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# THE MESOLITHIC AND NEOLITHIC HUMAN BONE ASSEMBLAGE FROM TOTTY POT, CHEDDAR, SOMERSET

by

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## ABSTRACT

This paper summarises the small surviving human bone assemblage from Totty Pot cave, Mendip, Somerset, and presents the results of a programme of AMS dating on six individuals. The results confirm the presence of one previously identified Mesolithic individual (7445-7080 cal BC), but unexpectedly place the other five individuals spanning the Middle to Late Neolithic, from ca. 3500 to ca. 2600 cal BC. The site is discussed in the broader context of earlier prehistoric human remains in other Mendip caves, and, for the Neolithic, in terms of the decision of whether to bury in a cave or in a mortuary monument.

## INTRODUCTION

The Mendip Hills are rich in both caves and swallets, many of which have yielded archaeological remains of various periods. Among these is Totty Pot, which has produced an assemblage of human and animal bone, including both wild and domestic species, as well as a small microlithic flint assemblage, a barbed and tanged arrowhead, and sherds of Beaker and Early to Middle Bronze Age pottery (Gardiner, 2001). Two previously published radiocarbon determinations indicated the presence of at least one Mesolithic human, dating to 7450-7050 cal BC (BM-2973), and an auroch dating to 5620-5370 cal BC (OxA-9863) (Ambers and Bowman, 2003; Troy, *et al.* 2001). The domestic fauna and pottery, however, caution against interpreting the entire human bone assemblage as being of Mesolithic date. An AMS $^{14}$C dating programme was therefore initiated, in conjunction with an assessment of the human and faunal remains (the former summarised below, and the latter reported in Murray, 2007 and this volume). We here present the results of the dating programme on the human remains, and place these in the context of other Mendip sites.

## TOTTY POT

Totty Pot is located some 5 km east of Cheddar (ST 4825 5358), on the plateau that forms the top of the Mendip Hills, at approx. 245m OD (Figure 1). It was found by Christopher Hawkes during a family outing in 1960, and excavated by Hawkes, geologist Willie Stanton and the Wessex Cave Club between 1960 and 1965. The present entrance is via a narrow, vertical shaft approximately 0.75 m wide and 4 m deep (Figure 2), leading to a short tunnel giving access into several small chambers, which open up to approximately two metres at the highest end (Figure 3). The approximate length of the cave is 10m. Although having the surface appearance of a swallet, Totty Pot is probably a relict section of an ancient stream cave whose entrance was formed by breaching of the cave roof through sub-aerial lowering of the

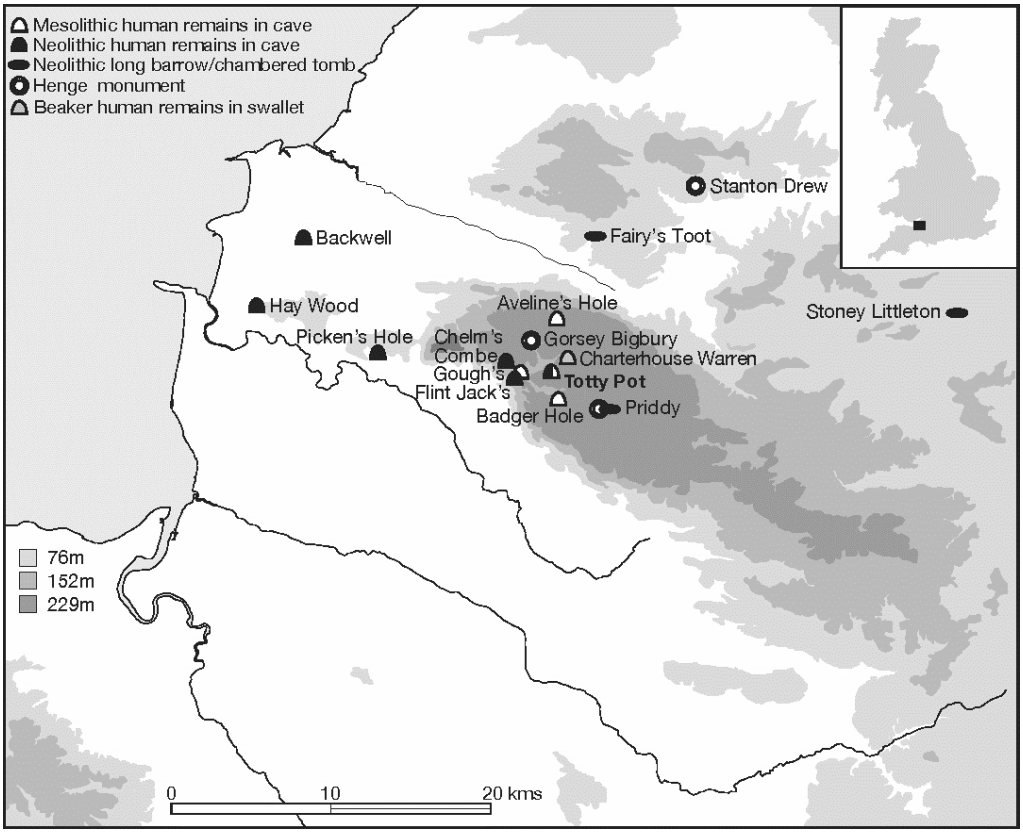


**Figure 1.** *Location map showing sites referred to in the text.*

plateau surface. The current vertical entrance was dug out in the 1960s and is probably not that used in antiquity, when the cave was most likely accessed via a relatively wide and low entrance on the south side of the depression (G. Mullan *pers. comm*. 2010).

Initial excavations at the site were primarily intended to explore its caving potential, and the recovery of archaeological material was unexpected, though it soon became apparent that bone material in particular was present, including both faunal and human remains. Work proceeded more carefully after this, as shown by the recovery of a small flint assemblage of 20 worked pieces, including seven convex backed blades, three rod and seven scalene microliths, and two microburins. The University of Bristol under the direction of Paula Gardiner undertook a small-scale test excavation around the cave entrance in 1998, again yielding a flint assemblage with formal tool types dominated by microliths (Gardiner, 2001; 2008). The microliths from both excavations are diagnostic of the later Mesolithic (Figure 4). A few small sherds of probable Beaker, Early and Middle Bronze Age, and Romano-British pottery were also found in the 1960s work (Gardiner, 2001).

***(Erratum: In the printed version of this paper, Backwell Cave was incorrectly located in Figure.1)***

**Figure 2.** *Totty Pot entrance depression.*

## THE HUMAN BONE ASSEMBLAGE

The majority of the human bone was recovered from two areas inside the cave: Area (A) K19 and Area (B) (Figure 3). The original radiocarbon date, BM-2973, was on a longbone from Area (B). The discovery of human remains was reported to the Leicester police, where Hawkes was living at the time. Unfortunately, after a cursory examination, they destroyed the material as being of no interest to them. Little contextual information is available for the surviving assemblage, which derives from subsequent excavations. Approximately half the human material was destroyed. Much of the remaining collection seems to have been recovered in 1963 (to which the designation TP ’63 refers). A list is given in the appendix.

The extant assemblage comprises some 60 identified elements, including a small number of refits (Appendix 1). A small number of additional unidentifiable bone fragments may be either human or faunal. The bones are in a reasonable state of preservation, with some complete longbones present. The collection is mainly comprised of cranial fragments, longbones, and the axial skeleton (vertebrae and pelvis), the bones of the hands and feet being limited to a talus and a six other hand/foot bones. While this may partly reflect retrieval methods, the recovery of a microlithic assemblage makes this very unlikely. The good condition of the recovered human remains implies that differential loss through poor preservation is also unlikely to be a factor. In any case, given the history of the collection, and its partial loss,

little can be read into the skeletal part representation, and the fact that at least some small bones are present may be significant. Only a few elements show any surface erosion, and none show clear indications of sub-aerial weathering (Behrensmeyer, 1978). No cutmarks, burning or other signs of intentional modification are evident on the human bone collection. Two elements (TP5, femur shaft, and TP575, a hand phalanx) exhibit rodent gnawing (Figure 5). A few elements have adhering calcium carbonate deposits, and may derive from the tufa floor noted in the 1960s excavations (see Murray, this volume) (Figure 6).

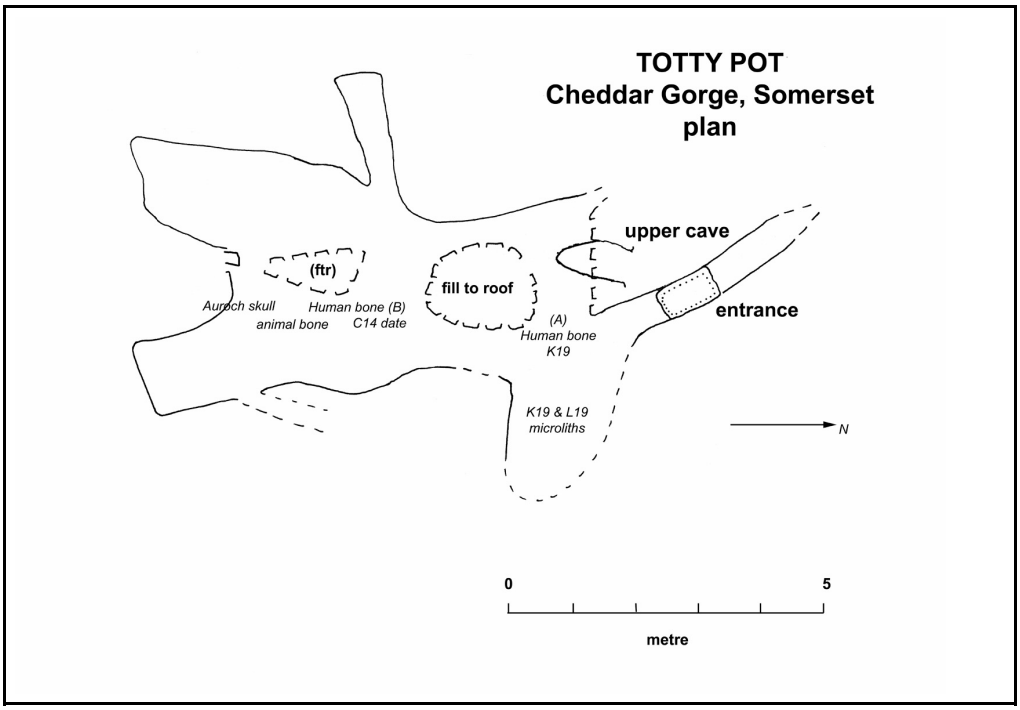


**Figure 3.** *Plan of the interior of Totty Pot, showing recorded positions of finds.*

A minimum of six, but more probably seven, individuals is represented in the collection, including three or four adults, an older child (ca. age 10), and two young children, ages 2-3 and 3-6 years. Given the total number of elements present, it is evident that each individual is only very partially represented. The subadults in particular are represented by only two or three elements each. This implies that considerably more material may still exist in the cave. While the determination of sex is difficult with such partial remains, the presence of two left innominates with wide sciatic notches suggests the presence of at least two adult females, while a number of large, robust longbones suggests the presence of at least two males, although, strictly speaking, there is definite evidence for only three adults.

Degenerative changes to one of the vertebrae suggests that at least one of the adults may have been of a relatively advanced age, although such changes can be found on young adult individuals subject to heavy workloads. Without the complete skeleton, it is not possible to make this distinction. The single adult maxilla present (Figure 7) is that of an individual of

ca. 25-35 years of age based on dental attrition, though this gives only a general indication, being dependent on the amount of grit in the diet, as well as on age (McLaughlin, 2007).

Stature estimates are possible from a complete femur (TP1, 168.8 ± 3.9 cm) a complete tibia (TP3, 171.0 ± 4.0 cm), and a complete radius (TP7, 171.9 ± 4.7 cm, though this is a poor element for stature reconstruction, and is associated with a large error term) (using formulae in Bass, 1987). The femur (TP1) has been directly dated to the Mesolithic (see below); the tibia may belong to the same individual (Figure 8). Based on their robusticity, both elements are most likely male. Their average value (170 cm, or just over 5½ ft) is towards the tall end of the range of 163.1 ± 5.8 cm given for males in western Europe during the Mesolithic period (Formicola and Giannecchini, 1999). (Incidentally, the average stature calculated for Neolithic males from Fussell's Lodge long barrow is 170 cm (Brothwell and Blake, 1966)). The three femora sufficiently complete for measurement provide platymeric indices of 78.9 (TP1), 83.9 (TP5), and 89.9 (TP6), while two tibiae provide platycnemic indices of 50.9 (TP2) and 53.4 (TP3). Both indices are a measure of how flattened the bone is, reflecting in part the mechanical stresses to which it has been subjected during the lifetime of the individual. Broadly speaking, the lower the index, the more flattened the bone, and the more active the individual (Ruff, *et al.* 1984). For the femur, values between 75 and 84.9 are considered platymeric (TP1 and TP5), while indices 85 and above are considered eurymeric (TP6). The value of 78.9 for TP1 is in good agreement with those previously reported for Aveline's Hole, averaging 76.3 ± 7.5 (n = 10) (Schulting, 2005, Table 4). The value of 83.9 for TP5 is near the upper end of the range for being classed as platymeric. This individual has been dated to the earlier Neolithic; the specific date of the remaining eurymetric femur is unknown, but presumably falls within the Neolithic, given that this is the only other period represented in the human dating programme (see below). It is interesting – though very speculative given the numbers involved – that the Neolithic individuals appear to present a trend towards less active lifestyles than seen in Mesolithic individuals in the same area. A similar trend has been noted with the uptake of farming on the south-eastern coast of North America (Ruff, *et al.* 1984).

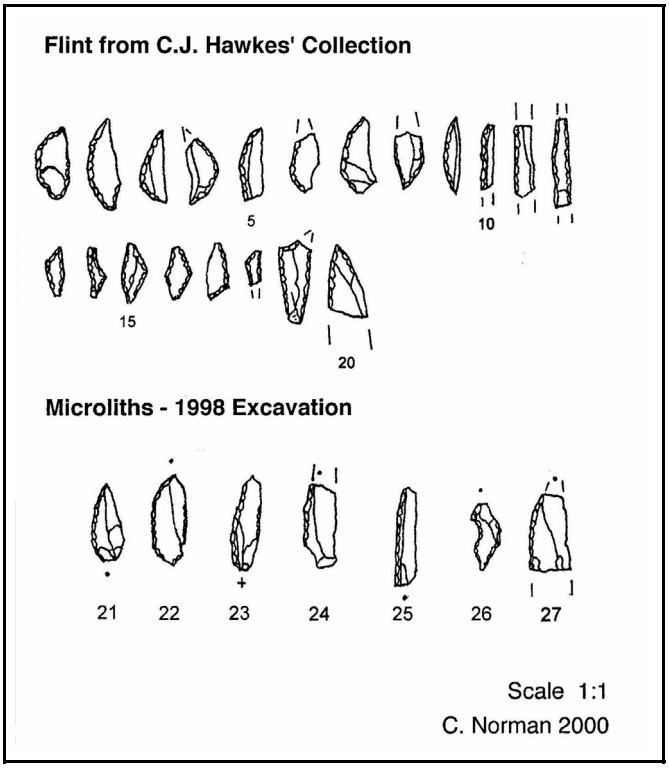


**Figure 4.** *Microliths from the 1960s and 1998 excavations.* **Gardiner 2008, Fig. 73.6.**

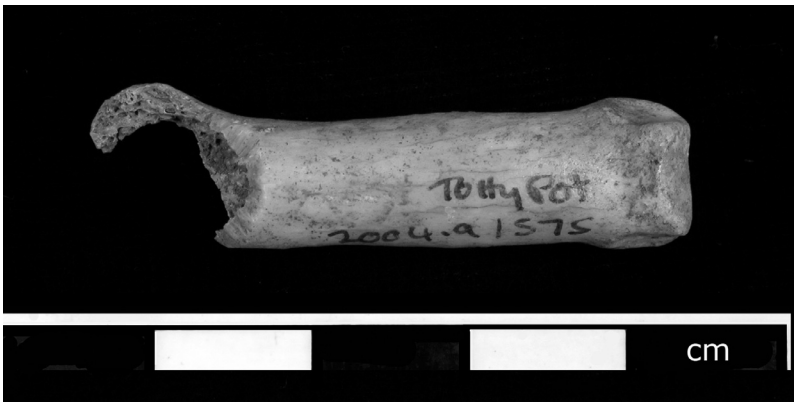


**Figure 5.** *Hand phalanx (TP 575) showing rodent gnawing.*

The condition and position of the human remains inside the cave suggests that they were deliberately placed inside the cave, rather than being washed in or brought in by predators. It is likely that undisturbed archaeology remains within the cave and a further excavation, trenching into the cave through the presumed original entrance, may well be worthwhile, though it would be a major undertaking.

## THE AMS DATING PROGRAMME

In the absence of stratigraphic relationships, samples were chosen on the basis of the minimum number of individuals represented in the surviving assemblage. Bone samples from each of the six individuals, three adults and three children, were submitted for AMS $^{14}$C dating and stable isotope analysis (Table 1). Of the adults, two are probable males based on the robusticity of the element (femur), while the third is a probable female. All samples yielded good collagen, with C:N ratios falling within the accepted range (DeNiro, 1985). The earliest determination confirms the presence of one adult dating to the Mesolithic (Figure 9). This result is in fact nearly identical to that previously reported by Ambers and Bowman (2003), and almost certainly belongs to the same individual, allowing the two determinations to be combined to 7445–7080 cal BC with 95% confidence ($\chi^2$ test, T = 0.6 (5%, 3.8)). The relatively wide date range here is due to a plateau in the calibration curve, though the great majority of the probability distribution (94%) lies with the period 7355–7080 cal BC, and this is used through the remainder of this paper. The other five individuals date to the Neolithic, and indeed span much of that period, from the earliest at 3630-3370 cal BC, to the latest at 2830–2460 cal BC, with the intervening three results indistinguishable at ca. 3340–3000 cal BC (Figure 10).


**Figure 6.** *Distal left ulna (no number, 1963 excavation) partly encased in calcium carbonate, presumably from tufa layer.*

| *Cat. no.* | *Element* | *Age/sex* | *Lab No.* | *$^{14}$C yrs* | ± | *Cal BC (95%)* | | *$\delta^{13}C$* |
|---|---|---|---|---|---|---|---|---|
| | humerus, L | adult | BM-2973 | 8180 | 70 | 7450 | 7050 | -19.4 |
| TP 1 | femur, L | adult, M? | OxA-16457 | 8245 | 45 | 7455 | 7085 | -19.7 |
| L humerus and femur | | adult, M? | combined | 8226 | 38 | 7445 | 7080 | |
| TP 6 | femur, L | adult, M? | OxA-16458 | 4706 | 35 | 3630 | 3370 | -21.0 |
| TP 2004.9/419 | ulna, R | child, 2-3 | OxA-16462 | 4498 | 35 | 3355 | 3035 | -21.1 |
| TP '63 2004.9/68 | femur, L | adult, F? | OxA-16459 | 4473 | 35 | 3340 | 3025 | -21.2 |
| TP '63 | femur, R | child, 3-5 | OxA-16461 | 4442 | 36 | 3335 | 2930 | -21.2 |
| TP 2004.9/257 | femur, L | child, ca. 10 | OxA-16460 | 4008 | 39 | 2830 | 2460 | -21.6 |
| auroch | | | OxA-9863 | 6540 | 50 | 5620 | 5370 | |

**Table 1.** *AMS determinations on human and faunal remains from Totty Pot. Calibrated with OxCal 4.1.5 using INTCAL09 (Reimer, et al. 2009). Rounded to nearest 5 years.*

The prominent Neolithic funerary presence was unexpected, given the lack of any diagnostic material remains relating to this period, with the possible exception of a quernstone fragment (Gardiner, 2001), which of course could also date to a later period. While unlikely, it is possible that the latest determination of 2830–2460 cal BC might be associated with the Beaker activity evident from the pottery: 94.6% of its 95.4% probability distribution falls within the more restricted period 2630–2460 cal BC, with the very end of this range just overlapping with dated human remains associated with Beaker material at nearby Charterhouse Warren (Levitan and Smart 1989). On the basis of these results at least, no human remains are associated with the Early or Middle Bronze Age pottery.


**Figure 7.** *Adult left maxilla fragment (no number).*

It is clear that at least four distinct events involving the deposition of human remains occurred at Totty Pot, with the earliest in the Mesolithic, ca. 7355–7080 cal BC. The previously dated auroch bone falls later within the Mesolithic, ca. 5620–5370 cal BC, and, together with the microlith assemblage, may refer to intermittent activity in the vicinity of the cave throughout this period. This is followed by at least three temporally distinct episodes of deposition in the Neolithic. The three individuals represented by the late Middle Neolithic (ca. 3350–3000 cal BC) determinations may refer to a relatively restricted phase of activity, or indeed to a single event: the calibration curve in the late fourth millennium BC is too imprecise to distinguish these alternatives.

## STABLE ISOTOPE RESULTS AND PALAEODIET

Stable carbon and nitrogen isotope analysis was also undertaken on the human bone assemblage. This provides insights into some aspects of past diets, and in particular on the consumption of marine protein. Measurements on adult human bone collagen reflect long-term averaged protein intake (over ca. 10 years), while measurements on children reflect shorter periods of time, as their bone is still actively forming (Schoeninger and Moore, 1992). While it would have been preferable to include contemporary faunal remains in this study, in the light of the various periods clearly represented (Murray, this volume), this also would have required their direct dating, and funding for this was not forthcoming (comparing isotope values for Neolithic humans with those of modern or even Bronze Age fauna is of little use).


**Figure 8.** *Adult left femur (TP1) and matched tibiae (TP2 and TP3), probably all from the same Mesolithic individual dated by the femur.*

Totty Pot is located some 20 km from the modern coastline, far enough that the use of marine resources would not necessarily be expected, least of all in the Neolithic period, when even humans found directly on the coast do not show any significant use of marine foods (Richards, *et al*. 2003; Schulting, 2007; Sheridan, *et al*. 2008). This is confirmed at Totty Pot by the $\delta^{13}C$ average of -21.2 ± 0.2‰ for the five Neolithic individuals, which is in fact the expected terrestrial endpoint for humans (Table 2). While the Mesolithic $\delta^{13}C$ result of -19.7‰ is close to this value, it does differ significantly from the Neolithic average, being elevated by over six standard deviations. But this cannot be necessarily interpreted as indicating the contribution of marine protein in the diet of this individual (on the order of ca. 10-15%, assuming a linear relationship between endpoints of -12‰ and -21‰ for marine and terrestrial systems, respectively). The terrestrial endpoint for earlier Holocene terrestrial fauna is itself slightly elevated, by about 1‰ (van Klinken, *et al*. 2000), and taking this shift into account brings the Mesolithic individual in line with what would be expected for a fully 'terrestrial' diet (i.e. non-marine; this does not exclude the consumption of freshwater aquatic species). A comparable $\delta^{13}C$ average of -19.9 ± 0.6‰ was reported for 18 earlier Mesolithic (ca. 8300 cal BC) individuals from Aveline's Hole (Schulting, 2005), not far from Totty Pot. Again, this is not interpreted as indicating the consumption of marine foods. It should also be noted that the sea would have been more distant from the Mendip Hills in the earlier Holocene (Heyworth and Kidson, 1982). The stable nitrogen isotope values ($\delta^{15}N$) are somewhat higher than might be expected for typical terrestrial diets. The two highest values, however, are on young children (ages 2-3 and 3-6 years); the

former in particular is likely subject to a nursing effect (Schurr, 1998), and even the latter may still incorporate bone formed prior to weaning.

| *Cat. no.* | *Age/sex* | *$\delta^{13}C$* | *$\delta^{15}N$* | *C:N* | *Cal BC (95%)* | |
|---|---|---|---|---|---|---|
| TP 1 | adult, M? | -19.7 | 10.3 | 3.2 | 7455 | 7085 |
| TP 6 | adult, M? | -21.0 | 10.5 | 3.2 | 3630 | 3370 |
| TP 2004.9/419 | child, 2-3 | -21.1 | 12.7 | 3.2 | 3355 | 3035 |
| TP '63 2004.9/68 | adult, F? | -21.2 | 11.5 | 3.2 | 3340 | 3025 |
| TP '63 | child, 3-6 | -21.2 | 12.6 | 3.2 | 3335 | 2930 |
| TP 2004.9/257 | child, ca. 10 | -21.6 | 11.2 | 3.2 | 2830 | 2460 |

**Table 2.** *Stable isotope results on human bone collagen from Totty Pot.*

## DISCUSSION

Totty Pot joins a growing number of cave and rockshelter sites across Britain and Ireland with evidence for Neolithic human remains (Chamberlain, 1996; Chamberlain and Williams, 1999; 2000a; b; Dowd, 2007; Leach, 2008; Schulting, 2007). While there is convincing evidence that the great majority of these were intentionally deposited, this cannot be assumed in every instance. Swallet holes and vertical-entrance caves are perhaps particularly problematic in this respect, since their entrances may be hidden by vegetation, and thus may be prone to accumulating both humans and animals through accidental falls. The *apparent* absence of any accompanying grave offerings with the human remains in Totty Pot might support such an interpretation. On the other hand, as noted above, there is abundant evidence for the use of caves as burial places in all phases of the British Neolithic, and it is likely that the majority of the human remains from Totty Pot were intentionally placed in the cave. It should also be recalled that there may have been another entrance into the cave.

Other caves on Mendip have also yielded Mesolithic and Neolithic human remains. For the former period, Aveline's Hole stands out for the sheer number of individuals represented, on the order of 50, with recent AMS determinations on 18 of the surviving MNI of 21 individuals tightly clustering within a century either side of 8300 cal BC (Marshall and van der Plicht, 2005). Of closely comparable date are an adult male skeleton from Gough's Cave ('Cheddar Man'), and at least two individuals from Badger Hole (Gowlett, *et al.* 1986; Hedges, *et al.* 1989). At 7355–7080 cal BC, the individual from Totty Pot is significantly later than the abovementioned sites, and is the latest Mesolithic human thus far identified from the Mendip Hills. It is unclear how well this corresponds with the Late Mesolithic microlith assemblage from Totty Pot (Gardiner, 2001; 2008), as it is difficult to offer a very precise date range for the latter.

Human remains directly dated to the Neolithic from Mendip caves and swallets are known from Backwell, Chelm's Combe, Flint Jack's, Hay Wood and Picken's Hole (Table 3; Figure 11) (ApSimon, 1986; Balch, 1926; Coysh, *et al.* 1962; Hedges, *et al.* 1997; Oakley,

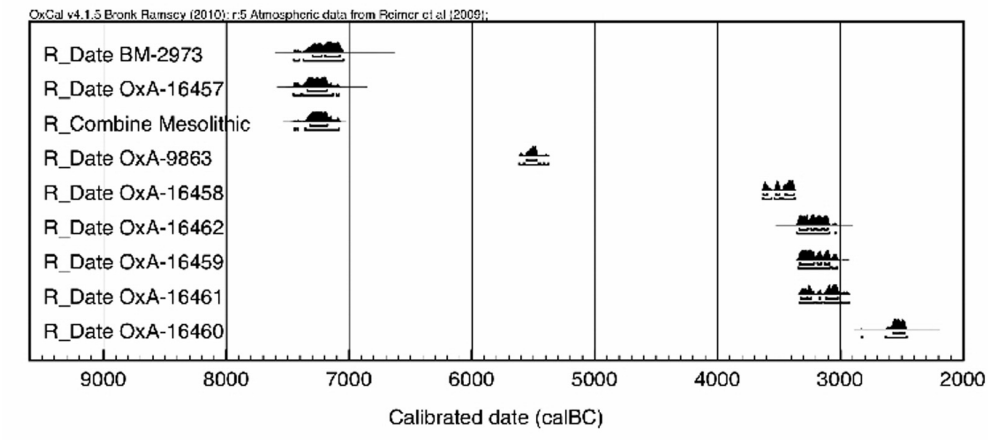


**Figure 9.** *Calibrated AMS 14C determinations on human and aurochs (OxA-9863) bone from Totty Pot (OxCal 4.1.5).*

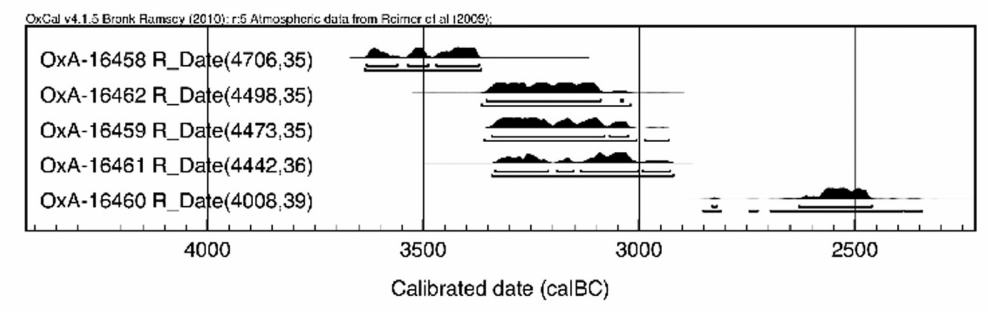


**Figure 10.** *Neolithic results on human remains from Totty Pot (OxCal 4.1.5).*

1958; Tratman, 1964; 1975; Tratman and Jackson, 1938; Wells, 1958). Most of these sites have only a small amount of material, representing from one to five individuals, typically only very partially (e.g., only two teeth have been found at Picken's Hole). Hay Wood is a notable exception, with approximately 20 individuals present (Everton and Everton, 1972). Each of these sites has only a single published date, which of course cannot be used to infer the age of any other individuals present, as amply demonstrated by the results from Totty Pot. The exception here again is Hay Wood, with a recent dating programme confirming the Neolithic age of most, if not all, of the human bone assemblage (Schulting and Chapman, in prep.).

A number of other Mendip caves contain undated human remains, some of which are almost certainly also Neolithic, firstly because cave burial is very common across Britain at this time, and secondly because a number of the sites also contain diagnostic material culture, in the form of Neolithic pottery, polished stone axes and leaf-shaped arrowheads. Falling into this group are Bridged Pot Shelter, Brimble Pit, Cockle's Wood Fissure, Outlook Cave and Tom Tivey's Hole (Chamberlain and Williams, 1999; Hickling, 1952; Lewis, 2000; 2005; Tratman,

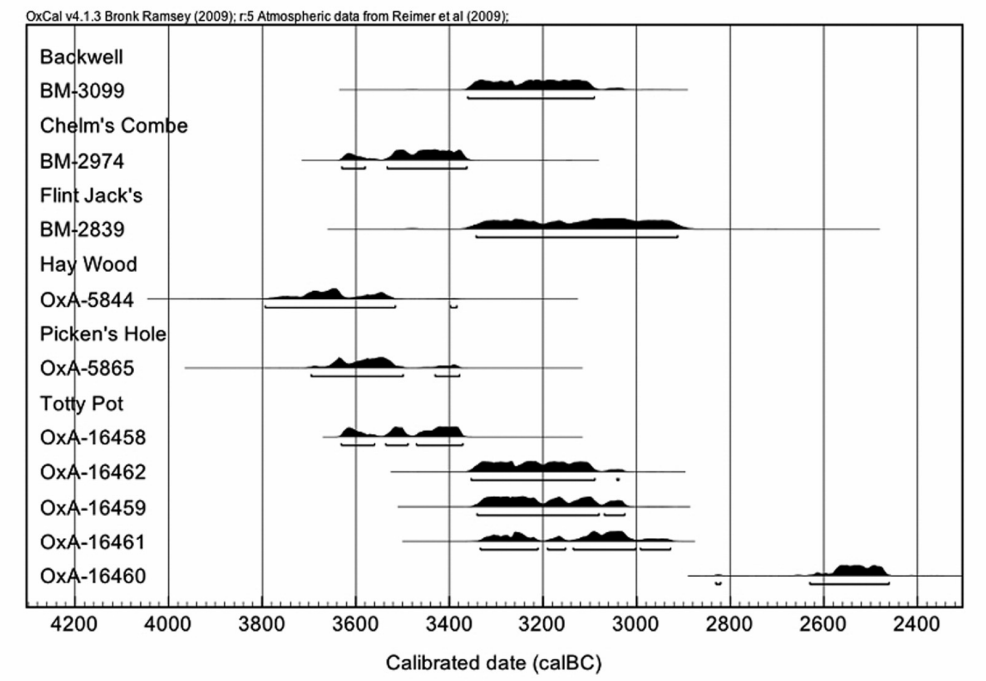


**Figure 11.** *Graph showing calibrated radiocarbon dates on Neolithic human remains from Mendip cave sites (OxCal 4.1.3).*

1975). While the issue would clearly benefit from a targeted programme of AMS dating on this material, it can already be said that the use of the caves of Mendip was an important aspect of burial practice in both the Mesolithic and the Neolithic. There is, however, no sense of continuity between the two periods, since there is a clear gap of over three millennia between the latest known dated Mesolithic human (Totty Pot, 7355–7080 cal BC), and the earliest known Neolithic human (Hay Wood Cave, 3795-3385 cal BC). This pattern is not unique to the south-west, and applies quite strongly across all of Britain (Blockley, 2005; Chamberlain, 1996; Schulting, 2007; Schulting and Richards, 2002). The origins of cave burial in the Neolithic, then, are clearly independent of the practice in the Mesolithic. Indeed, it may relate to perceived similarities between some of the properties of caves, and those of chambered tombs (Schulting 2007). Radiocarbon results on human remains from four Mendip caves – Chelm's Combe, Hay Wood, Picken's Hole and Totty Pot – overlap with the range expected for the construction and primary use of long barrows and chambered tombs in southern Britain (Whittle, *et al*. 2007), demonstrating that their use was likely contemporary at least in broad terms. The question of the possibility of more subtle chronological differences must await the outcome of further radiocarbon dating.

While little information is available for many of them, some 30 possible long barrows and chambered tombs are, or were, known from north Somerset (Bulleid, 1941; Grinsell, 1971; Lewis, 2005), including eight probable examples from the upland plateau of West Mendip (Lewis, 2009). Others may have been destroyed, mined for their stone, and/or flattened to facilitate farming in the immediately surrounding lowlands (cf. Smith, 1989), though such

activities may have been less prevalent on the Mendips themselves, as the hills are less suited to arable agriculture, and numerous stone outcrops are present, lessening the need to denude cairns for building stone. But few sites have been investigated, and, as Lewis (2003) has shown, their identification as Neolithic monuments from survey alone is not always reliable. Three of the confirmed examples with human remains are the Priddy long barrow on the Mendip plateau itself, and the well-known chambered tombs of Stoney Littleton and Fairy's Toot to the north (Bore, 1789; Colt Hoare, 1821; Lewis, 2002; 2005; Phillips and Taylor, 1972; Scarth, 1858; Skinner, vols. XXXV and XXIX; Thomas, 2002). Unfortunately there are no radiocarbon dates (and much of the material has been lost), but there is no doubt that their use overlaps with the use of caves for burial in the Mendips, since the latter demonstrably encompass much of the earlier Neolithic.

| *Site* | *element* | *age* | *Lab No.* | *14C BP.* | ± | *Cal BC (95%)* | | $\delta^{13}C$ |
|---|---|---|---|---|---|---|---|---|
| Backwell | vertebra | adult? | BM-3099 | 4510 | 40 | 3360 | 3090 | -21.8 |
| Chelm's Combe | longbone | adult | BM-2974 | 4680 | 45 | 3630 | 3365 | -22.1 |
| Flint Jack's | femur | adult | BM-2839 | 4430 | 80 | 3345 | 2915 | -23.8 |
| Hay Wood | vertebra | adult | OxA-5844 | 4860 | 65 | 3795 | 3385 | -20.8 |
| Picken's Hole | tooth | adult | OxA-5865 | 4800 | 55 | 3695 | 3380 | -20.7 |
| Totty Pot | femur, L | adult | OxA-16458 | 4706 | 35 | 3630 | 3370 | -21.0 |
| Totty Pot | ulna, R | infant | OxA-16462 | 4498 | 35 | 3355 | 3035 | -21.1 |
| Totty Pot | femur, L | adult | OxA-16459 | 4473 | 35 | 3340 | 3025 | -21.2 |
| Totty Pot | femur, R | child | OxA-16461 | 4442 | 36 | 3335 | 2930 | -21.2 |
| Totty Pot | femur, L | child | OxA-16460 | 4008 | 39 | 2830 | 2460 | -21.6 |

**Table 3.** *Radiocarbon determinations on Neolithic human remains from Mendip caves and swallets. Calibrated with OxCal 4.1.3 using IntCal09 (Reimer et al. 2009). Rounded to nearest 5 years. (Sources: Backwell, Chelm's Combe and Flint Jack's: Ambers and Bowman, 2003; Hay Wood and Picken's Hole: Hedges, et al. 1997; Totty Pot, this paper).*

The relationship between the use of caves and monuments thus becomes a question of considerable interest. It is difficult to identify the reasons leading to the decision to deposit the dead in either a monument or a cave, when both options were apparently available in the Mendips, as elsewhere in many parts of western Britain where suitable caves are present, such as the Gower peninsula in south Wales, or the west coast of Scotland (Schulting, 2007). Both caves and monuments contain the remains of adult men and women, and children of all ages; whether there may be more subtle differences in the proportions in which these are represented is at present impossible to determine. Firstly, minimal information is available on the human remains from Priddy, and they since have been lost, while the assemblage from the early excavations at Stoney Littleton has yet to be re-examined, though human remains found in a more recent excavation confirms the presence of an infant and two adults (Thomas, 2002). It is through a wider comparison with long barrows and chambered tombs in southern Britain that we can be more confident of their broad demographic similarities (cf. Chamberlain, 1996; Smith and Brickley, 2009). Secondly, a much more thorough reassessment, including a

programme of AMS dating, would be required on human remains from caves to confirm which individuals can be attributed to the Neolithic, and whether they group in time in the same way as many mortuary monuments are now appearing to do (Bayliss and Whittle, 2007).

One possibility that has often been considered is that the individuals deposited in caves and swallets were of a lower social standing than those placed in mortuary monuments, and used these as alternative burial places (Atkinson, 1968; Kinnes, 1975). As with potential differences in demography, it is difficult to address this question in any detail, other than to comment that it is not an unreasonable assumption. But aside from the labour required to construct the monument, there seem to be no clear differences in the mortuary ritual that can be pointed to. Finds are rare in both mortuary monuments and caves, but those that do occur across Britain and Ireland generally include the same range of materials: pottery, worked flint, and polished stone axes. Totty Pot seems to be an exception in this regard, as no diagnostic Neolithic finds were recovered, though again excavations have only partially explored the cave. The question of whether funerary feasting is occurring at caves is an interesting one, but one that it is not possible to discuss further, in the absences of dates on the faunal remains to confirm at least their general contemporaneity. Of course, the same concern could be said to apply to mortuary monuments, as it is often far from clear that human and faunal remains are necessarily of the same date (Sheridan, *et al.* 2008; Schulting, *et al.,* submitted). Similarly, it is difficult, given the nature of cave deposits, to investigate the question of the intentional manipulation of human remains in caves, or indeed the state in which they were first introduced into the cave, i.e. whether as complete bodies, or as disarticulated, defleshed bone. The presence of at least some small bones of the hands and feet, and the good condition of some fragile elements (e.g., a complete scapula) could suggest the former. Placement in caves could be part of a multi-stage funerary rite, though there is no evidence for this practice from the Mendips specifically. A new avenue of investigation involving a comparison of diets through stable isotope analysis, suggests that there may be some differences in the diets of those found in caves and those in mortuary monuments in south Wales, though these results are preliminary and remain tentative pending further research (Schulting, 2007).

Finally, the dating information available thus far suggests that the use of caves may be more persistent, continuing later in the Neolithic in a way not usually seen in monuments (Schulting, 2007). This is evident at Totty Pot itself, in the presence of three late Middle Neolithic individuals (an adult and two young children), and a Late Neolithic older child. The latter finding is particularly interesting, as burials from this period (ca. 3100–2500 cal BC) are generally poorly represented in Britain, though the cremated remains from Stonehenge provide a spectacular exception (Parker Pearson, *et al*. 2009). While no Grooved Ware was identified in the small assemblage from Totty Pot, Late Neolithic activity is well known from the area in general, most clearly from the henge monuments at Gorsey Bigbury, Priddy and, to the north, Stanton Drew (ApSimon, *et al*. 1976; Lewis, 2005; Tratman, 1966). Two possible Grooved Ware sherds were recovered at the nearby Charterhouse Warren Farm Swallet (Levitan, *et al.* 1988, 205), though the dated human remains here relate to the Beaker period also represented in the pottery (Levitan and Smart 1989). A larger assemblage of 42 sherds (though possibly only representing two pots) was recovered along with a polished axe-head and a small amount of human remains from Brimble Pit swallet (Lewis 2005, 129).

## CONCLUSIONS

The dating programme on the small human bone assemblage from Totty Pot has provided evidence for burial from both the Mesolithic and Neolithic. The dominance of the latter period was unexpected, as it is not represented in the artefactual material recovered. The number of Neolithic human remains increasingly being found in the caves and swallets of the Mendips, as well as the potential number of long barrows and chambered tombs, would seem to suggest that the region was of some importance as a burial place at this time. The hills rise dramatically from the surrounding lowlands, and the liminal nature of caves has often been discussed (Barnatt and Edmonds, 2002; Dowd, 2007; Lewis, 2000). However, there are the confounding factors of differential preservation and recovery to take into account. Alternative burial practices in the lowlands might consist of excarnation, flat graves, or river deposition, all of which would either leave little trace in the archaeological record, and/or have very low visibility. Nevertheless, the potential of the Mendip caves, and those of other regions of Britain and Ireland, for an investigation of alternative burial practices in the Neolithic is clear. The material already exists in museum collections: the challenges are firstly to document the full extent of this use, through systematic AMS dating of both human and faunal remains, and secondly, to try to develop a better understanding of the reasons underlying the decision to bury in these different contexts, both monumental and non-monumental.

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## REFERENCES

AMBERS, J. and BOWMAN, S. 2003. Radiocarbon measurements from the British Museum: datelist XXVI. *Archaeometry*. **45.** 531-540.

ApSIMON, A.M. 1986. Pickens Hole, Compton Bishop, Somerset; Early Devensian bear and wolf den, and Middle Devensian hyaena den and Palaeolithic site. In: S.N. Colllcutt (ed.). *The Palaeolithic of Britain and its Nearest Neighbours*. pp. 55-57. Sheffield. University of Sheffield.

ApSIMON, A.M., MUSGRAVE, J.H., SHELDON, J., TRATMAN, E.K. and VAN WIJNGAARDEN-BAKKER, L.H. 1976. Gorsey Bigbury, Cheddar, Somerset: Radiocarbon dating, human and animal bones, charcoals and archaeological reassessment. *Proceedings of the University of Bristol Spelaeological Society*. **14**. 155-183.

ATKINSON, R.J.C. 1968. Old mortality: some aspects of burial and population in Neolithic England. *In:* Coles, J.M. and Simpson, D.D.A. (eds.). *Studies in Ancient Europe: Essays Presented to Stuart Piggott*: pp. 83-93. Leicester: Leicester University Press.

BALCH, H.E. 1926. Excavations at Chelm's Combe, Cheddar. *Proceedings of the Somerset Natural History and Archaeological Society*. **72.** 93-123.

BASS, W.M. 1987. *Human Osteology: A Laboratory and Field Manual (3rd Ed.)*. Columbia. Missouri Archaeological Society.

BARNATT, J. and EDMONDS, M.R. 2002. Places apart? Caves and monuments in Neolithic and earlier Bronze Age Britain. *Cambridge Archaeological Journal.* **12.** 113-129.

BAYLISS, A. and WHITTLE, A. 2007. Histories of the dead: building chronologies for five southern British long barrows. *Cambridge Archaeological Journal.* **17**.

BEHRENSMEYER, A.K. 1978. Taphonomic and ecologic information from bone weathering. *Paleobiology.* **4.** 150-162.

BLOCKLEY, S.M. 2005. Two hiatuses in human bone radiocarbon dates in Britain (17000 to 5000 cal BP). *Antiquity*. **79**. 505-513.

BORE, T. 1789. A remarkable barrow. *The Gentleman's Magazine*. **59.** 392-393.

BROTHWELL, D.R. and BLAKE, M.L. 1966. The human remains from Fussell's Lodge long barrow: their morphology, discontinuous traits and pathology. *Archaeologia.* **100**. 48-63.

BULLEID, A. 1941. Chambered long barrows of north Somerset. *Somerset Archaeology and Natural History Society Proceedings.* **87.** 56-71.

CHAMBERLAIN, A. 1996. More dating evidence for human remains in British caves. *Antiquity*. **70**. 950-953.

CHAMBERLAIN, A. and WILLIAMS, J.P. 1999. A gazeteer of English caves, fissures and rock shelters containing human remains. *Capra*. **1**. http://capra.group.shef.ac.uk/1/caves.html.

CHAMBERLAIN, A. and WILLIAMS, J.P. 2000a. A gazetteer of Scottish caves, fissures and rock shelters containing human remains. *Capra*. **2**. http://capra.group.shef.ac.uk/2/scotland.html.

CHAMBERLAIN, A. and WILLIAMS, J.P. 2000b. A gazetteer of Welsh caves, fissures and rock shelters containing human remains. *Capra.* **2**. http://capra.group.shef.ac.uk/2/wales.html.

COLT HOARE, R. 1821. An account of a Stone Barrow, in the Parish of Wellow, at Stony Littleton in the County of Somerset. *Archaeologia.* **29**. 43-48.

COYSH, A.W., MASON, E.J. and WAITE, V. 1962. *The Mendips*. London. Robert Hale.

DENIRO, M.J. 1985. Post-Mortem preservation and alteration of *in vivo* bone collagen isotope ratios in relation to palaeodietary reconstruction. *Nature*. **317**. 806-809.

DOWD, M. 2007. The use of caves for funerary and ritual practices in Neolithic Ireland. *Antiquity.* **82**. 305-317.

EVERTON, A. and EVERTON, R. 1972. Hay Wood Cave burials, Mendip Hills, Somerset. *Proceedings of the University of Bristol Spelaeological Society.* **13**. 5-29.

FORMICOLA, V. and GIANNECCHINI, M. 1999. Evolutionary trends of stature in Upper Paleolithic and Mesolithic Europe. *Journal of Human Evolution*. **36**. 319-333.

GARDINER, P.J. 2001. *The Mesolithic-Neolithic Transition in South-West England.* Unpublished PhD thesis, University of Bristol.

GARDINER, P.J. 2008. South Western Regional Identities: Birdcombe, Totty Pot and Hawkcombe Head. In: McCartan, S., Schulting, R., Warren, G., and Woodman, P. (eds), *Mesolithic Horizons:* pp. 485-493. Oxford. Oxbow Books.

GOWLETT, J.A.J., HEDGES, R.E.M., LAW, I.A. and PERRY, C. 1986. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 4. *Archaeometry.* **28**. 206-221.

GRINSELL, L.V. 1971. Somerset barrows, part 2. *Proceedings of the Somerset Archaeological and Natural History Society.* **115**. 44-137.

HEDGES, R.E.M., HOUSLEY, R.A., LAW, I.A. and BRONK RAMSEY, C. 1989. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 9. *Archaeometry* **31**. 207-234.

HEDGES, R.E.M., PETTITT, P.B., BRONK RAMSEY, C. and VAN KLINKEN, G.J. 1997. Radiocarbon dates from the Oxford AMS system: *Archaeometry* datelist 24. *Archaeometry.* **39**. 247-262.

HEYWORTH, A. and KIDSON, C. 1982. Sea-level changes in south west England and Wales. *Proceedings of the Geologist's Association*. **93.** 91-111.

HICKLING, M.J.L. and SEABY, W.A. 1952. Finds from Cockle's Wood Cave, Nettlebridge, Somerset. *Proceedings of the Somerset Natural History and Archaeological Society.* **96**. 193-202.

KINNES, I. 1975. Monumental function in British Neolithic burial practices. *World Archaeology.* **7.** 16-29.

LEACH, S. 2008. Odd one out? Earlier Neolithic deposition of human remains in caves and rock shelters in the Yorkshire Dales. *In*: Murphy, E. (ed.), *Deviant Burial in the Archaeological Record:* pp. 35-56. Oxford. Oxbow Books.

LEWIS, J. 2000. Upwards at 45 degrees: the use of vertical caves during the Neolithic and Early Bronze Age on Mendip, Somerset. *Capra.* **2**. http://www.shef.ac.uk/~capra/2/upwards.html.

LEWIS, J. 2002. Reinterpreting the Priddy Long Barrow, Mendip Hills, Somerset. *Proceedings of the University of Bristol Spelaeological Society.* **22**. 269-288.

LEWIS, J. 2003. Results of geophysical surveys at two barrow sites in Cheddar and Priddy parishes, Mendip. *Proceedings of the University of Bristol Spelaeological Society.* **23**. 9-15.

LEWIS, J. 2005. *Monuments, Ritual and Regionality: the Neolithic of northern Somerset*. Oxford: Archaeopress, BAR British series 401.

LEWIS, J. 2009. The long barrows and long mounds of west Mendip. *Proceedings of the University of Bristol Spelaeological Society* **24**. 187-206.

LEVITAN, B., AUDSLEY, A., HAWKES, C., MOODY, A., MOODY, P., SMART, P. and THOMAS, J. 1988. Charterhouse Warren Farm Swallet, Mendip, Somerset. Exploration, geomorphology, taphonomy and archaeology. *Proceedings of the University of Bristol Spelaeological Society.* **18**. 171-239.

LEVITAN, B. and SMART, P.L. 1989. Charterhouse Warren Farm Swallet, Mendip, radiocarbon dating evidence. *Proceedings of the University of Bristol Spelaeological Society*. **18.** 390-394.

MARSHALL, P. and VAN DER PLICHT, J. 2005. Dating, *in* Schulting, 2005.

McLAUGHLIN, T.R. 2007. *Food and diet in Mesolithic and Neolithic Europe: an exploratory approach using dental microwear analysis.* Unpubl. PhD thesis, School of Geography, Archaeology and Palaeoecology, Queen's University Belfast.

MURRAY, E. 2007. Faunal remains from Totty Pot, Somerset. *PAST.* **55**.

OAKLEY, K.P. 1958. The antiquity of the skulls reputed to be from Flint Jack's Cave, Cheddar, Somerset. *Proceedings of the University of Bristol Speleological Society.* **8**. 77-82.

PARKER PEARSON, M., CHAMBERLAIN, A., JAY, M., MARSHALL, P., POLLARD, J., RICHARDS, C., THOMAS, J., TILLEY, C. and WELHAM, K. 2009. Who was buried at Stonehenge? *Antiquity* **83**. 23-39.

PHILLIPS, C.W. and TAYLOR, H. 1972. The Priddy Long Barrow, Mendip Hills, Somerset. *Proceedings of the University of Bristol Spelaeological Society.* **13.** 31-36.

REIMER, P.J., BAILLIE, M.G.L., BARD, E., BAYLISS, A., BECK, J.W., BLACKWELL, P.G., BRONK RAMSEY, C., BUCK, C.E., BURR, G.S., EDWARDS, R.L., FRIEDRICH, M., GROOTES, P.M., GUILDERSON, T.P., HAJDAS, I., HEATON, T.J., HOGG, A.G., HUGHEN, K.A., KAISER, K.F., KROMER, B., MCCORMAC, F.G., MANNING, S.W., REIMER, R.W., RICHARDS, D.A., SOUTHON, J.R., TALAMO, S., TURNEY, C.S.M., VAN DER PLICHT, J., and WEYHENMEYER, C.E. 2009. IntCal09 and Marine09 radiocarbon age calibration curves, 0-50,000 years cal BP. *Radiocarbon.* **51**. 1111-1150.

RICHARDS, M.P., SCHULTING, R.J. and HEDGES, R.E.M. 2003. Sharp shift in diet at onset of Neolithic. *Nature*. **425.** 366.

RUFF, C.B., LARSEN, C.S., and HAYES, W.C. 1984. Structural changes in the femur with the transition to agriculture on the Georgia coast. *American Journal of Physical Anthropology.* **64.** 125-136.

SCARTH, H.M. 1858. Remarks on ancient chambered tumuli, as illustrative of the tumulus still existing at Stoney Littleton, near Wellow, in the County of Somerset. *Proceedings of the Somersetshire Archaeology and Natural History Society* **8**. 35-62.

SCHEUER, L. and BLACK, S. 2000. *Developmental Juvenile Osteology*. London. Academic Press.

SCHOENINGER, M. and MOORE, K. 1992. Stable bone isotope studies in archaeology. *Journal of World Prehistory*. **6**. 247-296.

SCHULTING, R.J. 2005. '…pursuing a rabbit in Burrington Combe': New research on the Early Mesolithic burial cave of Aveline's Hole. *Proceedings of the University of Bristol Spelaeological Society*. **23**. 171-265.

SCHULTING, R.J. 2007. Non-monumental burial in Neolithic Britain: a (largely) cavernous view. In: F. Lüth and T. Terberger (eds.), *Non-Megalithic Mortuary Practices in the Baltic – New Methods and Research into the Development of Stone Age Society*. Schwerin.

SCHULTING, R.J., MURPHY, E., and JONES, C. submitted. New dates from the north, and a proposed chronology for Irish court tombs. *Proceedings of the Royal Irish Academy*.

SCHULTING, R.J. and RICHARDS, M.P. 2002. Finding the coastal Mesolithic in southwest Britain: AMS dates and stable isotope results on human remains from Caldey Island, Pembrokeshire, South Wales. *Antiquity.* **76**. 1011-1025.

SCHURR, M.R. 1998. Using stable nitrogen isotope ratios to study weaning behavior in past populations. *World Archaeology.* **30**. 327-342.

SHERIDAN, A., SCHULTING, R.J., QUINNELL, H., and TAYLOR, R. 2008. Revisiting a small passage tomb at Broadsands, Devon. *Proceedings of the Devon Archaeological Exploration Society.* **66**. 1-26.

SKINNER, J. nd. Skinner Journals Vol. XXXV. British Library, Additional manuscripts 33,667, London.

SKINNER, J. 1820. Skinner Journals Vol. XXIX. British Library, Additional manuscripts 33,656, London.

SMITH, G.H. 1989. Evaluation work at the Druid Stoke megalithic monument, Stoke Bishop, Bristol, 1983. *Transactions of the Bristol and Gloucestershire Archaeological Society.* **107**. 27-37.

SMITH, M. and BRICKLEY, M. 2009. *People of the Long Barrows Life, Death and Burial in Earlier Neolithic Britain.* Stroud. History Press.

THOMAS, A. 2002. Stoney Littleton long barrow: archaeological investigations and observations 1999/2000. *Proceedings of the Somerset Archaeological and Natural History Society* **146**. 11-16.

TRATMAN, E.K. 1964. Picken's Hole, Cork Peak, Somerset. A Pleistocene site. Preliminary note. *Proceedings of the University of Bristol Spelaeological Society.* **10.** 112-115.

TRATMAN, E.K. 1966. The Priddy Circles, Mendip, Somerset. Henge Monuments. *Proceedings of the University of Bristol Spelaeological Society.* **11.** 97-125.

TRATMAN, E.K. 1975. The cave archaeology and palaeontology of Mendip. In: D.I. Smith (ed.), *Limestones and Caves of the Mendip Hills*: pp. 352-403. Newton Abbott: David & Charles.

TRATMAN, E.K. and JACKSON, J.W. 1938. The excavation of Backwell Cave, Somerset. *Proceedings of the University of Bristol Speleological Society.* **5.** 57-74.

TROY, C.S., MCHUGH, D.E., BAILEY, J.F., MAGEE, D.A., LOFTUS, R.T., CUNNINGHAM, P., CHAMBERLAIN, A.T., SYKES, B.C. and BRADLEY, D.G. 2001. Genetic evidence for Near-Eastern origins of European cattle. *Nature.* **410**. 1088-1091.

VAN KLINKEN, G.J., RICHARDS, M.P. and HEDGES, R.E.M. 2000. An overview of causes for stable isotopic variations in past European human populations: environmental, ecophysiological and cultural effects. In: S.H. Ambrose and M.A. Katzenberg (eds.), *Biogeochemical Approaches to Palaeodietary Analysis*: pp. 39-63. New York: Kluwer Academic/Plenum Publishers.

WELLS, L.H. 1958. Human remains from Flint Jack's Cave, Cheddar, Somerset. *Proceedings of the University of Bristol Spelaeological Society*. **8**. 83-88.

WHITTLE, A., BARCLAY, A., BAYLISS, A., SCHULTING, R., and WYSOCKI, M. 2007. Building for the dead: events, processes and changing worldviews from the 38th to the 34th centuries cal BC in southern Britain. *Cambridge Archaeological Journal*. **17**. 123-147.

APPENDIX
Catalogue of the extant Human remains from Totty Pot

| *Cat. No.* | *Element* | *Side* | *Age* | *Sex* | *Comment* |
|---|---|---|---|---|---|
| TP K19 | cranial, fragments | | adult? | | small fragments of two inds.?; some conjoin |
| No number | cranium, fragment | | adult | I | very thick bone; red earth staining; joins w+ K19 frags |
| TP 13? K19 | cranium, fragment | | child/adol. | I | |
| TP 25 | cranium, fragment | | child | I | small fragment |
| TP K19 | cranium, fragment | | child | I | |
| TP 19 | cranium, occipital | | adol.? | F? | young adult? sutures open; treated; joins with TP 20 |
| No no. | cranium, occipital frag. | | | | similar to 22 but lighter in colour |
| TP 22 | cranium, occipital frag. | | child/adol. | I | |
| TP 20 | cranium, parietal frag. | L | adult | I | labelled 'F' [?]; joins w+ TP 19; small ind. |
| TP 24 | cranium, temporal | R | child/adol. | I | max. length 71.3 |
| TP 1 | femur | L | adult | M? | ~complete; large, robust element (Mesolithic date) |
| TP '63 | femur | L | child ~5 | I | length 17.5 cm, ca. 5 yrs age |
| TP '63 | femur | R | child ~5 | I | isomere for above complete L femur |
| No number | femur, condyle frag. | L? | adult | | medial condyle frag. |
| 2004.9/13? | femur, distal frag | | subadult | I | unfused; 'Sq 3[?] 4' ft layer, lower half' |
| 2004.9/68 | femur, distal shaft | L | adult? | I | fresh break proximally; cave sediment in cavity |
| 2004.9/257 | femur, proximal half | L | child | I | head and greater trochanter unfused |
| TP 5 | femur, shaft | R | adult | F? | some surface erosion; gnawing at prox break |
| TP 6 | femur, shaft | L | adult | M? | comparable in robusticity to TP 1; prox break fresh |
| 2004.9/248 | fibula, distal end | R | adult | I | conjoins with TP4 |
| TP 4 | fibula, shaft | R | adult | M? | large individual; missing prox end; distal joins with 248 |
| BM-2973 | humerus | L | adult | | yielded conventional 14C date of 8180 ± 70 BP |
| No no. K19 | humerus, distal frag. | L | adult | | ~same size as R, but deeper olecranon fossa |
| No number | humerus, distal half | R | adult | M? | large, robust element; some damage distally |
| TP 14 | innominate | L | adult | F | ~complete; wide sciatic notch |
| TP '63 | innominate | R | child 3-5 | I | nearly complete |
| 2004.9/500 | innominate fragment | L | adult | F? | similar morphology to TP14; with sciatic and acetabulum |

| | | | | | |
|---|---|---|---|---|---|
| TP 15 | innominate, acetabulum | L | adult | | partially encased in stalagmite |
| TP '63 | mandible frag | R | infant | I | |
| No number | maxilla | L | adult 25-35 | | M1,2, PM3,4; M3 congenitally absent?; treated |
| No number | metatarsal, IV | L | adult | | |
| 2004.9/567 | metacarpal frag | | adult | | |
| No number | metacarpal frag | | adult | | |
| TP '63 | phalanges | | adult | | 2 elements |
| 2004.9/575 | phalanx, hand | | adult | | rodent gnawing |
| TP 7 | radius | R | adult | M? | ~robust element; could match R ulna, but lacks distal DJD |
| TP 65a | rib, articular end | | adult? | | |
| TP 16 | scapula | R | adult | I | rugousity below glenoid cavity |
| TP 17 | scapula | R | child 2-3 | I | age 2-3 years |
| TP 65b | talus | L | adult | M? | Complete (see Table 1 for measurements) |
| TP 2 | tibia | L | adult | M? | large, robust element; some distal damage |
| TP 3 | tibia | R | adult | M? | large, robust element; isomere for TP 2 |
| 2004.9/112 | tibia, distal fragment | R | adult | I | |
| TP 13 | tibia? | | adult | | shaft fragment; eroded; poor condition |
| No number | tooth | L | adult | | M2; almost certainly same ind. as maxilla |
| No number | ulna | R | adult | M? | ~robust; DJD at distal end; covered in thin stalagmite |
| 2004.9/419 | ulna, prox 2/3 | R | infant | I | |
| TP '63 | ulna, proximal half | L | adult | | surface erosion, missing much of proximal end |
| TP '63 | ulna, proximal third | R | adult | M? | large, robust element; treated |
| TP K19 | vertebra, atlas | | adult | I | small element, but fully fused |
| TP 27 | vertebra, centrum | | child <3 | I | unfused centrum, thoracic? <3 yrs |
| TP 22 | vertebra, cervical | | adult | | fully fused, but small individual |
| TP 36 | vertebra, cervical | | child | I | primary fusion lines still visible, 3-6 yrs |
| TP 12 | vertebra, cervical frag.? | | adult | | small element, but rings are fused to body |
| TP 11 | vertebra, lumbar | | adult | | some lipping |
| TP 33 | vertebra, lumbar | | child | I | fused centrum and arches, 3-6 yrs |
| TP 34 | vertebra, lumbar | | child | I | fused centrum and arches, 3-6 yrs |
| TP '63 | vertebra, lumbar | | adult | | arthritic; lipping; wedge compression |
| TP 28 | vertebra, sacral S2/3 | | child 3-6 | I | primary fusion lines still visible, 3-6 yrs |
| TP 26 | vertebra, sacral S5 | | child 3-6 | I | centrum and arches fused, 3-6 yrs |

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