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AUTHOR R I MacPhail 20.2.80

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SOIL REPORT ON A "DARK EARTH" AT ST. BARTHOLOWMEW'S HOSPITAL, LONDON

During the early Spring of 1979 building work allowed excavations by the Department of Urban Archaeology (Field Officer, David Bentley) of Roman and post-Roman deposits at St. Bartholomew's Hospital. The section exposed "dark earth" resting upon opus signinum, which overlay foundation material. Within the "dark earth" itself the excavator has identified three horizontal zones. Namely: zone 1, which is late 1st Century to 4th Century and represents part of a Roman cemetery; zone 2, which is late Roman or Saxon and contains residual Roman pottery; and zone 3, which is believed to be Saxon and contains residual Roman pottery from the 1st to 4th Centuries. These were all sampled. In addition, a layer, here called zone 4, is associated with metalling overlying the "dark earth" deposits and is approximately 11th Century. This was also examined.

These deposits were described, and analysed for loss on ignition and for alkali extractable humus. Zones 1, 2 and 3 were also examined for their phytolith content, to ascertain vegetation changes mainly through opalised grass remains.

Soil colour varied slightly between dark greyish brown (10YR4/2) when dry, and very dark grey (10YR3/1) when wet, for most layers. Simple phosphate tests showed some differences, with particularly zone 1, which is associated with the Roman cemetery, having a Positive response. These variations may indicate some changes in the usage of the "dark earth"; for not only may Positve phosphate readings be associated with inhumations but also with cess material that has been identified from other "dark earth" deposits. Loss on ignition (see data) shows a similar amount of total organic matter throughout the deposits, which of course may have included charcoal, that gives the dark colouration to this material. These results are comparable with those from some "dark earth" at GPO 75. Alkali extractable humus, which is a measure of the organic carbon present, is rather low compared with that from the GPO 75 or POM 79, but varies only slightly within this "dark earth" deposit itself. Material of a later date (11th Century) has rather more, and this may relate to the younger age of a material that readily oxidises. Still, it seems

apparent that the "dark earth" at St. Bartholomew's may have had lower original organic matter content than other "dark earth" sites, both in London and elsewhere, even when oxidisation is taken into consideration.

Phytolith analysis comprised the extraction of fine soil (less than 1mm) after pre-treatment with HCl and combustion of non-opalised organic material. Three samples each from layers 1, 2 and 3 were mounted on glass slides using Naphrax (Refractive Index 1.74). Phytoliths were identified on individual slides producing total counts for each layer of between 477 and 571. Percentage types were calculated and show a dominance of Festucoid types throughout zones 1, 2 and 3. From soil pollen evidence gathered from GPO 75 (A. Mon. Lab. Report - Scaife, 1979) which clearly indicates an urban waste environment, such Festucoid grass types common to lowland waste areas are therefore likely candidates. However, the suite of phytolith types varies with the three zones (see Fig. 1) identified in the archaeological section suggesting slightly differing vegetation environments or inputs of organic material for each. For example, the lowest zone contains the least Coarse Wavy types, although the most Hats and Fine Wavy types. Layer 2 differs by exhibiting Dumbell types and increased numbers of Coarse Spiny types showing a higher proportion of Panicoid grass types. The very high quantities of Coarse Wavy types in layer 3 again reaffirms the dominance of Festucoid grass types (Rovner, 1971), and further suggest grasses which like moist conditions, both as in meadows or damp waste areas, and may include Poa and Festuca types as identified from reference samples.

Generally, then, the area was occupied by Festucoid grass types with small and varying quantities of Panicoid grass types, most probably of species with a liking for moist, urban wasteland environments. Nevertheless grasses may have been imported into the area for a number of uses. The opus signinum itself may have produced poor drainage encouraging such moist conditions. Still, the envisaged low quantities of original organic matter in the site indicate that the "dark earth" here may not have had such a large input of organic material - as in the form of cess as identified elsewhere. Its origins may therefore be somewhat different. Certainly its use as a

cemetery may have increased the mineral content through mixing of the natural soil material. It has been suggested that the sharp division between the opus signinum and the "dark earth" may not just relate to dumping, but may also indicate the reworking of this "dark earth" only as far as this "impenetrable" Roman level.

Data

Layer	pH	Phosphate	Alk. Sol. Humus	% loss on ignition	Colour Wet	Colour Dry
1a	7.4	Pos.	24.0	2.34	10YR3/1	10YR4/2
1b	7.4	Pos.	27.4	2.04	10YR3/1	10YR5/2
2	7.4	W.	25.0	2.26	10YR3/2	10YR4/2
3	7.4	Pos.	31.0	2.60	10YR3/1	10YR4/2
4	7.5	W.	54.0	2.04	10YR3/1	10YR4/2

N.B. a) Alk. sol. humus, mgms. per 100 gms. air dry soil

b) Phosphate, W - weak, approximately 0.15% P_2O_3

P - Positive, approximately 0.4-0.8% P_2O_3

Rovner, I. 1971 Potential of opal phytoliths for use in palaeoecological reconstruction. Quat. Res., 1, 343-359.

Richard Macphail

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