The Excavation of Two Romano-British Pottery Kilns at Barnetby Top, South Humberside

John Samuels

SUMMARY
The remains of two Romano-British pottery kilns were excavated. Both were producing greywares, particularly wide mouthed bowls. 'Dales ware' was also being produced, as well as the same forms in greywares. A general date of late third to mid fourth century A.D. is suggested.

INTRODUCTION
When plans were announced for the construction of the M180 motorway, a Joint Archaeological Committee was formed of Humberside County Council and the local authorities of Boothferry, Glenford and Scunthorpe to carry out a survey of archaeological sites which might be threatened by the motorway. To achieve the aims of the committee, a field archaeologist was employed and, it soon became apparent that immediate excavation would be necessary on at least two of the sites found. After consultation with the Department of the Environment, it was agreed that the Joint Archaeological Committee should undertake responsibility for some of these; the first of which was the Romano-British pottery kiln site at Barnetby Top.

The site (N. G. R. TA 050110) was identified by a small scatter of Romano-British pottery during fieldwalking along the proposed route of the motorway. Since there was no clear indication as to the type, or the extent of the site, a geophysical survey was carried out during February 1975 in conjunction with the Physics Department of Bradford University. (See below p. 17.) The results suggested the presence of either a hearth or a kiln, and since construction work on the Brig by-pass (M180) was to start on 1 May 1975, it was thought that a small excavation to locate the apparent archaeological feature would be worthwhile.

LOCATION
The site is located on the edge of a gap in the Lincolnshire Wolds, just above the 46m contour, and overlooks the village of Barnetby-le-Wold which is some 8km north-east of Brigg. (See Fig. 1.) The surface geology is fairly complex, changing quite rapidly from broken chalk to clay and gravel with outcrops of Kimmeridge Clay. Evidence of Romano-British settlement in this area is fairly extensive, though little is known in detail.

EXCAVATION
The plough soil was mechanically stripped off an area of approximately 400 sq. m, and a pottery kiln found where the geophysical survey had suggested. Although some Romano-British building debris was found in the excavated area, no further structure was identified, and ploughing had destroyed any stratification that might have existed. However, when construction of the by-pass began, another, smaller pottery kiln was found 50m to the east of Kiln 1.

Plate I Kiln 1, phase 2. (Scale division = 50cm.)

Kiln 1
Only the lower 25cm of the wall and lining of Kiln 1 remained. It had been dug into the natural subsoil and the oven and flue were lined with clay. The oven was seen to have been built in two phases. Originally it had had a simple circular clay wall, 10cm thick and 75cm in diameter. No trace of a floor or its supports was found, though presumably it would have had some kind of central support. The kiln had been fired a number of times, to judge by the degree of burning on the wall, before the oven walls were thickened internally and four tongue pedestals added.

Plate II Kiln 1. The oven showing outline of phase I. (Scale division = 50cm on ranging pole, inches and centimetres on small scale.)
The flue, which was 140cm long and between 40 and 20cm wide, was also lined with clay, some 20-30cm thick, and partly built on a foundation course of chalk and sandstone blocks. The flue arch was missing and there was no sign of any subsequent modification to this structure.

The stokehole was an unlined hole dug into the subsoil with a maximum diameter of 190cm and a general depth of 27cm, although there was a deeper depression at the mouth of the flue which had a maximum depth of 41cm. The stokehole was filled with burnt, sandy soil, small fragments of charcoal and broken pottery.

Several fragments of fired grey clay bars, roughly square in section, 5.5cm thick, and pieces of fired flat brown clay, 4mm thick, were found in the oven. These probably represent the remains of the firebars and clay plates used to form the oven floor.

**Kiln 2**

This was more complete than Kiln 1, standing to a general height of 45-50cm. It had also been dug into the natural subsoil of clay with flints, but was without a clay lining. Successive firing of the kiln had also fired the surrounding subsoil to a thickness of 13cm.
THE EXCAVATION OF TWO ROMANO-BRITISH POTTERY KILNS AT BARNETBY TOP

BARNETBY TOP

KILN 2

The oven was circular with a maximum diameter of 75cm and had a small tongue pedestal in the end constructed from clay and chalk which contained a small flue. At the flue end of the oven was a small arch, also built of clay and chalk, it had a grooved impression on either side, probably of twigs used in its construction.

The flue was 77cm long and 20-25cm wide and more complete than that of Kiln 1. It was roofed with two large sandstone slabs, which were sealed at the edges with unfired clay. A large greyware waster blocked the mouth of the flue.

Plate IV Kiln 2, with large grey ware waster wedged in the mouth of the flue. (Scale division = 50cm.)

The stokehole was almost rectangular, 130cm by 92cm with steep sides and between 64 and 74cm deep. At a step, 75cm from the mouth of the flue, the floor of the stokehole rose 15cm. A small circular depression 50cm in diameter and 30cm deep was attached to the south-east corner. The stokehole was filled with burnt, sandy soil, fragments of charcoal and broken pottery.

Clay Pit

Several hundred metres north-west of Kiln 1, a shallow depression, 2.8m by 1.6m and 46cm deep at the centre, was seen in an outcrop of Kimmeridge Clay which had been revealed by earth stripping for the motorway. Burnt soil and bone fragments were found, and it may have been used as a source of clay, either for building Kiln 1, or for throwing pots.

Area around the Kilns

A general spread of occupational debris was found. This included pottery sherdS of greyware, 'Dales ware', colour coated ware, Parisian ware, mortaria and oxidised ware. Three Roman bronze coins were found1 and various fragments of quernstone. (Like the flue capping of Kiln 2, these might be of Elsham Sandstone which outcrops locally.) A number of small blocks of chalk and fragments of roof and hypocaust tile were found, but no structures could be identified.

POTTERY

Pottery was found throughout both of the kilns and sufficient was obtained to give an impression of the types being produced. However, it is felt that there were not enough examples to indicate what percentage each type might have represented in total kiln production. This opinion was re-inforced as a result of participation in some recent experimental kiln firings. These took place at Barton-upon-Humber and Normany Park, and it was seen that certain pottery forms had a greater tendency to shatter than others and bore no relationship to the total numbers produced.4

The types of pottery being produced here were common in the late third to mid fourth century. It is even conceivable that the wide mouthed greyware bowls continued to be produced to the end of the fourth century and, at present, only a general date of this nature can be assigned to these kilns.

Pottery from the kilns

Type A: Deep wide mouthed bowls usually in greyware (except 10—13) with overhanging rolled rim. If decorated, between one and four incised lines below shoulder. Except for the decoration, almost identical bowls at Throlam, East Yorkshire, Swanpool and Rookery Lane where they were dated to the first half of the fourth century.
Fig. 5  Pottery, drawings 1-5.
1—5 Kiln 1 Rim diameters between 23 and 35cm Minimum of 9 vessels.
  1 Sandy grey fabric.
  2 Sandy grey fabric.
  3 Grey sandy fabric.
  4 Light grey sandy fabric.

6—9 Kiln 2 Rim diameters between 30 and 38cms Minimum of 4 vessels.

10—13 Kiln 2 Rim diameters between 28 and 33cm Same form but softer and smoother fabric with black outer surface and red core Possibly due to bad firing Minimum of 5 vessels.
  10 Black surface with red core. Flattened rim.
  11 Black surface with red core.
  12 Black surface with red core.
  13 Black surface with red core.

14—16 Kiln 2 Smaller wide mouthed bowls Rim diameters between 18 and 20cm Throlam Fig. 12 Rookery Lane types 33—4 Minimum of 3 vessels
  15 Dark grey sandy fabric.
  16 Grey sandy fabric.

Type B ?Storage jar Only found in Kiln 1 Possibly similar to Throlam Fig. 14 2 vessels.
  17 Grey sandy fabric.

Type C Small decorated jars, usually lattice work and with some variety in size and decoration Minimum of 5 vessels.

18—20 Kiln 1
  18 Dark grey smooth fabric. Broad band of burnished lattice decoration Rim diameter 18cm.
  19 Dark brown/grey sandy fabric Burnished ‘V’ decoration 13cm diam.
  20 Buff sandy fabric Broad band of burnished lattice decoration Rim diam 9cm, 11.5cm high over-fired.

21—22 Kiln 2 Minimum of 2 vessels.

21 Black outer surface red core Broad band of burnished lattice decoration and burnishing on base and neck Rim diam 10cm, 15.5cm high.

22 Black outer surface with red core One line of incised decoration Flattened rim 12.5cm diam.

Type D Grey ware pie-dishes 2 vessels.

23—24 Kiln 1 Straight sided but without sufficient remaining to estimate diameter 4cm deep.

25—28 Kiln 2 More variety in form, both straight sided and inclined Rim diameters between 15 and 19cm and 4.5—5cm deep Minimum of 5 vessels.
  25 Grey buff sandy fabric.
  26 Grey sandy fabric.
  28 Grey sandy fabric.

Plate VI Grey ware wide mouthed bowl found wedged in the mouth of the flue of Kiln 2 (Fig. 5, 6). (Scale division = inches and centimetres.)

6 Grey sandy fabric. A complete waster found wedged in mouth of flue 34cm diam, 24cm high.
7 Dark grey smooth fabric.
8 Grey sandy fabric.
9 Grey sandy fabric.

Plate VII Grey ware pie-dish from Kiln 2 (Fig. 5, 27). (Scale division = inches and centimetres.)

Type F Dalesware form but in greyware and neither so thick nor as shell gritted as above. Only found in Kiln 2 and with rim diameters between 12.5 and 18cm 3 vessels. Also found at Rookery Lane.

35 Dark grey fabric with some shell gritting.
36 Grey fabric without shell gritting.
37 Grey fabric with some shell gritting.

Type G Greyware flanged bowl. Only one example in Kiln 2.
38 Grey sandy fabric.

Type H Greyware lugged storage vessel. Only one example from Kiln 2.
General Area

40 Orange/brown exterior, white inside Colour-coat Flagon.
41 Bowl, black surface, red core. 20cm diam.
42 ?Nene Valley Black colour coat, red core

the design of the two excavated kilns at Barnetby Top was carried out at Normanby Park where it was noticed that Kiln 2 with its pedestal and small flue allowed a particularly good circulation of heat.

Both kilns are of the type described by Bryant as

White slip decor and rouletted line.
43 Parisian ware, stamped and rouletted.
44 Parisian ware, stamped and rouletted.
45 Grey ware Sandy 15cm diam.
46 Base of large storage jar Oxidised fabric, sandy.

DISCUSSION

Both kilns are of the fairly standard updraught design and the modification to the oven of Kiln 1 is not particularly unusual. It was unfortunate that nothing remained in either kiln of the oven floor. However, the regularly shaped pieces of fired clay probably represent the remains of firebars which would have spanned the oven between the pedestals and the clay plates which would have been placed across these.

As there was no trace of floor materials in Kiln 2, it is conceivable that this was sufficiently narrow for the larger pots to have been balanced between the arch and the pedestal and the smaller pots stacked on top. The design of the small pedestal with its own flue is more unusual, though a small 'chimney' is described as found in the oven wall at Throlam. An experimental firing based on examples of long flued kilns with their characteristic deeper depression at the mouth of the flue in the stokehole, though the advantage of such a design is not clear.

The Barnetby Top kilns were situated about half a mile from Middlegate Lane. This was described by Dudley: 'The Roman High Street follows the line of the chalk escarpment from Horncastle to the north entering the area with which we are concerned a few miles south of Caistor from where it links up a series of Roman sites at Caistor, Bigby, Barnetby, Horkstow and Ferriby.' Although Roman settlement in the immediate vicinity of Barnetby Top is suggested by the finding of Roman coins and pottery in Barnetby village, the best indication so far of a settlement is a series of cropmarks in the fields to the east of the kiln site. These were recently photographed by D. N. Riley and Fairey Surveys Ltd., and would seem to suggest several enclosures and a trackway, probably of Romano-British date. If these kilns were connected with that settlement, more will probably be learnt about the date of the pottery if, and when, excavation is carried out on the cropmarked area.
It is interesting that two Romano-British pottery kilns should now have been located on the northern end of the Lincolnshire Wolds because, so far, most of the Romano-British pottery kilns in this area south of the Humber have been found on the Jurassic Limestone ridge.

A GEOPHYSICAL SURVEY AT BARNETBY TOP
Roger Walker

A geophysical survey was undertaken at Barnetby Top to try to locate and identify any buried structures whose existence was indicated by surface finds of pottery. Unfortunately the exact nature and extent of the site was unknown, necessitating coverage of a relatively large area. Since only two full working days were available and it was intended to survey as large an area as possible — 2400 sq m in all — readings were limited to every 2m on a grid system.

Both resistivity and differential fluxgate magnetometer instruments were used. The former measures localised electrical resistance changes due to buried anomalies; for instance, the resistance reading goes up as the instrument traverses a wall or road, and goes down when over a ditch; the two probe array was used. The latter measures changes in the gradient of the earth’s magnetic field due to buried magnetic anomalies, e.g. heating of stone and clay can induce acquisition of a permanent thermoremanent magnetism.

The results of the resistivity survey are shown in Fig. 7 1 and 2. Presentation is in the dot density format whereby the number of dots plotted randomly at a reading station has a proportionality with the reading — the higher the resistance the greater the number of dots. Two distinct regions can be seen in Fig. 7.1, a high resistance region to the left and low resistance to the right. Considering the large extent of the phenomenon and the fact that the surface geology is fairly complex, changing rapidly from broken chalk to clay and gravel plus Kimmeridge clay, then these large scale effects could quite probably be attributed to geological, rather than archaeological, changes in resistivity.

By slightly changing the constant of proportionality between readings and number of random dots, it is possible to emphasize the high resistance regions which faintly show in Fig. 7.1 but can be seen clearly in Fig. 7.2. The central band is most probably associated with the geological transition from high to low resistance and may even be an outcrop. Several other high resistance areas can also be seen. As they stand, no recognizable archaeological features emerge and we must turn to the magnetic survey and see how it compares with this.

Due to lack of time and also a general absence of magnetic activity, a systematic scan of the whole area was attempted but without noting station readings. In this way, one fairly widespread magnetic anomaly, roughly circular and approximately 6m in diameter was located; the anomaly was of the order of 45 gamma, consistent with what could be a hearth or kiln. Significantly the magnetic anomaly and one of the high resistance areas coincide exactly, again consistent with the presence of a kiln or hearth, since the compacted clay and stone structure of a kiln would show as a higher resistance. Subsequent excavation confirmed this interpretation.

As a follow up to the location of the kiln, samples were taken from the fabric of the kiln and subjected to measurements of their magnetic susceptibility. This is a measure of the temporary magnetic moment induced in a sample when it is placed in a magnetic field — a sample that has a high susceptibility is more readily magnetised than one with a lower susceptibility.

This phenomenon occurs in most soils, clays and rocks and is due to the presence of iron oxides, generally in their weakly magnetic forms. However, the susceptibility may be increased or enhanced by either the decay of organic material associated with human habitation or by burning and heating, the latter process having a much stronger effect. Measurement of the magnetic susceptibility for a kiln may thus provide information on the extent and magnitude of heating effects in a kiln.

The susceptibility was measured on an A.C. susceptibility bridge, calibrated for 50gm samples in units of emu/gm (c.g.s. units). It is worth noting that a sample of raw Kimmeridge clay from the area has a susceptibility of only 2x10^{-6} emu/gm and the topsoil a susceptibility of typically 50x10^{-6} emu/gm. Results for the kiln are shown in Fig. 8.3 and 4. Clearly a considerable increase in susceptibility has occurred, from the clay in its raw state to fired state. An efficient kiln would be expected to have its oven as the hottest region and indeed, Fig. 8.3, the highest susceptibility reading is there, 762x10^{-6} emu/gm, followed in magnitude by the value 393x10^{-6} emu/gm at the mouth of the kiln. As samples are taken radially outwards from the inner lining of the oven, the susceptibility readings fall off quite rapidly 762x10^{-6} down to 23x10^{-6} emu/gm, since the temperature gradient during firing would also fall off rapidly in this direction. However, nearing the outer wall, the susceptibility rapidly rises again to 228x10^{-6} emu/gm. This would tend to
THE MAMMALIAN BONES

Mary Harman

The bones were found associated with the general occupation debris in the area excavated around the kilns. All of the bones were examined and, though they were well preserved, there were few whole bones, most of them being represented only by fragments.

Table I shows the number of bones identified for each species represented on the site. All the animal bones were from adult or sub-adult individuals. The only human bone identified was from an infant who probably died at birth, or very soon after.

The total number of bones is insufficient for any detailed assessment of the faunal evidence. Cattle and sheep predominate, with pig, horse and dog also represented. There is no evidence of anything unusual. Remains of neonatal human infants are not uncommon on Romano-British habitation sites.

Table Number of bones identified of each species

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Pig: 3 mandible fragments, 1 tooth, 1 metacarpal.
Horse: 4 teeth, 1 humerus, 1 metacarpal, 1 calcaneum, 1 metatarsal.
Dog: 1 ulna.
Human: 1 tibia.
Bird: 3 bones.

ACKNOWLEDGEMENTS

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FOOTNOTES

1 The other site was a Romano-British settlement at Sandtoft in the Isle of Ash Holme. Report in preparation.
2 See Discussion.
3 Claudius Gothicus 268-270 A.D., Antoninus Pius 138-161 A.D., Commodus 177-192 A.D.
5 P. Corder, 'Roman pottery and kilns at Throban, near Holme-on-Spalding Moor, East Yorks', East Riding Antiquarian Society, XXVII, 1930, p. 22, fig. 11.
Book Reviews

APPROACHES TO ARCHAEOLOGY by Peter J. Fowler, 203pp., illus., A. and C. Black, 1977, £6.50;
TECHNIQUES OF ARCHAEOLOGICAL EXCAVATION by Philip Barker, 279pp., illus., Batsford, 1977, £4.75 paper, £6.50 hard covers; SCIENCE AND ARCHAEOLOGY by David Wilson, 362pp., Penguin, 1978, £1.25; AN INTRODUCTION TO ENVIRONMENTAL ARCHAEOLOGY by John G. Evans, xiii + 154pp., illus., Paul Elek, 1978, £2.95 paper, £5.95 hard covers; TIME AND TRADITIONS in Archaeological Interpretation by Bruce Trigger, xii + 273pp., Edinburgh University Press, 1978, £5.00.

The changes which have taken place in British archaeology in the past twenty years or so have created the need for a new popular introduction to replace the classics of the 1950's written by Piggott and Wheeler. Peter Fowler has now written a book. The author's close involvement with a variety of national archaeological organisations and with the media have equipped him well as a spokesman for his generation, although the result, readable and well researched, is essentially a personal statement. The introductory chapter, which includes interesting discussions of changing attitudes to the past, and archaeology's place in modern society, is perhaps the most original part of the book. Professionals may look with some resentment to Fowler's contention that the mass of people prefer their own traditional, romantic view of the past to the new scientifically based knowledge being produced by expensive and painstaking research. Fowler is also reticent about claiming a positive social function for archaeology.

Separate chapters are concerned with current methods and priorities in field archaeology, well illustrated by two case studies, and in excavation, with a useful discussion of the nature of buried evidence and its limitations. 'Scientific Archaeology', on the impact of scientific modes of thought and techniques, is a balanced discussion of this aspect, which has, however, been more fully covered in several other books. On the other hand, 'Theoretical Archaeology' is welcomed as being an easy introduction to aspects of the 'New Archaeology', which is often wrapped up in difficult language. In the final chapter, 'Present Archaeology', Fowler is on the surest ground in his survey of current practice, the organisation of practical work in Britain, and topical issues such as treasure hunting and the cultural resources base. Essential reading, then, for full-time archaeologists, and at the same time a useful introduction to a number of new ideas for the interested layman.

Philip Barker deserves our thanks for his substantial compendium of information on techniques of excavation and associated activities. The author, accepting that it is not possible to produce 'the complete excavator', nevertheless has brought together a thoughtful, comprehensive, and up-to-date statement, which will deservedly now take its place as the most essential handbook on the subject. As such, much of the material in the central chapters of the book could perhaps have been organised in a more logical order. Barker writes in a readable style, but principles are often juxtaposed with practical hints and the result is a little indigestible. Fortunately, the index allows the book to be used, as no doubt it will be, for practical purposes. Barker deals adequately with processes, recording and interpretation of excavations and the subsequent follow-up tasks. His discussions of 'problem-orientation' and 'sampling' are both valuable and topical, for the nation's archaeological heritage is currently being subjected to a process of priority ordering on a national and regional level. The illustrations are on the whole clear, but some of the line drawings and most of the photographs suffer from over-contrasting, presumably as a result of the printing process used. The bibliography and glossary are both useful.

Science and Archaeology is a paperback edition of Atoms of Time Past, published in 1975, by the BBC's Science Correspondent, David Wilson. The author is concerned with the impact of archaeology's 'move back' to the sciences (where it began before becoming a science) and in particular the impact of the application of laboratory techniques and scientific thought on archaeology, our knowledge of the past, and on the profession of archaeology. The author describes various developments, including new methods of dating, clearly and fully, from the point of view of the history of science. He also shows how our view of the Neolithic Revolution has been affected by the new dating techniques and by environmental studies, describes methods of scientific prospecting and analysis, the use of computers, and (more briefly) new ideas on man's origins and the detection of fakes. Finally, he talks about the resulting changes in the profession and in the discipline of archaeology, in particular the New Archaeology. Wilson's book was not a new idea — there are already several others on the subject — but it is on the whole sound and stimulating and will appeal to those with a scientific background. It is also excellent value for money.

One of the areas of greatest growth, recent and potential, in practical archaeology is the study of the past environment. As a follow-up to his The Environment of Early Man in the British Isles by the same publisher, John Evans has now produced a first test book on the subject. This much needed volume fills the gap adequately. The book is organised logically, dealing in turn with the human environment and factors affecting it, the type of evidence — plants, animals, and soils and sediments — and what they can tell us about ancient environments; and the usual situations, natural and archaeological, in which the evidence is to be found. It is clearly written and illustrated, with appendices, references and glossary. A successful venture.

Professor Trigger's book is a different kettle of fish altogether. It is a book for the specialist prehistorian and anthropologist, and as such is theoretical and