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Forest Clearance and the barrow builders at Butterbump, Lincolnshire.

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Introduction

The Butterbump site consists of a line of early Bronze Age barrows on the land by Butterbump farm, which is a few miles east of the village of Willoughby, near Spilsby, Lincolnshire (Figure 1). Geologically, the site is on a small area of glacial sand and gravel, while most of the surroundings are on drift which extends from the edge on the sandstone ridge on which Spilsby is built, eastwards around Butterbump and on to the coastal alluvium (IGS 1977). These barrowswwere being levelled by ploughing, and Mr Barry Beeby has conducted excavations on one of these for several seasons up to 1975, sponsored by the Department of the Environment. This excavation was the reason for the present investigation of pollen in and around the site, particularly that from a peat-filled kettlehole adjacent to the barrow being excavated.

Sampling and laboratory work

Dr. Susan Limbrey had taken some samples of buried soil from the barrow in 1974 (which was apparently turf-built) but these did not contain any pollen. In August 1975 the writer took more samples of buried soils, which did not contain any

pollen either, and some peat samples from the kettlehole which were successful and which are the subject of this report. A trench had been cut into the peat in 1974 with a machine, and this section was overgrown and flooded. A clean peat section was exposed in the trench right at the edge of the kettlehole, since it was not possible to drain the whole trench, and this profile was sampled at an interval of 2½ cm. A larger sample of peat was collected at the bottom of the section for radiocarbon dating.

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 a total number of 180-740 grains were made. 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 terrestrial herb pollen. This pollen sum is used because some plants which could have been growing right on the site (such as the peat-forming wetland plants) might be over-represented in the pollen diagram if they were included in the sum used for calculating the percentages, and would therefore have obscured the changes in regional vegetation which are of more interest to the archaeologist. The pollen was adequately preserved in most cases, although occasionally thin or shrunken; the samples at 80 and 95 cm. were not very well preserved, and here some of the more robust pollen grains (like Tilia) may be more abundant because of

differential preservation. At 100 cm no pollen was preserved at all.

The pollen diagram

The pollen diagram (Figure 2 & 3) has been drawn up with clarity in mind, and many of the pollen records have been arranged in ecological groups to show some of the vegetation types which they may represent, 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 includes species which grow in a range of habitats, as, for example, Caryophyllaceae. Some of the rarer pollen types have had to be omitted for lack of space, but these do not add much to the information set out on the pollen diagram.

There are three main pollen assemblage zones:

B1: 75-95 cm. 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. 2%, Fraxinus ca. 1%, Sambucus and Prunus spores present. Gramineae ca. 50%, Plantago lanceolata, 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 large samples so that any desired horizon could be dated. Instead, a single sample was collected from the bottom of the profile, which gave the following date: 93-100 cm, HAR 2255: 4430 ± 90 B.P. (2480 ± 90 B.C.).

B1: 75 - 95 cm. The lowest part of the Butterbump pollen diagram shows signs of a landscape which was 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 seem to be entirely the result of the dissapearance of some of the more fragile pollen, for the preservation was adequate in three of the five samples which comprise this pollen assemblage zone. Lime forest seems to have been the natural climax vegetation of southern and eastern England, but the low relative pollen productivity of Tilia has resulted in its past importance being under-estimated.

Alder carr, a woodland growing on damp ground and consisting mainly of Alnus (alder) and Quercus (oak), seems to have been another type of vegetation growing in the locality. Alder pollen tends to be under-represented, so the very large amounts found here show that the alder carr was probably the vegetation growing on the bog surface in the kettlehole itself, surrounded by lime forest growing on the drier sandy soils. Cyperaceae (sedges) and Sparganium (bur-reed) are other wetland plants represented here, while Typha (bulrush) and Potamogeton (pondweed) pollen also occurred in small amounts not included on the pollen diagram. These wetland plants would have grown as an understory to the aldercarr, and Filipendula (meadowsweet)(not drawn on the diagram) probably grew in damp, but not such wet places, as around the edges of the kettlehole.

Other types of vegetation represented in B1 include some scrub with Corylus (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). There are few signs of open land 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 represents pollen zone VIIb (F III), corresponding to the Neolithic period, although there is little in the pollen record which can be attributed to human activity, apart from some cereal pollen, weeds and spores. It is possible that this area was not the scene of great human activity during the time of the elm-decline here, and the lowland forest may have proved to be impemetrable, so that settlement and land clearance originally concentrated on higher ground to the west.

B2: 70-55 cm.

In this middle part of the pollen diagram the most noticeable feature is the much smaller percentages of Tilia pollen compared with B1. 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 Sambucus nigra (elder) and Prunus type (e.g. sloe) pollen appears. This amounts to a considerable change to the surroundings, with reductions in the amount of lime forest, making room for light-demanding trees like birch and ash which cannot grow under a closed forest canopy. The elder often grows where human activities have raised the nitrogen levels, as a "weedy shrub", while Prunus type includes the sloe and wild cherry which often grow along wood margins rather than in closed forest. Corylus (hazel) shows some reduction, although

it is also light demanding. Quercus (oak) and Alnus (alder) values show no consistent change, a sign that the alder carr may have been unaffected by the changes which affected the dry land vegetation so much.

The herbaceous vegetation record shows corresponding changes: Gramineae (grass) pollen is greatly increased and signs of other probable grassland vegetation such as Plantago lanceolata (ribwort plantain), Rosaceae (perhaps Potentilla --cinquefoil) Rubiaceae (bedstraws) and Umbelliferae (umbellifers). There are also signs of arable farming, such as the Cerealia (cereal grains) and weeds of distrubed ground such as perhaps the Compositae (Tubuliflorae), Rumex (dock), Artemisia (mugwort), Caryophyllaceae (e.g. chickweed) and Urtica (nettle) Spores, present in the previous zone, are also increased, and Pteridium (bracken) is now present, providing further evidence of land clearance.

It is very difficult to date this zone with any precision ; it is later that the Neolithic elm-decline (3000 b.c.) and may be earlier than the arrival of Fagus (beech) which may approximate to the VIIb/VIII transition, about the beginning of the Iron Age. It is therefore tempting to to connect this phase of clearance with the Bronze Age activities in the area which are shown by the building of the barrows, until more positive evidence is available.

B3: 50 - 30 cm.

In this last part of the pollen diagram, the clearance of elm and lime forest seems to have continued, while the appearance aepcneaar aenmdl fsom reeeteov acdoenut niwehliteh

and lime forest seems to have continied, while the appearance

of Fagus (beech) might represent the expansion of beech woods in the Iron Age (Godwin, 1975).

Discussion and comparison with other results

The evidence from Butterbump that most of the original forest in the area consisted of Tilia (lime) supports the view that this was the case in much of southern and eastern England at around 3000 b.c., as mapped by Birks et al (1975), who consider values of 11-15% Tilia pollen (using total tree and shrub pollen as the percentage base) to be significant. The lower part of the Butterbump pollen diagram has 33 % Tilia pollen on this basis, demonstrating the importance of the lime forest. The very high Tilia pollen values at Butterbump may also be the result of having sampled a site which covers a small area so that the lime forest on the dry land was very close to the forming peat in the kettle hole.

The lack of much sign of forest clearance in the early Neolithic may seem a little surprising, but this can also be seen in the pollen diagram from Hatfield Moors, near Goole, about 60 miles to the north, (Smith 1958), where the elm pollen levels hardly decline at all, and the main signs of the Elm Decline horizon come from the start of continuous records from Plantago lanceolata (ribwort plantain) and Pteridium (bracken). The actual Elm Decline horizon does not seem to be represented on the Butterbemp pollen diagram, for the radiocarbon date at the base shows that this sequence starts about five centuries later. As suggested earlier, the late forest clearance here may have been a result of the inaccessibility of the coastal lowlands, or to the natural resilience of the forest growing in a very suitable place

and able to regenerate after small clearings had been made. Some of the upland forests, on the other hand, seem to been less easily able to regenerate after clearing because these habitats may at this time have been less suitable for forest, or more liable to serious erosion, This apparent difference in landscape changes underlines the importance of studying vegetation history from deposits as close as possible to archaeological sites.

The main clearance of the lime forest, suggested as having possibly happened in the Bronze Age, can be compared with the evidence of landscape change obtained from soil pollen analyses from suitable sites, such as those carried out by Dimbleby (1962). He found there were slightly degraded brown soils and immature podzols under Bronze Age barrows on the North York Moors. Thus the original brown forest soils started to become degraded and podsolised only in the Bronze Age when either virgin forest or regenerated forest growing on brown forest soils was cleared, leading to podzolisation, unless covered by a barrow. In the case of Butterbump barrow, Dr. Limbrey noted an acid brown soil in the buried profile. Possible Bronze Age clearance of lime forest can be seen in the pollen diagram from Island Carr Brigg (Smith, 1958) in which there is one Tilia decrease in the middle of Zone VIIb and another at the start of Zone VIII.

The final clearance episode can be tentatively linked with the Iron Age on the evidence from the appearance of Fagus , although this is far from conclusive. A better indication is the radiocarbon dated pollen diagram from Crosby Warren near Scunthorpe, again about 60 miles north, (Holland, 1975)

The final clearance episode has been tentatively linked with show that there was lime forest which was finally cleared at a horizon dated to 335 ± 70 b.c. (UB-860), demonstrating the increasing pressure on the land by its human occupants and their domestic animals at this time.

Conclusion

This piece of work demonstrates the probable course of vegetation history in this small region. It shows the value of studying a small deposit which would have had dry land vegetation growing adjacent to it, and hence well represented in the pollen records. The closely spaced samples for dating, and the important additional results from the study of plant macrofossils and insect remains etc. from the 2.25 m. core collected from the Butterbump Kettlehole in 1978 should provide more detail for this important phase of vegetation history.

Acknowledgements

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Bibliography

Birks, H.J.B., Deacon, Joy, and Peglar, Sylvia (1975) Pollen maps for the British Isles 5000 years ago. Proceedings of the Royal Society of London, Series B, 189 pp. 87-105.

Dimbleby, G.W. (1962) The development of British heathlands and their soils. Oxford Forestry Memoirs 23.

Godwin, H. (1975) The History of British Vegetation (2nd Ed) Cambridge.

Holland, S.H. (1975) Pollen analytical investigations at Crosby Warren, Lincolnshire, in the vicinity of the Iron Age

and their soils. Oxford Forestry Memoirs 23.

and Romano-British settlement at Dragonby. Journal of Archaeological Science 2, pp. 353-364.

Institute of Geological Sciences (1977) Quaternary map of the United Kingdom (south), London.

Smith, A.G. (1958) Post-glacial deposits in South Yorkshire and North Lincolnshire. New Phytologist 57 pp. 19-49.

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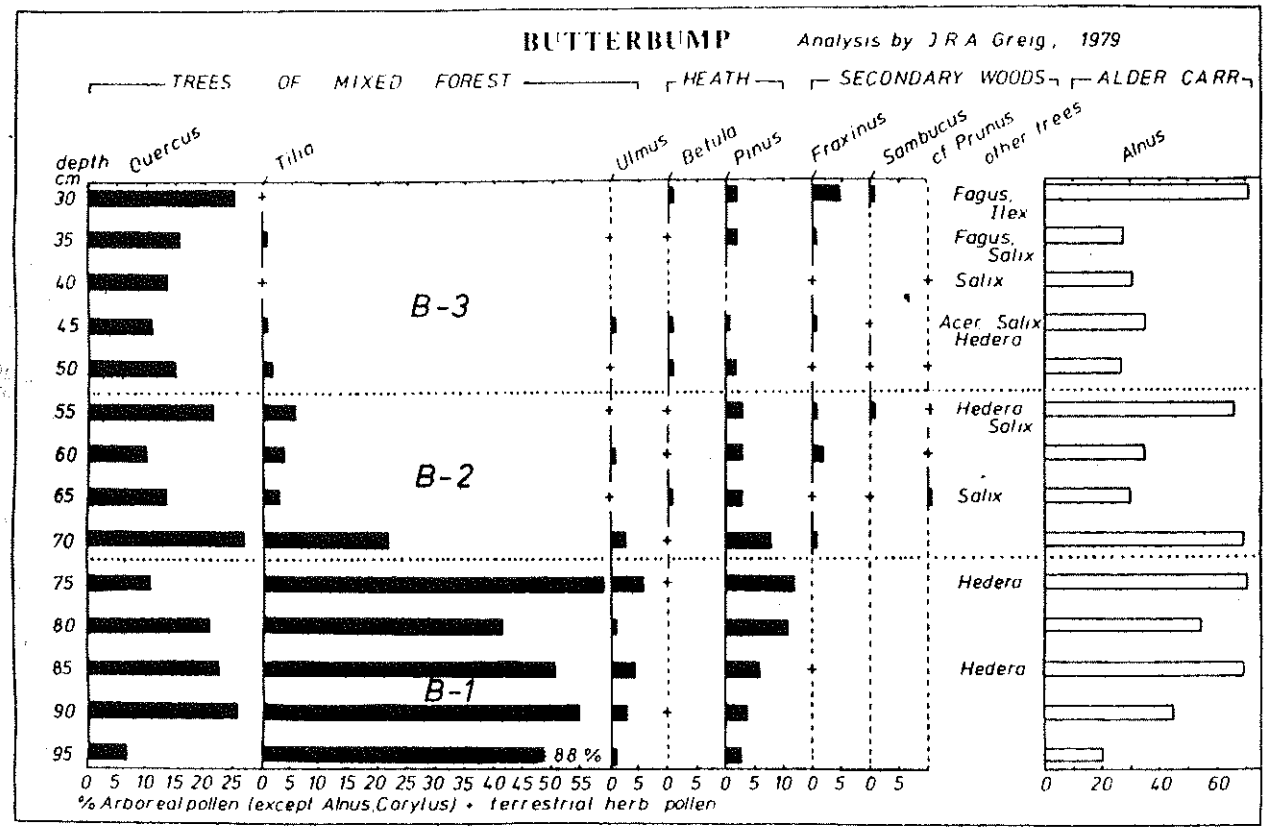


Figure 2

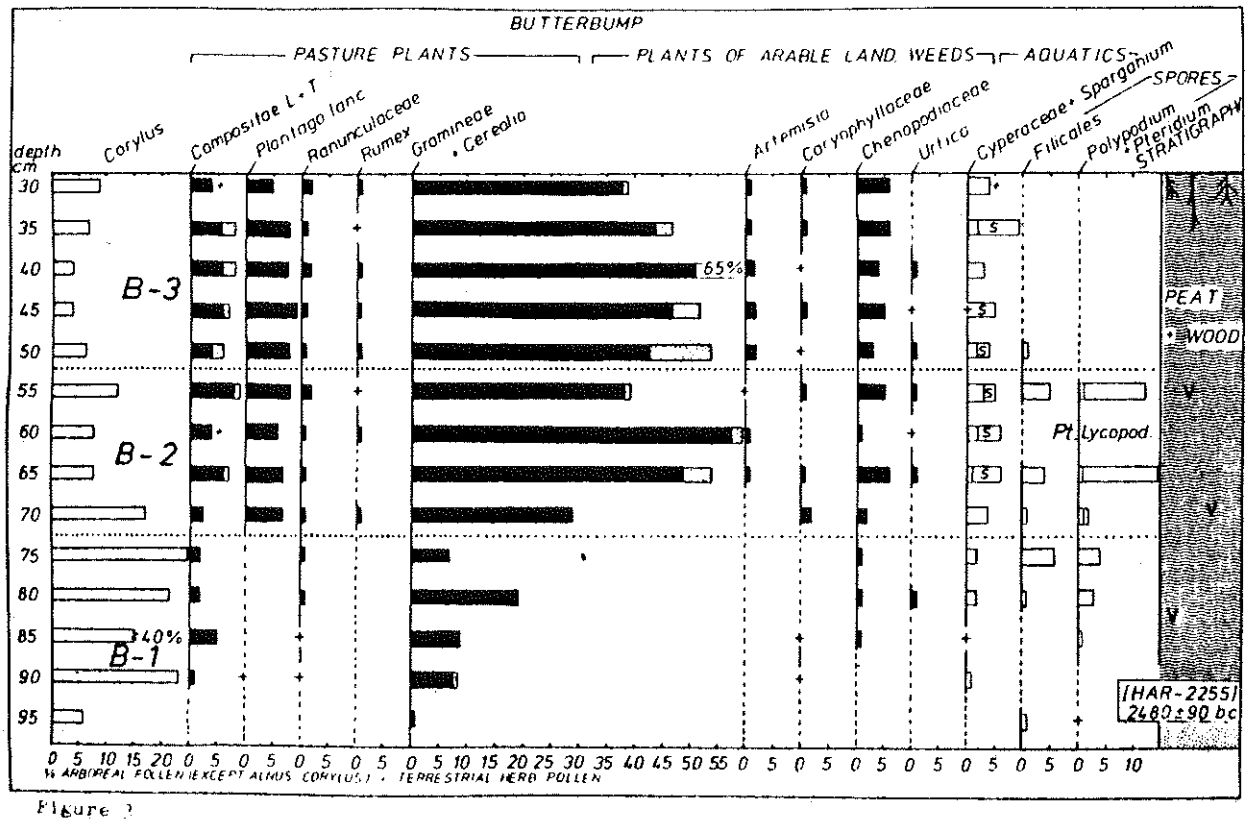
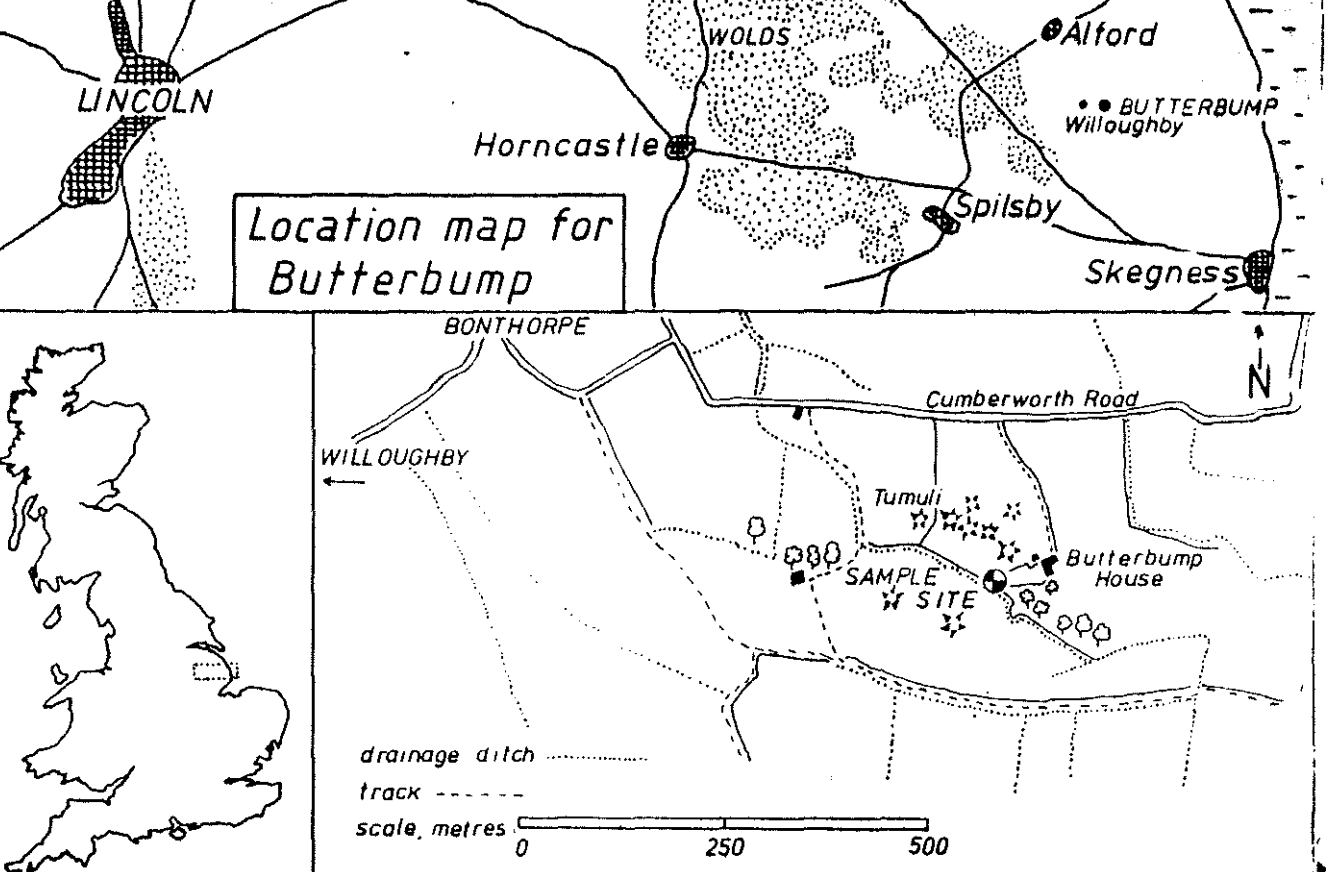


Figure 3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