BARTON COURT, OXFORDSHIRE 1496 AML Report 2846

POLLEN AB BF 75-76

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| Pollen type | SAMPLE 950/5 | percent total 832s4 | 832s5 | 1083/4 |
|---|---|---|---|---|
| (TREES & SHRUBS) | | | | |
| *Pinus* | 1 | + | + | 1 |
| *Taxus* | - | ? | - | - |
| ROSACEAE cf. *Prunus* | - | - | - | 1 |
| *Hedera* | - | + | - | 1 |
| *Ulmus* | - | ? | + | - |
| *Betula* | - | 2 | - | 2 |
| *Alnus* | + | 3 | 1 | 1 |
| *Carpinus* | - | + | 1 | - |
| *Corylus* | + | 50 | 1 | 2 |
| *Fagus* | - | 1 | - | - |
| *Quercus* | 1 | 6 | 2 | 1 |
| *Salix* | - | + | - | + |
| *Fraxinus* | + | 1 | - | 1 |
| *Sambucus nigra* | - | + | - | - |
| (HERBS) | | | | |
| RANUNCULACEAE | 1 | 1 | 2 | 2 |
| CRUCIFERAE | - | + | + | - |
| *Helianthemum* | - | + | - | + |
| CARYOPHYLLACEAE | - | + | 1 | + |
| CHENOPODIACEAE | 1 | 1 | 4 | 1 |
| MALVACEAE | - | - | + | - |
| PAPILIONACEAE: indet. | - | - | 2 | + |
| *Trifolium* type | 2 | - | - | 5 |
| cf. *Onobrychis* | - | - | - | 1 |
| *Vicia* type | + | - | - | + |
| ROSACEAE: *Filipendula* | 1 | 1 | + | - |
| *Potentilla* type | - | + | + | 2 |
| *Poterium sanguisorba* type | 1 | 1 | + | - |
| UMBELLIFERAE | + | 4 | 4 | + |
| POLYGONACEAE: *Polygonum avic.* | 16 | - | 2 | 1 |
| *Rumex* type | 1 | 1 | 2 | 1 |
| *Urtica* | 3 | + | - | 2 |
| ERICACEAE | - | + | - | - |
| cf. GENTIANACEAE | + | - | + | - |
| SCROPHULARIACEAE | | | | |
| cf. *Veronica* | + | - | + | - |
| LABIATEAE *Stachys* type | - | - | 1 | - |

POLLEN AB BF 75-76 (continued) percent total

| | 950/5 | 832s4 | 832s5 | 1083/4 |
|---|---|---|---|---|
| PLANTAGINACEAE: Plantago | | | | |
| major | + | - | 2 | + |
| Plantago media | 1 | - | - | - |
| Plantago lanceolata | 10 | 6 | 4 | 6 |
| RUBIACEAE | - | + | 1 | - |
| DIPSACACEAE: Succisa/Scabiosa | - | + | + | - |
| COMPOSITAE Tubuliflorae | 9 | 2 | 22 | + |
| Artemisia | - | - | - | + |
| Carduus/Cirsium | - | + | - | - |
| Centaurea nigra | + | + | 1 | + |
| Liguliflorae | 9 | 1 | 6 | 4 |
| Sparganium | - | + | - | - |
| CYPERACEAE | 3 | 1 | - | 2 |
| GRAMINEAE | 36 | 18 | 32 | 49 |
| sect. Cerealia | 4 | - | 4 | 11 |
| Spores, indet. | - | - | + | - |
| | 100 | 100 | 100 | 100 |
| number of grains counted: | 274 | 487 | 221 | 242 |

## TREE & SHRUB POLLEN

The tree pollen results add several plant records to those already obtained from the macrofossils: Pinus (pine), Alnus (alder), Quercus (oak), Hedera (ivy), Ulmus (elm), Carpinus (hornbeam) and Fagus (beech). Many trees are wind pollinated, and their growth form helps the dispersal of their pollen which is often, although not invariably, produced in large quantities, so most of them show up very well in pollen spectra such as these.

One sample (832 spit 4) which consisted of moss had 62% tree/shrub pollen of which 50% was from Corylus (hazel) and a further 12% from other trees such as oak, alder, birch,beech and ash. This is an unusually high level for this kind of site, and a likely explanation is that the moss did not grow in situ but was collected somewhere else, evidently where there was hazel growing in thin enough woodland for it to flower abundantly, and brought back to the site with the pollen it had collected in the woodland. The beech and ash have a low pollen productivity and may have been more important than their pollen percentages may suggest (Andersen, 1970).

The other three samples have much less tree/shrub pollen (2% -950/5, 6% - 532 sp5, and 9% - 1083/4) although this still includes a range of different types. Quercus (oak) is always present, Ulmus (elm) has one certain record and a doubtful one, but there is no Tilia (lime) from this site at all. These three were the major components of the primeval forest cover, and their presence or absence is a sign of the presence in the vicinity of any traces of such forest. In this case there is only really the ubiquitous oak here, so there is little evidence of true forest in the area.

The rest of the tree/shrub pollen consists of plants which are mainly associated with secondary woodland in a context like this, such as Fraxinus (ash), Carpinus (hornbeam), Betula (birch), Corylus (hazel), Alnus (alder) and Sambucus nigra (elder). These are commonly found in archaeological samples as most of them grow well round human habitations.

Sample 1083/4 has a very slightly higher tree pollen count than 950/5 and 832 spit 5, which could be a sign that the surroundings were more wooded at this tim but it would really be necessary to confirm this from more samples to see if the slightly greater tree pollen values are consistant or simply part of the normal fluctuations.

Some other sites have considerably less sign of forest tree pollen than these ones, like the well at Rudston Roman villa (Stead, 1979) which only had one doubtful oak record. Others, like the Iron Age settlement at Fisherwick, Staffs. have somewhat more, with oak, elm and lime all present (Smith, 1979). These site-to-site differences in tree pollen may only represent very local differences in degree of afforestation, ob they may be significant in showing what was the state of the inhabited landscape. Pollen diagrams from naturally deposited sediments such as peat bogs may, on the other hand, provide more information on the more or less uninhabited landscape round the bog which is less useful to the archaeologis

Interpretation of pollen spectra such as these is made uncertain by the vagaries of pollen production and dispersal from the various plants, so that their actual abundance is often greatly distorted by pollen percentages. Some modern pollen studies such as at Cowick (Humberside) where a medieval moat had preserved a succession going to the present day (Greig, unpubl.) show that the rosaceous trees like hawthorn and sloe deposit only a trace of pollen, and are often absent from the pollen record altogether when their presence is known from finds of fruit stones or thorns. Thus the 1% record of cf. <u>Prunus</u> type pollen from 1083/4 may be more significant than it might appear

Some of the pollen could have travelled a considerable distance before being deposited, and the <u>Pinus</u> (pine) pollen could represent pines growing many miles away, perhaps in association with the Ericales (heathers).

## HERBACEOUS POLLEN

The herbaceous pollen is best dealt with in comparison with the seed record. The small records of pollen of Ranunculaceae, Caryophyllaceae, Chenopodiaceae, Umbelliferae Polygonaceae Urtica Rosaceae and Cyperaceae simply confirm the macrofossil record for these plants. These pollen types could be said to be ubiquitous in archaeological deposits, at levels of 1-2%, and are not very informative.

The macrofossil records of members of the Papaveraceae, Fumariaceae, Solanaceae, Onagraceae Juncaceae and Hypericaceae have no corresponding pollen records, but these pollen types seem to be rarely, if ever, found even when seeds are very abundant so the pollen would seem to be sparsely produced or hardly dispersed or simply not preserved. The Linum macrofossil records do not correspond to any pollen either (as at Hibaldstow, Lincs. where there were seeds but no pollen, Greig unpubl.) and the only substantial pollen records of flax come from lakes where it has been retted (Tolonen, 1978), so this seems to be another "pollen shy" plant with poor pollen productivity or dispersal. Pollen from Valerianella was not found, and only one record of Labiatae pollen, while there was a substantial macrofossil record from both.

The pollen from the Papilionaceae, Plantago lanceolata, Rubiaceae Helianthemum and Dipsacaceae demonstrates the presence of plants not detected as macrofossils — the Papilionaceae seem to have rather soft seeds which rarely survive unless charred and even the pollen record is very patchy, but some sites where the pollen is well preserved show significant amounts of this pollen. The Trifolium type pollen seems referable to the two common clovers, T. repens (white clover) and T. pratense (red clover), and the qualified identification of Onobrychis pollen suggests the presence of the sainfoin, a strong calcicole. Some of the indeterminate pollen resembled Lotus, the bird's foot trefoil. Plantago lanceolata pollen is very commonly found in archaeological material, often exceeding 10% of the total pollen but seed records are few (Godwin 1975) and probably fail to reflect the abundance of this plant. Rubiaceae pollen is also very common, but the seeds only occur sporadically, while in the case of the Dipsacaceae pollen or seeds turn up from time to time either singly or together --- they seem to be rare enough to escape many detection in the normal sized sample. This may also be the case with the Malvaceae, here recorded in the seed and pollen lists.

The Compositae (Tubuliflorae) pollen record would appear to correspond to the seed record for Anthemis cotula, both reaching their greatest values in sample 832 spit 5. Archaeological samples often show this apparent connection between Tubuliflorae pollen and presence of mayweed achenes, also the presence of the corn marigold when present (not in this case). A third cornfield weed which is often detected palynologically (but not here) is the cornflower.

The Compositae (Liguliflorae) pollen record may correspond to the seed records of Sonchus and perhaps Taraxacum, once again on the results from other sites.

Artemisia pollen seems to be the only record of this plant, as its achenes are not usually found ---- Godwin (1975) does not record one ocurrence of Artemisia macrofossils.

The Gramineae and Cerealia leave a good pollen record, but the caryopses do not always survive well in waterlogged material, although they seem to have here, although the change in the abundance of the seeds does not matbh that of the pollen as in the case of Anthemis cotula.

An important question with a deposit such as this is the source of the pollen ---- in archaeological deposits pollen may have arrived from various sources, of which the main ones are more or less natural deposition from wind and water, and pollen which has come from the remains of flowers incorparated into the deposit with other plant matter (floral pollen) (Buckland et al., 1974, Robinson & Hubbard, 1977). There do seem to be criteria which allow some clue to the pollen source (Greig, 1979). The high tree pollen of sample 832 spit 4 has already been mentioned, with the suggestion that this pollen suite could have been brought in with moss from woodland. The other samples have lower levels of tree pollen, but not as low as the mere trace found in deposits thought to have solely been the result of decayed plant matter without atmospheric pollen. Other signs which appear to demonstrate atmospheric pollen are the fairly high values of *Plantago lanceolata* pollen, and from *Urtica*.

On the other hand pollen records associated with those of abundant seeds suggest that there is some floral pollen here too, records such as those of Compositae pollen which appear to match those of *Anthemis* and *Sonchus* achenes, and the very large *Polygonum aviculare* record in sample 950/5. This picture of mixed origin would be consistant with a well which was able to act as an efficient trap for atmospheric pollen, but into which amounts of vegetation were also introduced.

## COMPARISON WITH OTHER SITES

Other Roman sites have yielded rather similar pollen spectra from wells, ditches and a pond. Some sites were on a rather calcareous substrate, others on the more neutral Keuper clay but there are not many pollen types which can be attributed to calcicole or calcifuge plants to see if soil type can be detected this way, apart from *Poterium sanguisorba* type which has appeared at two other calcareous sites, and the possible *Onobrychis* which has not been identified from anywhere else.

Most of these Roman spectra are dominated by Gramineae pollen, as might be expected from a largely grassy landscape, with only 2% -3% Cerealia. At Barton Court the cereal count is higher, but this is likely to be due to floral pollen since caryopsis remains were found in most of the samples, although curiously not the one with the highest cereal pollen count. High *Plantago lanceolata* pollen values are another feature which seems to be quite common in these sites, and the first Barton Court sample with 10% seems to fit this pattern. High Compositae (Liguliflorae) pollen with little or nothing in the seed list to match is another feature of many Roman spectra, but this does not appear to be the case here.

The Fisherwick pollen results, although dated to the Iron Age, have a lot in common with the Barton Court spectra although the calcicole records are lacking.

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