UNCORRECTED ARCHIVE REPORT

APPENDIX 17 – POLLEN

By James Greig

Introduction

Four pollen samples were prepared and counted. They consisted of amorphous organic matter and some fine minerals which proved calcareous. The pollen preservation was excellent in 162/A/22, good in 162/A/27 and 605/A/4, and moderate in 82/-/21.

The results are presented below and are further interpreted and discussed in Appendix A1 together with other lines of environmental evidence and are summarised in the main report.

Methodology

The samples from 162/A/22 and 162/A/27 had so much pollen that they were counted under oil-immersion (x 1000 magnification). Fairly large numbers of pollen grains were counted in order to explore the rich and varied pollen flora as far as time allowed. After counting the slides were scanned under low power magnification (x 100) so that a few rare grains could be included, which had not been seen during the count itself. All grains that might need to be looked at again for further checking had their position on the slide noted, and the size of most of the cereal-type grains were noted.

In Table A17:1 the results are given both as numbers of pollen grains and as percentages of the total for each context. The Taxa represented are listed in taxonomic order within ecological groupings. This approach presents the data in a logical form that is intended to be clear and easy to understand. Taxonomic order is favoured within the groups because it keeps related plants together, and for botanists at least, it is easier to use than alphabetical order.

The ecological groupings are meant to make the results more readily understood, particularly by non-specialists, but there are a number of problems connected with this approach. The pollen types which can be recognised may come from plants that are closely related but grow in very different habitats, so *Anthemis* t. pollen could represent both grassland plants and weeds. The main assumptions in assigning taxa to the ecological groups are as follows:

- *Rumex*: probably mainly *R. acetosa* and other grassland Rumices
- Compositae (L): probably mainly taxa like *Leontodon* and *Hypochaeris* rather than the weedy Liguliflorae such as *Sonchus*
- Cruciferae: most likely to represent weeds like *Capsella* rather than grassland plants like *Cardamine*

- Caryophyllaceae: probably weeds like *Stellaria media* rather than the grassland taxa like *S. graminea.*
- *Aphanes* t.: probably *Aphanes* rather than *Alchemilla.*
- Cannabaceae: possibly cultivated rather than wild.
- *Anthemis* t.: probably *Anthemis* or *Matricaria* rather than *Chrysanthemum leucanthemum*
- Valeriana: probably Valeriana rather than Valerianella

The plant macrofossil records provides additional evidence that helps to resolve the problem of the likeliest plant species or group to have been the source of the pollen .

Trees and woodland

There is not much sign of woodland in these spectra. The amounts of tree and shrub pollen are mid to late Bronze Age 162/A/22, 4% and 162/A/27, 3%; Roman 605/A/4, 1%; and Saxon 82/21, 1%. These figures might be taken as a slight indication that the local landscape was substantially deforested by the Bronze Age, with further clearance occurring between then and the Roman and post-Roman periods. This tentative .conclusion assumes that most of the pollen has come from the atmosphere rather than from plant material deposited in situ, and the evidence for this set of circumstances is further discussed later. Oak is the only real forest tree represented, the other tree taxa being more characteristic either of open woodland (like ash), or scrub (like the rosaceous trees), while alder and birch are widely distributed quick-growing trees which have survived human influence by their ready growth from seed.

The very slight signs of pine and heather could be the result of longer-distance transport, and are not surprising given the presence of acidic lower greensand of the Newnham Courtney-Culham ridge, only 4km to the west.

Shrubs and climbers

These provide further evidence that what woody vegetation there was consisted more of scrub than woodland. The Rhamnaceae are sparse pollen producers and are not often found in pollen spectra, while the climbers bryony and nightshade are somewhat unusual occurrences in pollen spectra. There is a Roman macrofossil record of the former from Silchester (Godwin 1975), while woody nightshade pollen has been recorded from a few sites.

Grassland

This is the most important ecological group, both in numbers of taxa represented, and in their importance in the pollen record. The most pollen comes from grasses, ribwort plantain, red and white clover, nettles and composites. Such a pollen spectrum has often been found from well and ditch deposits where the macro fossils and insects confirm that deposition took place in surroundings of grassland, often pasture (Greig 1982). Although it is not yet possible to interpret the importance of these pollen records in terms of the landscape cover of the various taxa that they represent, it is interesting to compare them on a presence and absence basis with modern meadows in the midlands recorded by Fuller (1975). The meadow plants listed agree closely with the corresponding pollen types and much of the difference in importance can be accounted for by differing pollen productivity.

This grassland was calcareous, as shown by a few pollen records of distinct calcicoles like salad burnet and sainfoin; the general richness of the grassland flora also gives some evidence that the grassland was probably nutrient rich. A tentative suggestion is that the grassland was close-grazed, with many rosette plants like plantains and composites, which tolerate this damage, and unpalatable ones like buttercups and nettles which grazing animals avoid. It is interesting to note that records of rue and knapweed only occur in the Roman and later samples, which could be an indication that they were less common earlier.

Disturbed ground, possible crops.

This list is much smaller than that from grassland, both in number of taxa and in amount of pollen, suggesting that arable farming was less important than pasture in the vicinity of the site. Of course, there are far fewer abundant pollen producers in this group than in the grassland group. Few of the pollen types lend themselves to interpretation of ecological conditions apart from parsley piert, which tends to grow in dry soils. The cereals are a difficult group to identify, and in this work 40µ has been used as the division between cereals and grasses. As there is little sign of wetland vegetation, there seems little chance that grasses with large pollen are blurring the grass/cereal division much. The average cereal pollen size in sample 162/A/27 is 43µ (which is rather marginal for cereal pollen mounted in glycerin jelly), and in the slightly later layer 162/A/22 it is 49µ. The Saxon sample gives an average of 66µ which seems distinctly larger and may show that a different cereal crop was being grown.

Wetland

Most sites where pollen is preserved are wetlands such as lakes and marshes, and archaeological botanists therefore often need to try to distinguish the evidence of very localised wetland vegetation reflecting the immediate surroundings of the deposit from the indications of the dryland occupied landscape which may be the main focus of interest. However this is not a problem here since the samples come from small waterholes and wells and the very limited physical extent of conditions means that there are few pollen records from the wetland habitat group. All of these could be the result of damp patches in grassland as much as pond- or well-side conditions.

Comparison with other results, discussion

Pollen spectra consisting mainly of Leguminosae, Urtica (nettle), *Plantago lanceolata* (ribwort plantain) Compositae (L) (e.g. hawkbit) and Gramineae (grass) pollen have been found before, mainly from wells but also from .some small ponds, and this type of deposit has been considered to come from the atmosphere, from a short grassland vegetation that had surrounded the well or pond (Greig 1982). The connection between these deposits and the signs of pasture land may be a direct one, for cattle need to drink and in the past a water hole or well may have had to be provided for pastures which had no other ready water source like a river to hand. A somewhat different pollen flora, dominated by grasses, came from decayed plant material in one well, but this was interpreted as the result of grassy plant material having been deposited there, rather than deposition by natural means (Bakels 1980).

The data from pollen analysis can be expected to show up some characteristics of the past landscape which may not be evident from other remains: the woody vegetation, and the grassland with plantain, composites and clovers. These plants do not generally leave an abundant macro fossil record. In the weeds and crops group, Cerealia show up in the pollen record rather than as macro fossils, but with many weeds the reverse is probably the case: Polygonum species appear to be very low pollen producers.

This preliminary report is meant to see how far interpretation can be based upon pollen analyses alone, drawing parallels with other sites. The conclusions can be expected to be amplified and modified with the addition of the other data, from insects, plant macrofossils etc.

References

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