Springfield Lyons, Essex. Report on geophysical survey, 1982. Report no. 16/82

The magnetometer survey here covered the open ground next to spoil heaps to the east of the excavation and the main entrance causeway of the Late Bronze Age enclosure. The purpose of the survey was to test for the presence of features related to the site, and especially any that might be associated with metal-working, the presence of which is strongly suggested by the recovery of clay mould fragments in the adjacent enclosure ditch.

Soil magnetic susceptibility measurements (see below) have very low values with only minor contrasts, and the magnetic response from the site is correspondingly slight. The plan enclosed shows the survey results as plotted using a fluxgate gradiometer and chart recorder. Despite a sensitive recording level, no significant anomalies were located over the survey area:- there are fluctuations in the magnetometer signal, but these may all be related to extraneous soil noise or iron litter. A concentration of such anomalies centred on 110/46 might have an archaeological origin but this does not seem likely.

Scanning with the magnetometer was extended over the remainder of the site and the less accessible spaces between fence and spoil heaps, with similar negative results. An anomaly of 12 nanotesla near the edge of the plotted survey, centred at approximately 88/56, indicating a feature about 0.5 m in diameter, was the only significant find and although possibly spurious it might be worth investigation.

Topsoil magnetic susceptibility measurements are able to locate areas of magnetic enhancement in the soil where features may not remain. In the hope of locating evidence for related industrial activity, susceptibility measurements were therefore made at 1.0 m intervals over an area 15 x 32 m close to the find-spot of the clay crucible fragments. The values are illustrated on the plan in graphical form, similar to that used for the magnetometer traces, and show an apparently random variation between extremes of 4 and 36 x 10^{-8} SI Units/Kg. Most of the values are at the lower end of this range, and the higher readings do not form any recognizably significant pattern. Additional susceptibility readings were taken on the subsoil and ditch fill, and both of these also gave low values (natural from enclosure causeway: 12.6 SI; enclosure ditch fill: 8.5 SI). Only one sample showed some magnetic enhancenemt (feature 2900, fill 3502: 25.6 SI), but both the ditch and internal features were found to be undetectable, or nearly so, on scanning with the magnetometer.

Conclusions:

The survey results are disappointing for a site which has seen archaeological activity between at least the Bronze Age and Saxon periods, but, as is sometimes the case on sand and gravel soils, there is little contrast in magnetic properties between fill and natural subsoil, and surveys using magnetometer or magnetic susceptibility measurement are unlikely to be productive. Some features may show sufficient contrast to be detectable, but nothing of conspicuous significance, industrial or otherwise, was found in the limited areas surveyed.

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SPRINGFIELD LYONS, ESSEX

Geophysical survey, 1982

1 : 200

N

magnetometer survey

spoil heap

EXCAVATION

8 nT/cm.

spoil heap

topsoil magnetic susceptibility survey

12 SI Units/cm.

80
70
60
50
40
30
20
10
0

40 50 60 70 80 90 100 110 120

A. M. LAB.