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BIRMINGHAM UNIVERSITY
FIELD ARCHAEOLOGY UNIT

# An Archaeological Evaluation of Cropmarks at Newbold Farm, Barton-under-Needwood, Staffs.

May 1989

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B.U.F.A.U.

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## Introduction

In May 1989 Birmingham University Field Archaeology Unit was commissioned by Douglas Concrete and Aggregates Limited to undertake an archaeological evaluation of a group of crop-marks at Newbold Manor Farm, near Barton-under-Needwood, Staffordshire (NGR. SK. 203 194) following recommendations from Staffordshire County Council. These features were identified from an aerial photograph and consist of a large rectangular double-ditched enclosure (A) and a group of three circular enclosures (B) to the south-east. The evaluation was carried out in advance of the extraction of the gravels on which the site lies, in fields currently under pasture. The objectives were to locate the features represented by the crop-marks and assess the nature and survival of any associated archaeological deposits.

## Method

Three trenches were excavated and a resistivity survey was carried out in five sample areas (Fig. 2a). Trench I was positioned across the south side of the rectangular enclosure (A), while Trench II was dug at 90 degrees in order to locate the eastern side of the crop-mark. Trench III was excavated across two of the circular crop-marks (B). The topsoil in these areas was removed by a JCB with a toothless bucket. The top of the natural subsoil was then cleaned to reveal features cut into this horizon. Archaeological features were half-sectioned, planned and photographed. Perimeter trench sections were not drawn but measured profiles of the top of the natural subsoil were recorded. Standard BUFAU recording procedures were used, and an archive from which this report was prepared is retained at the University.

## The Excavations

### Trench I and II

Only two archaeological features had survived, both in Trench I. At the extreme southern end a small, shallow linear feature (F.5) crossed the trench at c.45 degrees. It was c.0.2m deep and c.0.30m wide. Its formation was probably a result of plough activity, but may alternatively have been the remains of a truncated ditch. It differed in orientation, position and size from the aerially recorded crop-mark ditches. The second feature (F.1) was equally truncated and survived to a depth of only c.0.10m. It seems to have been a fairly large (diameter c.1.0m) pit. A single small sherd of probably prehistoric pottery was found in its fill.

In the southern half of the trench the natural subsoil was coarse sand and gravel; this changed to a mixture of compact silty sand with frequent iron-panning and coarse gravel in the northern half, and along the full length of Trench II. In the areas of this sub-soil type its surface was indented with regular linear scoops c.0.10 - 0.20m deep. These were filled with compact silty gravel and may have been the remains of earlier plough activity such as that creating ridge and furrow earthworks. Better drainage may have made such features unnecessary on the looser gravels to the east, where none were observed. No evidence for the ditches which suggested the enclosure seen on aerial photographs had survived, and no finds (other than the single sherd of prehistoric pottery from F.1) were recovered.

<u>Trench III</u> (Fig. 2b)

This trench located a series of nine shallow linear features, all crossing the trench at roughly 90 degrees. Most were very shallow (<u>c</u>.0.10 - 0.20m) and averaged less than 1.0m wide. However, two features (F.5/7) were larger and deeper with evidence of cleaning slots in the bottom. Their similarity in form and depth suggests that they formed part of the same (?) circular enclosure. The fill of the larger of these features (F.5) contained quantities of heat cracked pebbles.

A further linear feature (F.1) was excavated at the southern end of the trench. This was <u>c</u>.0.5m deep and was perpendicular to F.2, the southernmost of the shallow linear features. The extent of later truncation meant that a relationship between these two features could not be established. However, the fact that F.1 seemed to respect the boundary formed by F.2 (or vice-versa) makes it likely that they were in use at the same time. The natural subsoil in this area was gravel with occasional areas of finer material sealing it. Two small sherds of pottery similar to that found in Trench I were found in the plough soil but no other pottery or artifacts were found.

## The Geophysical Survey

Five separate areas were investigated to complement the evidence from excavation of the three transects. The proximity of the areas examined by the two methods allows direct inferences to be drawn from the information provided by excavation, and vice-versa.

A resistivity survey was considered to be the most appropriate method of examination, given the nature of the gravelly subsoil, and the type of features suggested by the crop-mark evidence. Both resistivity surveying and crop-mark recognition depend on the detection of localised differences in soil consitituents, which cause a difference in the earth's resistance to the flow of electricity, and provide either encouragement or hindrance to crop growth. Soils vary considerably in resistivity, depending on their content and wetness, and thus detailed and accurate measurements of variation in ground resistance from place to place can detect quite subtle changes (anomalies) in the near subsurface, which may be due to natural processes, or manmade features such as walls or ditches. Water-retentive materials are of notably low resisitivity, whilst stone walls and floors have a higher resistivity due to their water content, which impedes the flow of electricity. The technique cannot distinguish between differing soils of similar resistivity, and climatic conditions may cause anomalies to reverse, or even disappear.

### Field techniques and data processing

Because of the extremely compact soil surface at the time of survey, the Archres device developed at Birmingham University was preferred to the use of a movable Square Array comprising four electrodes at the base of a rigid frame. The Archres employs a computer control box and Epson HX 20 computer to direct current from an Atlas Copco SAS 300 Terrameter along a line of 25 electrodes inserted into the topsoil at 1m intervals. Individual readings were obtained by employing four electrodes: current was injected into the ground via the outer pair, the ground resistivity being measured between the inner pair. Lines of readings were obtained by advancing the point of measurement along the line by one electrode per reading. soil resistivity was measured at a depth of c.0.6m below the surface.

Data was logged onto a micro-computer. A graphics program (Whizplot) was employed to provide on-screen interpretation, and the illustration (Fig. 3) for this report. These computer-generated plots highlight the areas of anomalies, which are represented by darker shading in the case of areas of higher resistivity, and lighter shading in areas of lower than average resistivity, emphasising the stonier areas by the use of logarithmic, rather than arithmetic progression in shading (Fig. 3). After recognition and definition, anomalies may be interpreted as natural or manmade features. Single point anomalies derive from machine error and should be disregarded.

Area 1 (Fig. 3)

Within this area measuring 10m by 21m, readings of background resistivity fell within the range 200-250 Ohm Metres. Despite variation in readings of background resistivity two anomalies may be discerned. A1, measuring up to 5m across and aligned north-south, contains readings up to 50% lower than the surrounding area. A high resistivity anomaly (A2) runs parallel with A1 but is markedly irregular in shape, measuring 300-400 Ohm Metres, within which is a concentration of very high readings up to 550 Ohm Metres.

Area II (Fig. 3)

Measuring 10m by 20m, this area examined the possible location of the western return of the double-ditched enclosure recorded as a crop-mark. Most readings here were in the region of 200-250 Ohm Metres. Anomaly

A3 comprises a disturbed area of higher resistivity than the surrounding area, measuring 300-400 Ohm Metres, which may contain one or more narrow linear features aligned north-south. A second anomaly (A4), of roughly sub-circular ring shape, is defined by values approximately 20% higher than those of the surrounding area. A narrow linear anomaly (A5) is defined by values around 350-400 Ohm Metres.

Areas III and IV

These areas exmained the location of a series of parallel crop-marks and sampled an area east of the double-ditched enclosure crop-mark. A gradual decrease in resistivity was recorded from east to west, ranging from 400-250 Ohm Metres. This may derive from a deeper topsoil overburden to the west, adjoining the field boundary, taking the gravel (material of higher resistivity), beneath the depth of investigation of the equipment used. Neither area produced coherent patterns indicative of potential manmade anomalies.

Area V (Fig. 2a)

This area was examined in an attempt to locate part of the crop-mark pattern of sub-circular features recorded in this area, and to sample an area beyond the marks for other manmade features. Again, little clear-cut evidence was revealed and the detailed plot is not presented. However, a correlation was noted between areas of higher resistivity and the locations of two of the sub-circular cropmarks (Anomaly A6) which were confirmed in Trench III. An area of low resistivity (A7) may be recognised as a linear anomaly aligned west-east, surrounded by two areas of higher resistivity.

Conclusions

Considerable differences were noted in the depth and composition of the underlying gravel within the evaluation trenches. Because of this variation and the indistinct outline of the features it is difficult to define any geophysical anomaly with certainty as a manmade feature. The variation within natural deposits may also mask smaller, manmade features. The correlation between the circular crop marks and the large area of high resistivity (A6) in Area V should however be noted.

Anomaly A1 in Area I is perhaps the most distinct, and may be a silt-filled linear feature such as a ditch. The high resistivity anomalies such as A2 in Area I and A5 in Area II may possibly be manmade stone walls or paved areas.

## Discussion

The excavated evidence strongly suggests that the archaeological features showing on aerial photographs as crop-marks have been subject to considerable truncation, probably by the plough. Trenches I and II found no evidence of the rectangular enclosure ditches, and the two features that were encountered had been almost completely destroyed. If the cropmarks did represent a ditched enclosure, now destroyed by ploughing, the ditches cannot have been very substantial, perhaps no more than 1.0-1.5m deep. The presence of a sherd of prehistoric pottery and the absence of Romano-British material hints at an Iron Age or earlier date for this enclosure.

Perhaps because the plough damage has been less intense or because they were originally more substantial, the features in Trench III were better preserved. A fair correlation was observed between the crop-marks and the excavated features. However, no clear statement can be made as to the function of these enclosures, as no other evidence of occupation associated with the ditches or their interiors was recovered. It is possible that the northernmost circular enclosure at least, may have been the remains of a double-ditched barrow. The presence of two sherds of pre-Roman pottery and the lack of any Romano-British material suggests a similar prehistoric date for these remains, as for the sub-rectangular enclosure. Although hardly proven by this evaluation, the remains can probably be interpreted as belonging to a pre-historic settlement comprising circular houses and perhaps other enclosures, most likely of Iron Age date.

The generally poor state of preservation of crop-mark features on this site makes a larger scale archaeological response inappropriate. Most of the features associated with crop-mark A have probably been destroyed, including the ditches themselves, although deeper soil to the west suggested by the geophysical survey may have preserved more information here. Similar damage has been done to cropmark B, and good survival of internal features and finds assemblages seems unlikely. The remains of some of the ditches have survived but this survival is probably confined to the larger features. The geophysical survey provides little amplification or enhancement of these results and does not indicate the presence of further extensive manmade features which might require examination.

No records of previous archaeological discoveries or investigations are catalogued for this particular area, although the Trent gravels are the focus for an extensive palimpsest of settlement remains and monuments of prehistoric and early historic date.

## Recommendations

In the light of this evaluation it would appear that some archaeological evidence for prehistoric, probably Iron Age, settlement survives on the gravels in this area. The condition of these remains where assessed, suggests considerable erosion and relatively poor preservation. In these circumstances the following is suggested as an appropriate response to the destructive threat posed by gravel extraction.

1) Examination of the subsoil horizon in the vicinity of the two areas evaluated, after the topsoil strip has taken place preparatory to gravel extraction. It would be desirable to monitor this initial operation archaeologically, perhaps by some direction of the stripping process.

2) Rapid clearance by hand of areas where archaeological features still survive would enable an overall plan to be prepared; this could be combined with limited excavation sampling to confirm sequence, type and dating of the archaeological remains.

3) A non-intensive analysis of the data obtained to produce a summary report relating to the site, the discoveries and their significance.

The employment of a small field team on site for up to 3 weeks should be adequate to carry out the recommended work, providing that this can be accommodated conveniently within the gravel extraction programme. A further modest allocation of resources (1-2 people) should be adequate for the preliminary analysis of results and production of the interim report. Costings for this programme can be provided by BUFAU.


## Acknowledgements

The excavations were commissioned by Douglas Concrete and Aggregates Ltd. and we are grateful to Mr. P. Boosie and the quarry manager Mr. Terry Gibbons for assistance. The field project was carried out by a BUFAU team comprising Jon Cane (supervisor), Iain McCraith, Andy Rutherford, Karen Walford and Martin Lightfoot. The geophysical survey was the responsibility of Alex Jones, with the assistance of Said al Farsi and Ibrahim Kalali, and the report has been edited by Peter Leach. Thanks are also due to Bob Meeson (Staffordshire County Planning Department) for advice and to the tenant farmer, Mr. Colin Hoult for his co-operation and interest.


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Alex Jones
June 1989

# NEWBOLD *Archaeological Evaluation 1989*

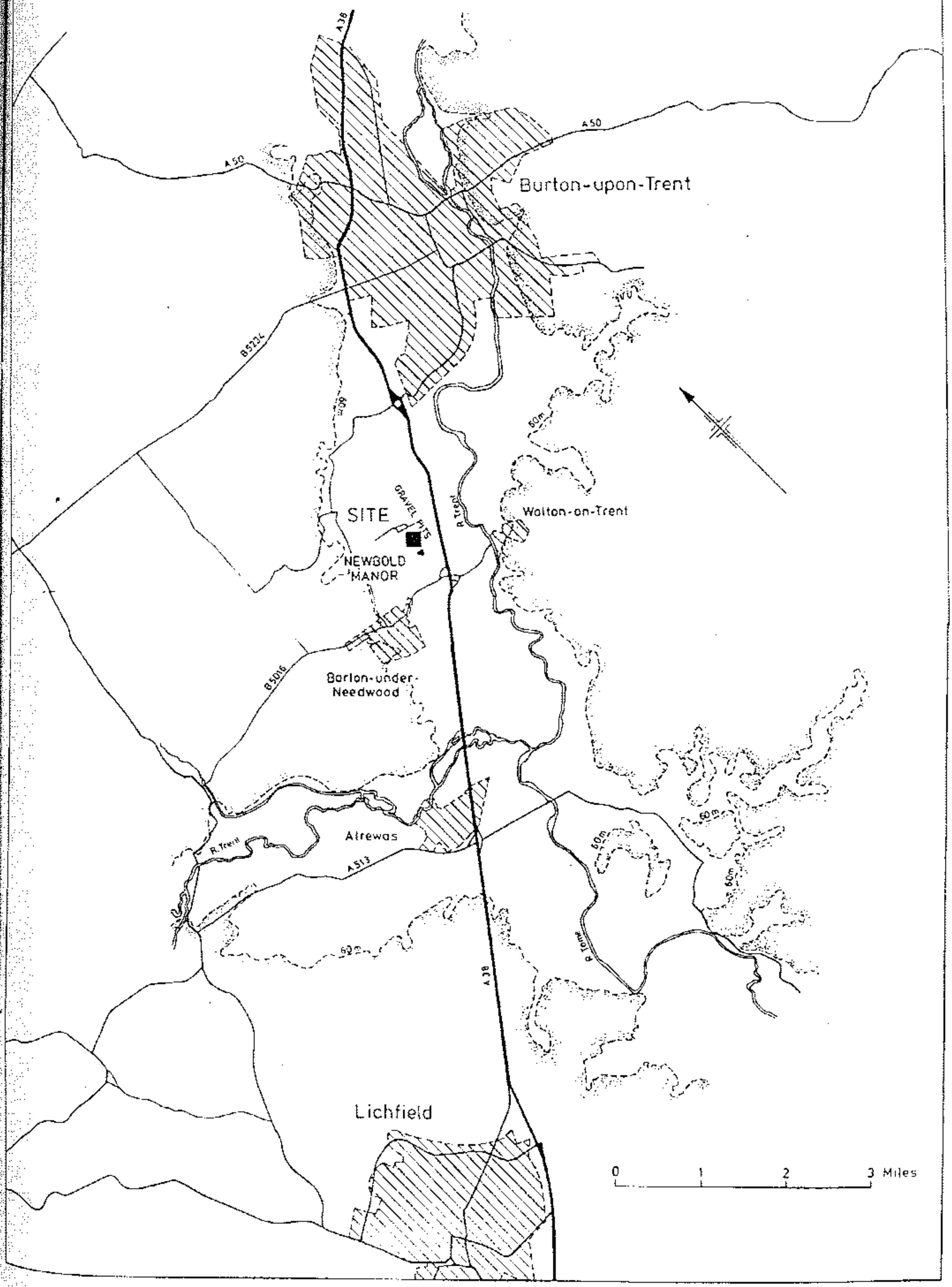


Fig. 1

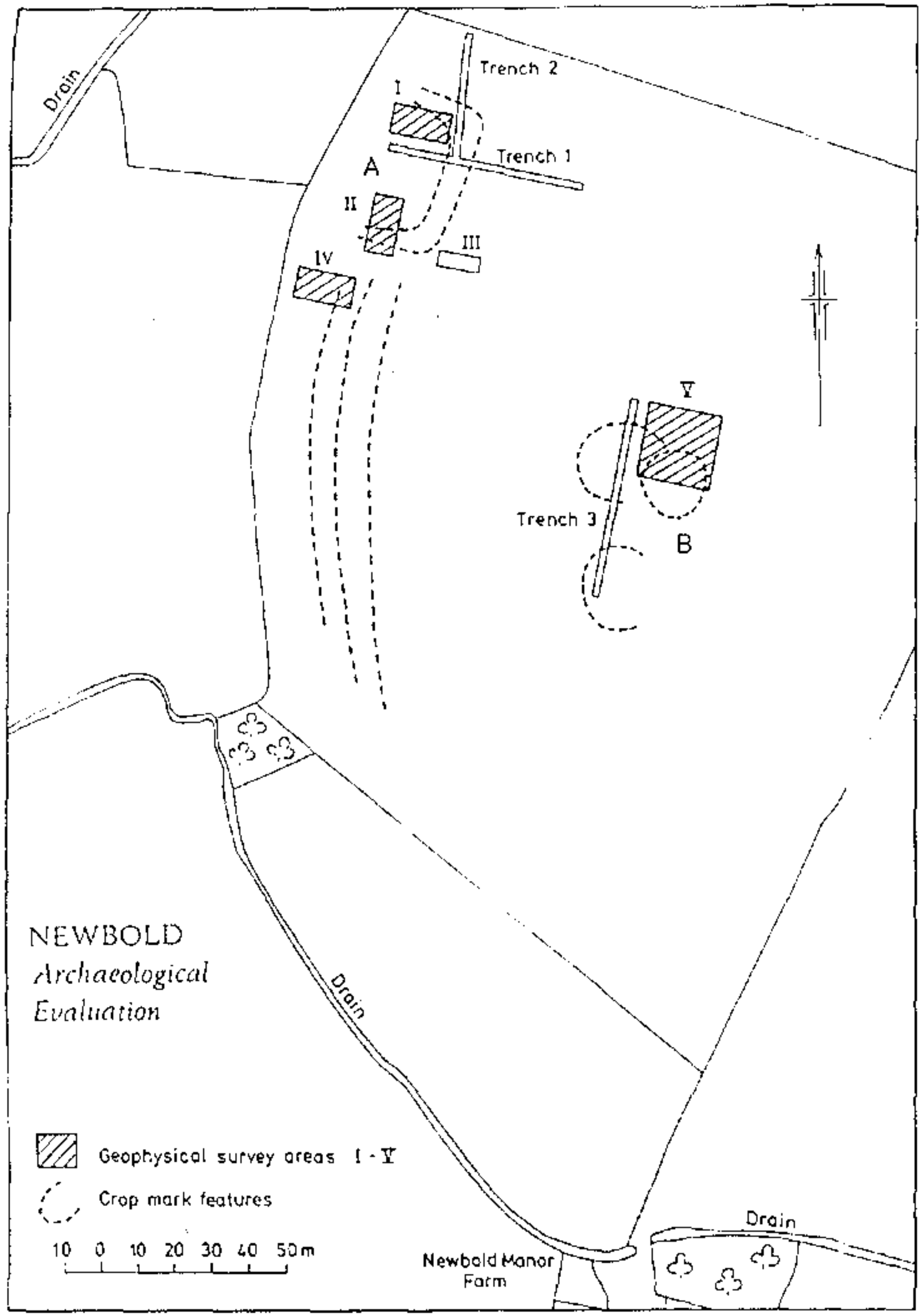
Drain
Trench 2
I
Trench 1
A
II
III
IV
V
Trench 3
B
Drain
NEWBOLD
Archaeological
Evaluation
Geophysical survey areas I - V
Crop mark features
10 0 10 20 30 40 50m
Newbold Manor
Farm
Drain

Fig. 2a

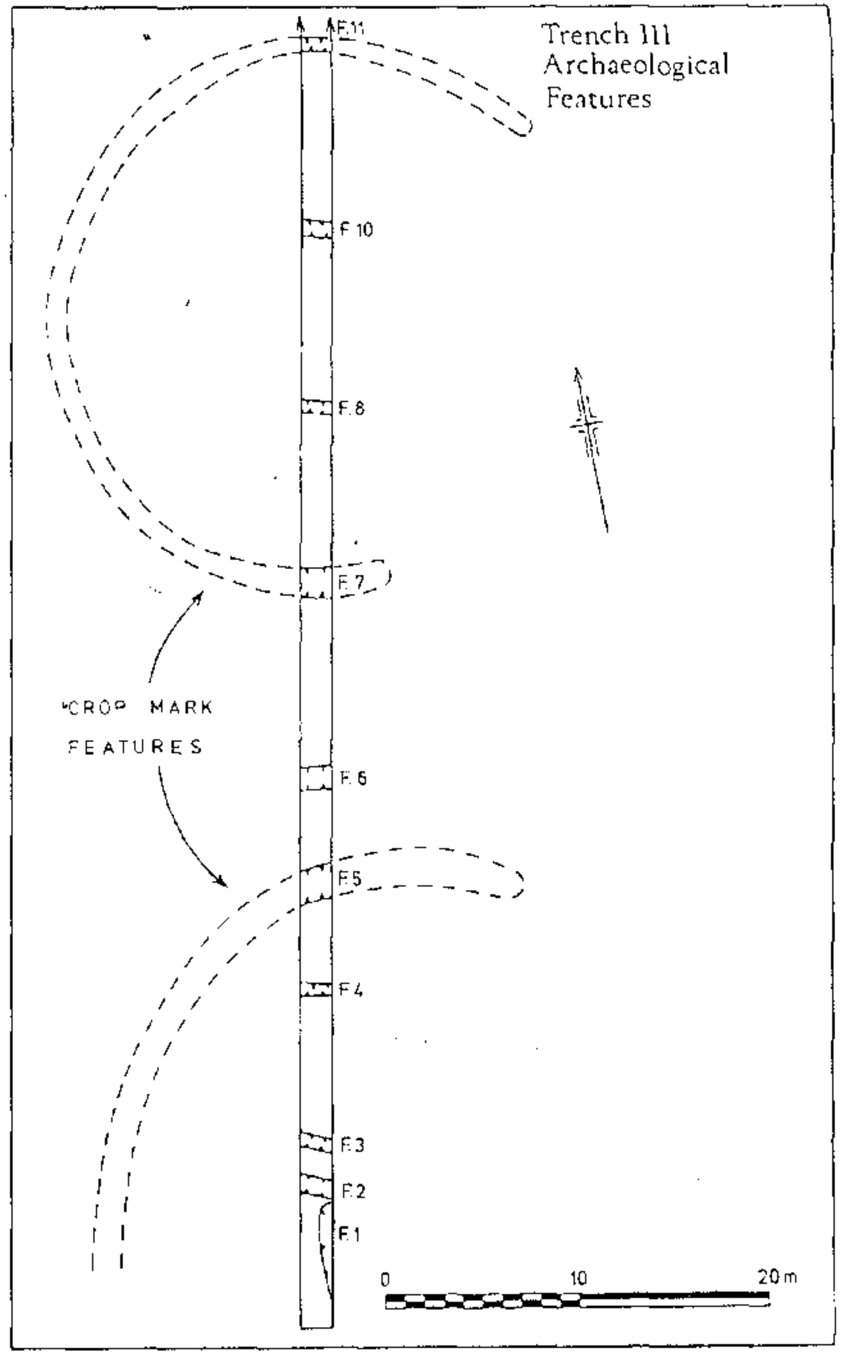
Trench III
Archaeological
Features
F.11
F.10
F.8
F.7
CROP MARK
FEATURES
F.6
F.5
F.4
F.3
F.2
F.1
0
10
20m

Fig.2b

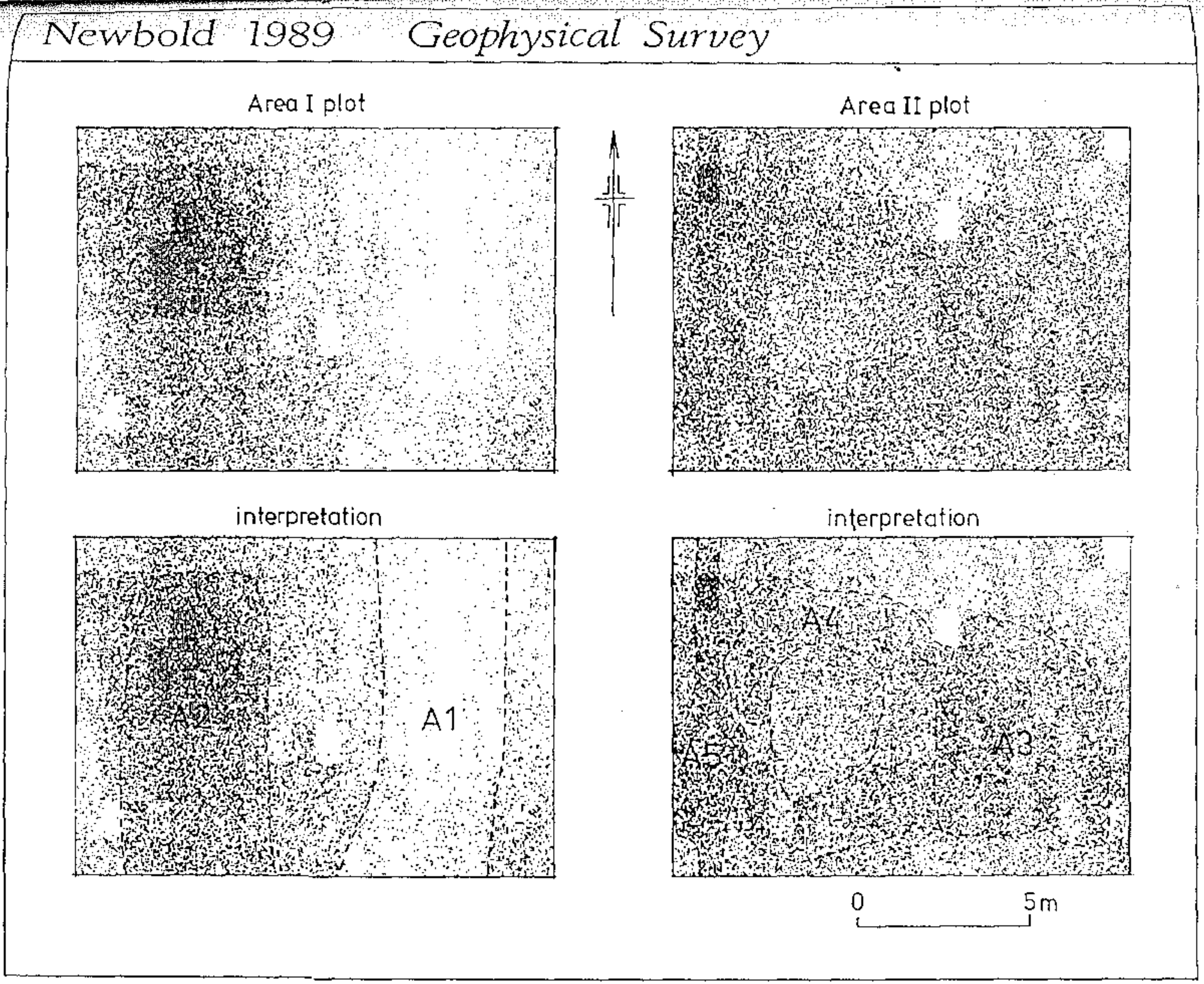
Newbold 1989 Geophysical Survey
Area I plot
Area II plot
interpretation
interpretation
A1
A2
A3
A4
A5
0
5m

Fig. 3