, 303).
For the first time it was observed that stone settings lay in association with the mound. Merewether claimed that the *'verge of the base is set round with sarsen stones, 3 or 4 feet in*

diameter, and at intervals of about 18 feet; of these however, only eight are now visible although others may be covered with the detritus of the sloping sides of the tumulus..' A few years later Long (1857, 339) could only find one visible and upon further inspection two grassed over, and consequently questioned Merewether's detail. Smith too (1861, 158) questioned Merewether's observation, noting that he could only trace *'one small stone visible on the Northern side of the base'.*

*Fig **11** The earliest known photograph of Silbury Hill taken by an unknown photographer. The rammed chalk surface of the London to Bristol highway indicates that it had been turnpiked, while the roadside telegraph could have been present from the second quarter of the 19th century. The chalk scarring is depicted on a lithograph published by A C Smith in 1861 and of unknown derivation (NMR archive).*

In response to continuing controversy, in particular James Ferguson's claim that the Roman road lay beneath the mound, the Wiltshire Archaeological and Natural History Society excavated two trenches in 1867 at the estimated original ground level on the east side of the mound. A trench was dug either side of where the road was expected to be. The size of and precise location of each trench is now not clear (but see below). The northernmost of these revealed a series of chalk blocks each about 1 ft diameter located just below the turf and at 2 ft deep six fragments of red deer antler were recovered within a restricted area of four square ft (Wilkinson 1867, 114).

The southern trench can be located with a little more certainty for it was sited *'by a depression which reaches nearly one third of the way up the hill and would seem to have been caused by*

some disturbance at the foot… ' (Wilkinson 1867, 115). The trench revealed *' a distinct semicircular space about 10 feet in radius' that had been "hollowed out". The surface was irregular, and on a ledge about eighteen inches higher than the rest, three feet square, and four feet within the hill, there was a deposit of wood ashes, in the middle of which, and lying side by side, were the blade of an iron clasp knife……and a small whetstone…'.* Fragments of antler and the iron blade of an Romano-British clasp knife and whetstone are in Devizes Museum (Catalogue vol 2, 85). The old ground surface was not recorded as it appeared to have been truncated and Wilkinson suggested that it had been deturfed to provide material for the core of the mound (Wilkinson 1867, 115). The search for the Roman road was more fruitful in the field to the south (see below).

Between September and November 1886 attention turned to the ditch, and excavations were carried out by A Pass (1887) in the meadow at the base of the hill. The location of these was depicted on a plan prepared by Ashmead and Son of Bristol (Fig 11). In this the mound is depicted with uneven slope (generally) by uneven hatching and it is of interest in that the summit is shown to have squared-off sides on the north, west and east. The closeness of hatching has resulting in blacking out around the circumference but it would seem to depict a bank broken by a number of gaps. The extent of the ditch is shown, as is its westward extension. In the south the westernmost causeway is depicted, but the rest of the ditch including the easternmost causeway is presented as silted. A ledge against the westernmost causeway is depicted as 'refuse' from the 1849 tunnel, the material perhaps then being in a less consolidated and more easily identifiable state.

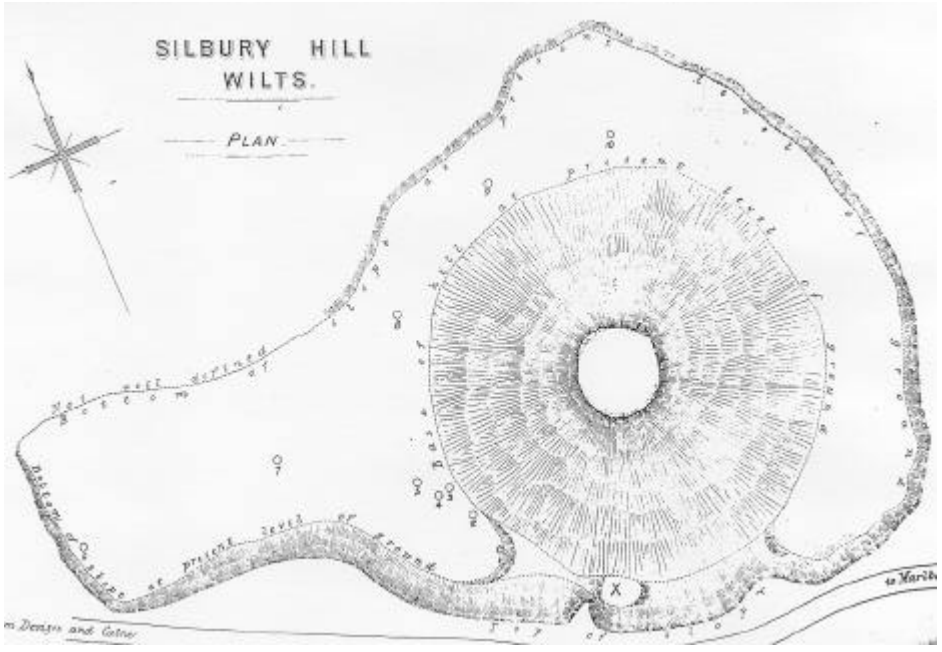


Fig. 12 Survey of Silbury Hill by Ashmead & Son

Pass excavated ten trenches, described as shafts, on the ditch floor to the west and north of the mound. The size of each of these is unknown, but workmen digging them were described

in the plural so that each hole must have been large enough to take at least two individuals; in each case the shaft was taken down to the natural solid chalk. Pass noted the remains of *'notches or steps'* that had been cut into this at the base of shafts 1 and 8. In most cases *'the chalk had been removed…to a depth of about 15ft, but near the foot of the hill this depth suddenly increases to about 21ft* (6.4m), *below the present surface'* (Pass 1887, 248). A process of elimination of other comments in the article indicates that his measurements were from the present ground surface of the ditch floor rather than below the level of the surrounding natural ground. In most cases the matrix consisted of alluvially deposited white clay but this was undifferentiated and unfortunately described as one unit. Close by the mound a large amount of chalk rubble, evidently silting from the mound, was present and within the westernmost ditch terminal was a deposit of 'many' sarsen boulders *'10in to 14in in diameter'*.

Evidently few finds were encountered. Some flint flakes and bones were recovered or at least noted from shaft 6. In shaft 5, at *c*10ft (3m) from the surface, the clay appeared to have been stained almost black for about 1ft thick, from which level came a human femur, and this in turn lay on a further 5ft (1.5m) deposit of unstained clay. Pass retained the soil and washed it through a sieve and a number of flint flakes were recovered (Pass 1887, 250). Bone was of deer, ox, pig, and dog. Remnants of deer and ox was also found in all other but one shaft and sometimes small burnt sarsen stones were found associated with these (Pass 1887, 251). In shaft 2 close to the mound and ditch terminal, a coin of Marcus Aurelius was recovered at a depth of 6ft (1.8m), indicating perhaps that the upper third of the ditch deposits had accumulated since that time.

Pass remarked that even in September after a long dry summer, water stood at a depth of 8ft (2.4m) in these shaftholes and believed that together with the flooded ditch extension to the west the mound would have been defensible.

There was evidently some concern and discussion about the shape of the mound by 1887 and that it had been altered by the spoil from the 1777 shaft, for Pass (1887, 252) comments that as the shaft was 4ft (1.2m) in diameter *'the whole of the chalk debris removed could not have exceeded forty cubic yards, and this would occupy a small space in the centre of the summit….so that none of it would have rolled down the sides'*. Contrary to Merewether's statement, he evidently thought that the hole had been backfilled, as he commented that there was a 'small bank visible on the flat summit' (Pass 1887, 252), but otherwise neither mentions the shaft or depicts its position on plan. It may well have been capped in the intervening period.

In August 1922 Flinders Petrie turned his attention to the mound (Petrie 1923). He produced a measured profile of the mound that indicates that the position of the 1777 shaft on the summit

was visible and perhaps open at that time (Fig 13). He also investigated the eastern 'neck' or causeway and determined that it was of solid chalk, the outer slope of which had been deposited with chalk rubble in order to 'form a smooth gradient from the road down to the neck' (Petrie 1923, 215). His plans however depict no excavation trench at this point and it maybe that his interpretation derives from auguring.

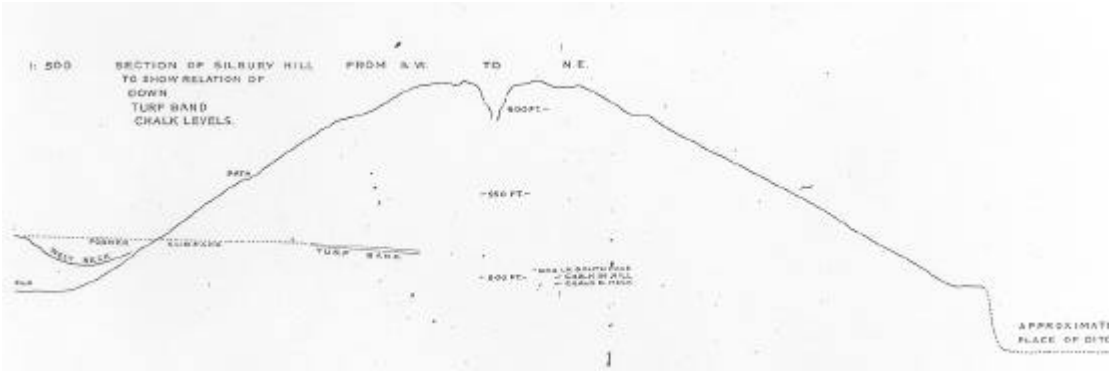


*Fig. **13** Petrie's profile drawing of the mound showing the position of the 1776 shaft (from Petrie 1924).*

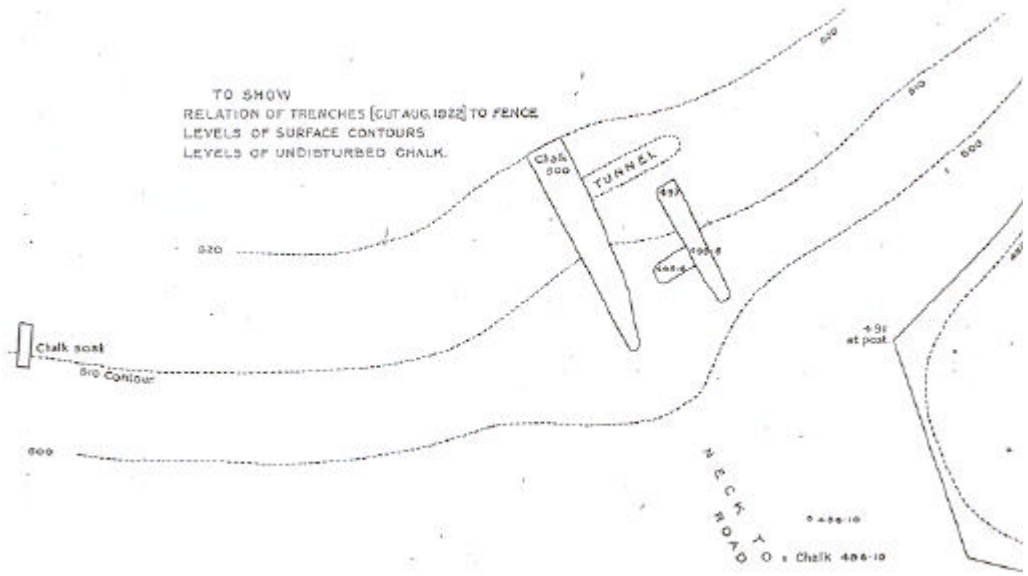


*Fig **14** Plan of Petrie's excavation trenches (from Petrie 1924).*

He did, however, excavate two small parallel trenches on the lower slope of the mound opposite the eastern causeway or 'neck', the westernmost for 40ft (12.1m) into the mound, with an extension and tunnel at right angles almost connecting each trench. The latter two cuts were intended to intercept any entrance that lay along the line of the 'neck'. As Wilkinson had discovered previously, the original ground surface here appeared to be absent, leading Petrie to consider that it had been lowered or cut into. A further small trench was placed on the lower slope of the mound equidistant between the 'necks', though the original ground surface was not encountered here either.

Petrie did, however, rediscover seven of the eight sarsens that Merewether had noted as being located around the base, but indicated that they were not as precisely positioned as Merewether had indicated. He gave measurements to them from a fencepost. He also mentioned that about thirty sarsens had been reused to support carts across the ditch (Petrie 1923, 216) although exactly where is not recorded. Assuming similar intervals around the base Petrie indicated that if the stones formed a circle there would have been originally 250 stones – each just over 2m apart.

*Fig. **15** Petrie's backfilled excavation trenches Sept 1922 (photo NMR plan archive).*

As there was access, Petrie also investigated the 1849 tunnel in order to link the original ground surface in the interior with the external ground surface. He determined that *'the mound was centred on a long almost level spur of down, which fell away sharply on the east* (Petrie 1923, 216), and that it chiefly consisted of deposits of chalk rubble and yellow clay usually laid

horizontally. Many fragments of antler, bones of red deer and pig, and flint flakes were recovered mostly at a depth of c8-10ft. Some worked flints and antler fragments from the excavation are in Devizes Museum (Catalogue vol 2, 86). Passmore (Petrie 1923, 218) added that a piece of Roman potsherd was recovered from topsoil of the east 'neck'. Amongst his conclusions, and unfortunately without quoting a source, Petrie mentioned a central tree that was found when digging the shaft in 1777 and he speculated that a cord stretched from such a feature would allow level construction work to take place (Petrie 1923, 217). Where he got this idea from is not clear but Edwards (2001) also discusses the story about a central tree.

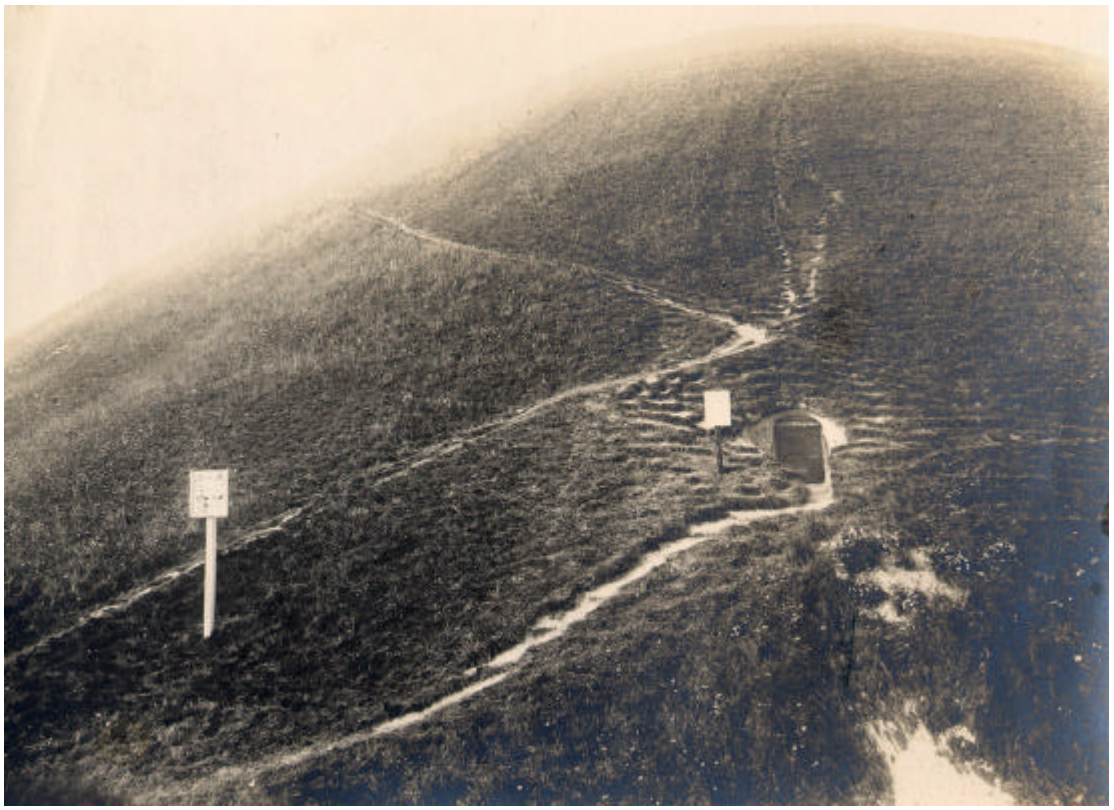


*Fig. **16** Photograph, probably taken in 1922, showing position of new notice and door blocking collapsed tunnel (photo NMR archive).*

An early attempt to locate a burial chamber by electrical resistivity methods was made in the late 1950s. Unlike previous investigators McKim (1959, 176 –8) considered that any burial might lay off centre and may remain undetected by either shaft or tunnel. A series of resistivity readings was taken around part of the base at 510ft OD and at approximately half way up the mound at 550ft OD, though the precise position was unrecorded. The results, however, were considered unsatisfactory and did not demonstrate the existence of buried features either way.

It may have been McKim's work, however, that stimulated the interest of Atkinson. The latter's campaign of investigation, funded and filmed by the BBC, took place over three seasons in the late 1960s. He not only reinvestigated Blandford's tunnel, taking care to explore the central area, but also excavated trenches on the summit and slopes in order to investigate the terraces, as well as the southern part of the ditch. Others were intended but it is unclear the extent to which work was actually carried out. As part of this programme a contour survey was undertaken by the Geography Department of the University of Bristol. This resulted in a plot with contours spaced at 2m intervals, clearly inadequate to depict the earthworks that Atkinson knew were present. Subsequently, John Hampton of the National Monuments Record arranged for overlapping vertical photographs to be taken from the air and for Keith Atkinson of University College, London to prepare a photogrammetric plot (Fig. 17: and letters - NMR files). A series of interim reports was published and much of this work on the mound has now been admirably published by Alasdair Whittle (1997).

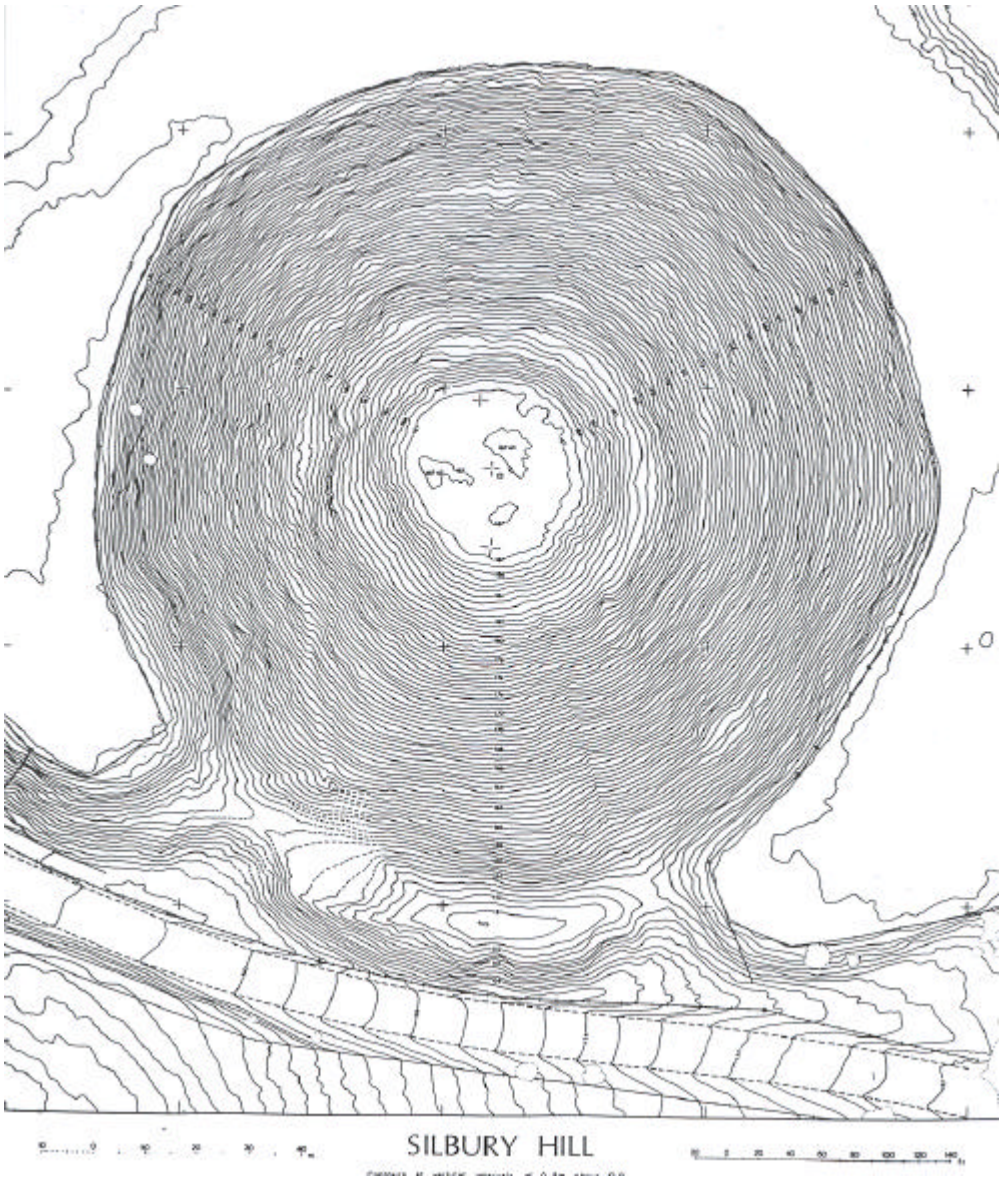


*Fig. **17** Photogrammetric contour plan prepared by Keith Atkinson in 1968 (NMR archive).*

The excavation evidence allowed Atkinson to conclude that there were three major phases of construction. In the first, a circular fence some 20m in diameter enclosed an open but well trampled space and was subsequently filled, at first with a low mound of clay and gravel and then turf and soil to a height of about 4.5m. This was then sealed by layers of gravel and soil taken from the valley floor forming a mound of about 36m diameter and 7m in height. Secondly, a mound of chalk was constructed over the earlier mound that reached a base diameter of some 73m and utilised the material excavated from a surrounding quarry ditch. Finally, the ditch was filled in and an enormous mound of chalk constructed using material from a new surrounding ditch and its extension (Atkinson 1978).

To date, most work has aimed at determining the age and nature of construction of the mound or of locating a central burial chamber, and the later use of the mound and its environs has invariably been disregarded. Despite this, there are a number of indications of early activity within the surrounding landscape. A La Tene I bronze brooch (NMR SU 16 NW 74) found near Silbury Hill provides record of Iron Age activity (Devizes Museum: Grinsell1957, 34) and finds of other artefacts (Chadburn & Corney 2001, 46) have been taken as evidence that Silbury might have been a focus of interest at that time. These finds, however, contrast with the abundant Romano-British evidence. Stukeley mentions a Roman coin found on the summit, while a gold coin found in a mole hill on the mound is thought to be Neronian (sited to SU 100685: NMR SU 16 NW 108: Proc Marlborough College Natural History Society 1888, 146). A number of sherds of Romano-British pottery were recovered in Atkinson's trenches on the summit, as well as in the ditch (Atkinson site archive Alexander Keiller Museum, Avebury (henceforward AKM)). Pass too, found Roman material in the ditch, and a sherd of Roman pottery was recovered from the eastern causeway by Petrie, while a number of horseshoes, said to be Roman, have been found at various times within the vicinity. The latter figured prominently in early archaeological literature, and in 1854 Mr Bartlett of Burbage exhibited one to the meeting of the Archaeological Institute (Anon 1854, 65: Devizes Museum Cat 2, 1934, 231). This was said to have been recovered from *'the foot of Silbury Hill'* while the meadow boundary was being removed, found *' in a bed of chalk, and the nails remained in the shoe, but no trace of the hoof or bones was found…. The Late Dean of Hereford obtained a similar horseshoe found with others and a skeleton a short distance north-west of Silbury, and it is figured amongst the illustrations of his Diary'*.

The course of the Roman road and the relationship of road to mound has figured prominently in discussions about the date of the mound. Stukeley (1743) was well aware of the course of the Roman road, it *'…goes close by Silbury Hill, through Bekamton-fields..'* He thought the road unfinished and noted the manner in which nearby barrows had been quarried for material. And again (1743, 43) *'The Roman way … Curved a little southward to avoid it* (Silbury), *and it runs close by the isthmus of the hill, then thro' the fields of Bekamton. This shows Silbury Hill was ancienter than the Roman road. They have lately fenced out the*

Roman road (which they call the french way) in the plough'd fields of Bekamton; but you see the confirmation of it when it reaches the heath ground….' Stukeley's illustration shows equally spaced pits either side of the camber. The regularity indicates that these may not be quarry pits, but instead may represent postholes, stone sockets or trees that once lined the road side.

Rickman (1840, 401) argued that Stukeley had misrepresented the line of the road, depicting it as *'making a half turn around the base of the artificial hill; as if the Roman road aimed at such an obstruction merely for the sake of avoiding it; and he then relies on this fictitious curve in support of his opinion of the priority of date of the said hill',* but these comments were immediately rebutted by Long (1857, 341-2). Smith too was clear (1861, 183), *'East of Beckhampton the road runs straight for Silbury, but afterwards turns southwards to avoid it'* and it could be *'observed in all seasons - crops of corn ripening somewhat earlier on the track of the Roman road than in the surrounding field,* (which) *mark its course just before harvest very clearly'*, and he re-emphasised these views later (1884).

Nevertheless the argument continued. Controversy was fostered by James Ferguson who claimed that the Avebury stones represented a plan of King Arthur's battle of Badon Hill and that Silbury Hill was constructed in commemoration, much as a monumental mound had been constructed at Waterloo. The Wiltshire Archaeological and Natural History Society, therefore, investigated the mound at the point where the Roman Road was considered by Ferguson to approach the mound (see above) and trenches cut on either side of the supposed position of the Roman road. Smith (1884) depicts these as on the east side of the mound and adds that the trenches were joined up to investigate the supposed road surface. Neither revealed evidence for the Roman road and attention turned instead to the field to the south where it was visible as a shallow earthwork and soilmark, and where Smith as others fully expected to find it. A trench excavated across it revealed a road 18ft wide defined by two side ditches and located at 30 yards south of the base of Silbury Hill. A total of nine sections was cut along a 477yard stretch of the road where it curved south of the hill (Wilkinson 1867, 117). Smith (nd) wrote that *'Silbury is not on the Roman Road though Ferguson declared it was and challenged us to dig: we accepted the challenge: he came down and Sir John Lubbock and others: and after digging into the face of the hill where Ferguson desired we put the workmen on where we knew the road had been, to the south of the hill and discovered it in no less than 10 places'.*

Unfortunately no plans of the position of these exists, other than that they were on the brow of the hill opposite the mound. Atkinson bemoaned this in his project design (1957) and planned to remedy the situation. Unfortunately no plan appears to exist of those excavations either. Neither can notebook or any other indication of work be traced. An air photograph taken in

1968 indicates that a series of small trenches was cut approximately along the line of the road but there is no further information.

Atkinson's project design thus included investigation of the Roman Road. His own view about the position of its course was *'dictated by the necessity of getting the shortest crossing over the marshy ground immediately east and southeast of Silbury'* (Letter to G Berry in Atkinson site archive AKM). He noted the presence of the road on the latest air photographs recording that *'It extends west for 250m from where the road changes direction, to the Southwest of Silbury Hill, and is centred on SU 0953 6846. Cropmarks of parallel ditches follow part of the alignment of the road, just to the east of the possible agger described above, but diverge from the route of the road where it changes direction, and head in the direction of Galteemore farm in Beckhampton village. These* (i.e. the parallel cropmarks*) are the remains of modern activity in the area, probably for one of the utilities'.* A plan provided for Atkinson by the County Council shows two government oil pipelines, positioned south of the Silbury mound, one of which Atkinson realised was *'our feature'*.

A well excavated in 1896 (Brooke and Cunnington 1897) situated immediately adjacent to the hedge alongside the road produced Romano-British material, and this was only 50 yards east of a well excavated 16 years earlier by the Cunningtons (position taken from Smith 1882). Firmly dated to the Roman period, it had been backfilled with sarsen boulders and various fragments of building material, dressed sarsen, tiles, including a fragment of Bath stone 12" long and 9" diameter thought to be part of a column. Finds included pottery, a quernstone, iron hook, nails, oyster shells, antler, bronze scales, coins a blade of shears, iron stylus. Similar broken tiles were found on the surface of the adjacent field (Brooke & Cunnington 1897, 168: NMR SU 16 NW 29).

Further undated wells were also identified in the area, one close to the Swallowhead spring, the other to the southeast of Silbury Hill and within its ditch. A further example said to have been used during the 19th century was located by the road south-west of Silbury Hill, while two others further east were depicted on Brooke and Cunnington's (1897) plan.

During additional excavations during the Wiltshire Archaeological Society campaign to demonstrate the line of the road, Smith encountered a large hole close to the easternmost trench (NGR SU 1018 6829). This measured 12ft by 8-9ft in width and was interpreted as a 'kitchen-midden'. Three small bronze coins; an iron stylus; part of a pair of shears; a number of nails a few fragments of samian; potsherds from over eighty pots, stone, tile, animal bones and oyster shells were recovered (Wilkinson 1867, 118: Devizes Museum Catalogue). A second midden was dug by Brook nearby (NGR SU 1011 6821: position illustrated in Brooke and Cunnington 1897, fp166) some time before 1888 and concentrations of Romano-British sherds were subsequently recovered in 1973 by Mrs F J de M Vatcher in an east-west sewer

trench close to the Kennet at NGR SU 1047 6823 (NMR SU 16 NW 97). Smith too had recorded the presence of Roman coins where the road approached the southern slope of Waden Hill.

While the evidence from south of the A4 indicated the presence of at least one substantial Roman building somewhere in that locality, it was not until 1926 that the presence of significant quantities of material indicating Roman buildings north of the road too was found (NMR SU16 NW 41, NMR SU 16 NW 85, NMR SU 16 NW 197). Samian ware, other pottery and tiles, etc., were noted in patches of dark soil in 1926, in a pipe trench on the slopes of Waden Hill (Cunnington 1930, 173). Much later a human skeleton with iron nails associated with its feet, and Romano-British pottery (including samian), flint flakes, oyster shells, and a fragment of roofing tile in the fill of the grave was discovered 180m north of the A4 (at NGR SU 1037 6855: NMR SU 16 NW 41: Devizes Museum Acc 30/66: Evans 1966, 97-8: Anon 1967, 135).

Further evidence was encountered during work in advance of a new sewer pipe (Powell *et al* 1996, 27-58), and in particular by air photography (NMR SU1068/180 Oct 1996; NMR SU1068/165-71 Aug 1995; SU1069/48 Aug 1983) that indicated the presence of at least fourteen rectilinear buildings set between the slopes of Waden Hill and the Kennet (Fig 18: Corney 1997, 139-141). These are situated either side of a street or trackway that runs parallel to the Kennet and which may be terraced into the hillside in the manner of similar Romano-British villages elsewhere in Wiltshire (McOmish *et al* 2002). Further buildings may lie to the south alongside the Roman road.

In terms of chronology there is no evidence to suggest that the settlement continued much beyond the Roman period, and while the origins of nearby Beckhampton village are quite unknown, Atkinson's excavations on the Silbury terraces indicated that the mound itself certainly continued to be utilised: *'the inner angle of this terrace had been recut and revetted by vertical timbering; and similar construction was found on both of the two smaller and slighter short terraces examined further down the slope. In all three places the associated pottery was of late Saxon or Norman fabric, and the most probable date for this activity, presumably defensive in intention, is given by a silver quarter penny attributable to the last years of Ethelred II (AD 1009-16)'*. In addition an early medieval, slightly squarish stone bowl *c* 4" across, was recovered from the cutting on one of the lower ledges (Atkinson excavation archive - 35mm slide), while an iron spearhead dated to the Saxon period was recovered early on in the campaign while erecting a post in connection with a launching ceremony (Birmingham Evening Mail 8-4-68 cutting among Atkinsons site archive AKM). However, according to H Shortt of Salisbury Museum the spearhead could have been Roman or even earlier (Letter Atkinson site archives AKM).

Despite this, the partial examination of the flat summit of the mound in 1969 revealed no trace of post-Neolithic structures (Atkinson 1970). Other finds from the vicinity, including a triangular decorated bronze mount, probably for a book dated to the 10th or 11th centuries AD, which was found in the River Kennet south of Silbury Hill at SU 101683 (NMR SU16 NW 113: Devizes Museum pers comm Paul Robinson: Anon 1983, 133) supports the idea of high status activity either on or around the monument in the early Medieval period.

*Fig. **18** Air photograph of Romano-British settlement on the slopes of Waden Hill. Silbury Hill at top. (Photo NMR SU1068/169)*

*Fig. **19** Photograph showing refreshment rooms and petrol pumps to the west of Silbury Hill. The tea bungalow was present by 1928 when the first application for the siting of petrol pumps was made and the photograph probably taken in the 1930s (NMR archive T1836).*

THE EARTHWORKS

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Survey of the mound and its surrounding area in 2001 was carried out by Global Positioning System by satellite, the data from which allowed compilation of both hachured and contour plans, as well a series of digital terrain models to be produced.

The mound

In plan the mound is not circular. The contour plan (Fig 20) reveals that the form of the mound is dictated by a series of radial spines or spokes from which horizontal sections emanate in a similar manner to a spiders web. Some of these 'spines' can be isolated and identified at points where the contours collectively project and disrupt the general curvature. The summit itself is more correctly sub-rectangular, measuring 36m by 32m, and despite containment by a fence that might have influenced shape during recent times, the base may possibly be nine-sided.

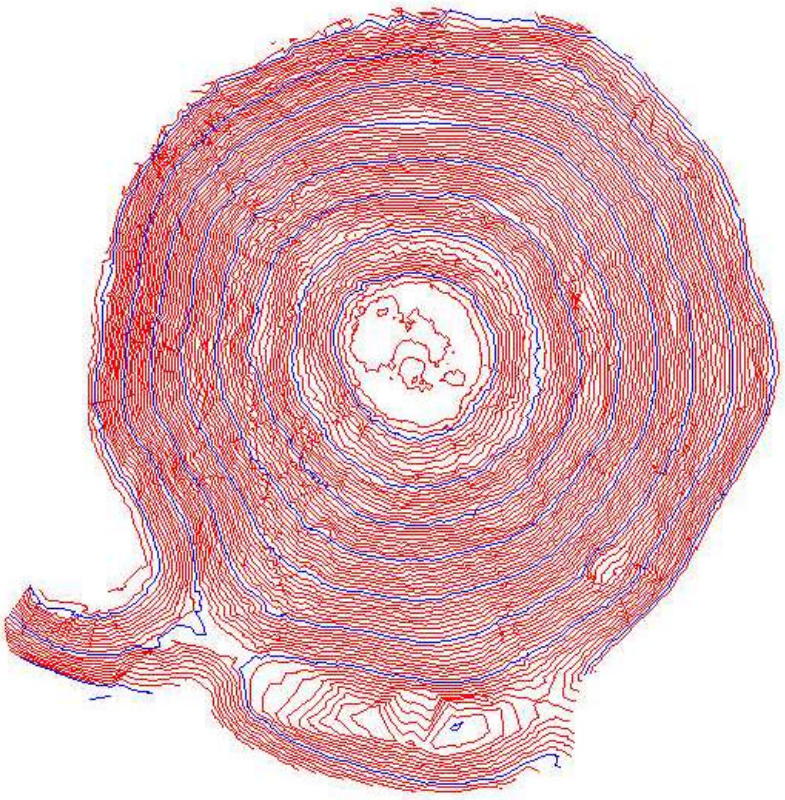


*Fig. **20** Plan of the mound with contours at 0.5m intervals.*

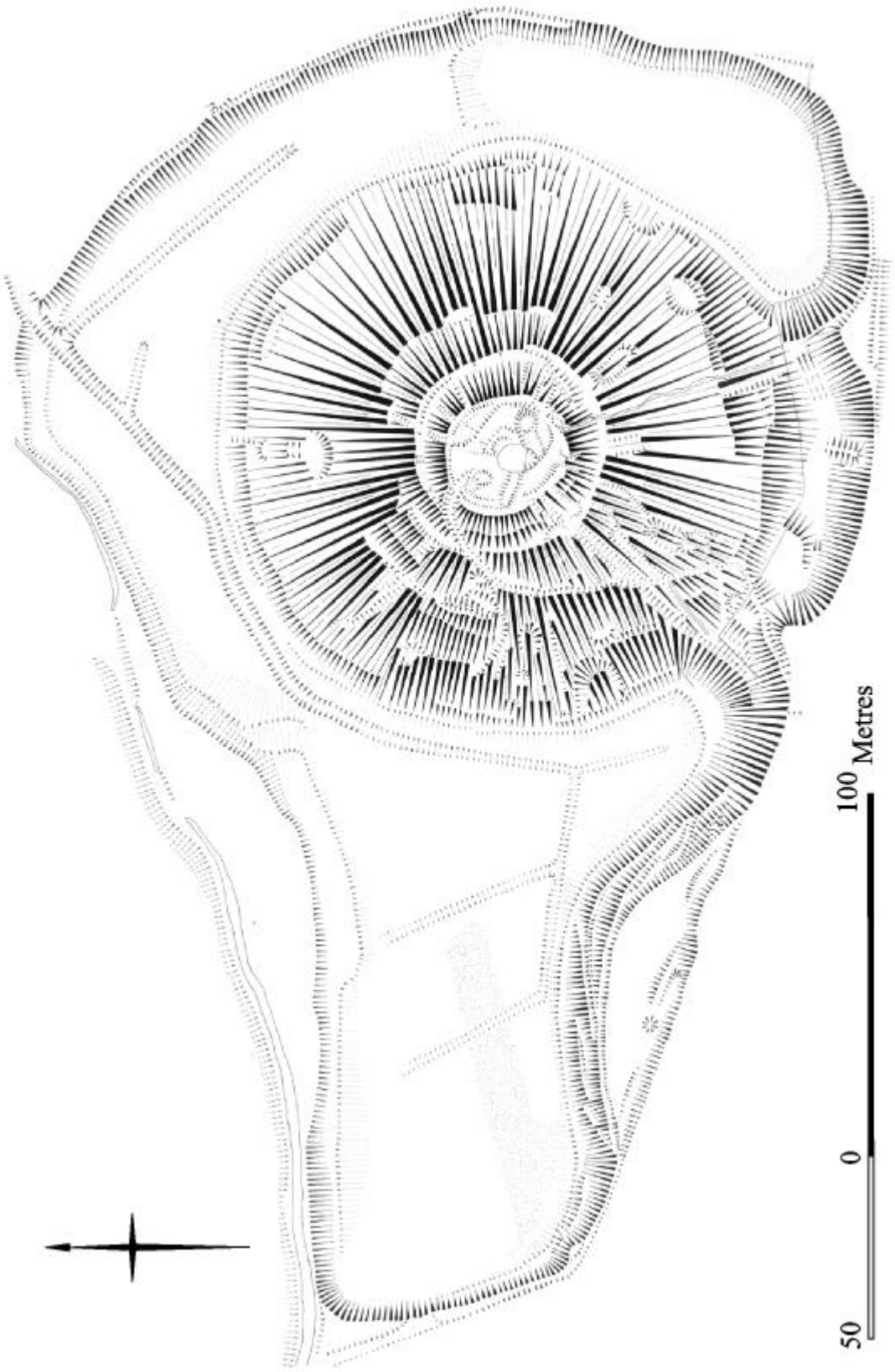


*Fig. **21** Hachured plan of Silbury Hill reduced from original at 1:500 scale.*

A break of slope several metres above the present ditch floor (Fig 21) almost certainly marks the old ground surface and therefore the real base of the mound. Below this the angle of slope invariably steepens, but it marks the inner edge of the ditch rather than the lower levels of the mound. Although it is difficult to be precise, because continuity of line cannot be traced, the diameter of the mound at this level is generally about 150m, and even taking weathering into account, the diameter of the original final mound must have been of this order.

The height similarly differs depending on whether it is measured from the position of the old ground surface, and if so where, or from the present base of the ditch, i.e. the current fence line. True height at the centre of the mound, estimated as likely to be over 30m was confirmed by borehole readings as a little either side of 31m (Kirkbride 2001 unpublished report). Taken vertically from around the perimeter it differs according to the fall of the natural ground surface - in the north some 32m and in the east 34m in height. The mound rises steeply achieving varying angles according to position on the mound, and tapers, sometimes with straight sides, but elsewhere in a slightly cambered fashion, towards its flat summit.

A few earthworks survive on the summit, some to over 0.5m in height. These are difficult to interpret, principally because of the lengthy and varied activity known to have taken place during historic times, not least the effects of excavation paraphernalia. Aside from the collapsed shaft that is situated almost centrally, the main feature is a circular hollow some 7m in diameter and measuring over 0.5m in depth, set a little to the east of it. A hollowed gully, almost an entranceway, leads into this from the west. Around the lip of the summit are traces of a shallow bank, where it survives no more than *c*3m wide by 0.2m in height, perhaps remnants of a tree planting ring. Other earthworks, in particular a bank to the north of the collapsed shaft, may have been a result of past excavations.

At various points around the slopes are traces of horizontal terraces, platforms or breaks of slope thought by Atkinson to be remnants of his proposed tiered construction. The uppermost of these ledges, a maximum of 2.5m wide on the surface, lies just 4m below the summit. It is better seen on the north and east and barely perceptible in the south and southwest, perhaps because it had been better infilled in that quadrant or, because the prevailing wind from this direction has resulted in greater weathering and erosion. A second can be traced at *c*10m below the summit, while stretches of breaks of slope that might account for others lie at 15, 19 and 27m below the summit. If perambulated, the upper ledge, in fact, finishes the circuit at a position below the starting point and implies a spiral arrangement. It is unclear whether this is as a result of the original construction, or of later redevelopment, but it suggests that the model of tiered construction proposed by Atkinson may be need to be modified and that the 'terracing' could have been a spiral. In the southeast, a ramp, 2m wide, leads prominently from the upper ledge almost to the summit. Again whether this is an original feature is unclear. That it finishes short of the summit may indicate so, if the material above it is later.

In the west are further ledges at a slightly lower level that could represent stages of the 'tiered' construction. They stretch for 12m and provide ledges up to 2m in width. The present path, an important chronological feature (see below), cuts them but other than this there remains uncertainty as to whether they are original features.

Other more platform-like features lie around the mound, both on the slopes and close to the original ground level. On the northern slopes a break of angle leads to a prominent crescentic platform or stance *c*14m by 5m. A trench-like scar leads downhill from this to an apron, while a subsequent scar on the same axis appears to cut the old ground surface.

A similar crescentic platform situated in the south-east is so prominent that it appears on the digital model. This measures 10m by 5m and lies above a considerable apron. Some metres above it, lying just below the uppermost 'terrace' and on the same axis is a considerable scar, 13m in length by 5m wide and over 0.5m deep. This may represent trenching, and the hint of a bank to one side could support this, but it could equally indicate the sort of collapse that has occurred above the Merewether tunnel.

Other similar features are situated at ground level. In the east a small ledge 9m by 4m may represent the trench cut by the Wiltshire Archaeological Society to investigate whether the Roman road ran beneath the mound (see above), though some uncertainty concerning the exact location of this remains. A little south of this a further crescentic cut some 12m by 6m could be the result of this or much earlier activity.

A number of linear features ascending the mound were recorded. Two of these, each 1.5m in width, are situated on the upper northeastern slopes between the two uppermost ledges and mark the position of Atkinson's backfilled excavation trenches. The westernmost of these, 17m in length, was placed from the summit, across the uppermost ledge and down to a break in slope that almost certainly marks the position of a further ledge. The second, at 7m in length, investigated the area between the summit and the uppermost ledge. Perhaps the chief among these linear features is a depression, up to 1m deep and 7m wide, that can be traced for 19m up the slope of the mound, and its line may be reflected in other scars closer to the summit on the same alignment. It lies opposite the westernmost causeway and is probably the result of the collapse of the 1849 tunnel. It maybe that closer to the centre, at greater depth, the collapsed chalk has still to work its way to the surface.

A narrow linear scar, cut to a maximum of 0.5 deep, the result of visitors climbing the mound, lies in the southeast opposite the southeast causeway.

The present pathway to the summit, eroded and hollowed in places, curves around the western slopes, starting opposite the southwestern causeway and ascending to the vicinity of the tunnel entrance, then gradually ascending northwards and finally approaching the summit from the northwest. It is easy to assume that this is a feature of recent visitor wear, but the route of the path is visible on early illustrations and dates from at least 1663. Stukeley mentions the construction of a pathway by Richard Holford, then owner of Avebury Manor, which in conjunction with the known tree planting may indicate that some use was made of Silbury as an eyecatcher. Most of the Manor parkland lay to the north, but like the Marlborough Castle mound, there may have been an attempt to incorporate it within a designed landscape and it may have been an unusual and attractive feature to take visitors. Whether it was present path that was being reconstructed is perhaps doubtful, but it could be that the ramp leading from the upper ledge to the summit was cut at this time.

Shallow banks of material on the western slope remain unexplained – they could represent spoil tipped from one of the excavations, but equally may represent other features, former routes of access or property boundaries.

The southwestern corner of the mound opposite the ditch terminal appears to have material missing. The circumference here is concave rather than convex. The profile is more hollowed, and the angle of slope steeper. If this is the result of an earlier outward collapse of material there is no sign of the resulting spoil at the foot of the mound or in the present ditch. Alternatively it could result from an inward collapse, but for the moment this remains problematic. A shallow bank also ascends the mound here, from ditch terminal to summit. In places other scars, the results of more recent routes to the summit, obscure it but, cut by the path of 1773, it would appear to be an early feature. It is conceivable that the mound was once subdivided for pastoral purposes and that the bank forms a long vanished hedgeline, but equally it could indicate the position of an early route to the summit, the position of a stairway perhaps.

The ditch

Situated on a declining spur, the base of the mound will have been placed at an angle and if horizontal construction layers and ditches were intended, more material would consequently need to be placed on the north side of the mound than the south. Similarly, in the southwest and east, the sides of the ditch are steeply cut compared to the north, where the edge of the visible ditch is quite shallow resulting in a broad flat bottom up to 43m across. At the level of the original ground surface the ditch is between 38 and 53m in width. South of the mound, the ditch, separated from the rest of the circuit by two causeways, appears both narrower and shallower than elsewhere, being 27m wide by 6m deep. In the west the ditch appears to have

been considerably extended and excavated into an extensive rectilinear quarry, some 85m wide and 165m long, in the direction of the Beckhampton Brook. This will be referred to as the extension. In the south this left a steep quarry face currently some 6m deep, while closer to the stream a mere 1 m deep.

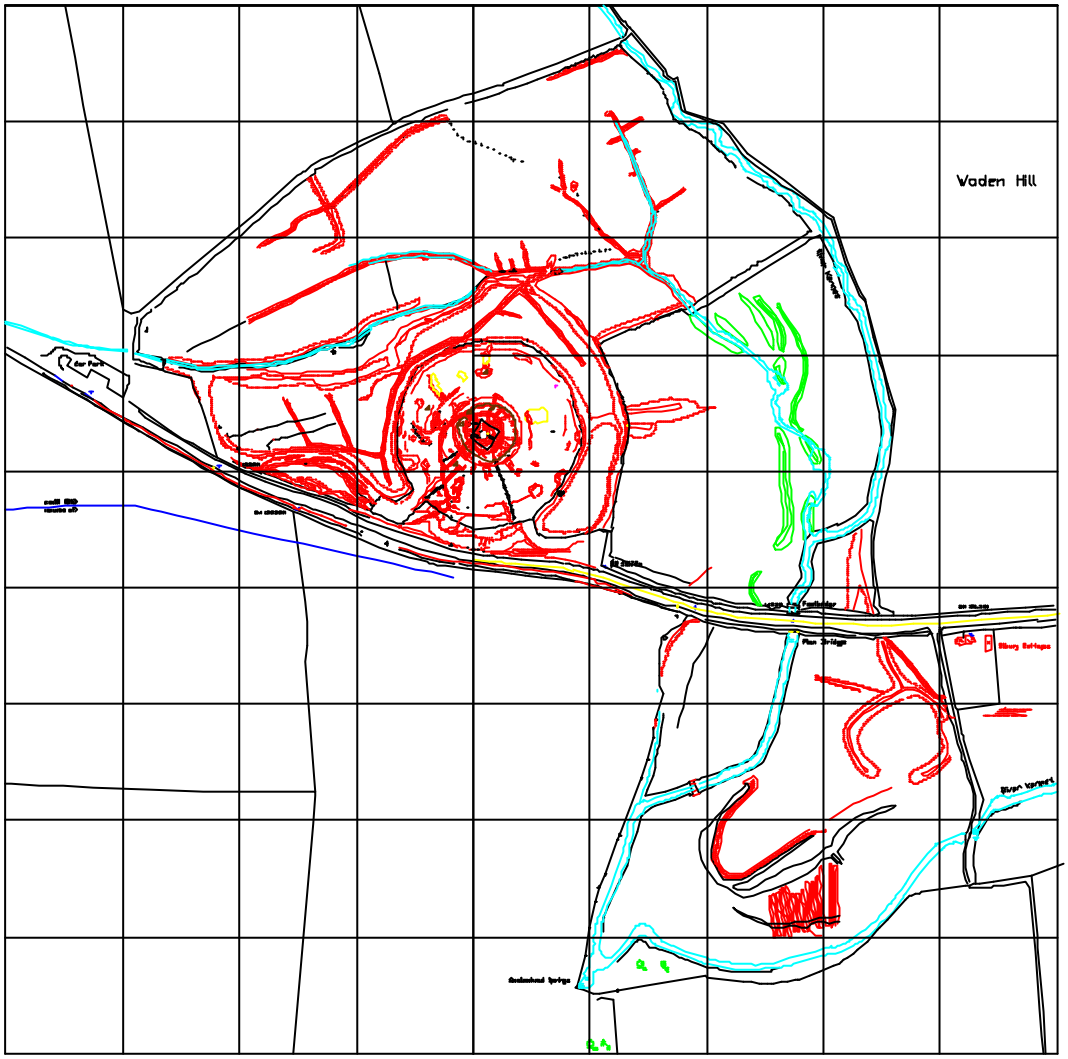


*Fig. **22** Plan of the Silbury Hill area plotted on the Ordnance Survey tile. Each square = 1 hectare. Red = archaeological features, dark blue = line of Roman road, light blue = stream, green = relict stream channels, yellow = vegetation.*

The wider landscape

Perhaps surprisingly in view of the close proximity of the Romano-British village (Corney 1997), no earthworks indicating an extension of settlement were recorded. The meadows immediately around the monument have been heavily cultivated at some time in the past and apart from a few fragments of almost levelled lynchets, earthworks do not survive. Despite this cultivation, an embanked enclosure, bounding an area of about 0.70ha, can be detected south of the A4 (Fig 22). In plan form it is square with rounded corners and with an opening

perhaps too wide for a formal entrance in the southwest. The banks are shallow and almost levelled but remain up to c0.5m high in places. It remains of unknown date and does not conform to the alignment of the known Roman village or of the Roman road, though conceivably may be associated.

A shallow linear bank-like feature, no more than 0.2m high, was noted south of the A4 and aligned almost parallel with it but contrary to the A4, aiming to avoid the lower slopes of Waden Hill. In view of the number of utilities that may lie alongside the A4, this may be an almost levelled pipeline.

A number of sherds of Roman pottery were noted during the survey but not retained. A single sherd was noted to the northeast of the Silbury mound adjacent to the junction of Beckhampton Brook with an ancient channel of the River Kennet. Good but unquantified numbers of sherds were observed close to the valley floor between the A4 and the Swallowhead spring.

Remains of post medieval and recent drainage and potential flood meadows lie within the ditch and meadows around the monument and to the south of the A4 around the confluence of the various streams. South of the road a carrier has been constructed around the lip of the higher ground immediately above the River Kennet, though it is by no means clear where this is feeding water to. A series of shallow gullies was traced within the monument ditch; these were probably for drainage as the ditch itself floods quite naturally each winter. A series of water channels, dry in summer, encourage the Beckhampton Brook to observe certain courses.

Sarsens

No sign of the peristalith said to be present around the base of the mound (Merewether 1851: Petrie 1924) was encountered. A sarsen boulder lies on the surface of the monument ditch little more than *c*2m from the north of the mound, while three others lie on the outer slopes of the ditch in the east. Erosion by the path up the mound has revealed a small boulder at the summit. A number of sarsen boulders were noted to the south of the A4 where they have probably been dragged to the surface as a result of road or pipeline digging. A standing stone situated 16m north of the quarry ditch marks the canalised line of the Beckhampton Brook, while a series of split sarsens have been utilised (*allée couverte*-like) as a sluice for the Beckhampton Brook to the northeast of the mound. Significant numbers of boulders can still be seen in the banks of the Kennet. Small fragments of burnt sarsen were observed eroding from the surface of the southern ditch edge of the ditch extension.

Valley

Former water courses can be traced on the valley floor and indicate that the stream formerly ran a little closer to the mound. The course of the River Kennet appears to have been canalised where it flows close to the base of Waden Hill. South of the A4, forced by the promontory-like spur of Waden Hill, the Kennet's course veers southwest, until it turns a sharp angle to move west towards west Kennet. Similarly the course of the Beckhampton Brook may have shifted. Its natural course lies some 20m north of the quarry ditch, after which it is channelled by drains towards the Kennet, though at some point it may have been channelled into the ditch extension.

Further south, the Swallowhead Spring, dry, but bedecked with offerings and sacred tokens at the time of survey, today lies in a narrow coombe 20m south of the Kennet. Vegetation at the time of survey precluded survey of any extant features but the presence of a number of sarsen boulders was noted. These may be quite natural. A spring is marked a little higher up the valley on the current OS map. The spring issues from the base of a modern plough lynchet and it may be that this had encroached and formerly the outlet lay a little further south.

DISCUSSION AND CONCLUSIONS

Introduction

As we see it today, the form of the Silbury monument is as much the product of four millennia of weathering, modification and erosion, as of its original construction. This attrition was caused in part by the elements, but also by intermittent episodes of greater human and animal activity that have left their marks across the surface. That the mound has remained so proud, evidently stable, has been put down to its superb construction (e.g. Atkinson 1968, 169-170), Passmore (in Petrie 1923, 218) being led to comment that the hill must have been 'turfed over as made' in order to ensure that no slippage of rubble occurred. However, as Atkinson's excavations demonstrated, in all probability few of the features that we see clearly today are those left by the original builders. Even the well known steps or terraces are the product of early medieval use, although Atkinson believed that they respected or reflected earlier construction. It is important to recognise the validity of these phases of activity. Teasing out detail that marks the final stage of late Neolithic construction is, of course, an important and valid approach, but it is just a snapshot of a transitory phase in the monument's history and illustrations of other phases are of equal value and importance. Analytical ground survey of Silbury Hill, its quarry ditches and the surrounding area, has added a significant amount of information about the monument. The mound itself is, of course, one huge earthwork, but engraved on its summit and slopes are other earthen features that have a tale to tell about construction and use of the mound during millennia.

The survey information collected by GPS techniques has been plotted in a number of ways: the traditional hachured plan providing most relevant information, but contour plots and digital models play their part too. These together with the inspection of easily available documents and air photographs allow a new interpretation of the monument that emphasises the chronological ebb and flow of activity as well as its position and context within the wider landscape.

The traditional hachured plan (Fig 21) reveals a number of previously unrecognised features that appear as subtle earthworks engraved or set into the summit and slopes of the mound, as well as highlighting others formerly known, but which have figured less prominently in literature. In contrast the new contour survey, plotted here at 0.5m intervals (Fig 20), while not depicting such subtle detail, helps illustrate the changing angles of slope in a manner that the hachured plan does not. The latter does contain some of the features depicted on the hachure plan since contours break these features at arbitrary points, but to construct a contour plan that would illustrate all of the features recorded would entail a plot at considerably less that 0.2m intervals, which would be tiring on computer memory and black

out when produced for illustration as a reduced plot. Although Atkinson had specified the methodology (Atkinson site archive AKM: Letters NMR file), the contour survey carried out by Bristol University in 1967 and plotted at 2m intervals depicts none of the earthworks. At that time, before the availability of EDMs, however, it was an enormous task to survey contours at intervals appropriate enough to pick up subtle earthen changes. The photogrammetric plot subsequently made by Keith Atkinson (Fig 17), however, was plotted at 0.5m intervals and does show detail of the more prominent features and can be usefully compared with the present ground survey to detect change since 1968 (see separate report by Tom Cromwell, English Heritage, Centre for Archaeology). The photogrammetric plot, however, resulting from photographs, is subject to problems of prevailing lighting conditions and vegetation growth and devoid of some of the subtle detail available in the ground survey. Both surveys are, however, also restricted by the necessity of plotting at a scale that will reproduce on the printed page. Nevertheless it can be remarked that the general form of the mound is depicted in both surveys. K Atkinson's photogrammetric plot (NMR Coll 616309) shows the concave portion in the southeast of the mound, the northern and southeast anomalies, the latter with a trench above it, and two (possibly three) high points on the summit that stand proud by over 0.5m above the surrounding area, one in the northeast and one in the west. All of these are, of course, included, with other detail in the present survey.

Shape

Careful investigation of the surface earthworks has resulted in a series of plans that not only allow the mound and surrounding landscape to be digitally modelled, but also ensure greater understanding of the development of the monument. Reference to the contour plan (Figs 20 & 23) indicates that the mound is not in fact circular, and that its form may be dictated by a series of radial spines, between which are straight construction lines forming something like a spider's web. The number of straight sides is not absolutely clear, as much of the surface is masked by weathering, but it could be as many as nine at the base, and it is conceivable that the form changes slightly as it attains higher levels. Towards the summit it appears even more angular; on the penultimate ledge for example, an almost right-angled change in direction can be observed (see e.g. Fig 24), while the summit itself appears to be sub-square rather than circular.

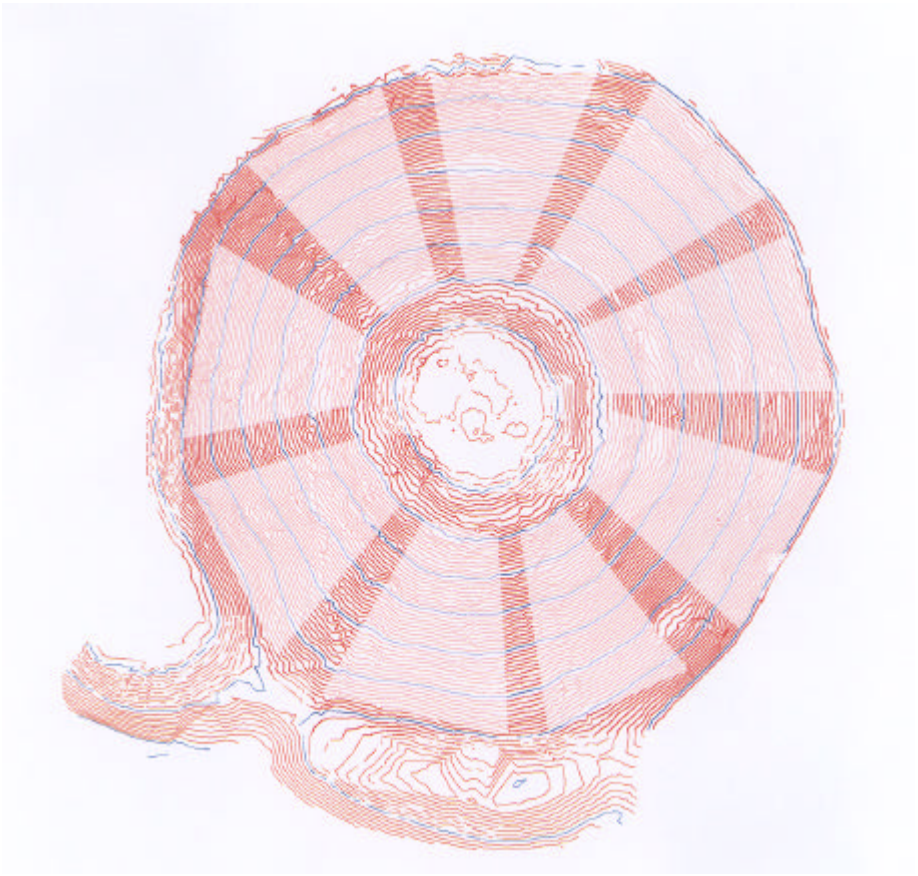


*Fig. **23** Contour plan showing potential construction details.*

*Fig. **24** Air photograph taken during Atkinson's investigation, showing angular form of upper terraces, with the entrance to the tunnel in the foreground (Photo: NMR SU 1068/20).*

There is one exception to this overall plan. In the southwest, immediately above the terminal of the quarry ditch, the slope appears to be concave. This can be seen on both the 2001 survey and 1968 photogrammetric contour plans, as well as on some views of the digital model (e.g. Fig 25). It may be considered that to some degree this is fortuitous and that the eye is fooled by the curving nature of the ditch terminal, but a ruler placed along contours on this part of the plan indicates that the concave appearance even though slight is genuine. This is difficult to explain, but perhaps the most obvious occurrence producing such a feature would be as a result of collapse of part of the mound. Today there is no evidence revealed on plan to support such an explanation (no rubble at the foot of the mound, for example). However, work by Pass in the ditch at this point revealed great amounts of chalk rubble together with sarsen boulders (Pass 1887, 248). Merewether, Atkinson, and Petrie all mention the presence of sarsen within the structure of the mound and it may be that the boulders mentioned by Pass represent the residue of a pile of collapsed material: the chalk matrix being diluted, washed and dispersed in solution before being redeposited.

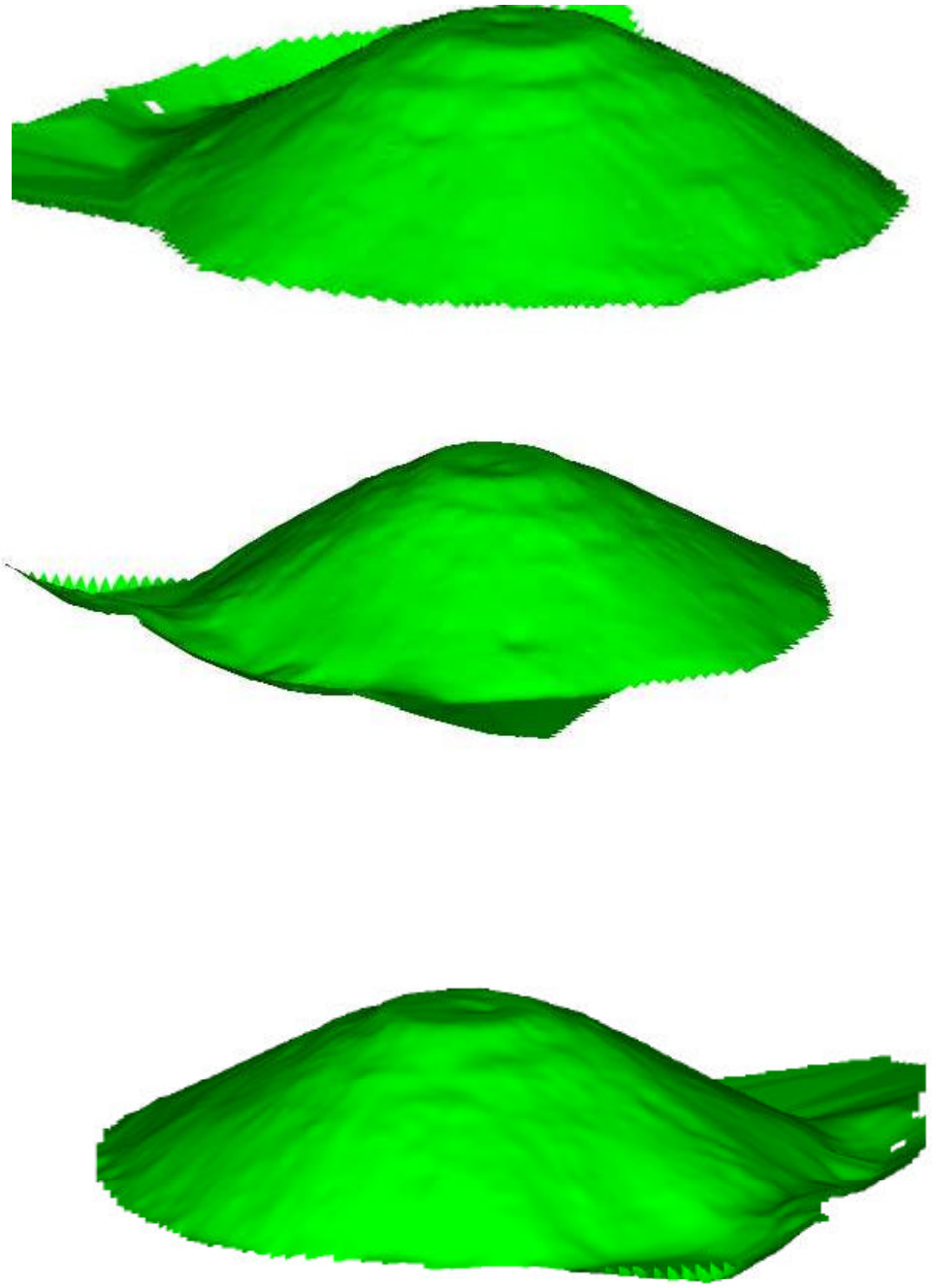
In profile the mound appears a little lop-sided, the west and northwestern slope appearing to bow out. This can readily be observed in photographs, including that on the cover of Whittle's (1997) report. The other sides comprise a steep but steady incline.

Volume

The correspondence announcing the commencement of excavation of the 1776 shaft proudly declared that Silbury Hill was *'the largest tumulus or arteficial mound of earth in this kingdom'.* The statement has been accepted and reworked ever since and by 1851 the mound had become the largest in Europe, for Smith (1861, 148) quotes Matcham (1851) as indicating that Silbury is *'the largest tumulus which this quarter of the world represents'*.

The sheer size of the mound has engendered discussion about the amount of work involved in construction. Aubrey was the first to consider the volume of the mound. After lamenting that he had not taken appropriate measurements, he continued that `*…Sir Jonas Moore, Surveyor of the Ordnance …..told me that according to the rate of work for labourers in the Tower… it would cost three score or rather (I think) four score thousand pounds to make such a hill now'* (Fowles 1980, 682). According to Stukeley (1743, 43) *'The solid contents of it amount to 13558809 cubic feet'.* Subsequently, Smith (1861, 150) estimated the contents to be *'468,170 cubic yards';* Petrie used feet *'…..the volume of material artificially piled up has been estimated as 8.7 million cubic feet …* ' (Petrie 1924, 216). More recently Atkinson (1967) reaffirmed that it is the largest artificial mound in Europe (presumably excluding modern waste tips), by comparing it to the smaller pyramids in Egypt and estimated the volume at about 12.5 million cubic feet.

*Fig. **25** Three views of the digital model of the mound showing (top) terraces and platforms in the southeast, (centre) platforms on the western slopes and the concave part of the mound circumference in the southwest and (lower) terraces in the west and platform on the northern slopes.*



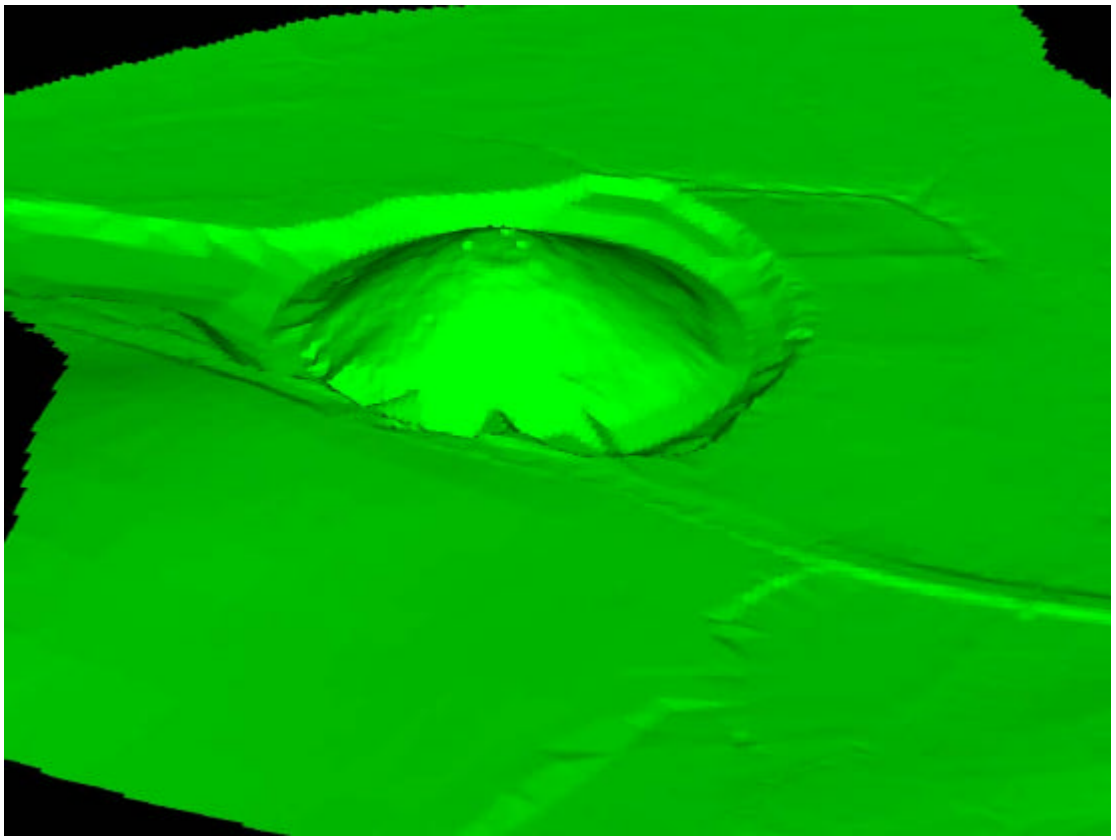


*Fig **26** Digital model of reconstructed ditch and mound.*

By digitally modelling the old ground surface it becomes possible to attempt these calculations using modern methods. Certain known points are the key. Close to the centre of the mound the cores taken by Skanska indicated that the old ground surface lay at between 30.45 and 31.15m beneath the summit (Kirkbride 2001 unpublished report, 19). The old chalk ground surface is visible as a break of slope for much of the circumference of the mound, several metres above the present ditch floor and by linking this level to that provided by the boreholes in the centre of the mound the resulting triangles provide a reasonable approximation of the old ground surface beneath the mound. Separating the mound from this level and calculating the volume gives 239133.2834 cubic metres. Of course this does not provide an exact figure as some material will have slumped into the ditch (see above), or washed down the slopes since construction (see below), but for the first time such calculations can be based upon surveyed data.

Frequently associated with such calculations are suggestions that the material for the mound was quarried from the ditch. As there has been little archaeological investigation of the ditch some extrapolation is necessary in order to test this. There are chalk remnants of the old ground surface on all sides beyond the northern limits of the ditch. It is possible that there has been some truncation of the surface, but if so it is likely to have been of the order of 0.5m or

so, and by linking the level of the old ground surface of the mound with the existing ground surface beyond the ditch, a reasonable approximation of the pre-mound topography might be obtained. By using the details provided by Pass (1887), of the depth of the ditch, coupled with the seismic soundings and excavation trench data recorded by Atkinson (site archive AKM), an approximation of the morphology of the ditch has been plotted and modelled (Fig 26). These provide the starting point for calculations about the volume of material extracted from the ditch. The ditch immediately around the mound is modelled as cut to a greater depth than the ditch extension, with the extension itself portrayed as flat bottomed. This would have provided 235522.2866 cubic metres of material. Given the uncertainties of the morphology of the ditch, the similarity with the figure obtained for the material within the mound is striking, the difference being a mere 3610.9968 cubic metres.

Size

Vital statistics of the earthworks, including that of the mound itself are presented above. Taken at the level of the old ground surface and depending on where the measurement is taken the diameter of the mound at its base is between 135 and 145m. With similar caveats the summit measures between 34 and 32m across. By utilising data from the bores taken by Skanska (Kirkbride 2001, unpublished report) as noted above, the height of the mound closer to its centre can be taken as 31m. Whether this marks the ultimate late Neolithic height of the mound depends crucially on the radiocarbon date recently obtained during recent excavations on the summit, the report of which should be read in conjunction with this (Fachtna McAvoy, Centre for Archaeology, Portsmouth).

While the survey has established the measurements at the top of the ditch, sub-surface data is only available from the restricted work carried out by Pass (1887) and Atkinson (Whittle 1997: Atkinson site archive AKM).

Earthworks on the mound

Earthworks, some quite substantial, situated on the summit of the mound (Fig 27) are difficult to interpret mainly because of uncertainty over the potential effects of the known excavation activity (below). In addition, other post-medieval or recent known or unrecorded events, such as the fairs recorded in 1736 and 1747, or the tree planting noted by Stukeley in 1723 (ibid), may have left their mark. The shallow bank that partly circumscribes the summit is almost certainly a tree-planting ring (Fig 27b), perhaps reflecting the event recorded by Stukeley. Ashmead's survey (Pass 1887) could suggest, and an aerial photograph taken on 8 April 1949 (SU 1068/31) indicates, that the ring was formerly almost continuous; the most

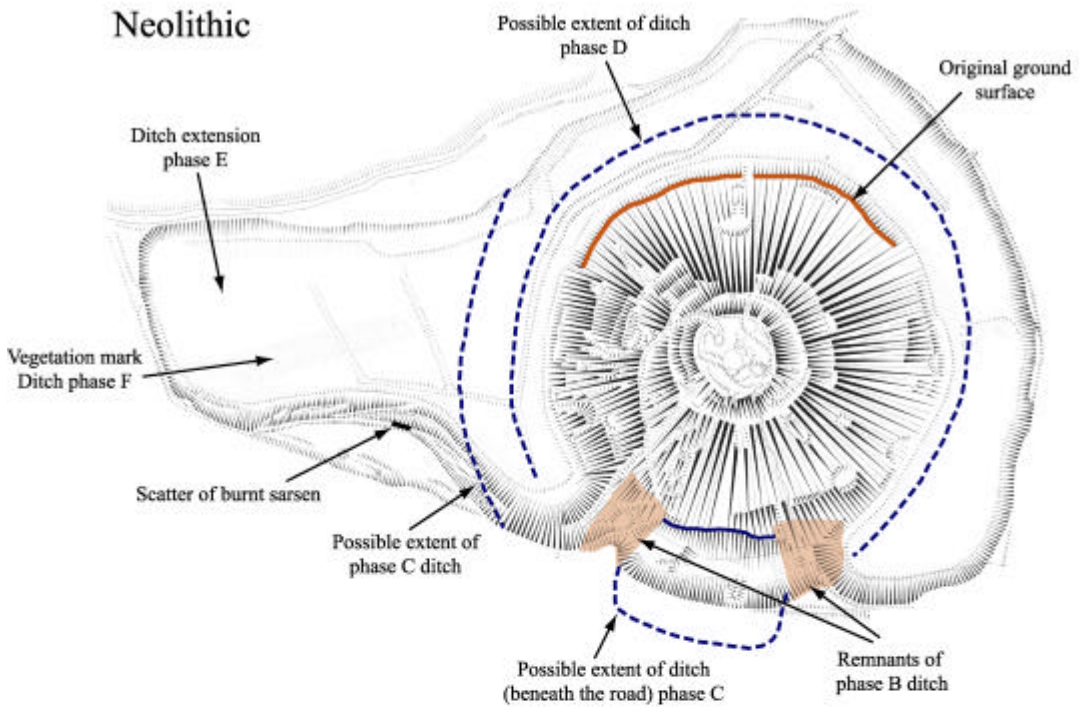
significant damage presumably occuring as a result of Atkinson's campaign of excavations in the late 1960s.

On the east side of the summit, situated between the spoilheap and the tree-planting ring, is a circular pit-like depression of unknown function. There is no spoilbank visible around it, though such may lie beneath the other neighbouring features. It is visible on an air photograph taken on 8 April 1956 (SU 1068/45), so precedes the work undertaken by Atkinson, but could be the result of the tree planting episode that took place in 1723 and reported by William Stukeley as where *'workmen dug up the body of the great king there buried in the centre'.*

If the breaks of slope on the sides of the mound can be interpreted as terraces then at least six levels might be present. Apart from the uppermost two, where a ledge is visible on the surface, these can only be traced for small parts of the circumference. Atkinson excavated three of these and concluded that, while they had been recut and possibly revetted during the early medieval period, they nevertheless formed an original, i.e. Neolithic, feature. As evidence for this, he suggested that a portion of chalk revetment on the upper terrace similar to the walling encountered on the summit appeared to extend into the mound, while the smoothing of the ledge surface created by the passage of countless feet was for him by prehistoric builders (Atkinson 1968, 170). On this basis he confirmed his belief that the mound was originally constructed in a tiered or stepped cone fashion, similar to a wedding cake (Atkinson 1968, 170). In preparing the available data for publication, however, Whittle was more cautious (1997, 22) and acknowledged that the evidence provided only uncertainty.

However, the plan of the earthworks provides some surprises. When the circumference of the uppermost and well-defined ledge is perambulated, the circuit is not completed. Instead one returns to a position several metres lower than the starting point, a feature in fact noted by Whittle (1997, 8). The ledge as we see it is in fact a spiral. Some caution is required in extending this point too far, for it is not clear

whether the spiral continued to incorporate ledges further down the mound. Neither is it clear whether it was an original feature or a result of later modification. Equally, however, it does not appear to be recent, as the footpath present on Aubrey's sketch of *c*1665 cuts across it. Nevertheless, such a spiral feature would make sense both in terms of construction and for later access.


Neolithic
Possible extent of ditch phase D
Original ground surface
Ditch extension phase E
Vegetation mark Ditch phase F
Scatter of burnt sarsen
Possible extent of phase C ditch
Possible extent of ditch (beneath the road) phase C
Remnants of phase B ditch

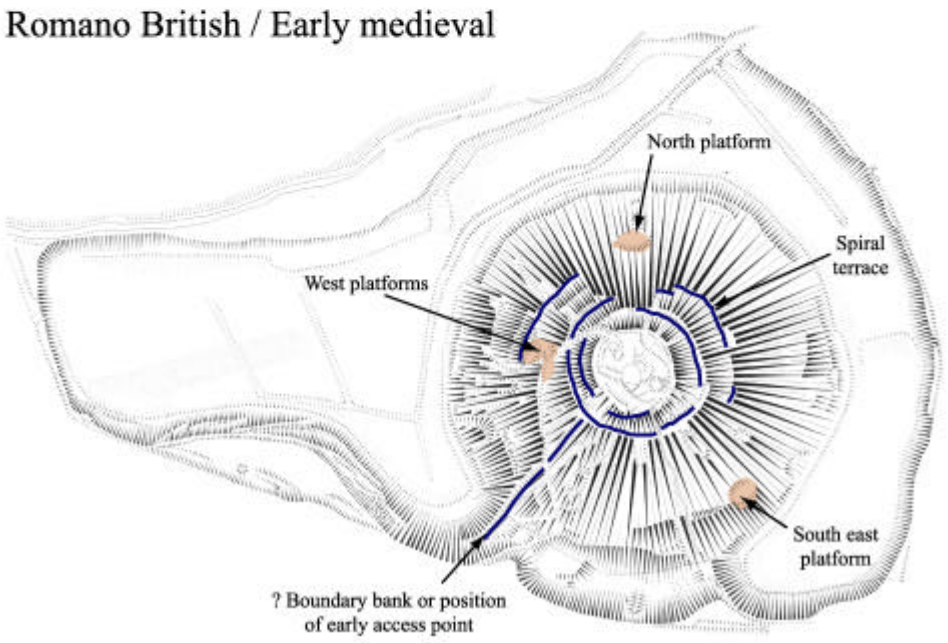

Romano British / Early medieval
North platform
Spiral terrace
West platforms
South east platform
? Boundary bank or position of early access point

*Fig **27a***

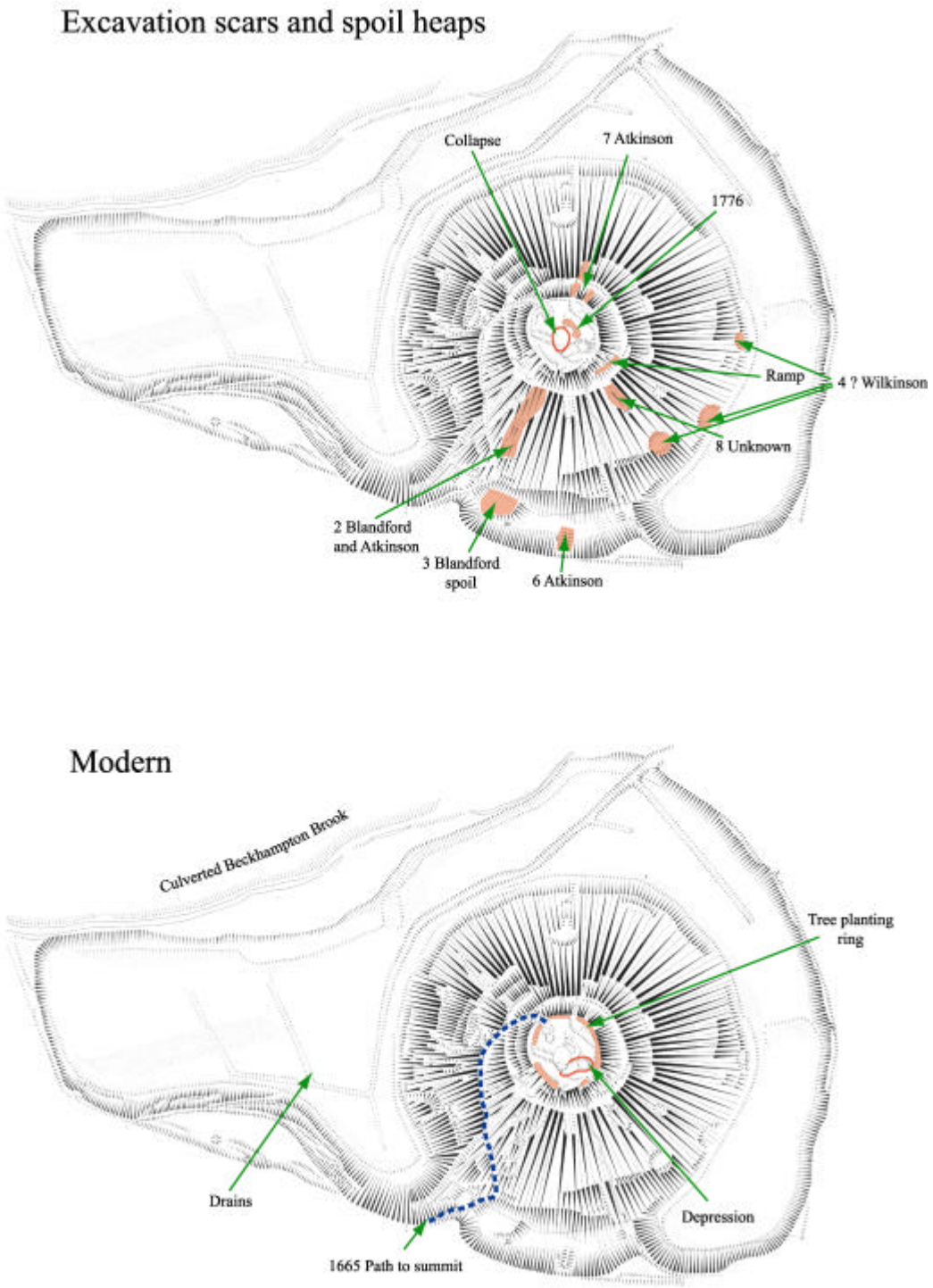

Excavation scars and spoil heaps
Collapse
7 Atkinson
1776
Ramp
4 ? Wilkinson
8 Unknown
2 Blandford and Atkinson
3 Blandford spoil
6 Atkinson
Modern
Culverted Beckhampton Brook
Tree planting ring
Drains
Depression
1665 Path to summit

*Fig **27b***

Assuming Atkinson was correct and the terraces were an original feature, interpretation as a tiered construction would pose an enormous logistical problem of hauling material to the higher levels. Not impossible of course, and great amounts of scaffolding, ladders, gantrys and other construction paraphernalia could have been used to assist. However, in contrast, a spiral would allow easy access and material could be relatively simply carried or dragged up to the working level. Indeed the massive Belgian memorial mound at Waterloo was constructed by means of a circular track (Rickman 1840, 403). Equally, as a finished monument, access to the summit would be made easier by such a regular pathway. In addition a spiral arrangement would provide the perfect processional way and of course the preoccupation with spirals in Neolithic art will not escape attention.

The point equally applies if the terraces are not in fact of Neolithic date. It should be noted that the presence of Romano-British artefacts and in particular of early-medieval post-holes and artefacts on the ledges must allow the possibility of later construction (see below). After excavation Atkinson had concluded that the terraces had been re-cut as a response to the Danish invasions (Atkinson 1968, 170), but if the mound was indeed fortified at that time and the timber 'revetment' formed palisades, some other method of obtaining entry to the summit would need to be employed.

If indeed a spiral, it is arranged clockwise from the top downwards: one would ascend anti-clockwise. It is further possible, that as occasionally is the case on garden mounts, other paths may take shortcuts or interrupt the flow. It is interesting that the plan prepared by Ashmead for Pass (1887) shows in its hatching a spiral arrangement (thanks to Fachtna McAvoy for pointing this out). However, as none of the known features - the ledges, paths and platforms - on the slopes are illustrated, the spiralling is only depicted from the 3rd terrace downwards rather than from the uppermost - the only place where it is today visible - and in any case pictured as going the wrong way, this is likely to be a symbol of illustration rather than survey. There is no indication of the spiral from the first terrace to the top of the mound.

There is nothing to indicate a date for the ramp that cuts obliquely from the 1st terrace partway to the summit in the south-east and the fact that it does not quite reach the summit is curious: it could have led to an intermediate level. Disturbance at the summit, however, particularly construction of a tree-planting ring, could have resulted in material overlying it and obscuring its ultimate destination. A break of slope can be detected at the level of the beginning of the 1st terrace further to the southwest, but the angle at which the ramp climbs indicates that it is not part of such a level. The manner in which it appears to veer across the terrace leaving spoil on the outer side may, on the contrary, hint that the feature is a relatively late one. Indeed there is a hint that it was of considerable prominence in the illustration of 1788 (Fig 7: Gough Maps 231 fol 216 Bodlean Library). Of historical activity, the pathway under

construction at the time of Stukeley's visit is a potential contender, though one is tempted to suggest that it may equally be a feature associated with access arrangements for the 1776 excavation.

Survey highlighted the presence of a number of deliberately constructed platforms around the middle and lower slopes of the mound that cut into the original profile and therefore post-date its construction. One particularly prominent example faces north up the valley towards Avebury. Below it are scars extending to the foot of the mound indicating an episode of considerable disturbance. The feature, cut at a break of slope indicative of the presence of an eroded terrace, indicates an important episode and its presence on early air photographs taken in 1933 and 1949 (SU 1068/24 and 31) confirm that it was not a result of the BBC excavations. Indeed one of these photographs suggests that a considerable trench may have been dug below the platform. Situated halfway up the steep slope, the platform is located in an unlikely position for the stance of a shepherds hut or similar dwelling. Given the proximity of the Romano-British settlement site immediately east and south of the monument, together with the Roman road that is aligned on it, it may have supported a monument of some kind. Much pottery and other artefacts of the Romano-British period have been found on and around the mound in the past (see below), and indeed the monument itself may have acted as a focus for settlement and it may even have been considered as sacred in the Roman period as when originally constructed (see below). It is almost inconceivable that the Romans did not leave their mark on the monument, and these external platforms could easily be attributable to this period. Indeed, excavations by Wilkinson (1867) in the east side of the mound revealed a platform on which were placed ashes associated with a knife and whetstone attributed to a Roman date (Devizes Museum Cat). Clearly, a phase of cutting into the mound took place in the early medieval period too, and it is equally likely that the platform is attributable to this period (see below). Less convincingly, it may have provided the base for a more recent designed landscape feature and, facing due north, would have been easily seen from Avebury Manor House. A grotto and belvedere were constructed within the mound at Marlborough (Field *et al* 2001) and it is conceivable that similar examples were planned for Silbury in emulation of them.

A second prominent platform is situated on the southeast slope. Several metres above it is a further trench like scar. The upper of the two features has very slight spoil banks alongside and is therefore likely to represent trenching rather than sunken ground (Fig 28). Both were present on the 1968 photogrammetric contour plan, but air photographs taken in 1933 (SU 1068/53) indicate that these have been present on the slopes for a considerable time. The upper trench is depicted with bare chalk breaking the vegetation and this may indicate that the feature is of 19th or early 20th century origin – an unrecorded excavation.

It is conceivable that the platform was one of the trenches dug by Wilkinson when prospecting for the Roman road, certainly Whittle (1997, 8) believed so. As noted above, the southernmost of Wilkinson's trenches encountered a semi-circular ledge cut into the chalk mound upon which, and within, was a deposit of wood ash and a Romano-British knife together with a whetstone (Wilkinson 1867, 115: Devizes Museum Catalogue). Wilkinson, however, commented that his southern trench was located by a linear depression that reached a third of the way up the hill evidently caused by disturbance at the base, and as such it maybe that it was sited a little further north where such a depression exists. It would be easy to suggest that these represent the excavation trenches dug by Petrie in 1922, but he specifically states, and indeed his plan depicts that, his trenches were positioned opposite the causeway, whereas these lie a little to the northeast of it. Certainly given its position facing the London-Bristol highway a garden feature might be considered less likely. Like the platform in the north, however, the example here may have supported a Romano-British monument or early medieval feature.

Many disturbances appear to have taken place on the western slopes of the mound and a large scar of exposed chalk was present here in 1861 (Smith 1861, Pl 1). Much of this is depicted as irregular breaks of slope on the hachured plan. While there are a number of breaks of slope that might be construction features or collapsed terraces of the mound, the area is riddled with rabbit burrows and in some cases these have disfigured archaeological features to such an extent that interpretation, other than simply as disturbed ground, is not possible. At least two sub-rectangular platforms exist here, one cut by the pathway and another a little below it. Both of these could have held structures and the construction of the path across one indicates that it is unlikely to be an emplacement for a recent feature.

As noted above the winding path to the summit currently engraved on the slopes appears to have been in position by *c*1665, for Aubrey depicts it in his sketch of the monument (Fowles 1980). Comments by Stukeley (1723, 158), however, indicate that this path may have been formalised, *' an old iron bridle of an unusual shape, and for what use I can't imagine, that was found this year in making a way up to the hill.. '.* An alternative view of this work is that the 'way' refers to the ramp leading from the uppermost ledge almost to the summit.

The present pathway up the mound is a useful archaeological tool, for it is in the same position as when John Aubrey illustrated it during the 1660s: all features that it overlies or cuts through must be earlier than it. One such is a considerable but shallow bank that rises from the terminal of the western causeway almost to the summit. It certainly marked the position of a significant point of access to the summit during Atkinson's campaign (see for example scars on Fig 24) but its form as a bank indicates that there is more to it. It is conceivable that it marks the position of a hedge that once subdivided the mound, or alternatively it could represent a former method of accessing the summit - a flight of steps

perhaps. Lack of a property boundary or other feature here on early maps supports the earlier dating and consequently it is included on Fig 27a.

*Fig **28** Platform on the southeast slope in 1954 with trench-like feature above it (photo NMR archive -A 3172/1).*

Excavation scars

Aside from the contemporary newspaper accounts of 1776 that indicate a trench size of eight feet square, there appears to be no documentation to provide details of the shaft excavated by Colonel Drax and the Duke of Northumberland. The recent collapse has destroyed any remaining earthworks that might add detail to this, although it is conceivable that part of the spoilheap remains. Despite the view of Pass (1887, 252), who thought that the material had been backfilled, the account by Merewether (1851), and illustrations by Petrie (1923) and Lukis (Edwards 2001), indicate that the 1776 excavation shaft itself appears to have been poorly or only partially backfilled at best. A blurred aerial photograph taken on 12-11-1925 (NMR SU 1068/8) depicts a crater on the summit (Fig 29). Whether this was capped soon afterwards is unclear as air photographs taken on 13-7-1927 (SU 1068/50-51) depict what appears to be a mass of rank vegetation in the area of the crater. The viewpoint is too low on these to be certain whether the crater itself is still present, but the vegetation just might result from a recent capping episode. Further photographs taken in 1933 and 1934 (SU 1068/24-25: SU 1068/53-54) certainly depict a collapsed shaft, with a crater by then largely grassed over.

None of this is surprising. The participants were after all miners, employed to dig a shaft rather than fill it in, and mining practice is unlikely to waste labour on unproductive tasks. The practice of gunflint miners at Brandon, Suffolk, for example, was invariably to cover over the surface with brushwood and sods of earth providing a simple capping; sometimes they didn't even do that (Forrest 1983). Mining practice elsewhere seems to have been little different: open shafts still await the unwary in many moorland areas of the British Isles.

Remedial action seems to have taken place sometime between the summers of 1934 and 1936 as the crater is no longer visible on an air photograph taken on 7-6-1936 (SU 1068/26) its fill or capping being surmounted by a patch of rank vegetation.

Careful examination of the surface of the mound during the summer of 2001 revealed that traces of the spoilheap surrounding the shaft are still present. A wide but irregular, almost sub-rectangular, bank of spoil, clearly depicted on a number of early air photographs (SU 1068/24-26) once surrounded the shaft. The present survey recorded traces of this around the northern lip of the shaft, though elsewhere the feature is missing, perhaps truncated during Atkinson's operations on the summit. It is conceivable that this is the weathered remnant of the mounds of spoil recorded by Merewether (1851, 74). A shallow west-east oriented bank situated between the southwest lip of the shaft and the edge of the summit appears to overlie the tree planting ring but on an air photograph of 8 April 1956 (SU 1068/45) is indistinguishable from the rest of the spoilheap.

*Fig **29** Air Photograph of Silbury Hill taken in 1925 showing crater on the summit. (Photo: NMR SU 1068/8).*

Various episodes of archaeological excavation have left scars on the slopes of the mound. Principal amongst these are the tunnels dug to the centre of the mound at approximately ground level from the southwest perimeter in 1849 and 1969: the position being clearly visible as sunken ground. In contrast to the 1776 shaft, the digging of the tunnel in 1849 is better documented (Tucker 1851: Merewether 1851) and although this and the 1969 investigation had separate entrance points, perhaps marked by certain visible gridirons and concrete plinths recorded during the survey, the latter converged on the former to take the same route to the centre and in terms of earthworks are indistinguishable from each other on the surface. A slight shadow is visible here on air photographs of 1933 (SU 1068/53) and 1956 (SU 1068/45), perhaps indicating that movement initially began as a result of disturbance while the tunnel was open earlier in the 20th century. The depression is insignificantly depicted on the 1968 air photography or photogrammetric 0.5m interval contour plan prepared by Keith Atkinson, though when Richard Atkinson encountered the tunnel a considerable portion had collapsed (eg Whittle 1997, fig 6). The linear depression, visible and noted by Whittle (ibid, 8), extends a considerable distance up the slope of the mound and at 7m wide indicates sunken ground beneath. It may be that similar collapses have also occurred closer to the extensively tunnelled centre of the mound but have still to migrate to the surface.

Depressions and scars in the east may mark the position of other excavations carried out by the Wiltshire Archaeological and Natural History Society in 1866 to demonstrate whether the

nearby Roman Road formerly ran beneath the mound, and where Flinders Petrie investigated the possibility of an entrance existing opposite the south-east causeway. The Wiltshire Archaeological Society trenches, must have been at the level of the old ground surface. The lettering on Smith's map (1884) indicated, though does not confirm, that these trenches were on the extreme east of the mound, though his earlier map (1861) depicting the course of the road indicated that they must have been a little south of this and if so correspond with a shallow concave depression detected at this point. As noted above, Whittle (1997) believed that the southernmost of Wilkinson's trenches is marked by the platform on the southeast slope (Fig 28) and this possibility also needs to be taken into account.

There is little sign of Petrie's excavation trenches on and opposite the southeastern causeway, though a shallow scar that ascends the mound at this point might mark the position of one of two trenches designed to test whether there was an entrance opposite the causeway.

The position of Atkinson's excavations too, on the upper terraces, can now be located with some accuracy as they appear as depressions on the surface. In the north, two narrow linear depressions on the uppermost ledge mark the position of trenches. Photographs in Atkinson's site archive (AKM and see example published by Whittle 1997, pl.9) confirm that this is so. The westernmost of the two is the longer, extending south from the first ledge to the summit, and down hill as far as a break in slope that appears to mark the second terrace. In contrast the second depression extends between the summit and first terrace. Judging from the archive photographs, other almost parallel scars nearby, may result from the position of fencing around the trenches. The position of Atkinson's excavation trench on the third terrace further downslope was not detected by fieldwork (but see below). However, the well recorded position of his trench across the southern ditch is visible as a broad mounded bank, where it was overfilled, much to Atkinson's annoyance (Atkinson site archive AKM).

Entrances

No entrances to the interior of the monument are known, though Petrie, unsuccessfully, searched for one opposite the southeast causeway. Stukeley (1743, 43) considered that the causeways provided access, leaving '… *two bridges, as it were, or passages up to the hill. By this means the ascent for the multitude employ'd. Was rendered more easy. For the natural hill was as a half-pause or resting place for them'*. The causeways themselves are misnomers, however, for they do not provide direct access across the ditch from old ground surface to old ground surface, but are themselves cut down to a depth of c3m and would need an enormous bridge were they to be used in this way. Others have suggested that the

ditch in the south was unfinished and that it was subsequently intended to remove the causeways (Petrie 1924).

The southeast platform, as mentioned above, is situated close to the old ground surface at a point where one might predict a monument of this period to have an entrance. In recent times discussion about an entrance has been ignored as it has been felt that the work of Blandford and Atkinson found no central chamber and effectively ruled out an entrance. But that work focussed on the centre of the phase I turf mound and any entrance to the later phase II and III chalk structures as we know them is just as likely to lie on top, or to the side, of the turf mound, as within it. Petrie was looking for an entrance and given that it is not unknown for broadly contemporary monuments sites such as New Grange in Ireland (e.g. O'Kelly 1982) to have solar aligned entrances, one might be aware of a potential entrance at this point.

Peristalith

At face value the identification of a series of sarsens as a peristalith by Merewether (1851, 74) and subsequently Petrie (1924, 215-6) appears a little unlikely as it would appear improbable that deliberately placed stones would remain in position on such a slope after four thousand years. The possibility remains that they were positioned on an original berm and subsequently buried by scree from above. It is not absolutely clear whether they were noted around the old ground surface, or on the modern surface of the ditch. Although Petrie was well aware of the position of the old ground surface, he measured them in from a fence post, which suggests it was the ditch, in which case they may have fallen from the slopes above. Only one, and a smaller fragment, are present around the foot of the slope, ie on the ditch surface, today. Any others appear to have been dragged off, perhaps for building or agricultural purposes. Petrie (1924, 216) mentions sarsens being used to support carts across the ditch, though why carts should be driven across the ditch is by no means clear, unless that is, small scale quarrying of the mound was contemplated. Split sarsen has been used northwest of the mound in places to line the culverted Beckhampton stream. A standing stone to the north of the ditch extension lies along the line of this and it may be that much of it is lined with now buried sarsen. Three large sarsens lie on the outer slopes of the ditch in the east, and may be some of those noted by Petrie, though if so, why they should have been dragged to the outside slope of the ditch is unclear. They could alternatively have formed part of the field boundary. One might expect the meadows around the monument to have once contained natural accumulations of sarsen that, as elsewhere on the Marlborough Downs, have long since been cleared for agriculture. Smith notes nearby surface concentrations on his map of 1884 and some early engravings depict the main Highway (A4) lined with sarsen. Sarsen is quite common in local field boundaries and the valley floor here was probably once littered with it.

The ditch

Former lack of emphasis on the ditch has resulted in its being considered of secondary importance to the mound; being thought of merely as a quarry from which the mound material was derived. Clearly the location of the mound immediately adjacent to the Beckhampton Brook suggests that there is much more to it than this and ditches of course, even large ones around henges or hillforts, need not be for defence or as quarries for material but, for example, might be constructed to keep evil spirits out (Darling 1998).

While it has been assumed that material forming the mound derived from the ditch, and of course conversely that the ditch excavation provided all of the material for the mound, we should be aware that apart from proximity there is little evidence actually linking the two. The ditch extension could, after all, be much later than the Neolithic date generally applied to the mound. However, if not the mound, there is the problem of where the quarried material has gone to, for there is no bank or other feature surrounding the ditch. This need not be of great concern as like other quarries on the chalk the material could have gone for mortar in local Roman buildings, or for liming.

Equally it is not unknown in the construction of Neolithic and Bronze Age monuments for material to have been brought, perhaps ceremoniously, from a considerable distance. Unusual materials, particularly those of striking colours e.g. quartz, frequently occur, the bluestone at Stonehenge being the supreme example (Green 1997). However, no foreign material has come to light here and the evidence available indicates that all of the materials, gravel, chalk, sarsen, could have been obtained in the immediate vicinity.

While little is known of the nature of the ditch we have made some attempt at further discussion. Using the available data on the depth of the ditch, taken from Pass (1887) and Atkinson (Whittle 1997, 24) and unpublished core and seismic data (Atkinson site archive AKM) from the ditch north of the mound, the original ditch profile has been modelled (Fig 26). There is some indication from the work of both Pass and Atkinson that it is deeper closer to the mound, but elsewhere, in particular towards the outer edges of the ditch and in the ditch extension, it is assumed that the initial slope evens off to a flat floor. Absolutely no data is available for the ditch on the east side of the mound but a similar profile to that in the north is assumed.

The portion of the ditch adjacent to the highway situated between the 'causeways' is, as seen and surveyed, slightly different in character from the rest of the ditch. For one thing, its width at 30m is considerably narrower than elsewhere. According to Atkinson's section drawing (Whittle 1997, fig 23) its ultimate floor is more than 4.5 m below the present silted level with a

13m wide flat bottom. Whittle points out, however, that during Atkinson's excavations here in the south, neither the floor nor the edge of the ditch were encountered and the true lip of the ditch must therefore lie beneath the present road. If this is so, the true width could be as much as 50m and it would therefore match the width of the ditch elsewhere. Assuming that they do not represent later infilling - and they do not appear to - the causeways would be even more pronounced. Petrie indicated that the easternmost causeway had been covered with chalk rubble to ease access, though this event is completely undated.

Indications of the presence of an earlier ditch beneath the mound were encountered by Atkinson part way along the course of the tunnel (Whittle 1997, 13-20). It is assumed that this feature encircled an earlier (phase II) chalk mound, although evidence from other early mounds e.g. Westbury 7 (McOmish *et al* 2002) indicate that such ditches could just as easily be causewayed or be side ditches. The surface survey, however, plays no part in the further interpretation of this. Thus there were perhaps five phases of ditch cutting:

a) around 1st chalk mound (Atkinson's phase II), sealed beneath the later (phase III) chalk mound,
b) a second ditch around the 1st chalk mound (phase II), perhaps marking out the line of ditch around the phase III mound and cutting the area of the later causeways. Perhaps too, this involved the backfilling of the first ditch,
c) Widening and deepening of the second ditch,
d) extension of ditch to the west i.e. construction of the huge rectangular water cistern, and
e) cutting of vegetation feature (see below).

The enigmatic vegetation mark noted in the ditch extension to the west of the mound is difficult to account for (Fig 30). For just three days in early summer as the water-filled ditch dried out, a huge vegetation mark, some ten metres wide and indicative of a substantial subsurface feature, appeared to extend across the ditch floor for some 50 metres towards the mound. Air photograph NMR SU 1068/232 shows part of the mark in the ditch and NMR SU 1068/158 and 161 taken on 3-1-95 depicts the possible line of the mark in the ditch. It is conceivable that post-medieval ditches on the surface might have influenced the pattern of drainage here, but within this part of the ditch they are on a completely different alignment to the vegetation mark. Assuming that it marks a genuine sub-surface feature the darker vegetation suggests that a massive negative feature is present below the surface. Its orientation, however, is curious, running diagonally across the ditch extension leading towards a position that is off-centre of the mound. It maybe that a deeper channel, collecting from local springs, carried run off together with that of the proto Beckhampton Brook to the deeper ditch around the mound and indeed that this provided a catalyst for the ditch extension.

*Fig **30** Photograph of vegetation mark in the ditch.*

Silbury Hill is positioned at a low point in the landscape adjacent to water/springs such that its summit barely attains the level of surrounding hilltops. Digital modelling of the surrounding valley floor, while serving to emphasise the enormous size of the mound, highlights this lowland setting on the very edge of dry chalk immediately adjacent to water. Like Pass, Petrie concluded that the low position of the mound, hidden from view by the local hills could only reflect the importance of having a water filled ditch about it. He suggested that the Avebury henge might also have been situated in order to utilise a flooded ditch (Petrie 1923, 217). In contrast, Atkinson believed that Silbury must have been dug when the climate was considerably dryer (Atkinson 1967, 259) as excavating the ditch would have been impossible without a lower water table. Whether water flowed freely or intermittently during the period of construction remains unknown. Work on the prehistoric environment of the valley floor (Evans et al 1993) indicated the presence of standing pools of water and this was taken as evidence for an almost dry stream bed. Recent empirical observations, however, a result of unusual weather conditions, has made it clear that such standing pools only develop on the porous chalk when the ground is already saturated and the stream bed full. The importance of the drainage system to the construction and meaning of Silbury is paramount and in this context it is perhaps surprising that there has been so little investigation of the ditch.

Whether local springs fed the ditch is equally unclear. Pass (1887) indicated that even after a dry summer over two metres of water constantly stood in the bottom of his trenches, and a well (or spring), remembered as being used in the 19th century, was located in the southwest

ditch terminal (Brooke and Cunnington 1897). Certainly observation within the cultivated field to the south and information from below the old ground surface in the boreholes (M Kirkbride pers comm) indicates the presence of at least one flint seam in the natural chalk. Other than that it is Middle Chalk, little detail is known of the geological stratigraphy at this point. Both flint and clay seams retard water percolation and either could help form local perched water tables. Along with mountains, caves and lakes, springs invariably hold considerable spiritual significance to non-western societies and may be considered sacred (e.g. essays in Hirsch & O'Hanlon 1995), and as potential interfaces with the spirit world are increasingly recognised as having other than economic importance in archaeology (e.g. essays in Ashmore & Knapp 1999).

Despite recognition that many prehistoric artefacts have been recovered from rivers, bogs and springs (e.g. Bradley 1990: Needham & Burgess 1980: Field 1989: Field & Cotton 1987) and that many Neolithic and Bronze Age monuments focus on such places (e.g. Bradley 2000), too little research has been conducted on prehistoric associations with water. The economic impact is of course implicit, but the sheer power of currents, tides and of life giving properties generally must undoubtedly have had an enormous importance and contemporary perception, interpretation, memory and tradition must have resulted in important ritual and ceremony adjacent to bodies of water.

The rectangular extension at Silbury appears to have been deliberately formed and once waterfilled would effectively provide a cistern or reservoir. Elsewhere cisterns are considered to have symbolic implications as foci of ritual and ceremony (Ashmore & Brady 1999, 137) and it is conceivable that it was of similar importance here. The mirror like quality of standing water may have had symbolic implications too and given recent archaeological fascination with shamanism it is not without interest that mirrors have been considered as symbols of shamanic ceremony and power (ibid).

Wider landscape

The old chalk ground surface is visible as a break of slope several metres above the present ditch floor for much of the circumference of the mound, and there are remnants of the chalk old ground surface on all sides beyond the ditch. Fragile archaeological surfaces with traces of activity associated with construction or use of the mound may occur in these areas. Quantities of small fragments of burnt sarsen were recorded eroding from the southern lip of the ditch extension during the present survey and may reflect some of this activity. There is no indication how extensive these deposits may be but they emphasise the potential archaeological importance of the areas immediately around the monument.

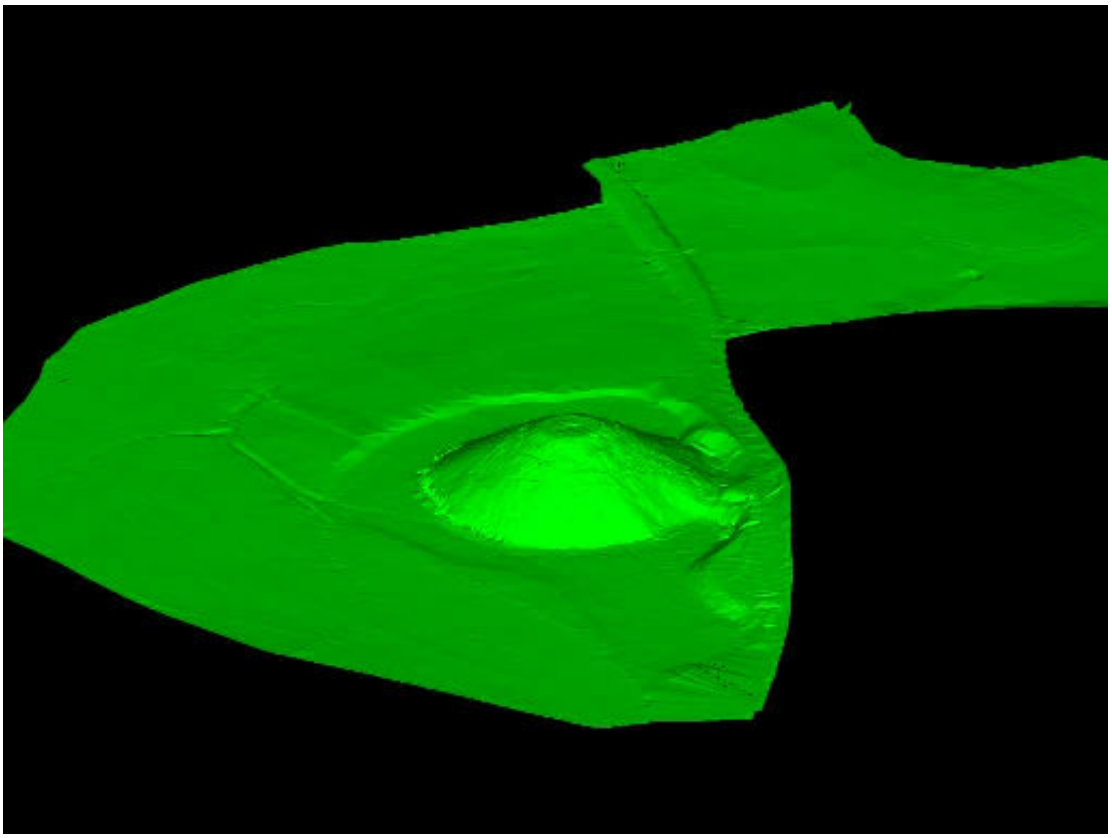


*Fig. **31** View of the digital model showing Silbury Hill in its lowland landscape position.*

Although shallow and almost levelled, the termination of the former field boundary against the Silbury ditch in the east is unusually bulbous (Fig 22). This might of course have resulted from accumulated ploughsoil in the field corner, but it is mounded quite considerably and it is conceivable that the field boundary was laid out using an early feature such as a barrow as a marker.

South of the A4, a sub-rectangular enclosure has been considerably plough-levelled but survives to a height of *c*0.5m (Fig 22). There is no evidence of date and while the military pipeline appears to cut across one corner, given its proximity there must be a reasonable chance that the enclosure is part of the Romano-British settlement. No evidence of the Roman road as earthwork was encountered, though it can be observed as vegetation and soil mark in the field to the south of the mound under certain conditions.

Drainage ditches in the surrounding meadows form part of an unusual flood meadow system and are discussed below.

Purpose

It was evidently considered of importance to construct the mound on the extreme limit of the chalk deposit, rather than on a higher position on the dip slope, or on one of the surrounding hills, where it might be seen for considerable distances. Neither was the flood plain itself, right in the middle of valley floor acceptable. The liminal position, at least in part, must have been dictated by the perhaps ancestral importance of this part of the landscape, though the catalyst that determined that the inconspicuous barrow (evidently, though not necessarily, round) be made into such a monumental mound will remain unknown. Despite extensive trenching by Blandford (Tucker 1861) and reinvestigation by Atkinson, the nature of the early central deposits remain obscure. The earliest feature here, a small mound of orange coloured gravel, covered by a turf mound, is positioned a little above the waterline. In terms of site lines etc, it was impossible to be certain what would be visible from the summit of a later, ultimate phase mound, until after it had been constructed. On the contrary, the catalyst for construction of ever-larger mounds must have incorporated ideas that develop from the importance of the landscape position of the earlier smaller mound and indeed whatever preceded it. Thus the place itself is important rather than the mound. The focus perhaps being a natural feature that we can at present only guess at. We can of course speculate about traditions and beliefs, and the ultimate goal might be to obtain some insight into the perception of those who constructed the site. To do so will necessarily involve dispensing with 20th century western preconceptions about both the prehistoric past and perceptions of landscape, particularly for a site that attracts all kinds of metaphysical and supernatural theories (see e.g. Silbury Hill internet sites). As ever it is imperative that a scientific approach to this is adopted.

Neolithic

The justification for the WHS classification itself is based around the Neolithic monuments that cluster within such a small area, many of which are intervisible with Silbury and will have played their part in influencing beliefs and perceptions of those who constructed and used the site. While there is a considerable amount of data concerning the wider Neolithic landscape here, there is little knowledge of the immediate environment around Silbury itself. The modern approach to the West Kennet Long Barrow from the A4 highway provides links with Silbury Hill in the modern mind as visitors use the long mound as a viewing platform for Silbury. Of course, Silbury was not present when the long barrow was built and in fact the position of the latter is more related to a re-entrant valley that stretches south towards the chalk escarpment. It lies on the flanks of this valley and is better viewed from it. The point about the proximity of such monuments, however, is that it demonstrates a considerable pedigree of Neolithic

monument construction in the area. Activity that must have made its mark in the Later Neolithic imagination as well as on the landscape.

Whether the final phase of construction at Silbury took place over tens or hundreds of years, enormous numbers of people must have been involved. Atkinson suggested 500 people over ten years as one scenario. Simply in practical terms, the area for hundreds of metres around the mound must have been one huge building site: the building materials, chalk, gravel, sarsen, could all be obtained locally, but in addition the paraphernalia of extraction and construction, logistics of wood cutting and supply, arrangements for sustenance communal or private, would all have left their trace and resulted in the scoring of paths and accessways through the land. The direction of works may have been carried out from higher points around, in particular the slopes of Waden Hill, perhaps even using the equivalent of a viewing platform or shed. All of this activity also needs to be seen against the backdrop of contemporary (or near contemporary) developments at nearby Avebury and West Kennet, where similarly massive monuments had been or were being constructed or modified.

Fieldwalking of Folly Hill, Beckhampton, to the northwest of Silbury, during the 1980s revealed a concentration of struck flints dating to Mesolithic, Neolithic and Bronze Age periods in the northwest of the area, but very little on the slopes towards Silbury (Holgate 1987, 259-63; 1988, 91-6). Even less is known of the Neolithic activity to the south of the mound, but casual and random observation of cultivated surfaces in the area between the mound and Wansdyke indicates an abundance of struck flint scatters.

Both Avebury henge and the nearby West Kennet palisaded enclosure may have been broadly contemporary (see Whittle 1997, 139-140 for discussion of dating). The main enclosure at West Kennet is situated on the valley floor and actually straddles the stream. Along with Silbury, these sites are not only potentially linked by contemporaneity but also by their physical link to the River Kennet. Henges have been noted before as occupying low positions, bowls or dishes in the landscape, essentially areas with a riparian focus. Wauluds Bank, Beds, (often considered as a henge though still of uncertain date) actually incorporates a spring, and there are landscape indications that Durrington Walls may once have done too. The Marden henge is close to the source of the Avon and incorporates the river into its circuit, while Knowlton lies adjacent to the river Allen, and Mount Pleasant to the Stour. It is less well remarked that Neolithic round barrows have a similar focus, some of course by their very proximity to the henges already mentioned. Duggleby Howe itself is situated at the springhead of the Gypsy Race stream, and New Grange and other nearby mounds alongside the River Boyne. The same is true for many Bronze Age round barrows (Field 1998: McOmish *et al* 2002).

There is quite reasonably an assumption that the earlier mounds at Silbury are round, though the cone shape of phase II depicted in some reconstructions might pose problems of stability. Round mounds are quite commonplace in the Neolithic of Britain (Kinnes 1979) appearing frequently as round cairns in the highland zone (e.g. Davidson & Henshall 1991) and indeed it seems likely that many mounds presently categorised as Bronze Age may on investigation turn out to be Neolithic. Some are of large diameter, for example Garton Slack 80, Yorks, which is 31m in diameter, Aldwincle 1, Yorks, is 36m across, Stoney Low, 33m in diameter and Tideslow 40m diameter. Within Wessex, Westbury 7 is 43m in diameter though merely 1m in height, while the enormous but undated mound at Compton on Salisbury Plain at 46m in diameter and 6m in height (McOmish *et al* 2002) may also be Neolithic. Similarly, large but now levelled mounds occur at henge complexes at Mount Pleasant, Dorset, Marden, Wilts, Arbor Low, Derbyshire, and Knowlton, Dorset. Conquer Barrow, Dorset, is 30m diameter and up to 4m in height, though perhaps later in date as it was thought to have been constructed over the enclosure bank at Mount Pleasant (Wainwright 1979). According to Wainwright (1971, 182) the Rev Mayo had described the undated Hatfield Barrow at Marden, Wilts, not far from Silbury, as *'about 70 or 80 yards diameter and about 30feet high'* (between 64 and 73m diameter by 9m high), though by 1807 it had evidently suffered some levelling or erosion, for Colt Hoare (1821) described it as 483ft (147m) diameter by almost 22.5 ft (7 m) high.

Neolithic round mounds of lesser dimensions are also present across Wessex (Kinnes 1979), both free standing examples and as components underneath subsequent Neolithic or Bronze Age monuments. Across the Pewsey Vale on Salisbury Plain Neolithic mounds at Amesbury 71, Mere 13d, and Warminster 10, together with Upton Lovell 2a, are known to be of Neolithic date (Kinnes 1979, 10, 21: McOmish *et al* 2002), while excavation by William Cunnington at Silver Barrow, Tilshead, a large round mound with side ditches, revealed features similar to those found beneath local long barrows. Equally round mounds of turf, or flint and sarsen boulders, often occur beneath long mounds e.g. the mounds within Heytesbury North Field long barrow, or Old Ditch long barrow, Tilshead (McOmish *et al* 2002).

Many of these Neolithic round mounds contain features of turf, pits, timber or stone chambers, pyres, cists or banks or ditches defining cremation cemeteries (Kinnes 1979), often of more than one phase of use. In this respect the enigmatic central feature at Silbury would not be out of place. Duggleby Howe, for example, covered a rectangular pit with 5 burials in and around it. A further phase saw burials placed within the lower levels of a primary mound of turf some 23m in diameter, and cremations incorporated within a later phase of primary mounding before, at unknown date, this in turn was covered by a massive mound 38m diameter by 6.5m high. (Kinnes *et al* 1983).

Typical artefactual finds from these sites include ground axes or knives, leaf, lozenge or transverse arrowheads, antler tools, bone pins, amber or shale beads and jet belt sliders, any

or all of which, at Silbury, could easily have been overlooked or discarded by early excavators, particularly as those employed were miners or tunnellers rather than antiquarians, and their technique almost certainly did not include trowelling or sieving. The fragments of antlers and animal bones mentioned by Tucker (1851, 301) are particularly intriguing in this respect.

While section drawings do not exist for the final part of the tunnel, those that do (Whittle 1997, figs 10, 11, 12) indicate that the central complex at Silbury may be of similar or greater complexity to Duggleby. The orange gravel core at the heart of Atkinson's tunnel was dipping so markedly that the recorded part of the tunnel must have just clipped the edge of it. Its complete extent is unknown but must have been at least 5m across and 0.6m in height. Whether the stake situated at over 7m from the centre formed part of a freestanding circle is not known. Only one further stake was encountered in the western (?or eastern) lateral tunnel (Whittle 1997, 18). Whether these defined or revetted the turf or were for another purpose is not clear.

Close to one of the stakeholes, i.e. adjacent to the edge of the turfstack, Atkinson recorded a sarsen boulder, almost 0.5m across, on the old land surface, that he thought might have formed part of a kerb. Two metres away a second sarsen lay adjacent to a pile of chalk rubble (Whittle 1997, 18). Two other boulders were recorded though not precisely located (Whittle 1997, 20). Both Blandford (Tucker 1851, 300) and Merewether (1851, 79-80) observed the presence of 'many sarsen stones' some of which were thought to have been laid against the turf mound.

The turf mound was capped with a substantial series of chocolate coloured clays, chalk rubble, dark earth and marsh deposits, and all of these features were incorporated to form Atkinson's phase I mound that reached some 30m in diameter. Extending the tip lines, the mound may have reached a height of about 4m but Atkinson, able to observe from inside the mound, suggested it was about 5.5m in height (Whittle 1997, 20). At this point the monument was an unditched bowl barrow of similar proportions to many other Neolithic mounds.

Overlying this was a chalk mound 66m diameter – Atkinson's phase II, with tip lines suggesting that it may have had a rounded profile and reached somewhere in the region of 10m or perhaps even12m height. Most of the material is chalk rubble or blocks of chalk that must have derived from a significant quarry somewhere nearby. The most likely candidate is the substantial hollow, 8m wide by 3.5m deep, detected in Atkinson's tunnel at *c* 51 m from the centre, interpreted as a ditch that if encircling the mound must be just over 100m in diameter – enclosing a monument closer in size to New Grange in Eire or Le Hougie Bie in the Channel Islands.

The nature of this ditch remains unknown, but a considerable berm was present between it and the mound that recalls the enclosure ditch at Maes Howe. Since the old land surface was not investigated at this level it cannot be confirmed whether a spoil bank lay immediately adjacent to it and it is merely assumed that the material went to build the mound. Small mounds of rubble are shown in section at the edge of both phase I and II mounds, and could have been banks. Neither is it known whether it was merely an isolated pit, or a segmented or pennanular ditch that fully encircled the monument. Certainly it required backfilling before the final stage of the mound could be constructed.

The final phase of construction (phase III) was an enormous enterprise that involved capping and dwarfing an already impressive monument and altogether taking it into a different league. It was evidently not enough to deepen or widen the ditch and to utilise the berm for building. Rather the ditch was backfilled in order that it could be built upon. The final phase must have been conceived as one, with a proscribed diameter defined by a new ditch. The survey has suggested that an earlier ditch may have existed here too. If so it could mirror in size the buried ditch.

Unfortunately Atkinson's tunnel, which lay below the old ground surface, did not encounter the outer face of the final phase of the mound. This ought to rest on the solid chalk immediately outside the buried ditch. Petrie, however, encountered only chalk rubble, though he commented on the horizontal layering frequently encountered. This must have been built carefully up and around the earlier mound. In the final and steepest of the mound constructions, it is unknown whether walling or other revetment was utilised to consolidate the steep slopes and one must refer to Atkinson's excavations on the terraces close to the summit and presume that construction technique here was typical of the mound as a whole.

Bronze Age

In view of the amount of evidence for Beaker activity within the wider landscape it is surprising that no Beaker evidence comes from mound itself. Equally there appears to be little evidence of Bronze Age activity on or around the mound. Neither Atkinson nor other excavators report the presence of significant amounts of pottery or other artefacts of this period, though some of the flintwork from the secondary positions in the ditch reported by Pass (1887) may be Bronze Age.

On the face of it Silbury does not appear to have a provided a focus for Bronze Age activity in the way that other Neolithic sites have done. A group of round barrows developed on the northern slopes of Waden Hill and Stukeley illustrates two discs situated on the southern slopes just above the Kennet, which would place them adjacent to a spring incorrectly

referred to as Swallowhead on some early maps. Further ring ditches have been recorded on the opposite bank: air photographs NMR SU1068/181 taken in Oct 1996 show traces of what appear to be conjoined ring ditches, probably barrows at SU 1048 6803. A large cemetery of round barrows once adorned the southern slopes of Folly Hill, Beckhampton (Soffe 1993), and provided visual focus to the Beckhampton - Devizes valley. The valley itself appears to be the focus of local Bronze Age funerary monuments.

Holgate's illustration (1987, 259-63) depicts the densest scatters of Bronze Age flintwork at a distance from Silbury, on the northern slopes of Waden Hill and on Folly Hill, Beckhampton, 0.75km northwest and northeast respectively. Fieldwalking, however, has not taken place at the southern end of Waden Hill or on the dip slope south of the A4 road.

Romano-British context

Considerable amounts of Romano-British artefactual material come from both the mound and ditch as well as the surrounding fields. A few Roman potsherds come from Atkinsons excavations on the summit and upper levels, while Stukeley reported the discovery of Roman coins. Wilkinson (1867) cut into the mound at the level of the original ground surface and encountered a platform, on which was a pile of ashes associated with Romano-British artefacts. Pass (1887) encountered further evidence: close by the base of the mound a coin was recovered at 2m depth in the ditch. Coins too, came from Atkinson's 1969 investigation in the southern ditch, over 100 of them, mainly of the 4th century. Fragments of and part of a 'snaffle bit, stylus, ring, nails, slag, bronze braclelet, 3 decorated bone pins, clay ring and a clay phallus' were also recovered (Atkinson 1978, 169: Farley 1971, 7, 10-12), along with over 300 sherds of Romano-British pottery (fully discussed in Farley 1971).

As noted in Chapter 4 above, the position, nature and extent of the Roman settlement, long suspected from the chance finds, has recently been revealed as a result of a combination of pipeline excavations and aerial photograph evidence (Powell *et al* 1996: Corney 1997: Corney and Walters 2001). Air photographs taken in August 1995 and April 1997 (NMR SU 1068/ 169-171 and SU 1068/180-1) appear to depict parts of the Roman settlement (Fig18).

Material from the shafts or wells situated to the south of the road - tiles, a column base, a possible fragment of a pillar, and a considerable quantity of small finds - indicate the presence of a substantial building. Abundant Romano-British pottery was noted in the cultivated field between Silbury Hill and the Swallowhead spring during present work. Farley suggested that the siting of a villa here might be improbable given the proximity of the adjacent road (1971, 8) and instead favoured the presence of a posting station of late 3rd – late 4th cent date. He considered that as no building was revealed by the trenching to trace the Roman road in

1867, if located between the Roman road and mound it may have been destroyed by turnpiking of the road (ibid, 3). As we have seen, however, Silbury's southern ditch appears to have formerly lain beneath the present road, leaving little space for a substantial building at that point. It maybe that a building lay at the foot of the slope between the mound and the Swallowhead spring, where it might be covered by colluvium. Middens of Roman material were noted here in the 19th century (Brooke & Cunnington 1897) and spreads of Romano-British potsherds noted there during the present survey. While a building here might account for the Roman finds in the Silbury ditch, an alternative location would be on the slightly lower ground to the east, on the gradual spur provided by Waden Hill. Here, the sub-rectangular enclosure recorded south of the A4 might be a candidate, and could easily harbour, for example, a small temple or other building.

If Silbury, rather than the Roman road, was the focus of activity, it may be that the building was a temple. Corney (2001, 141) has raised the possibility of Silbury forming a religious focus and that the *'wells or shafts at the base of the hill may form an arc'* and could have a *'ritual function'*. In addition he points out that the coins found in the ditch could have been votive in nature (Corney & Walters 2001, 48 quoting Morehead pers comm). It is almost inconceivable that with at least 14 Romano-British buildings facing the mound, Silbury was not utilised in some way. It may be that Wilkinson's evidence of a utilised platform is only the tip of the iceberg and that Roman deposits are widespread, the mound being covered with burials, monuments and memorials.

No new evidence for the Roman road has come to light and the parallel pipeline that traverses the area close to the line of the road can easily be misidentified. These appear as very shallow linear earthworks across the meadow to the southeast and as soilmarks in the ploughed field to the south. It maybe that this was initially misidentified by Atkinson, who according to his project design, had intended to investigate the road, for a series of sondages can be seen along the course of the pipeline on aerial photographs taken in 1968. There remains a problem in identifying the course of the road where it crossed the Kennet. Atkinson believed that the narrowest point of the valley would be chosen and if so it must partially at least underlie the present highway, at least as far as the southern slopes of Waden Hill.

Early Medieval context

The fate of the Romano-British village is unclear, though it is by no means unusual to see such villages deserted at the end of the Roman period (McOmish *et al* 2002) and it is conceivable that the focus of settlement turned to Beckhampton, arranged as its place-name suggests along the Beckhampton Brook. Slight earthworks and regressive map analyses indicate that much of the village once lay closer to Silbury Hill than it does today.

Evidence of medieval activity on the mound itself is considerable, and it is worth noting that there is more pottery of this period than Neolithic amongst Atkinson's archive material. Atkinson described this as Saxon, though reassessment might indicate that much is perhaps 11th or 12th century in date (Reynolds pers comm). Indeed a single sherd of green-glazed pottery was found on the surface of the upper ledge along with other pieces of coarseware during the present work. Stukeley and others too, refer to the discovery of a bridle bit etc. on the summit, while Atkinson recorded the discovery of an iron spearhead at the commencement of his excavations, though as noted above this of course, could have been earlier in date. Much of this was recovered from the three ledges that he investigated on the northern slopes and in fact consideration of his excavation record here is crucial in determining the nature of the surface remains and in much of our understanding of the construction and use of the mound.

Atkinson's project design (Trowbridge Local History Reference Library) makes it clear that his working hypothesis was of an original construction in the form of *'a stepped cone, and that most of the steps, particularly towards the bottom have been obliterated by weathering'.* The location of the position of trenches across the upper two terraces has been recovered by the present survey and confirmed by the photographs published by Whittle (1997). These two trenches excavated in 1969 encountered the uppermost ledge. The first revealed what was described as *'near vertical rough chalk walling'* (Whittle 1997, 21) situated on the inside of the ledge. As this chalk feature appeared to extend inwards under the topmost level of the mound Atkinson believed both terrace and wall to be original, the surface of the terrace being *'trampled smooth by workers'* (Atkinson 1968, 170). No dating material is recorded and although cautious, Whittle considered that there was no evidence to suggest that the feature wasn't part of the original construction. The second trench, however, did not locate the feature and Whittle surmised that it may have been because the cutting was not taken as far back into the mound as the first trench. However, small postholes were encountered along with iron nails and early medieval potsherds, and Atkinson finally concluded that both upper and second terraces had been *'later cut back to a vertical face and revetted by timber secured with nails'* Atkinson 1968, 170). The fact that these were not revealed in the first trench indicated that any revetment or other wooden feature need not be considered as continuous. The second trench also encountered the 2nd terrace. Its almost vertical walling (Whittle 1997, fig 20) consisted of small sarsen boulders and blocks of chalk surmounted by rubble and silt (Whittle 1997, 22). Hard against and partly within it were a series of six postholes placed a few centimetres apart from each other. The postholes were thus considered to be chronologically inseparable from the rough walling (Whittle 1997, 22). Finds, evidently from this level included crucially a silver coin of Ethelred II, dated to 1010AD, along with iron nails, and early medieval potsherds. The position of these postholes hard against the mound implies revetment, perhaps to ensure the stability of the slopes.

There is less certainty about the third terrace. Excavation of this is only described in general terms as '*downslope*' from that across the second ledge (Whittle 1997, 22). Here no wall was described but the mound was said to be composed of compacted chalk rubble and silt, evidently with a chalk step cut into it (Whittle 1997, 22). Early medieval potsherds were again apparently found associated.

Atkinson was evidently intrigued by features at this level, so much so that he planned to extend the trench in 1970. Writing in support of his application he described how in 1969 *'Halfway down the north side of the mound…last summer we made a small cutting, 6ft by 12ft long to investigate a slight step or terrace which breaks the smooth profile of the mound at this point. This appeared to have been formed, like other similar terraces higher up the mound, in late Saxon times, possibly for defensive purposes; but below it the cutting revealed what may have been an associated ditch, of which it was possible to excavate only the inner edge. I am anxious to extend this cutting downhill for a limited distance (probably not more than another 12ft) in order to establish more reliably the character and date of this feature…..*' (letter 22 April 1970 M Walker to Messrs Golding Hargrove WRO 3293/1). It is not clear whether this proposed extension was ever dug; or the intended sondages around the base of the mound that he described in the same letter. With reduced funding, Atkinson certainly returned to complete work on the summit in July and August 1970 (Atkinson 1978, 170) but there is no published or archive record of further work on the slopes.

It is clear from this that Atkinson was thinking of these terraces as recut and revetted and substantially early Medieval in date. His description of the 1969 cutting as 'halfway down the north side of the mound' immediately introduces the possibility that he had in fact encountered the platform revealed in the present survey as being in this position. Some of the loose soil, much burrowed by rabbits, noted here might help to support the location as that of an excavation trench, and a shallow depression leading downhill from the platform could mark the site of such a trench, though this does appear to be depicted on aerial photographs taken prior to 1968. If Atkinson's trench can indeed be located on the northern platform, then not only the early medieval potsherds but also the ditch described might also be associated with it.

Whittle restated Atkinson's conclusion that the terraces, in the case of the uppermost a modification of an original part of the construction of the mound, had been considerably cut back to a vertical position and revetted during the early medieval period, but cautiously acknowledged other possibilities.

There was clearly a significant phase of activity at this point in time. Atkinson believed that the mound had been fortified against the Danes, perhaps as a result of concern after the battle

said to have been played out at nearby East Kennet in 1006AD (Garmondsway 1975, 137: see also Reynolds 1999, 94). The postholes, however, were located on the inside of the terrace step, implying revetment rather than fortification. Leaving the ledges themselves exposed, with the shelter of a palisade on the inner edge would have presented a perfect access route for attackers (and a blind spot for defenders). There are, however, other potential interpretations a) the mound would provide a ready made prestigious site for a building, and it is worth recalling one interpretation of the place-name as *'hall'* (Gover *et al* 1939, 295); b) if the site was considered sacred during the Romano-British period it could have retained its ritual nature through the early Christian period. Locally the struggle to emphasise Christianity appears to have been quite important. The presence of a Saxon cross, followed by the establishment of Christian church, possibly a Minster (Reynolds 1999, 94), at Avebury all within sight of Silbury, emphasises the enormous Christian interest in the area. Avebury subsequently attracted a Benedictine monastic cell, and suffered attempts to destroy the standing stones. Given this concern to Christianise pagan monuments it would be no surprise if Silbury Hill saw some form of Christian usurping and modification.

Far from being part of initial construction the stepped arrangement, whether as concentric circles or some kind of spiral, is essentially of early medieval date. It is conceivable, as Atkinson believed, that the form reflects earlier construction features, though while making sense there is very little evidence to support such an assertion, and Atkinson himself (1968, 170) relied on the polished surface of the terrace as an indicator of antiquity. All of this has some implications for the stability of the mound. Firstly, for revetment to be necessary, early medieval users must have considered the mound to be in an insecure state and it could have been crumbling quite significantly before the cutting of the terraces. Secondly, the smoothed surface that we see is not the product of good Neolithic building, for the infill of the steps that we observe must have developed around early medieval posts, and indeed occurred as they rotted. Assuming a fresh, clean cut revetted appearance in the early medieval period, the terrace fill is entirely a product of historic times.

Post medieval

As referred to above, the probable tree-planting ring situated around the lip of the summit might be ascribed to the events recorded by Stukeley (see above). Tree-planting rings are common features that appear in many prominent positions on the Marlborough Downs. Such planting here, together with the recorded construction of a path suggests that the mound was being considered for, if not utilised as, an eyecatching landscape feature by the Lord of the Manor, Richard Holford, perhaps as part of a formal perambulation through the wider landscape. There is no further evidence for such a use, though the existing curving path

coupled with the terraces provide a ready-made mount to surpass that situated just over 8km to the east alongside the river Kennet at Marlborough.

The low-lying ground around the Silbury mound contains traces of what appears to be a system of water meadows. Unlike examples on the Kennet further downstream, or further south along the River Avon, there is no uniformity or pattern to these. Rather they appear as a local response to the drainage problems of the immediate area. Carriers both north and south of the road appear to fringe the higher ground, though no side carriers can be traced. Ditches present within the main ditch of the mound are likely to have been for drainage and it may be that this accounts, at least in part, for the atypical nature of the meadow system, management being concerned with balancing of flooding with drainage regimes.

Large Mounds

No other mound in Britain reaches the enormous size of phase III Silbury. The stone circle around New Grange, Eire, measures some 103m in diameter, while the cairn itself is some 85m by 78m with a maximum height of just over 13m (O'Kelly 1982). Le Hougue Bie at 50m diameter and 12m high (Burl 1986, 236) is the largest of the mounds on the Channel Islands. A little further afield, in Brittany, the Tumulus St Michel at Carnac measures 125m by 60m and reaches 10m in height. Tumiac, Morbihan, is 50m diameter and 15m in height, while Crocuny at Carnac is 55m by 23m and 13m in height (Burl 1985, 125, 133, 165). All of these approach the proportions of the earlier Silbury mounds, but none compare with the final phase.

It may be that large mounds remain to be discovered (or site reports translated) in the former USSR. One mound on the crest of Mount Mithridates near Kertch was said to be 30m high while newspaper accounts of the removal of a cairn 76m in height at Ekatarinoslav, near Alexandropol, Russia might be something of an exaggeration (Smith 1861, 163: Long 1857, 338).

There are numerous large mounds situated along the bluffs and terraces of the River Mississippi in the USA, a point recognised by Whittle in considering comparanda (1997, 147). Despite a degree of quarrying, Mound A at Poverty Point, Louisiana, thought by some to represent a flying bird, measures 216m by 195m and reaches 21m in height (Gibson 1999, 11). Emerald Mound, Mississippi, covers 8 acres, and measures 234m by 132m and reaches 10m high (Baca 1999). In Ohio, Miamisburgh Mound, is 20.7m high (Brine 1996, 56-9) and Grave Creek 21m high (Brine 1996, 58-9), while Monks Mound, Cahokia, Illinois is 27m high (Brine 1996, 106). Mounds in Central America also achieve considerable proportions, examples in Guatemala exceed 13.7m in height (Brine 1996, 190).

From this preliminary survey of the literature it is evident that, stone constructions such as pyramids aside, Silbury Hill is not only the largest prehistoric mound in Europe as Rickman and others claimed, but almost certainly of the whole World. Only stone built structures are of a greater bulk and height and, as Atkinson indicated, Silbury does well against these. It certainly compares favourably to the pyramids of Egypt and Central and South America in terms of human achievement, and being considerably older than them is an even more astonishing construction. In terms of monumental structures, the ziggurats of Mesopotamia, some of which date to a similar period of time, therefore simply in terms of monumentality may be the closest parallels. As such, Silbury deserves its reputation as a mound of considerable international importance.

MANAGEMENT AND CONSERVATION

This section should be read in conjunction with a separate report on conservation of the site by Amanda Chadburn (English Heritage, South-west Region). It leaves aside problems arising from known excavations and only points arising from the foregoing text are highlighted here.

While as stable as any archaeological earthwork it has become apparent from this investigation that the mound, previously thought to be a product of good Neolithic workmanship (e.g. Atkinson 1968, 169: Passmore in Petrie 1924), has eroded to a greater degree than formerly envisaged. It has already been mentioned how Atkinson originally believed that the chalk mud filling the ditch was derived from the mound, but came to the conclusion that much of this mud may have been washed into the ditch by the Beckhampton stream (Atkinson 1968, 166) and he may have been right in good part. His initial assumption that the mound was considerably higher and that weathering and erosion have taken their toll, resulting in obscuring of the terraces, was modified. We now know that not only were these obscured during historic times but they were cut (or perhaps recut) in historic times too, presumably in response, for whatever reason, to an already crumbling mound. That there has been erosion in recent times also seems likely. Wilkinson (1867) reported that his trench was placed adjacent to a scar that reached almost to the summit. Unless this refers to the disturbance above the southeast platform, such a scar is no longer visible and must have been obscured by weathered material.

There is also an indication of an early collapse of material from the lower slopes adjacent to the southwest ditch terminal. The convex appearance of the mound outline is broken at the point where Pass' description of sarsen boulders in the ditch (Pass 1887, 248) hints at the presence of amassed rubble. Since this was likely (though not certain) to have been sealed beneath layers containing a Romano-British coin the episode would appear to have occurred early in the life of the monument.

Given the angle of slope, which varies considerably, and the soluble and easily eroded nature of chalk, this degree of weathering comes as no surprise; rather the surprise is that it has held together so well, but we can now see that it is the later modification that gives the impression of an almost freshly cut monument.

There must be a reasonable chance that there will be further erosion. Weight on the natural chalk land surface must be enormous and should part of the inner edge of the ditch give way a sizeable portion of the mound may follow. Earthworks themselves, of course, invariably result from collapse and weathering of structures and it might be accepted as a normal part of

the process of earthwork development. It is not unknown for large monuments to encounter this process. Similar examples only come from other parts of the world, but the collapsed pyramid of Meidum, Egypt (sand), ziggurats of Iraq (mud brick), spring to mind where mounds have collapsed under their own weight. Monks Mound, Cahokia, USA, which suffered a large collapse in the 13th century, is rather different. This was constructed of alternating layers of clay and sand. In hot weather the mud dries and cracks while in wet weather it becomes plastic and shifts; the sand layers providing internal drains or outlets for water (Daylon 2001) and thus the method of construction that bound it together also resulted in its instability.

At Silbury, the ditch is stable and more deposits are added annually by the flooding of the ditch. The steep scarp marking the southern lip of the ditch extension is prone to cattle poaching. Burnt fragments of sarsen were noted as eroding from here and hint at a potentially important and fragile Neolithic horizon beyond the limits of the ditch. Here the chalk surface may harbour important evidence related to the construction and subsequent use of the mound. Unprotected by build up of material, some of this may be extremely fragile. How far from the base of the mound such activity might be expected is difficult to judge. Suffice to say perhaps that intensity of activity might be greater as one approaches the mound. Today the meadows north of the A4 highway remain in grass and deposits might be expected to be reasonably well preserved, but the area to the south of the mound that incorporates the Roman Road is continually cultivated.

The two 'causeways' carry considerable amounts of human traffic, as does the adjacent southern lip of the ditch. Archaeological remains here are likely to be extremely fragile, particularly if, as Petrie imagined, the 'causeways' may have been used as entrances, or if they represent the final relict fragment of a surviving phase of ditch.

METHOD

by Bernard Thomason

A GPS control survey was carried out at Silbury Hill during 2001 in order to support a number of tasks:

- To acquire high quality Ordnance Survey National Grid co-ordinate values for pre-existing survey control points relating to earlier surveys carried out by the Centre for Archaeology, Portsmouth.
- To establish control with high quality OS National Grid co-ordinate values for archaeological survey work carried out by the Archaeological Investigation team based at Swindon.

The work by the Archaeological Investigation team was intended to provide:

- A survey framework for an interpretative large scale archaeological plan of Silbury Hill and its environs;
- three-dimensional data to allow detailed computer modelling of the survey area;
- analysis and interpretation of the surface features of the site and environs, placing them within archaeological, chronological and landscape context;
- high quality location data supporting geophysical survey work carried out others.

To provide accurate position a base station established on the summit of Silbury Hill was occupied for 3hrs 10 mins on the 30th Jan and 3 hrs 25 mins on the 8th May 2001 with a Trimble 4700 dual frequency GPS receiver. The resulting data was processed using data from OS Active Stations at Droitwich, London, Nash Point, Northampton and OSHQ Southampton, using Trimble Geomatics Office software v.1.5. Transformation from WGS84 to OS National Grid co-ordinates was carried out using the OSTN 97 transformation.

All subsequent survey activity utilised this station. Hachured and contour plans were produced, and a ground model was constructed Ground modelling was carried out in Key Terra-Firma 5, using c. 16000 points collected using Trimble 4700, 4800 and 5700 dual frequency, real-time GPS surveying equipment. A surface model was produced as an interpretation aid, showing the site as it currently exists. This can be manipulated in order to observe the mound from any chosen viewpoint, but is depicted here as a pre-selected still frame.

In order to examine the relative volumes of the material extracted from the ditches surrounding the hill and of the material required to construct the hill itself, four further models have been constructed:

- The estimated pre-Silbury Hill ground surface
- The mound above that surface
- Two reconstructions of the ditches were made,
    - using an “average” flat bottomed ditch profile interpolated from a number of small trenches (shafts) excavated by Pass (1887) in which the depth of the ditch has been identified
    - using a profile of the ditch recorded seismically by Atkinson (site archive AKM), interpolated as a circular ditch centred on the mound, in addition to data supplied by Pass noted above.
- Finally a surface model representing a possible reconstruction of Silbury Hill, using this interpolated ditch has been constructed.

ACKNOWLEDGEMENTS

Investigation was carried out by David Field and Graham Brown in two stages during May and June 2001, separated of necessity because of foot and mouth precautions and by the level of water retained until relatively late in the year in the ditch. Thanks to Julie Swain of English Nature for allowing the survey to take place on a SSSI. Our appreciation is also expressed to David Hues, Richard Hues and the National Trust for granting access to their land during a time of great stress on the countryside. Gillian Swanton allowed access to a GPS station situated on her farm for which Colin Shell kindly provided data.

Access to Silbury Hill was granted by Amanda Chadburn of English Heritage, while Fachtna McAvoy and colleagues at the Centre of Archaeology, Portsmouth, who excavated on the summit, are thanked for their patience and understanding during some grisly weather, while Melanie Pomeroy, World Heritage Site officer, Kennet District Council, kept an interested and watchful eye on the site.

With the latest GPS equipment and software Bernard Thomason played a central role in helping to ensure that programmes ran smoothly, which was essential in the post fieldwork programme of digital modelling, etc that followed data gathering. Deborah Cunliffe assisted with illustrations, while Mark Bowden also participated in fieldwork, and along with Nicky Smith and Graham Brown commented helpfully on an earlier draft of this text.

Librarians at Salisbury, Bristol, Trowbridge and the Wiltshire Archaeological Society reference libraries, Felicity Gilmore and Claire Field (English Heritage), Clair Brown at the Bodleian Library for assistance with the Stukeley MS are all thanked for their kind help, as are Paul Robinson (Devizes Museum), and Ros Cleal (Alexander Keiller Museum, Avebury), Danny Parker and Ian Leith (English Heritage).

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APPENDIX

Extract from the *Bristol Journal* Saturday November 2, 1776 Vol LXI, p3

'Silbury-Hill, the largest tumulus or artificial mound of earth in this kingdom, supposed to be of between 3 and 4000 years duration, was begun to be opened by the miners of Mendip, on Thursday last. They have made a hole at top of eight feet square. The Antiquarians promise to themselves wonders from the bowels of this mountain! It is situated between Devizes and Marlborough'

The *Salisbury and Winchester Journal*, Monday November 4, 1776 Vol XLI, No 4, p3), is almost identical but substitutes *'on the 31st ult'* for *'on Thursday last'.* A third, again almost identical account, was placed in *Bingley's London Journal*. This was quoted by Jackson (1862) which is quite easily obtained and not repeated here.

Extract from the *Salisbury and Winchester Journal* Monday November 18, 1776

To the printer

Sir As the attention of such gentlemen as have a taste for antiquities, is, I imagine, at present fixed on what passes in digging Silbury-hill; I thought that the following anecdote, which was told me long ago by one who was a party in the transaction, might serve to amuse the antiquarians till their workmen at Silbury had finished their search; and if you can find room in your paper, 'tis at your service.
Paturiunt Montes nascetur, Etc - HOR

A poor boy was carrying a pitcher of milk along the road near Silbury-hill, and unluckily fell down and broke the pitcher; a Taylor, who lived at Abury, just by, met the boy crying for the loss of his pitcher and his milk; and at that instant a coach came in sight. The taylor, who was a man of humour, bid the boy be comforted, and told him he would try to get something for him of the gentry in the coach, and for this purpose bid him cry out lustily as the coach was going by. The coachman was, as was expected, ordered to stop on hearing the boy's cries, and the people in the coach enquired what was the cause of the boy's lamentations; the taylor stepped to the coach-side, and told them that the boy had reason to lament, for that he was carrying home an urn which his father had just dug out of one of the barrows; that as a piece of antiquity it was of great value; that Dr Davis of Devizes, who was known to be a great antiquarian, would have given a guinea for it, etc. This excited the curiosity of the gentry in the coach to examine the broken pitcher, and thinking that the pieces might be joined together,

they offered to give a crown for it, which was accepted: the taylor gave the boy a shilling to make good his loss, and put the remainder in his pocket. The gentry in the coach drove away with the broken pitcher, supposed to be a Roman urn, and probably is now shown in the museum of some antiquarian as such, and much admired by the Virtuosi.

WILTONIENSIS

A further cutting from the *Wiltshire Independent*, a letter from J Waylen, marked in ink 1842, requotes the story, giving the date of the original journal - also adds-

'It appears that about that period, several gentlemen of Bristol and Bath had entered into a subscription, for the purpose of excavating and examining the ancient barrow of Silbury Hill….' (Devizes Museum Cuttings 3:28)

Extract from the *Salisbury and Winchester Journal* Monday Dec 2, 1776

To the Printer of the Salisbury Journal.
Uno avulfo, non deficit alter. Virg.

There is, I observe, in your paper of the 18th instant a story of a Boy who broke a pitcher, which by the contrivance of a taylor was put off for a Roman Urn, etc. This story is intended as a sneer at the Antiquarians in general, and particularly at those gentlemen who have employed the Miners at Silbury-Hill.

That there are ignorant pretenders in every science, who may be easily imposed on, will not be denied, but that any branch of science or literature should therefore be the object of ridicule will by no means follow.

The study of Antiquities, if it not to be accounted a liberal science, and is of little immediate use to mankind, yet, I think, it will be admitted to be a gentlemanlike amusement, at least, and considering how many gentlemen spend their time and their fortune in childish trifles, or in vicious pleasures; I think enquiries into the Antiquities of this or any other country are laudable and as such ought rather to be encouraged than ridiculed. If therefore those gentlemen who have employed the workmen at Silbury should be successful in their search, or if they should be disappointed there, in either case it may perhaps be a pleasure to them to be informed that there is another barrow in the same neighbourhood, in which they may again try their fortune.-This barrow is taken notice of in the additions to Camden (see Gibson's edit

Wilts p111) and said to be "the largest barrow in these parts except Silbury." It is situated near a village called Marden, about six miles eastward from Devizes, in that fine vale which is bounded on the north by the Marlbro' downs and on the south by Salisbury plain, about eight miles southward of Silbury-Hill, nearly in a line with Stonehenge, and as near half way from Silbury to Stonehenge as its situation near a rivulet will admit. It is, as I guess, about 30 feet high, and of a very large diameter at the bottom. It is surrounded at a distance with a vast ditch, which like that of Abury has its bank thrown outward; which I think plainly shows that this intrenchment could not be of the military kind. The area inclosed by this ditch contains, I imagine, near 40 acres.

There is within the same area another barrow of much smaller dimensions, at the distance of about 150 yards from the great one.

Dr Stukeley in his Abury says (I think, for I have not the book by me) that the entrances into the circular intrenchement at Abury, which he supposes to be a Druidical Temple, are to the south-east and north-west, and so are these of this intrenchment I am speaking of. There were a great number of stag's horns, some of them of a very large size found a few years ago in levelling a part of the bank, and near the same place was found a human skeleton. There is great reason to suppose that there is a cavern in the great barrow, for the top or vortex of it is sunk into a hollow. I have conversed with old people in the neighbourhood, and they all think that it is considerably sunk within their remembrance. If this account should help to keep up the spirit of enquiry and curiosity which is at present excited, it will be a pleasure to.

Sarum Nov 28, 1776 S.A.S