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INTERIM REPORT ON THE PALYNOLOGICAL ANALYSIS OF THE PLEISTOCENE (SLINDON SANDS) DEPOSITS AT BOXGROVE, WEST SUSSEX.

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PALYNOLOGICAL INVESTIGATION

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A section (GTP 10) opened up by mechanical excavator in November 1985 produced a fine section through the upper Slindon Sands; an overlying greyer sand containing the archaeological surface; the Fe/Mn layer and the overlying brickearths and clay with flints. This section was sampled sequentially and it is from three of the samples obtained that preliminary data presented here are taken.

Low absolute pollen frequencies necessitated the use of 30 gram samples of these highly minerogenic sediments. Extended hydrofluoric acid digestion of the silica and micro-mesh (10 u) sieving were used in addition to normal procedures. The concentrated pollen and spores were sufficiently abundant to obtain preliminary counts of 150-200 grains to be made from 2 microscope slides per level. The recovered pollen comprised largely of saccate coniferous forms. Overall, these were moderately to poorly preserved and in consequence some degree of differential preservation must be considered. These data are presented in Table 1 , calculated as a percentage of the total sum of pollen and spores. A small number of Mesozoic palynomorphs was present and these have been excluded from the sum.

Arboreal pollen is dominant throughout the samples counted. These taxa comprise predominantly coniferous taxa- *Pinus* (pine), *Picea*

(spruce) and *Abies* (fir). Small quantities of deciduous trees are also present- *Quercus* (oak), and *Fagus* (beech).

In the grey upper Slindon Sands, *Pinus* is the dominant taxon in both levels, forming 80-83% of total pollen. Low values of *Picea* and *Abies* are also present. Pollen of herbaceous taxa and of other deciduous are few in relation to the coniferous elements. This raises the question of whether differential destruction and/or preservation of some pollen types has occurred or whether the paucity of taxa is due to other taphonomic or ecological factors. If these sediments were laid down in marine or brackish water over-representation of saccate pollen (coniferous) grains may also have occurred. It is likely that a combination of these factors may have skewed the pollen data in favour of the more readily preserved saccate coniferous forms. Furthermore, the possibility of this pollen being derived from earlier sediments has been considered and it is felt that the pollen is contemporaneous with the sediments. In these highly minerogenic sediments it is likely that pollen contained in and transported in such sediments for any extended period would probably have been rapidly destroyed through abrasion (Hall 1981,199). Macphails micromorphological analyses of the sediments should show the presence or absence of allochthonous fractions which might contain earlier pollen. Opaline phytoliths have been recovered from these sediments and tentatively identified as being from conifers.

The Fe/Mn horizon produced substantial quantities of pollen and is the highest stratigraphical sample analysed. The pollen spectrum is dominated by *Pinus* (50% TP) but with a strong element of *Picea*

(23%). In view of the usual under-representation of *Picea* and over-representation of *Pinus*, the former becomes highly significant. The lower values of *Pinus* may be the result of the real increase of *Picea* competing with *Pinus*. Alternatively, this reduction may be statistical depression of *Pinus* by the higher within sum values for *Picea*. Absolute pollen counts will elucidate this point at a later date.

In view of the above considerations,it is thought therefore that the pollen spectra illustrate an environment dominated by pine, spruce and fir although the distinct possibility that other types may have been destroyed must be taken into account. In comparison with the Hoxnian interglacial type sequence at Hoxne (West 1956) and Marks Tey (Turner 1970), it would appear that the dating of these assemblages may be;

Fe./Mn HoIV Post Temperate zone or ? late HoIII.

Upper Slindon Sands HoIII Late Temperate Zone.

The high percentages of *Picea* in the uppermost sample may indicate a Post Temperate date of the Hoxnian interglacial. Such high percentages of *Picea* are not found in the complete sequence of Marks Tey (Turner 1970) but are seen at Hoxne (West 1956) and importantly in the interglacial (Hoxnian or late-Cromerian) Steynwood clay sequence of Bembridge, Isle of Wight (Holyoak and Preece 1983). The

dominance of *Pinus* along with smaller amounts of *Abies* is also consistent with a late Hoxnian date. It is, however, notable that there is an absence of *Carpinus* and *Betula* , both of which might have been expected from sediments of this age but which may be the result of the effects of differential preservation noted above. It is not proposed to consider here the possibility of an alternative (ie. outside of the recognised sequence of interglacial periods) until complete pollen analyses of a number of stratigraphical sequences have been completed.

Hubbard (1978) has also produced pollen data from the Slindon Sands but at a stratigraphically lower position. His data (Table 2) shows again the presence of quantities of *Pinus* (33% TP), but with a range of deciduous arboreal taxa dominated by *Quercus*. Herbacous types are similarly more numerous and are dominated by Gramineae. These data are commensurate with an earlier part of the temperate sub-stage and high values of Gramineae have been noted from other Hoxnian sequences (West 1956; Turner 1970).

BOXGROVE PRELIMINARY POLLEN DATA

	Fe	11-16	21-23
PINUS	50.3	80.4	82.5
PICEA	22.8	8.7	5.0
ABIES	1.8	1.6	0.6
UNIDENT. SACCATE	9.0	2.7	3.1
QUERCUS	3.5	1.1	1.9
FAGUS	0	0.5	0
cf JUNIPERUS	0.6	0	0
CARYOPHYLLACEAE	0	0	1.3
PAPILIONACEAE	0	0	0.6
LIGULIFLORAE	0.6	0.6	0
TUBULIFLORAE	1.3	0.5	0
UNIDENTIFIED	6.6	2.2	3.8
MONOLETE	1.2	1.1	0.6
PTERIDIUM	2.4	0.5	0.6
PRE-QUAT. (ABSOL)	0	12	8

POLLEN AND SPORES AS A PERCENTAGE OF THEIR TOTAL SUM

TABLE1

BOXGROVE: HUBBARDS POLLEN DATA

PINUS	32.9
BETULA	3.4
ALNUS	0.4
QUERCUS	15.8
ULMUS	0.4
ACER	0.4
TAXUS	0.4
FRAXINUS	0.7
FAGUS	0.4
CORYLUS	1.3
JUNIPERUS	1.7
CRATAEGUS	1.7
SORBUS	0.7
GRAMINEAE	31.2
PLANTAGO CORON.	0.4
P. LANCEOLATA	4.0
RUMEX	0.3
PAPILIONACEAE	0.3
RANUNCULUS	1.0
UMBELLIFERAE	1.7
CALLUNA	0.7
VARIA	1.0

POLLEN CALCULATED AS A PERCENTAGE OF THEIR TOTAL SUM

TABLE 2

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