



British  
Geological  
Survey

# BGS

*expertise  
applied to  
historic  
sites*

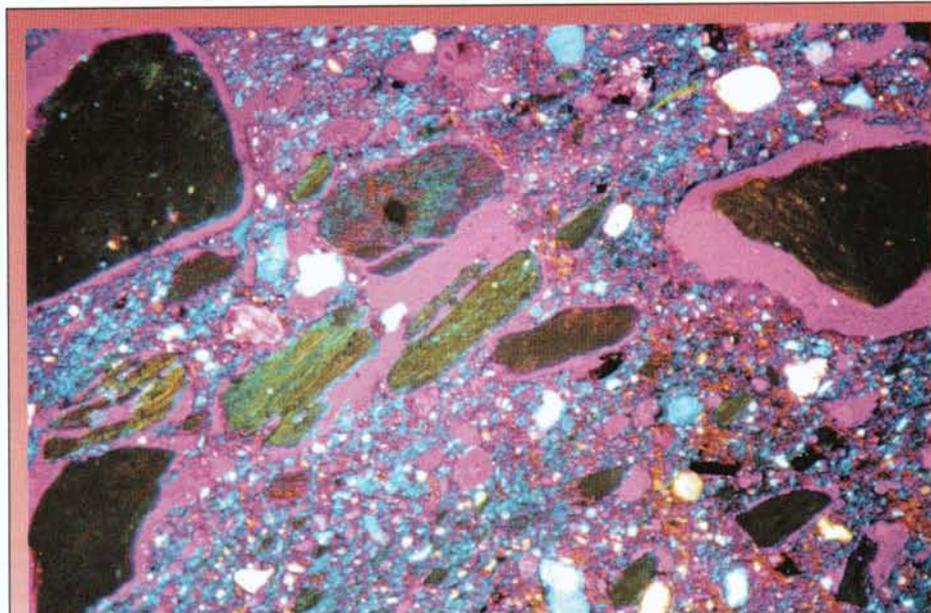
Neil Fortey

Keyworth

The BGS has much to offer the archaeological community and welcomes opportunities in this area. It has been examining and advising on archaeological sites and artifacts since the 19th century in response to enquiries from museums, church authorities, companies and private individuals. A notable example is the Stone of Scone, which has repeatedly been examined since its description in 1865 by Sir A C Ramsey. Although archaeology forms only a minor part of Survey activities, several BGS scientists have interests in different aspects of the subject. For example BGS staff are currently evaluating chemical and mineralogical techniques to determine the provenance of Scottish pottery in co-operation with Historic Scotland and the Medieval Archaeology Research Group.

### Archaeological Sites

The BGS has world-recognised expertise in geological surveying, and its archive of 6-inch sheets and notebooks provides a valuable primary resource. Recent involvement has included mapping medieval saltern mounds and glacial sediments containing a fossilized raft in Lincolnshire and



*Microscopic fabric of Scottish buff white ware pottery.*

an investigation of the coastal erosion undermining Hadleigh Castle, Essex. High-precision geophysics, engineering geology and airborne remote sensing are readily applicable to investigating archaeological sites and provide rescue surveys prior to land development in which disturbed ground and key soil horizons are mapped non-invasively. Geophysical changes have delineated buried Romano-British settlements and, using ground radar, located burials, a crypt and Roman features beneath Leicester Cathedral.

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### Under the microscope

The BGS has examined querns (grindstones), honestones (whetstones), slags, bronze artifacts, vases (the Bronze Age Caergwrle Bowl) and stone axes. Samples from disused quarries provide the basis for stone matching, and the BGS undertakes petrological analysis of stone and ceramic artifacts. In the 1970's, a survey was carried out of the origin of celtic crosses in Scotland. More recently, the BGS has located sources of replacements for damaged building stones from Salisbury

# Archaeology

Cathedral and investigated the provenance of stone and mortar from Carneserie Castle, Argyll. The portable infrared mineral analyser (PIMA) provides field analysis of the mineral assemblage in stone, mortar or implements. Cathodoluminescence provides a non-invasive means of fingerprinting gem-stones and glass fragments.

### Chemical fingerprints

Developments in geochemical analysis are opening enormous areas of potential to archaeologists. Portable x-ray fluorescence provides non-destructive analysis in the field. Techniques such as laser-probe mass-spectrometry and electron-probe micro-analysis reveal micron-scale variations in chemical fingerprints of metallic alloys, gold, glass and other objects. For instance, in conjunction with Kirkdale Archaeology, the BGS investigated the microchemistry of slag from Stirling Castle. Isotopic analysis carried out by the NERC Isotope Geochemistry Laboratory can investigate the provenance of lead in archaeological materials or be used to investigate palaeoclimate. These and other techniques such as x-ray fluorescence and inductively coupled plasma-atomic emission spectrometry can handle smaller and smaller samples, so damage to the artifact itself can be virtually invisible.