Forest Clearance and the Barrow Builders at Butterbump, Lincolnshire

J.R.A. Greig

SUMMARY
A pollen diagram from deposits in a possible kettlehole adjacent to late Neolithic/early Bronze Age barrows at Butterbump shows signs of successive clearance of the original lime forest which covered the area 5,000 years ago. Much of this clearance may be contemporary with the building of the barrows. The probable course of the vegetation history from the Neolithic period to the Iron Age is thus demonstrated for a hitherto neglected area of eastern England and the usefulness of studying vegetation history from deposits as close as possible to archaeological sites is emphasised.

INTRODUCTION
A group of eleven or more round barrows of the late Neolithic/early Bronze Age stand close to the present-day Butterbump Farm, east of the village of Willoughby, grid reference TF 494723 (see Fig. 1). They are situated on a small area of glacial sand and gravel set in the Middle Marsh, the wide strip of drift or glacial clay which runs parallel to the chalk and sandstone scarp of the Lincolnshire Wolds on their eastern, seaward side and extends eastwards to the coastal alluvium or Outmarsh. This coastal plain may have re-emerged from the sea in Neolithic and Bronze Age times and Butterbump may have formed a drier island in the surrounding marsh.¹ The Wolds are rich in prehistoric burial sites. Long barrows, the burial sites of the Neolithic period, were concentrated in the central and southern parts and include the well-known Giants’ Hills barrows at Skendleby, which lie only four miles west of Butterbump. Round barrows, the cemeteries of the later Neolithic and earlier Bronze Age, are densest on the Wolds, but also occur further east on the Middle Marsh, as at Butterbump, and scattered along the whole eastern flank of the limestone scarp which runs north/south through central Lincolnshire.²

The Butterbump barrows are being levelled by ploughing (although some are now protected under grassland) and Mr Barry Beeby, sponsored by the Department of the Environment, excavated one of them for several seasons from 1972 to 1975. He found a cremation burial in a pit, covered by an arrangement of wooden planks thought to be a bier. A perforated whetstone and bronze dagger with wooden sheath found two metres away were probably contemporary with the burial. Around it was an irregular circle of turves, earlier than the raising of the mound. A number of secondary cremation burials belonged to later phases. Radiocarbon dates for the first burial and dagger were 1750 b.c. ± 180 (HAR—490) and for two of the later burials, 1510 b.c. ± 130 (HAR—488) and 1520 b.c. ± 80 (HAR—491).³ This excavation prompted the present investigation of the pollen from inside and around the site, and particularly from a peat-filled possible kettlehole about 100 yards from the

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Fig. 1 Location maps for Butterbump and its surroundings.
excavated barrow. This was first sampled in 1975 and the results from this fieldwork are presented here. In 1978, the entire depth of the deposits was sampled (2.25 m) in order to provide further pollen data, and results from plant macrofossils like seeds, and from insect remains, as well as more radiocarbon dates.

**SAMPLING AND LABORATORY WORK**

Samples of buried soil from the Butterbump barrow were taken by Dr Susan Limbrey in 1974, but these did not contain any pollen. Further samples collected from the barrow by the writer in 1975 did not produce any pollen either from turf layers or from subsoil. The peat samples from the kettlehole, however, were more successful and are the subject of this report. A trench had been cut into the peat in the previous season (1974) and the exposed profile was cleaned and sampled as far as was possible in the flooded trench, at the very edge of the kettlehole. Pollen samples were collected at intervals of 2.5 cm and a larger peat sample taken for radiocarbon dating from the base of the section.

The stratigraphy was as follows:

- **0—30 cm**: modern vegetation, peaty soil and roots (not sampled)
- **30—100 cm**: humified peat with wood fragments. Bulk sample collected at 95—100 cm.
- **100—130 cm**: light brown sand/silt (not sampled)

The peat samples were prepared for pollen analysis by standard methods, and counts of 180—740 pollen grains were made from each sample. The percentages used for the pollen diagram are based on the amount of tree and shrub pollen (less Alnus and Corylus) together with the amount of pollen from dry land herbs. Calculated in this way, the pollen diagram shows the changes in dry land vegetation more accurately, and some of the wetland plants which were actually growing on the site do not distort these results by their strong representation. The pollen was adequately preserved in most cases, although somewhat corroded in the lowermost two samples.

**THE POLLEN DIAGRAM**

The pollen diagram (Figs. 2 and 3) shows the pollen records arranged in ecological groups, such as the trees of mixed forest, or the plants of arable land. Such a grouping is only a convenient approximation, since pollen records can often only be ascribed to a group of plants which grow in a variety of habitats, like the Compositae. Experience from other sites often permits a pollen group like this to be associated with a particular range of plants and hence a grouping to be made like that of Compositae with pasture plants. Some of the rarer pollen types have had to be omitted from the pollen diagram for lack of space, but these are not thought to have had much to add to the information set out.

There are three main pollen assemblage zones:

- **B1: 75—95 cm** Characteristics: High tree pollen (Tilia ca 50%, Quercus ca 15%, Ulmus ca 3%, Pinus ca 7%, Gramineae ca 10%).
- **B2: 55—70 cm** Moderate tree pollen, moderate herbaceous pollen. (Quercus ca 15%, Tilia ca 4%, Ulmus ca 1%, Fraxinus ca 1%, Sambucus and Prunus type present. Gramineae ca 50%, Plantago Rumex, Artemisia and spores present).
- **B3: 30—50 cm** Moderate tree pollen but low Tilia (ca 1%).

**RADIOCARBON DATE**

It was not possible to collect a series of samples so that any desired horizon could be dated. Instead, a single sample collected from the base of the profile was dated as follows: 95—100 cm, HAR 2255, 4430 ± 90 b.p. (2480 ± 90 b.c.).
INTERPRETATION OF THE POLLEN DIAGRAM

B1: 75—95cm

The lowest part of the Butterbump pollen diagram indicates a landscape mainly covered by a mixed deciduous forest. This would have been predominantly *Tilia* (lime), with *Quercus* (oak) and *Ulmus* (elm) also present. The very large amounts of lime pollen do not appear to be the result of the disappearance of most of the more fragile pollen through decay, for the pollen preservation was noted to be adequate in all but the lowest sample. The amount of lime in this forest can be estimated if the pollen results are corrected for the various amounts produced and dispersed by the different tree species. The low relative pollen productivity of *Tilia* has previously resulted in its importance being under-estimated. About 90% of the dry land forest cover would have been of lime, 5% of oak, and smaller amounts of elm, pine, birch and ash. Such lime forest seems to have been the natural vegetation of considerable parts of England during the Atlantic period (ca 7000—5000 years ago). The wet area of the kettlehole would have had a somewhat different vegetation consisting of alder carr with oak. Alder pollen tends to be somewhat under-represented, so the very large amounts found here (ca 50% pollen sum) would have come from the very local wetland vegetation, which also includes the Cyperaceae (sedges) *Sparganium* (bur-reed) and three taxa not drawn on the pollen diagram, *Typha* (bulrush) *Potamogeton* (pondweed) and *Filipendula* (meadowsweet).

Other types of vegetation represented here include some scrub with *Corlus* (hazel) perhaps growing where forest trees had fallen, letting in enough light for this shrub to flower. There are also some signs of *Pinus* (pine). Open land is hardly represented, apart from a little Gramineae (grass) pollen, and trace records from Cerealia type (cereal grains), *Plantago lanceolata* (ribwort plantain) and *Urtica* (nettle).

The radiocarbon date shows that this part of the pollen diagram is likely to represent pollen zone VIIIb (F III), the start of which corresponds approximately with the beginning of the Neolithic period. There is little which can be attributed to human activity, apart from some cereal pollen, weed and spore records, so the forest cover here seems to have been very nearly in its primeval state. Settlement and hence forest clearance may originally have been concentrated on the higher ground, as the distribution of archaeological sites of this period would suggest.

B2: 70—55cm

In this middle part of the pollen diagram the most noticeable feature is the much smaller amounts of *Tilia* (lime) pollen. In addition there is a decrease in *Ulmus* (elm) and perhaps also in *Pinus* (pine). There are increases in the pollen values of *Betula* (birch) and of *Fraxinus* (ash) and the appearance of *Sambucus nigra* (elder) and *Prunus* type (e.g. blackthorn) pollen. Even when the results are corrected, the lime seems to be only about half of the tree cover, and the increases in pollen records from light-demanding trees like birch and ash show that the forest canopy was less closed. Furthermore, the elder often grows where human activities have raised the nitrogen levels in the ground, while the *Prunus* type pollen group includes the sloe, a woodland margin and hedgerow rather than a forest shrub. The values of oak and alder show no consistent change, so the alder carr may therefore have been much less affected by the forest clearance which changed the dry land vegetation so much.

The herbaceous vegetation record shows corresponding changes: Gramineae (grass) pollen is greatly increased, and signs of other possible grassland vegetation such as *Plantago lanceolata* (ribwort
plantain), Rosaceae (perhaps Potentilla, cinquefoil), Rubiaceae (bedstraws) and Umbelliferae (e.g. hedge parsley). There are also signs of arable farming from plants such as the Cerealia (cereal grains) and associated weeds of disturbed ground like the Compositae (Tubuliflorae), Rumex (dock), Artemisia (mugwort) (closely associated with farming cultures in Denmark\(^2\)), Caryophyllaceae (e.g. chickweed) and Urtica (nettle). The increased amounts of fern spores, such as Pteridium (bracken), show the increased habitats available for these plants through forest clearance.

It is very difficult to date this episode with any precision: it is later than the Neolithic elm-decline (ca 3000 b.c.) and seems to be earlier than the arrival of Fagus (beech) which is of approximately Iron Age date. It is therefore tempting, until further evidence is available from the continuing work on this site, to connect this major phase of clearance with the Bronze Age activities in the area displayed by the building of the barrows.

**B3: 50—30cm**

In this last part of the pollen diagram the clearance of elm and lime forest seems to have continued, while the appearance of Fagus (beech) might represent the expansion of beech woods in the Iron Age.\(^8\)

**DISCUSSION AND COMPARISON WITH OTHER RESULTS**

There are not many detailed and dated pollen diagrams from near archaeological sites in the lowlands to compare with these results, and many of the lowland sites are large wetlands which do not show up the changes to dry land vegetation as well as at Butterbump. The signs of lime forest, and of its clearance and replacement by agricultural land are not very clear in the pollen diagram from Hatfield Moors\(^9\) which is about sixty miles to the north. Tilia clearances in other pollen diagrams appear to have taken place at various times in the prehistoric period rather than synchronously,\(^10\) but there are as yet too few radiocarbon dates from lime-rich lowland sites such as Butterbump to be able to make further comment upon the stages of lime forest clearance here.

The original area of almost pure lime forest in this part of England is indicated by other lime-rich pollen sites such as Misterton Carr (four miles north-west of Gainsborough), and the coastal peat at Ingoldmells and by the surviving Lincolnshire limewoods which may be relics.\(^11\)

When the forest was cleared from most of the land there were dramatic changes to the original brown forest soil which began to become degraded and podzolised. These changes can be detected by comparing ancient soils of varying age, preserved under some barrows such as those on the North York Moors studied by Dimbleby.\(^12\) The early examples are brown soils, but the later ones are increasingly degraded and immature podzols are sometimes present. At the same time (although not at Butterbump), the pollen analyses show increasing signs of deforestation. At Butterbump Dr Limbrey noted an acid brown soil in the profile, and this may represent a similar stage of partial soil degradation.

A possible parallel with the final clearance episode at Butterbump may be seen in the results from Crosby Warren, near Scunthorpe, where the final clearance of lime forest has been dated to 335 ± 70 b.c. (UB 860), demonstrating the increasing pressure on the land by its human occupants at this time.\(^13\) It is hoped that the continuing work on the second series of samples from Butterbump will provide more detail on the relation between archaeological sites and the changing landscape here.

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**FOOTNOTES**

2 J. May, op. cit., pp. 42, 45-9, 63, 71-81. See p. 72 for map of late Neolithic/bronze Age barrows.
3 ibid., pp. 81-2.
6 J. May, op. cit.
11 J. R. A. Greig, op. cit.