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REPORT ON CANTERBURY BUCKET RESIDUE AML NO 820672

Samples of the black deposit were extracted with a series of solvents of varying polarities. The various extracts were examined by infrared spectroscopy and various chromatographic techniques.

The hexane extract gave a triglyceride pattern similar to that obtained for adipocere. Analysis of the methyl derivatives of the fatty acids obtained by hydrolysis by gas-liquid chromatography showed the extract to consist of approximately 55% palmitic acid, 20% stearic acid, 12% oleic acid, 6% myristic acid and traces of lauric acid, palmitoleic acid and linoleic acid. Such levels are similar to those obtained from bog-butter! Traces of cholesterol were also detected.

Extraction of the residue with chloroform gave material having an infrared spectrum similar to that of a tar. Examination of the material by both thin-layer and high performance liquid chromatography suggested the material was a bitumen. Investigation of the extract by emmission spectroscopy showed the presence of the usual soil elements namely: calcium, magnesium, iron, silicon, copper and titanium. The calcium levels, however, were unusually high and suggested "contamination" with hard water either by immersion or usage. No nickel, vanadium or molybdenum were detected indicating a wood origin for the residue.

Other solvents yielded no useful results. PEG (used in the conservation process) was detected.

It seems possible that the bucket had, at some time, been used for carrying milk or similar system. Unfortunately bog-butter/adipocere can be derived from most fats or oils when subjected to bacterial attack under wet, anaerobic conditions and consequently it is not possible to identify the original material with certainty.

The tar seems to be a deliberate addition ie. a water-proofing, etc. It is unlikely to have come from the wood of the bucket.

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1. M D Thornton, E D Morgan, F Celoria. 'The Composition of Bog Butter p.20-24, Science and Archaeology April-September 1970 (George Street Press)