

# **The palaeogeography and Neolithic archaeology of Herm**

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## **Abstract**

*The small Channel Island of Herm combines several distinct habitats within its restricted compass, ranging from steep rocky coasts and rolling upland plateau in the south to a dune-fringed sandy lowland in the north. Where upland and lowland meet, a line of modest megalithic tombs constitute the island's most striking archaeological feature. Four seasons of fieldwork (2008-2011) have sought to determine the environmental history of northern Herm since the last glacial and to place the tombs within the broader context of Neolithic activity. A series of trenches and auger holes has revealed the changing morphology of the prehistoric land surface that lies buried beneath the extensive deposits of aeolian sand that cover this part of the island. Results indicate that much of the lowland plain was initially occupied by a shallow marine inlet that was cut off from the sea and progressively infilled from the 4<sup>th</sup> millennium B.C. Pollen and soil sequences reveal how the wooded early Holocene landscape around the edges of this inlet was steadily degraded by human impact and climate. Traces of settlement and cultivation (notably plough marks) suggest the megalithic tombs were situated within an agricultural landscape, although the fragile soils required extensive manuring. This has relevance for theories that have proposed that islands were favored places for burial by communities visiting from neighboring mainlands. Herm was a locus for settlement and farming as well as for burial during the Neolithic period. The most striking feature of the Herm project has, however, been the detailed environmental history that it has revealed.*

**Keywords:** Channel Islands, Herm, Neolithic, palaeogeography, excavation, burial, cultivation.

## Introduction

Recent years have witnessed a remarkable growth in island studies, drawing together perspectives from geography, ecology, anthropology, literature and archaeology. Gone are the days when islands were considered “laboratories” of biological or cultural change, where processes of natural selection or internal social development could be studied relatively free from the complications of external connections. Instead it is now widely recognised that island communities are rarely isolated, and it is the modern land-dweller’s perspective that casts the sea in the role of a barrier rather than carrier. The concepts of ‘maritime cultural landscapes’ and ‘maritime communities’ emphasize how those living on coasts and islands may have distinctive maritime identities, and (in the latter case) closer connections with other coastal communities than with their neighbors inland (Westerdahl 1992; Rainbird 2007).

At the same time, it must not be forgotten that the sea can be as dangerous as well as a life-giving element. As Boomert and Bright observe, the postprocessual rejection of biogeographical approaches to islands and insular behavior can overestimate island connections and trivialize the act of voyaging (Boomert and Bright 2007). Furthermore, small islands present a particular quality of ‘oceanicity’ that not only drives the human experience of travelling to or living on an island, but also impacts on a whole range of special environmental conditions including temperature and humidity, the long-term effect of winds, and the action of sand, storm, sea spray and dune formation (Brothwell and Dimbleby 1981).

That islands have often been special places is well established by their archaeology. Famous examples include Rapa Nui and Pohnpei in the Pacific, and

Malta and the Balearics in the Mediterranean. Here monumentalism has recently been linked to island isolation and social circumscription (Kolb 2011), but the radically varying levels of maritime connectedness of these different islands and island groups suggest we should be seeking a more nuanced reading. The distribution map of recorded Neolithic chambered tombs and stone circles around British shores reveals notable concentrations on Scilly, Orkney, Arran and North Uist (TABLE 1). Small historic populations and economic marginalisation may have played a role in the better preservation of prehistoric monuments on some of these British islands. These factors are, however, inadequate to explain the size and number of the Orkney monuments, or the high number of entrance graves of Scilly, or the contrasting tomb densities of Jersey and the adjacent mainland (Davidson and Henshall 1989; Robinson 2007; Scarre 2011a, 159-160). Nor can they account for the spectacular character of island monuments such as Maes Howe, Ring of Brodgar or the recently discovered Ness of Brodgar on Orkney. Islands such as these may have been special places, attracting pilgrims through the elaboration of ritual practices and the settings created for them by the island communities (Rainbird 2007).

Islands may also have been particularly associated with the dead. The megalithic tombs around the coast of the Isle of Man have been interpreted in terms of “the sense of islandness developed by Manx people in prehistory which was conceptually associated with death and otherworldliness” (Frieman 2008). The high densities of monuments on the small islands of the Molène archipelago off the western tip of Brittany, noted over a century ago and confirmed by recent survey work, might be interpreted as evidence that mainland communities were burying their dead there (Du Châtellier 1902; Sparfel and Pailler 2009; Scarre 2002, 2011). There is little evidence of Neolithic settlement on the islands, although from a slightly later

period, a substantial Beaker/Early Bronze Age house has recently been excavated at Beg ar Loued (Pailler *et al.* 2010). A similar proposal has been made for the Scottish island of Arran. Centrally located within the Firth of Clyde, its 21 tombs may have been connected with communities living on the fertile plain of mainland Ayrshire, where megalithic tombs are virtually absent (Hughes 1988). The prominent profile of the island, with its striking mountains, encourages the view that it may have been considered a special place, visited by mainland communities who also sought its glassy pitchstone, a prized lithic raw material. Arran was no prehistoric ‘desert island’, however, as evidence of Neolithic field systems at Machrie Moor on the west coast makes clear (Murray 1991; Barber 1997). But before we conclude that the Arran monuments were most likely the work of island communities we must bear in mind the pitfalls of the island laboratory model and the possibility that coastal communities may indeed have been nodes in a maritime network. There is nothing inherently implausible in the proposal that prehistoric coastal communities visited nearby islands to bury some, at least, of their dead.

To suggest that there were ‘islands of the dead’ around the coast of Neolithic northwest Europe, however, is altogether more problematic. Most islands have evidence of Neolithic settlement to complement the tombs. Yet strict contemporaneity of settlement and burials is difficult to establish, and in some instances burials cluster in particular parts of the island landscape, raising the possibility that these may have been segregated zones.

## The Herm project

A striking example of both these characteristics – settlement evidence and clustering of monuments – is provided by the small Channel Island of Herm, 6 km east of Guernsey (FIG. 1). Fifteen megalithic tombs are arranged in a roughly linear manner along the crest of two hills at the northern end of the island – Grand Monceau and Petit Monceau – and across the saddle of lower ground between them. A further isolated tomb (‘Tomb 15’ in the standard numbering scheme: Kendrick 1928) lies on the lower ground to the north known today as the Common. Nineteenth century records suggest that one more tomb stood on the prominent rocky outcrop within the northern coastal dune, close to the present obelisk. Reports of yet a further ruined monument on the northwest foreshore (Johnston 1981, 118) appear doubtful (Kendrick 1928; Kinnes 1988; Patton 1995). We thus have 16 confirmed megalithic tombs in a relatively restricted area (FIG. 2). Others may once have been present in the central and southern part of Herm, but agricultural activities have removed any visible traces.

The Neolithic monuments of Herm were first recognised and studied in the late 1830s and early 1840s by the Lukis family of Guernsey. Quarrying of Herm granite had commenced on an industrial scale in 1820 (Kellett-Smith 1961), and it was probably the quarrying activity that brought the Herm tombs to the notice of Guernsey antiquary Frederick Corbin Lukis. Lukis sent two of his sons over to Herm in 1838, and in 1839 he visited the island himself. Several of the Herm tombs were subsequently excavated by Lukis or his sons between 1840 and 1844. Records of the work survive in the form of notebooks and a fair-copy summary, the *Collectanea*, and the details of the various interventions were eventually published in Kendrick’s 1928 survey of Guernsey archaeology (Kendrick 1928, 198-221).

Reference has already been made to Grand and Petit Monceau, the hills upon and between which stand the majority of the surviving tombs. To north of these hills, lapping up against their lower slopes, is a low-lying plain, the 'Common', covered by thick deposits of windblown sand. The sand cover wraps also around the southern side of Petit Monceau to fill a separate, more sheltered basin. In both areas the aeolian sand has buried and preserved the prehistoric land surface that was associated with the tombs. It hence offers the opportunity to examine that land surface for evidence of settlement and cultivation activities, and to determine whether the tombs stood within a segregated funerary landscape, or within a setting of fields and farmsteads.

Lukis and his sons reported that beneath the sand cover lay a deposit of dark earth, and beneath that again a yellow loessic material in which the orthostats of the megalithic tombs were set (e.g. Tomb 13: "filled underneath the covering sand with a dark soil that extended down to the yellow clay in which the props were embedded" Kendrick 1928, 211). Similar loessic material was exposed by the severe storm of March 2008 on the northern shoreline of Herm, beneath the coastal dune. Hence at the outset of the current project both nineteenth century records and recent observations suggested that an extensive loessic buried soil survived to be explored across the whole of the low-lying northern part of the Herm, and around and among some of the tombs.

Between 2008 and 2011 the Herm project undertook four seasons of excavation and coring, supported by soil sampling, micromorphology, palynology (by R Scaife) and luminescence dating (by I Bailiff). Luminescence was crucial in establishing the age of both the buried prehistoric surfaces and the overlying sands (see Appendix). The ecological sensitivity of the areas in question meant that trenches had to be excavated by hand, which limited the size of the surfaces that could be



exposed. The objective was to sample the buried land surface as widely as possible, and to fulfil this aim twelve separate trenches were opened: four of them associated with tombs, one with a stone-built wall, one with an isolated standing stone, and six in locations with no surface indications (FIG. 3). These excavations were complemented by an extensive series of boreholes in order to establish a comprehensive soil history and to generate profiles of the sub-sand surface. The overall area of field enquiry was divided into two parts by the saddle connecting the craggy hills of Petit Monceau and Grand Monceau: to the north, the Common; and to the south and west of the saddle, the area to the south of Petit Monceau we have labelled the Basin. Both Basin and Common are today sheltered from the sea by substantial dunes.

### *The changing shape of Herm*

It is the coastal dunes that fix and define the shape of Herm at the present day. To north and west, skerries and intertidal reefs extend as far as the Grande Amfroque some 4 km distant. Given rising postglacial sea level it might be supposed that during periods of lower sea-level these skerries would have formed part of a Neolithic ‘Greater Herm’ that would have been considerably wider and longer than the present day island. Studies along the north French coast indicate that sea-level during the Neolithic period, some 5000 years ago, was roughly 5 m below present and that highest tides would have been equivalent in height to the lowest tides of the present day (Morzadec-Kerfourn in Giot *et al.* 1998, 437-440). Contrary to expectations, however, auger survey across the Common gave evidence of a shallow former marine inlet on its western side and deep dune deposits (5+m) on its eastern side, separated by a central spine on which stands Kendrick Tomb 15. From this central spine the

buried early Holocene land surface falls away on both sides about 2.75- 3.40 m beneath the modern ground surface. It is never present below *c.* 1.80 m O.D. Consequently, the actual area of old ground surface present beneath the sand of what is now the Common was about one-third to one-half smaller in extent in prehistoric times than the land area seen today (FIG. 3).

The shallow inlet is filled with over 2 m of freshwater, brackish and marine silts and fine sands. These are covered by a *c.* 30 cm thick dark brown humified reed peat, and that in turn by almost 2 m of aeolian sand dune accumulation. Radiocarbon assay of the base of the silts gave a date of 3090 cal BC (4493 $\pm$ 30 BP; Wk-33516) suggesting that this is the date after which the marine inlet began to silt up. It became more of a shallow lagoonal lake, with seawater only getting into the area occasionally. The marine silts and fine sands below this are characteristic of a shallow water marine environment, probably a salt marsh fringed by oak woodland with some hazel (*Corylus avellana*), minor cereal and ribwort plantain (*Plantago lanceolata*) evident (pollen analysis by Rob Scaife (forthcoming)). At the base of the profile, trees and shrubs account for some 75% of the pollen assemblage with oak (*Quercus*; 36%) and hazel (*Corylus*; 25%) predominant. This is from the earlier Holocene deciduous woodland that immediately surrounded the shallow bay. Much more extensive pollen data from peat beds on the west coast of Guernsey add complementary evidence to a picture of widespread deciduous woodland in earlier Holocene to early Neolithic times (Campbell 2000).

The peat overlying the former marine inlet developed between 565cal AD (1553 $\pm$ 26BP; Wk-33515) and 1030 cal AD (1040 $\pm$ 25 BP; Wk-33514). This date span is corroborated by several features of the pollen assemblage, including the presence of the tree species walnut (*Juglans*: a Roman introduction) and hemp

(*Cannabis sativa*: found as a medieval crop). This freshwater detrital peat probably formed in a freshwater dune slack when the embayment had been completely cut off from the influence of the sea by the development of the sand dune along the foreshore.

An earlier vegetational phase is documented by the basal part of the palaeosol buried beneath the foreshore dune at Moussonnière Beach (FIG. 4). Sparse pollen survival in this palaeosol suggests that it began to form in late glacial and/or early post-glacial times, when it was associated with an open birch-pine landscape. The often well organised fine illuvial clay and silty clay components of the basal part of this palaeosol strongly hint that it developed in association with a stable and well drained vegetational complex such as woodland (cf. Bullock and Murphy 1979; Fedoroff 1968; Macphail *et al.* 1987). Significantly, this soil contained numerous abraded Neolithic pottery sherds and lithic remains. There were also distinctive traces of soil disturbance and features interpreted as ard marks (FIG. 8).

#### *Prehistoric activity on the buried surfaces*

The ard marks which repeatedly occurred beneath the northern dunes form part of a series of prehistoric activity traces on or within the areas of buried soil that were exposed in the course of the fieldwork (FIGS. 6 & 8). Setting aside the trenches directly associated with the megalithic tombs, each of the remaining nine trenches revealed the presence of flints and potsherds within the buried soil.

Direct evidence for settlement came from two locations. In the northeast corner of the Common, excavation revealed a massive tabular outcrop of granite

bedrock. To the east of the outcrop the buried prehistoric surface yielded a concentration of flint and pottery (mostly very eroded) totalling almost 200 pieces in an area of some 2 sq m. There were no visible structural remains, but sheltered by the outcrop this artifact scatter may have been a short-lived encampment or occasional settlement.

Remains of more substantial habitation were discovered beneath the dune to the south of Petit Monceau, where a footpath leads down to the beach. The buried prehistoric deposits here had been heavily eroded by deep natural gullying, but structural traces were identified at two distinct levels, both associated with Neolithic material: at the higher level, a row of three post- or stake holes; and below that, cut into the subsoil, two beam slots. Within the beam slots were potsherds and other material including a fragment of schist bracelet (FIG. 5). Such bracelets are characteristic of the Early Neolithic and early Middle Neolithic of northwest France. The example from Herm was of the wide rim variety attributable to the later end of this time-range (Fromont 2010). The assemblage as a whole can be assigned to the Cerny group c. 4700-4500 B.C. (Marcigny pers.comm.), and makes this one of only a handful of earlier Neolithic settlements to have been discovered in the Channel Islands (cf. Sebire and Renouf 2010; Marcigny *et al.* 2010).

Isolated stake holes were also found in a series of small trenches excavated in the floor of a modern sand pit at the southern edge of the Common, but they did not appear to correspond to buildings. The most striking evidence of prehistoric activity in the sand pit was a criss-cross pattern of ard marks in a sector excavated close to its western edge (FIG. 6). Ard marks were also identified cutting into the Neolithic horizon close to the foot of a large standing stone and, as already mentioned, beneath the coastal dune fronting Moussonnière beach. These traces suggest that prehistoric

agriculture was relatively widespread across the northern part of Herm, and in places approached very close to the megalithic monuments.

The most striking feature of the trenches excavated through the sand is the low-level scatter of flints and pottery that was present in the upper part of all the exposed land surfaces. These might represent the deflated palimpsest of successive deposits that have come to rest at this level, but that possibility is weakened by the fragile nature of the pottery, which is unlikely to have survived deflation and movement down through the soil. They are hence more likely to be artifactual material caught up within organic domestic debris scattered on the soil, possibly to maintain or enhance its fertility. This interpretation is supported by the micromorphological analysis of the soils themselves.

#### *The pre-dune palaeosols*

The range of palaeosols investigated across the northern half of Herm provide a composite soil and landscape history throughout the Holocene period. A combination of over 140 hand auger profiles and 12 test trenches revealed that a buried soil was consistently present across about two-thirds of the area of what is now the Common (French 2011a). Nineteen buried soil profiles were sampled for micromorphological analysis, about half of those profiles being directly associated with known Neolithic tombs, and half being adjacent to them but off-site (TABLE 2; French 2011b). The nature and sequence of palaeosol development was analysed primarily using micromorphological techniques (Courty *et al.* 1989; Bullock *et al.* 1985; Murphy 1986; Stoops 2003) in combination with a thorough programme of optically stimulated luminescence dating (the latter conducted by Ian Bailiff).

Although there is variable expression of the early Holocene buried soil that developed on the loessic substrate, it is generally composed of a very fine sandy clay loam. This has abundant to common illuvial clay coatings of both pure and dusty forms, both in its groundmass and coating the fine sand grains (French 2011b). This soil lacks any sign of an *in situ* organic A horizon (except in the vicinity of Robert's Cross) and has thus been truncated, losing up to one-half of its thickness. We suggest that it represents the slightly acidic argillic brown earth that developed in association with woodland on the weathered granite geology of the island (FIG. 4). This was the island's predominant soil type by the time that the first Neolithic tombs were built in the 5th or 4th millennium B.C. The sequence of pure to impure clay coatings in the argillic Bt horizon of this soil (FIG. 7b) imply a succession from stable woodland development to disruption and clearance of this soil (cf. Bullock and Murphy 1979; Fedoroff 1968; Fisher 1982; Macphail *et al.* 1987, 1990). Nonetheless, there are signs of depletion of some of the fines component (e.g. variable low or open porosity; thin silty clay coatings adhering to the sand grains; variable silty clay fine groundmass versus variable sand component). Hence these soils appear to be less well developed than might have been expected. Indeed, it has been suggested that argillic horizons in decalcified material may be re-calcified as a result of later phases of aeolian deposition with calcareous beach-derived sand (Allen and Goss 1974; Aguilar *et al.* 1983). Thus partial depletion of the clay component and subsequent incorporation of wind-blown sand from exposed foreshores have played a strong role in shaping these buried soils.

This brown earth also has a strong loessic or wind-blown silt and fine to very fine sand component (FIG. 7a), undoubtedly derived from the previous dry and cold conditions of the late glacial period (Catt 1978). It has also been observed in

soil/midden profiles of the late pre-Roman Iron Age on the adjacent island of Jethou (Morrison and Simpson 2008) and over much of the nearby island of Alderney (Hazeldon 2003). The fine textured composition of this soil implies that it would have had large reserves of water available for plant growth, at least initially. This soil type tends to be structurally weak, however, with a relatively low clay component and a very poor organic status, vulnerable to a combination of run-off, soil drying and/or soil erosion, particularly if ploughed or trampled.

Subsequently this soil was opened up and much disturbed, probably by a combination of clearance and plough disturbance, wind-blow, surface run-off and hillwash. Experimental studies on the erosion of loessic soils (Mucher and Ploey 1977; Imeson *et al.* 1980) suggest that once these soils are bare, rainsplash readily leads to significant erosion. This process explains the truncation of the upper part of the palaeosol that is repeatedly observed in the Herm profiles, especially when combined with the effects of plough agriculture. Indeed post-clearance ploughing in the Neolithic and Bronze Age (5<sup>th</sup> to 2<sup>nd</sup> millennium B.C.) could be partly responsible for the truncation of this early Holocene soil, and ard marks are repeatedly observed at the A/B horizon boundary in these brown earth soils (FIGS. 6 and 8). The associated surface disturbance caused by a combination of ploughing and rainfall on an open and largely fine granular soil system would have led to both within-soil illuviation down-profile of fines (clay, silt and fine organic matter) (FIG. 7c) (Macphail 1992; Macphail *et al.* 1987, 1990; Kuhn *et al.* 2010, 221), as well as their depletion, leading to more sand-dominated soils as observed in all the Herm palaeosol profiles. Thus the sustained use of this landscape for agriculture would have been difficult without an intensive and actively managed manuring regime, also with fallow periods. Certainly where A horizon material is present (in Trenches A & E),

the sand grains have a coated and bridged grain aspect with thin coatings and linkages of a black humified organic ‘dust’ (5-10% in thin section and 2-8% loss-on-ignition) (French 2011b) (FIG. 7C). This feature implies agricultural disturbance, and the ‘skeleton’ of humified organic matter could be a relic of organic matter that had been added to this soil. Unfortunately, there is as yet no pollen or macrofossil data to corroborate that possibility, and only weakly enhanced phosphorus values of 120-740ppm (French 2011b).

Exactly when these processes of soil change began is a matter of some speculation, but excavation at Tomb 12 (FIG. 9) suggests they had begun by the time the tombs were constructed. There are strong hints that, in order to counteract the depletion of this former woodland soil and the incursion of windblown sand, organic matter (FIG. 7c) and settlement-derived debris were deliberately being added to the soil to give it the nutrients and organic ‘body’ needed if it were to be useable for cultivation. This practice of ‘manuring’ with midden derived material appears to have continued from the 4th to the late 2nd millennium B.C.

Cultivation was interrupted by a major period of influx of windblown sand between about 1200 and 380 B.C., but in later prehistoric times the Robert’s Cross area and the basin south of Petit Monceau became more stable again with occasional periods of turf development as indicated by at least two thin horizons of black humic sand alternating with lenses of clean fine sand. Cultivation resumed, with evident ploughmarks and considerable additions of organic matter and settlement-derived rubbish. The black humic ‘dust’ that characterises these upper soil profiles indicates a much greater organic component, but wind-blown sand continued to accumulate. This upper soil represents a ‘plaggen’ type of soil where the humic horizon is over-thickened through the addition of organic matter in the form of household waste,



manure, turf and/or seaweed (Pape 1970; Limbrey 1975, 335-6; Goldberg and Macphail 2006, 48).

Thus a conscious effort seems to have been made at managing and conserving the fine sandy soil through the addition of organic material during later prehistoric and Roman times. Ploughing and associated run-off and slope-wash, as well as the intermittent accumulation of wind-blown sand from exposed sandy foreshores, appear to have been widespread across the northern part of the island. The increasing aggradation of wind-blown sand implies that changes were occurring to the coastal morphology of Herm, particularly around the northern shores of the island, with greater exposed areas of sandy foreshore and possibly periods of greater storminess.

Finally came a more extensive phase of wind-blown sand accumulation, blanketing the low-lying northern part of the island. Optically stimulated luminescence dating suggests that this phase began around A.D. 1200, and continued to the 17<sup>th</sup> century A.D. (see Appendix). It was probably the creation of the dune bluff system on the northern shore that finally sealed off the large former marine inlet area in the western area of the Common, and led to the creation of a shallow backwater swamp. More recently, much of the Common was re-modelled to create a short-lived golf course in the 1930s (Kalamis 1996, 78), but its grass, bracken and gorse covered surface has remained more or less stable since then. Nonetheless recent aerial photographs of the past 20 years or so indicate that Shell Beach has continued to expand, and the dune bluffs of Mouissonnière Beach continue to suffer blow-outs.

### *The megalithic monuments*

The information provided by the detailed study of landscape and soil development enables the megalithic tombs to be assigned to their correct position within the dynamic palaeoenvironmental sequence, and has been complemented by re-investigation of the tombs themselves.

The line of monuments ran from the highest point of Grand Monceau overlooking the Common, down its elongated western shoulder to the saddle of land at Robert's Cross that separates Grand Monceau from Petit Monceau. The row of tombs (generally smaller in size) then continues up the eastern slope of Petit Monceau and over the summit, where only around half of those recorded by Lukis can still be identified. This linear arrangement is unusual if not unique within northwest Europe. Linear cemeteries of megalithic tombs are found in Ireland – at Newgrange and Knocknarea, for example (Cooney 1990) – and comparison can be drawn with tomb clusters on the Grée de Cojoux at Saint-Just and on the Landes de Lanvaux in Brittany (Briard *et al.* 1995; Gouézin 1994; Scarre 2011a), but none of these resembles the topography of northern Herm.

The two largest tombs are situated on the saddle of lower ground at Robert's Cross. Both consist of elongated chambers with orthostatic side-walls and narrowed entrances opening towards the east. Tomb 12 (FIG. 10) has a box-like chamber converging upon a narrow tunnel-like entrance according to the plans drawn by Lukis in 1841. Excavations in 2011, however, indicated that the outermost stones were bedded at a higher level and were not part of the original tomb structure. There was no evidence of a passage.

Tomb 13, only 5 m from Tomb 12, appeared to be broadly similar in plan although it had collapsed, probably in prehistory, the whole structure shifting and folding to the north (FIG. 11a). This meant that the orthostats of the northern side were buried beneath the fallen capstones and no longer visible. The plans produced by Lukis during his 1842 excavations show the approximate location of these northern orthostats but cannot be taken as a reliable indication of their original position. The southern orthostats were, however, exposed once again in excavations of 2011 (FIG. 11b), together with the easternmost pair of orthostats marking the entrance. A sketch in the Lukis archive showing the tomb as excavated in 1842 (FIG. 12) is very similar to its current appearance after clearance of overlying sand and vegetation in 2011. Despite the uncertainties in plan arising from its collapsed state, Tomb 13 appears to have been generally similar in form to Tomb 12, with a parallel-side chamber narrowing towards the entrance.

According to Lukis, both tombs contained substantial quantities of human remains along with pottery including Beaker vessels (notably two complete vessels from Tomb 12: Kendrick 1928 plate XII H1 and plate XIV H2). Little of the human remains survives. The Beaker material (held today by the Guernsey Museum) would have been deposited in the second half of the 3rd millennium B.C. Such material is found regularly in megalithic tombs in Brittany and the Channel Islands but is usually considered to have been a later insertion in older monuments. Hence it does not date the construction of the tombs (Scarre 2011a, 259-262). A round-based carinated vessel from Tomb 13 (Kendrick 1928, plate XIV H6) would be consistent with a late 5th or earlier 4th millennium date. AMS dates are being obtained for human remains from both tombs that may help to resolve the issue.

The small tomb in the middle of the Common (Tomb 15) was a particular focus of interest in the recent fieldwork since Lukis' notebook indicated that the sand cover here was relatively shallow. Lukis interpreted the structure as a rectangular cist surrounded by a circle of boulders – a category of monument that subsequently became known as 'cists-in-circles' (Kendrick 1928, 69-70; Kinnes 1988, 26-27; Patton 1995, 78-82). Cists-in-circles are generally attributed to the late 4th or 3rd millennium B.C. (e.g. Patton 1995, 81) though there is in fact little secure chronological evidence. Excavations at Tomb 15 in 2009 and 2011 demonstrated that the boulder circle surrounding the chamber in the plans drawn by the Lukis family in 1841 was illusory. The boulders shown in the nineteenth century plans proved to be scattered surface blocks with no structural relationship to the chamber. The recent excavations did however discover the base of a dry-stone wall to the west of the chamber, curving towards the east and disappearing into the southern baulk (FIG. 13). No return was located to the east of the chamber and it is not at present possible to determine whether the wall formed part of the funerary structure (e.g. the kerb of a former covering mound) or was an unrelated later feature (e.g. a field boundary). Pottery recovered from the vicinity, and from Lukis upcast, was thick walled coarse ware consistent with a date between late 4th and early 2nd millennium B.C., but given the history of disturbance the possibility of an earlier origin for Tomb 15 cannot be excluded. The megalithic cist of Les Fouaillages on Guernsey is currently the earliest known Neolithic monument from the Channel Islands (Sebire and Renouf 2010).

The reinvestigation of the Herm tombs has hence clarified details of their structure, and it can be suggested that the oldest of them date to the 5th or early 4th millennium B.C., contemporary with similar monuments of Normandy and Brittany. Their history of modification and re-use can also be closely paralleled in adjacent

regions of mainland France. While a precise chronology remains to be established, some of the tombs were the focus of new deposits as late as the 3rd millennium B.C. (and others may have been built at this period). Their chronology and history of deposits therefore resemble those of mainland tombs, and it is all the more striking that in their morphology the tombs themselves have few mainland parallels. They appear to be expressions of insular identity within a broad regional domain of monumental practice. The same observation can be made for the Neolithic monuments of the Channel Islands as a whole (Scarre 2011b).

### *Mounds and chambers*

By the early nineteenth century, erosion had exposed the megalithic structures of the Herm tombs and removed most of the cairns or mounds that once covered them. The Lukis family made little reference to them in their work on the tombs, largely concentrating on exploring and clearing the chambers. Their fieldwork on Herm was completed before the great ‘mound’ debate (on the original appearance of megalithic tombs) began in the 1860s. It was indeed one of the Lukis sons, William Collings Lukis, who became a leading proponent of the view that all megalithic tombs had once been covered by mounds, and that only human action or natural erosion had reduced them to the mound- or cairn-free state that many of them now present (Lukis 1864).

The issue was incidental to the fieldwork undertaken in 2008. Nonetheless remains of mounds appeared to survive at two of the tombs (Tombs 6 and 12), and these were targeted. The objective in each case was to excavate a section through the mound and to expose the buried Neolithic land surface beneath. In both cases,

however, what had been taken from surface topography to be a mound proved to be merely an accumulation of wind-blown sand. Trench A, adjacent to Tomb 12 (FIG. 14), in particular, revealed no trace of a mound or cairn save for an accumulation of blocks placed against the rear of the orthostats. These blocks were encased within the same loessic silt as the Neolithic surface on which the tomb was built. Immediately above the Neolithic surface was a layer of fine white aeolian sand dated by luminescence to the late 2nd millennium B.C., and above that again a sandy grey soil with Roman material capped by a thick deposit of medieval sand. This sequence seemed to imply that Tomb 12 had been built as a free-standing megalithic structure.

Further excavation in 2011 radically revised that interpretation. A second trench, S placed across the eastern end of Tomb 12 (FIG. 14) revealed a marked asymmetry in the sequence of deposits (FIG. 15). To the north, that sequence recapitulated the stratigraphy revealed in 2008: Bronze Age sand, later prehistoric/Roman soil, and medieval dune sand, with no trace of a mound. To the south, the dune sand was thin and came down immediately upon a thick brown humic soil directly overlying a surface of tightly packed medium-sized stones with some larger blocks interspersed. This appeared to be the remains of an earthen and rubble mound. If so, it must initially have enclosed the tomb structure on all sides, and its absence on the northern side must be the consequence of significant post-Neolithic erosion that has operated only on that side of the tomb, facing towards the Common.

A similar pattern was revealed at Tomb 13. On the northern side, the Neolithic loessic soil surface was overlain by a thin deposit of fine white sand, then by a grey-brown sandy soil, and that in turn by a thick capping of loose sand. Towards the south, however, a thick humic layer rested directly on the Neolithic surface and was

covered by only a thin deposit of dune sand. The humic layer dipped sharply downwards towards the north.

These sequences suggest that both Tombs 12 and 13 were originally encased within, and probably covered by, a mound. They also show that they had been subjected to massive degradation leading to the complete removal of their northern halves in a process that lapped around the western end of Tomb 13. The collapse of Tomb 13 was probably the result of the removal of that supporting material from its northern side; whereas Tomb 12 was left standing but exposed. The tombs are located on a low ridge that forms the saddle between the hills of Petit Monceau and Grand Monceau. Thus the contrast visible between the northern and southern sides of these tombs replays in microcosm the more general contrast between the heavily eroded palaeosols of the Common and the better preserved soil sequences in the basin to the south of Petit Monceau. Whatever force removed the northern halves of the two mounds may also have removed a covering mound from Tomb 15 on the Common, although definitive evidence for the latter has not survived. The major erosional event itself can be dated to the 2nd millennium B.C. since it is bracketed by deposits of late 3rd millennium Beaker material and Jersey bowls in the tomb chambers, and by the luminescence date of [ca](#) 1200 B.C. for the fine white sand that was blown up against the eroded edges of the truncated mounds.

This unexpected discovery illustrates above all else the energy of the natural erosional processes to which the island of Herm has been subject during and since the prehistoric period. The Common, in particular, has been subjected to severe erosion that has truncated its Neolithic soil sequences. Without the protection of the massive dune system today, this low-lying area would still today be exposed to the full force of wind and storm. Conversely the basin south of Petit Monceau is more sheltered,

and more propitious for cultivation, with traces of a possible Roman field system revealed by geophysics. It is this area that has retained the full sequence of prehistoric and post-prehistoric soils, without the truncation documented on the Common to the north. Tombs 12 and 13 stand precisely at the junction of these two erosional regimes.

### **Herm: island of the dead?**

Herm in the early Holocene was very different from today. The extensive skerries to north and west may have been joined during a time of lower sea-level to form a more extensive 'greater Herm', but the northern end of the present-day island was conversely occupied by a shallow marine inlet, fringed by deciduous woodland. By the 5<sup>th</sup> millennium B.C., when the first Neolithic evidence appears, Herm had become smaller as sea level rose. Cultivation and climate began to degrade the Holocene woodland, and manuring probably became necessary to maintain the arable potential of the soils. This was the context in which the megalithic tombs were built: an arable landscape, probably already marginal to cultivation, but one far from devoid of human activity. By the end of the 2<sup>nd</sup> millennium the battle had been lost, as increasing deposits of windblown sand made further cultivation of the Common impossible.

This detailed landscape history is the key outcome of the Herm project. In the vicinity of the megalithic tombs, and across much of the surrounding buried landscape, excavations have revealed a persistent low-level signature of human activity. Precise chronology remains an issue, but the artifactual traces comprise flints (some of them worked) and pottery that would be consistent with a Neolithic presence. Luminescence dates consistently give late 3rd [to 1st](#) millennium ages for the



surface of the buried soil (see Appendix), fixing the point in time since which it has been permanently covered by aeolian sand. The general scatter of artifacts is most likely the result of manuring across the Common where by the 4th millennium B.C. soil fertility was probably already problematic. The basin south of Petit Monceau is more sheltered and has been less heavily eroded but even here a scatter of artifacts in the prehistoric soil suggest systematic manuring. Traces of ard marks in both the basin and the Common confirm the impression of widespread prehistoric agricultural activity in the area around the tombs, extending in some cases close to the edges of the megalithic monuments themselves.

The use of domestic waste for manuring in northwest Europe dates back to at least the 4th millennium B.C. Phosphate and micromorphological analysis suggest indeed that manuring may have been practised by the very earliest agricultural communities of central Europe from the 6th millennium B.C. (Bogaard 2004, 45-46). At Thayngen-Weier in Switzerland, charred remains and pottery incorporated in arable soil were interpreted as residues of manure carried out from the stables of the adjacent mid-4th millennium lakeside settlement (Troels-Smith 1984). A 3rd millennium B.C. arable soil with ard marks at Bornwird in the Netherlands contained Late Neolithic potsherds, flints and charred seeds reminiscent of domestic debris (Bakels 1997). In Britain, evidence of the addition of organic wastes to improve soil during the Bronze Age and Iron Age-Medieval periods has been recorded from the Outer Hebrides, interleaved with aeolian sands, in a coastal environmental setting similar to that of Herm (Gilbertson *et al.* 1999). Anthropogenic soil formation of Bronze Age or possibly Late Neolithic date has also been identified from Tofts Ness on Sanday, Orkney. Application of burnt grassy turf material along with faecal material, possibly of human origin, was attested by chemical and micromorphological

analysis. The analysts concluded that in this marginal sandy environment, with summer water shortage and high propensity to erosion, only intensive forms of manuring made the landscape viable for sustained arable production (Simpson *et al.* 1998). The evidence from Herm hence joins a growing body of evidence for active soil improvement and maintenance by early farming communities in marginal coastal environments from at least the 3rd or 2nd millennium B.C. It is also clear on Herm that the struggle to maintain soil fertility was unsuccessful in the long-term, though whether this is due to faltering human actions or driven purely by growing environmental adversity remains unclear.

The ubiquitous evidence for cultivation and probable manuring, sometimes in close proximity to the tombs, calls seriously into question the starting hypothesis that Herm in the Neolithic period may have been an “island of the dead,” a special place reserved for burial. A closer analogy indeed might be provided by the 4th millennium Céide field system in western Ireland, where a series of tombs (many of them relatively small in size) are scattered among a Neolithic field system (Caulfield *et al.* 1998). The analogy is admittedly inexact in that the Céide fields are exceptional and have no known parallel in Britain or northern France; nor is there evidence that the landscape of Herm was partitioned on this scale. It may however be more appropriate than the unwarranted assumption of a ‘sacred landscape’, where, misleadingly, “the very concentration of monumental architecture has encouraged the notion that domestic sites have been excluded from the same areas” (Bradley 2005, 201-202).

The results from the Herm project would tend to support such scepticism, and cast doubt on any suggestion that monument-rich islands such as Scilly or Arran were reserved for the dead. That said, Herm must not be studied as an island laboratory, isolated from the rest of the Channel Islands and indeed from northern France. The

5th millennium schist ring fragment discovered in 2010 must be a mainland import and the associated pottery indicates close connections with contemporary mainland communities and traditions. Those connections extend throughout the Neolithic period and beyond, as illustrated by Beakers and Jersey bowls, and by polished stone axes. The very number of tombs, especially if there were once even more of them, extending across parts of the island where cultivation has taken its toll, might be disproportionate to the size of the Neolithic community. Given its surface area of only 2 sq km, cultivation on the island itself may have been able to support no more than a handful of individuals on a permanent basis. It is entirely possible that some of those buried on Herm had spent very little of their lives there.

The Herm project has also underlined the complex and dynamic evolution of these island environments, and the fluctuating nature of the shoreline interface. The presence of a former marine inlet occupying much of the area of the Common radically alters the landscape setting of the Neolithic activities, and is a reminder that rising sea level and bathymetry alone are poor predictors of island shape in the past. The current shoreline is entirely dependent on the position of the coastal dune systems without which the low-lying parts of Herm would be periodically inundated by the sea, and may indeed have been so before the dunes became established. Elements of the more recent environmental history of the island are preserved within the aeolian sands themselves, where systematic application of luminescence dating has revealed patterns of storminess extending back a millennium, with fainter echoes reaching as far as the Bronze Age. Extension of the Herm methodology to other islands and coastlines on both sides of the Channel is now needed to expand upon and contextualise these results.

## **Appendix: Optically stimulated luminescence dating (Ian Bailiff)**

A programme of luminescence dating was undertaken to determine the age of burial of prehistoric land surfaces and also to provide a chronological framework for the development of the buried soils. In addition, the opportunity was taken to sample sediments associated with excavated structures. This short summary describes the dating work relevant to the main discussion in the paper and a full account of the work will be presented elsewhere (Bailiff *et al.* in [prep.](#)).

During each excavation season samples for luminescence dating were selected on the basis of the archaeological and geomorphological assessments of the opened trenches and examination of the sediment cores. To investigate when the prehistoric land surface was covered by dune sand, samples were taken from the basal sand deposits and, where accessible, from the uppermost layer of the palaeosol lying below the contact surface. The sediments were sampled using opaque rigid plastic tubes driven horizontally into cleaned sections to a depth of at least 20 cm, extracted and then promptly sealed in heavy gauge black plastic sheet to prevent exposure of the sediment to daylight and to retain the moisture content. In terms of determining the age of deposition an average for the depth range sampled within the tube diameter (40 mm in most cases) is obtained. Where the soils were too compacted to use plastic tube for coring, a block of sediment (at least 3 x 3 x 3 cm) was cut and then wrapped in black sheet as for the cores. In the laboratory the sediment from the inner section of the sample tube or excised block was extracted and prepared under subdued red lighting conditions. For the latter, the coarse grain quartz fraction in the size range 150-200  $\mu\text{m}$  was isolated using standard sieving and chemical treatments (Aitken 1998). Measurements of optically stimulated luminescence (OSL) were performed with aliquots (<1 mg) of quartz coarse grains and the absorbed dose,  $D_e$ , was

determined using an OSL procedure that is similar to the single aliquot regenerative procedure (SAR) described by Murray and Wintle (2006), but where corrections for sensitivity changes and thermal transfer are handled differently. These measurements were extended by adding an experimental step that enables single grain determinations of  $D_e$ . The latter is important where sediments may have been deposited without thorough exposure to daylight before burial or where they may have been subject to post-depositional disturbance. The dose rate was assessed on the basis of laboratory measurement of the concentrations of the lithogenic radionuclides in the sampled sediment and the use of beta and gamma thermoluminescence dosimetry (Aitken 1998). The latter was applied to determine the gamma dose rate by placing dosimeter capsules in the burial medium for ca. one year.

The OSL ages obtained for basal dune sands in eight trenches and the immediately underlying buried soil in four of these (14, 16, 17, 18) are given in TABLE 3; the overall error on the age is given at the 68% level of confidence.

The earliest of the preserved dune sands sampled occurs at Roberts Cross (359-6:  $1210 \pm 200$  B.C.). Within the Common, the OSL ages for three of the basal dune sands sampled to the west (359-11:  $1590 \pm 30$  A.D. and 359-12: A.D.  $1660 \pm 25$ ) and to the east (359-17.2: A.D.  $1215 \pm 60$ ) of the massive tabular outcrop indicate, together with the date for the basal dune sands (359-22.1: A.D.  $1430 \pm 50$ ) facing Moussonnière Beach, an accumulation of wind blown sand extending from the start of the 13th to the late 17th centuries A.D. In the trench excavated on the northern lower slope of Petit Monceau, where there was evidence of disturbance in the buried prehistoric land surface attributed to ploughing, the OSL dates for the basal sand (18-1:  $440 \pm 190$  B.C.) and uppermost buried soil (18-2:  $290 \pm 170$  B.C.) overlap. At the other three contact locations examined, the large separation of the OSL dates for 14-1 and

14-2, 17-2 and 17-3 and 16-3 and 16-2 confirm the truncated nature of the buried soils.

Sample 359-14.2 (A.D.  $320 \pm 175$ ) represents the top of a sequence of two or more superimposed buried soils that were revealed in Trenches E and F, located south of Roberts Cross. An OSL date of  $1150 \pm 290$  B.C. (359-14.6) was obtained for the basal soil in the Trench E sequence that represents the upper part of the lower palaeosol. In Trench F this sequence extends from the top of the corresponding lower palaeosol (359-15.1:  $1220 \pm 300$  B.C.) to the lower horizon of a buried soil that contained Neolithic pottery (359-15.5:  $4410 \pm 570$  B.C.).

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Charles French is Professor of Geoarchaeology and Director of the McBurney Geoarchaeology Laboratory in the Department of Archaeology and Anthropology, University of Cambridge. Before moving to Cambridge as a lecturer in 1992 he had been palaeoenvironmentalist and assistant director of the Fenland Archaeological Trust since 1983. He specialises in the analysis and interpretation of buried landscapes using geomorphological and micromorphological techniques, and acts as an environmental archaeology consultant and micromorphologist for many archaeological units in eastern England and beyond. He is currently involved in landscape archaeology projects in the East Anglian fenlands, the chalk downlands of Wessex, the Channel Islands, central Bosnia, northwestern India, southern Patagonia and Peru.

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## Tables

Table 1. Densities of Neolithic monuments on northwest European islands

Island	No. monuments	Land area sq km	Density/ sq km
Rügen	254	935	0.2
Orkney	70	971	0.07
Arran	21	430	0.04
Scilly	87	16	5.4
Channel Islands	92	196	0.47
Herm	16	2	8.0

Table 2: Soil profile numbers and contexts with brief soil micromorphological descriptions

Profile number	Location & context	Description & micromorphology
1 & 205	Moussonnière Beach; palaeosol under coastal sand dune	40-45cm thick; sandy clay loam on weathered granite, with predominant fine to very fine sand component, and common dusty and minor pure clay increasing down-profile; truncated, weakly developed argillic brown earth; with short/discontinuous & irregular striae features infilled with blown sand defining in upper surface of the buried soil or ard marks
50	Sand quarry pit northeast of Robert's Cross; palaeosol under dune sand	20-40cm thick; sandy clay loam with predominant fine to very fine sand component, and abundant dusty and common pure clay increasing down-profile; truncated argillic brown earth on weathered loessic B/C; with short/discontinuous & irregular striae features infilled with blown sand defining in upper surface of the buried soil or ard marks
52	Trench B, Kendrick tomb 6, on Grand Monceau; palaeosol under mound	16cm thick; sandy clay loam with predominant fine to very fine sand component, and minor dusty clay with a few micro-laminated pure clay coatings, all with strong amorphous iron impregnation; truncated brown earth on weathered granite; with short/discontinuous & irregular striae and shallow flat-bottomed furrow features infilled with blown sand defining in the upper surface of the buried soil or ard and spade marks respectively
54	Trench A, Robert's Cross, tomb 12; upper palaeosol under dune sand on northern side of tomb	18cm thick; predominantly fine quartz sand with dusty clay, with abundant humified organic matter and shell fragments; organic, weakly developed fine sandy loam on c. 20cm of wind-blown sand
55	Trench A, Robert's Cross, tomb 12; basal palaeosol under dune sand on northern side of tomb	29cm thick; sandy clay loam with predominant fine to very fine sand component, and abundant dusty and common pure clay increasing down-profile; truncated fine sandy clay loam brown earth on weathered granite
208 in Tr S & 209 in Tr R	Trenches R & S, Robert's Cross, between tombs 12 & 13; palaeosol beneath dune sand, upper buried soil and dune sand, on the western side of the tomb	18-20cm thick; as for Pr 55
56	Trench D rock outcrop; deflated palaeosol under dune sand	10-12cm thick; thin humic fine sand over sandy clay loam on granitic C; remnant brown earth survival
104	Trench D2 rock outcrop; palaeosol under dune sand	20-25cm thick; humic fine sand soil over sandy clay loam on gravelly sand B/C on granitic C
100	Trench E; cumulic Roman and prehistoric palaeosols under dune sand; with wide ploughmarks in	62-75cm thick; cumulic soil: two thin, black, very humic fine sand lenses with fine sand inbetween over c. 20-40cm of wind-blown sand over fine sandy/silty

	upper surface and narrow marks c. 15-20cm down-profile	clay loam common dusty clay, organic dust and micrite; a humic brown earth developed on loessic B/C and weathered granite C; with sand-filled irregular striae features infilled with black humic fine sand defining in its upper surface of the buried soil
101	coastal exposure Cunliffe's saltern site, Fisherman's Cottage; saltern/midden and palaeosol under dune sand	80cm thick; excremental sandy clay loam with fine anthropogenic inclusions of ash, pottery, shell, charcoal and plant tissue; organic shell midden with a brown earth on loessic B/C
102	coastal exposure opposite Caquorobert, Belvoir Bay; palaeosol under hillwash	c. 64cm thick; excremental and iron cemented humic fine sand over a fine sandy clay loam with increasing dusty and micro-laminae pure clay down-profile; humic fine sand over argillic brown earth on loessic B/C over granitic C
103	Trench F; palaeosol under dune sand	30cm thick; humic fine sandy loam over a fine sandy clay loam with abundant dusty clay; humic sandy loam over a disturbed brown earth on weathered granite
200	Trench N, northern footslope of Petit Monceau; palaeosol under dune sand	42cm thick; humic fine sandy loam over a fine sandy loam with minor illuvial clay; a slightly truncated, not well developed brown earth on weathered granitic B/C
201, Tr M & 207, Tr H	Trenches M & H, Kendrick tomb 15; palaeosol under dune sand	12-24cm thick; humic fine sandy loam with a bridged grain structure over a fine sandy clay loam with an increasing illuvial clay component down-profile; <b>loessic argillic brown earth</b> on weathered granitic B/C
202	Trench L, curvilinear stone wall & structure; palaeosol under dune sand	28cm thick; iron cemented and bioturbated fine sand over a fine sandy clay loam with a minor dusty clay component; truncated/trampled/depleted sand on a weakly developed brown earth on soliflucted beach pebbles B/C
203	Trench O; palaeosol under dune sand	c. 80cm thick; humic and iron impregnated sandy clay loam over illuvial clay and iron dominated fine sandy clay loam; truncated, partly depleted, argillic brown earth on loessic B/C over granitic C, possibly affected by variable groundwater conditions
204	Trench P; palaeosol under sand dune	58cm thick; as for Pr 203 above



Table 3. Luminescence dating of sediments from Herm

Lab ref.	Trench	Dune Sand	Lab ref.	Palaeosol	Lab ref.	Palaeosol
		Basal OSL date		Upper OSL date		Basal OSL date
359-6	A	<u>1210±200</u> B.C.				
359-11	D1	A.D. <u>1590±30</u>				
359-12	D1	A.D. <u>1660±25</u>				
359-14.1	E	A.D. <u>1380±55</u>	359-14.2	A.D. <u>320±175</u>	359-14.6	<u>1150±290</u> B.C.
	F		359-15.1	<u>1220±300</u> B.C.	359-15.5	<u>4410±570</u> B.C.
359-16.3	G	A.D. <u>1325±55</u>	359-16.2	<u>630±240</u> B.C.		
359-17.2	D2	A.D. <u>1215±60</u>	359-17.1	<u>1900±300</u> B.C.		
359-18.2	N	<u>290±170</u> B.C.	359-18.1	<u>440±190</u> B.C.		
359-22.1	Beach	A.D. <u>1430±50</u>				

## Figure captions

Figure 1. Location of Herm in the Channel Islands.

Figure 2. The island of Herm showing location of tombs. Stippled areas represent parts of island thought to have been submerged during the mid-Holocene.

Figure 3. Northern end of Herm showing location of tombs and trenches excavated 2008-2011. Dotted line indicates estimated limit of land surface in the mid-Holocene period with shallow marine embayment occupying much of the low-lying area known today as the Common.

Figure 4. Exposure of buried old land surface excavated at base of coastal dune on Moussonnière Beach.

Figure 5. Fragment of schist bracelet from mid 5th millennium B.C. settlement site south of Petit Monceau.

Figure 6. Criss-cross ard marks in prehistoric land surface exposed at base of modern sand pit to the north of Tomb 12.

Figure 7. Selection of soil photomicrographs (scale = 1 mm)

a: MB1 loessic fabric: Photomicrograph of the very fine sand to coarse silt loessic fabric, Moussonnière Beach, Profile 1 (frame width = 4.5mm; plane polarized light)

b: B1B Bt fabric: Photomicrograph of the Bwt clay-enriched horizon in loessic sand, Moussonnière Beach, Profile 1 (frame width = 2.25mm; cross polarized light)

c: Herm 55.2 dusty Bw: Photomicrograph of dusty clay infills in the lower B horizon of Profile 55, Trench A, Roberts Cross (frame width = 4.5mm; plane polarized light)

Figure 8. Sand-filled ard marks in the upper surface of Profile 205 at the lower A/upper B horizon surface, Moussonnière Beach.

Figure 9. Section of Trench A, Robert's Cross, showing Gallo-Roman and Neolithic surfaces. The location of the section is shown in FIG. 14.

Figure 10. Overhead view of Tomb 12 in 2011 prior to excavation.

Figure 11a. Plan of Tomb 13 at an early stage of excavation in 2011 indicating limit of 1842 Lukis excavation (subsequently backfilled by wind-blown sand).

Figure 11b. Detail of southern side of Tomb 13 excavated to base of Neolithic horizon, showing collapsed orthostats A and B. Note original packing stones in situ at base of orthostat B. (Scale bar in trench = 50 cm)

Figure 12. Lukis watercolour of Tomb 13 during excavation of 1842. From *Collectanea Antiqua* Volume IV, page 107 (ref GMAG 7452) held by Guernsey Museum. Reproduced courtesy of Guernsey Museums and Galleries.

Figure 13. Overhead view of Tomb 15 showing chamber and curving dry-stone wall. (Photo: Kevin Lajoie).

Figure 14. Plan of Tomb 12 showing location of Trenches A (2008) and S (2011). Sections shown in FIGS. 9 and 15 are indicated.

Figure 15. Section across eastern entrance to Tomb 12 (a-b in FIG.13) illustrating asymmetrical nature of deposits: arable soil capping probable Neolithic mound to south (left); aeolian sand deposits to north (right). A= pit filled with limpets; B= stony surface.