RADIOCARBON DATES FROM WARRINGTON ROAD, PRESCOT

Jim Innes and Philippa Tomlinson

Introduction

In volume 5 of this Journal a report was published on the results of stratigraphic and pollen analyses of a peat bed found during excavations for building development at Warrington Road, Prescot (Tomlinson and Innes 1989). Located near Prescot town centre (Fig. 1) but adjacent to the old Prescot Moss, it was thought that the site could yield important evidence regarding the past vegetation of the area, including the impact of previous human activity and land-use, as the Medieval town of Prescot was a focus of early settlement in Merseyside and formed one of the major agricultural and industrial centres in the region (Philpott 1988). It is very likely that it was also an attractive location for settlement in earlier times, including the prehistoric periods, due to its situation upon a sandstone ridge adjacent to the boulder clay plain to the south and the peatlands of Eccleston Moss to the north, providing a range of contrasting soils and economic resources (Innes and Tomlinson 1983).

The stratigraphy of the Prescot peat site showed three main units above a basal coarse red sand. A well humified reedswamp peat was overlain by a birch tree stump, above which was clay-rich amorphous peat. The pollen evidence from the Prescot peat profile confirmed that the site had been a centre of quite intensive land-use, including arable cultivation. The upper part of the profile in particular contained high levels of cereal pollen, suggesting that much of the surrounding area had been brought under cultivation. Some indications of forest disturbance were present near the base of the profile also, so that the site seemed to have had a long standing history of human activity. Although this environmental evidence of land-use clearly had important archaeological implications, the profile contained no archaeological material which could be used to date the pollen record, and so the agricultural record could not be put into any cultural context. While the upper part of the peat deposit could be Medieval in date, the authors of the environmental report noted that, with the probable history of peat cutting and drainage in the area, the Prescot peat could really be of any date from the Neolithic onwards. They also stated (Tomlinson and Innes 1989, 9) that 'it is difficult to establish if the profile provides a continuous record, or whether a depositional hiatus may have occurred above the birch tree stump', although the upper part of the profile seemed likely to provide a reliable record of vegetation history. On the basis of the low levels of elm pollen throughout the pollen diagram it seemed unlikely that any of the peat would have been older than the Neolithic, as the major decline in elm pollen frequencies in north-west England pollen diagrams does not occur until around 5100 radiocarbon years ago near the beginning of the Neolithic period (Hibbert, Switsur and West 1971). Also the scale of the cultivation recorded in the upper part of the Prescot diagram suggested that it would probably be of later prehistoric

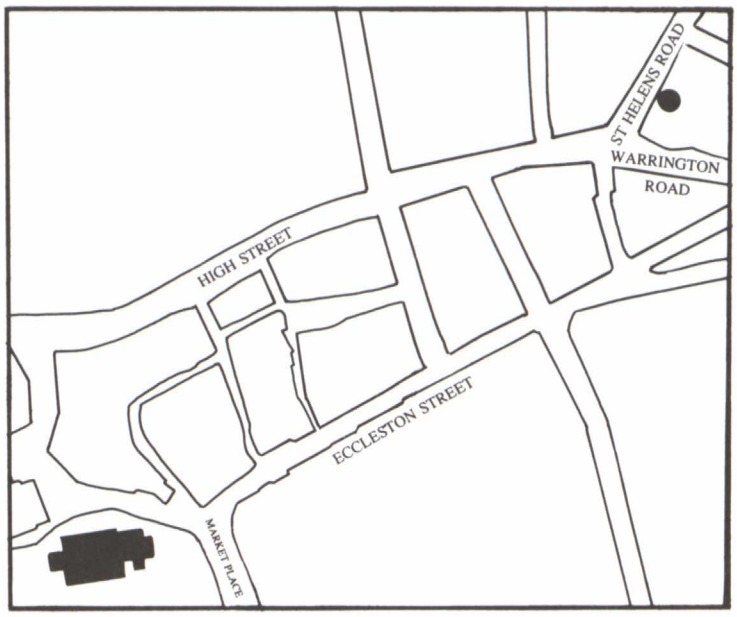

Figure 1: Location map.

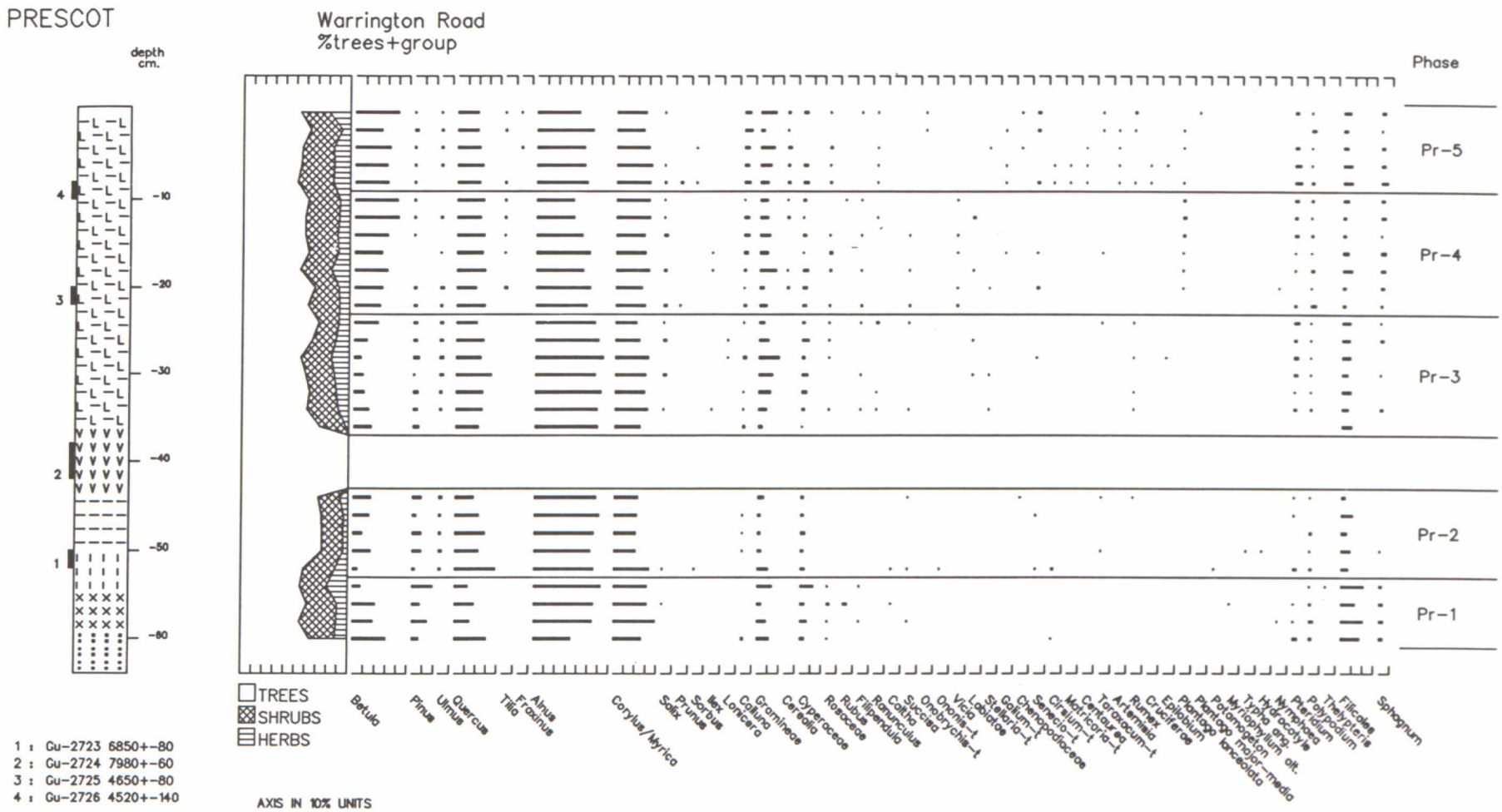

Figure 2: Pollen diagram, Warrington Road, Prescot.

Table 1. Radiocarbon dates from Warrington Road, Prescot

Date No.	Depth (cm)	Sample Material	Date (BP)	Laboratory Code
1	50-52	Amorphous peat	6850+80	GU-2723
2	36-43	*Betula* wood	7980+60	GU-2724
3	20-22	Clayey peat	4650+80	GU-2725
4	8-10	Clayey peat	4520+140	GU-2726

date at least, or even more recent. With this level of uncertainty in the dating of the pollen evidence, and the potential importance for the Prescot area which has no other pollen diagrams available for study, it was decided to obtain radiocarbon dates for the agricultural phases in the diagram and to test for any hiatus within the profile which may have been caused by peat cutting. Four samples were submitted for dating to the Glasgow University Radiocarbon Laboratory and the results are discussed in this paper together with a reappraisal of the environmental evidence from the Prescot profile.

Results

The four radiocarbon dates are shown upon the redrawn pollen diagram for Warrington Road, Prescot (Fig. 2) and described in detail in Table 1. The dated samples were taken from the start of phase PR-2 (50-52cm), from the tree stump in the profile, from the start of phase PR-4 (20-22cm) and from the start of phase PR-5 (8-10cm).

Sample number one (50-52cm) was selected because a large grass grain of cereal type was recognised at this level and single pollen grains of herbs which could be associated with small scale forest disturbance were also recorded, such as *Cirsium* (thistle), *Succisa* (sheep's bit) and *Pteridium* (bracken). The radiocarbon date for this sample was 6850+80BP.

Sample number two (36-43cm) comprised wood from the birch stump in the peat and was selected to show whether the stump was likely to be *in situ* or was in a secondary stratigraphic position in the profile having been transported from elsewhere. The radiocarbon date for this sample was 7980+60BP.

Sample number three (20-22cm) was selected because it marked the beginning of a phase of forest clearance and cultivation with cereal-type pollen and the start of significant pollen curves for likely agricultural indicators like *Plantago lanceolata* (ribwort plantain) and *Senecio* (groundsel). The radiocarbon date for this sample was 4650+80BP.

Sample number four (8-10cm) was selected because it marked the beginning of a phase of severe forest clearance and cultivation with high levels of cereal-type pollen and a wide range of weed pollen indicative of open ground and probable agriculture. As well as *Plantago lanceolata* and *Senecio* these included *Artemisia* (mugwort), *Rumex* (dock), *Taraxacum* (dandelion) type, *Centaurea cyanus* (cornflower), *Matricaria* (mayweed) and Chenopodiaceae (fathen) family. The radiocarbon date for this sample was 4520+140BP.

Discussion

The date of 6850+80BP for sample one was considerably earlier than expected, since the absence of *Ulmus* (elm) pollen below this level and the low frequencies above it had strongly suggested a date later than the elm decline of *c.* 5100BP. This early date makes questionable the identification of the single pollen grain of cereal-type at this level. Although cereal-type pollen has now been reliably carbon dated at a number of sites in north-west England to around 5800BP (Williams 1985, Innes and Tomlinson 1991) this date of approaching 7000BP seems far too early to be acceptable as a further example of pre-elm decline farming. One of us (JBI) has therefore re-examined the pollen counts from this level of the Prescot diagram and has found that the pollen grain counted as of cereal type was in fact of borderline size to be identified as such (Andersen 1979), being 40microns in diameter. It is possible therefore that this grain could be referable to other grasses which produce large size pollen grains, such as *Agropyron* (couch-grass). Because of the new dating evidence, this cereal-type identification is therefore no longer accepted and has been removed from the pollen diagram (Fig. 2). The other herb types identified at this level need not on their own be regarded as evidence of forest clearance, as they include species which may be found in natural wetland habitats. It is not known why the frequency of elm pollen should have been so low at and prior to *c.* 6850BP and this should perhaps be the subject of future research in the Prescot area. Supporting evidence that the radiocarbon date from this level is probably correct exists in the lower *Alnus* (alder) pollen frequencies at the base of the diagram. With moderately high *Pinus* (pine) frequencies also present, it is possible that this low alder represents a time shortly after the major rise of alder pollen which occurred at about 7200BP in north-west England (Hibbert, Switsur and West 1971) and which defines the

start of the Flandrian II period of maximum development of deciduous forest in the mid postglacial. This would fit well with the radiocarbon date of 6850+80BP for the start of phase PR-2 only a little higher up the profile.

The radiocarbon date of 7980+60BP for wood from the birch stump in mid profile also presents difficulties of interpretation as it is out of chronological sequence with the other dates. The tree stump is therefore clearly not *in situ* and would appear to be an older stump incorporated into the sediment profile at this level. As the lower part of the sequence is of early Flandrian II age, the stump itself appears to be several centuries older than the base of the Prescot succession. It must derive from older deposits and it is perhaps most likely that it had been preserved within older peats near to the Warrington Road profile and was transported into it during a period of erosion. Although not readily apparent from the pollen counts, the gap between phases PR-2 and PR-3 almost certainly represents an hiatus within the profile. Although the cause must remain conjectural, the very intense cultivation of land at the peatland margin by Neolithic agriculturalists could have been responsible for erosion of sediments from the profile followed by inwash of the tree remains and then accelerated accumulation of clay-rich organic material.

The radiocarbon dates of *c.* 4650BP and *c.* 4520BP from the sediment above the tree stump are similar but sequential and suggest that sedimentation was both continuous and rapid during the early Neolithic period. Sufficient differences exist between the pollen assemblages in this part of the diagram to indicate that the pollen changes are likely to represent real changes in vegetation history and that reworking of this sediment has not taken place. Major deforestation and agriculture evidently occurred very near to the site during the Neolithic period, with consistently high cereal-type pollen values and many weeds of open ground and of cultivation as described above. Re-examination of the numerous cereal-type pollen grains from these upper levels has confirmed their identification, and they are mainly of *Triticum* (wheat) type. The unexpectedly early dates for the upper part of the peat sequence indicate that cutting, drainage and reclamation of the sediments at Prescot has resulted in a greatly truncated profile, with any post Neolithic deposits which once existed now lost.

Conclusion

The radiocarbon dates have proved to be crucial in the interpretation of the stratigraphic and pollen data from Prescot. The sequence is much older than previously supposed, with peat inception in early Flandrian II, an hiatus in mid-profile created probably around the time of the elm decline and an unexpectedly intensive agricultural phase in the Neolithic period. Although the dates are unexpectedly old there is no reason to suspect that contamination of any kind has occurred. The results stress the dangers inherent in the interpretation of pollen data in cultural terms without independent dating control.

Acknowledgements

We are very grateful to the Lloyds Bank Dating Fund for an award to cover the cost of three of the radiocarbon dates, and to the Rainford Trust and the Merseyside Archaeological Society for funds to meet the cost of the fourth date. Dating was carried out by Dr. G. Cook of Glasgow University at the Radiocarbon Dating Laboratory, Scottish Universities Research and Reactor Centre, East Kilbride, Glasgow.

References

Andersen S. Th. 1979 Identification of wild grass and cereal pollen. *Danmarks Geologiske Undersogelse Arbog* 1978. 69-92.

Hibbert F. A., Switsur V. R. and West R. G. 1971 Radiocarbon dating of Flandrian pollen zones at Red Moss, Lancashire. *Proc. Roy. Soc. London* B. **177**, 161-176.

Innes J. B. and Tomlinson P. R. 1983 Cultural implications of Holocene landscape evolution in the Merseyside region. *Amateur Geologist* **10**, 2-17.

Innes J. B. and Tomlinson P. R. 1991 Environmental Archaeology in Merseyside. *J. Merseyside Archaeol. Soc.* 7, 1-22.

Philpott R. A. 1988 *Historic Towns of the Merseyside Area.* National Museums and Galleries on Merseyside. Occasional Paper No. 3. Liverpool.

Tomlinson P. R. and Innes J. B. 1989 Pollen analysis from Warrington Road, Prescot. *J. Merseyside Archaeol. Soc.* (for 1982-83) **5**, 7-10.

Williams C. T. 1985 *Mesolithic Exploitation Patterns in the Central Pennines. A Palynological Study of Soyland Moor.* Oxford: British Archaeological Reports, British Series. **139**.