

The background of the entire cover is a vibrant, abstract painting of a landscape from an aerial perspective. The land is divided into numerous irregular, colorful patches of yellow, orange, red, green, and blue, suggesting different types of terrain or vegetation. A small church with a dark, pointed steeple is visible in the middle-left area. In the upper right, a biplane is depicted in flight against a cloudy sky. The overall style is impressionistic and expressive.

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Hommage à Roger AGACHE
pour 35 ans de prospections aériennes dans le Nord de la France

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ROYAL COMMISSION ON THE HISTORICAL
MONUMENTS OF ENGLAND

HERTFORDSHIRE. A PILOT PROJECT FOR
THE NATIONAL MAPPING PROGRAMME

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Résumé

Entre 1990 et 1992, le Service de photographies aériennes de la Commission royale des Monuments historiques d'Angleterre examinait les photographies aériennes obliques prises sur le comté d'Hertfordshire (1 600 km²). Les informations archéologiques ont été cartographiées à l'échelle du 1/10 000e et un enregistrement informatique des sites archéologiques a été créé. Les bases de données, MORPH, contiennent 2 639 relevés relatifs aux sites de la période néolithique au vingtième siècle.

Abstract

Between 1990 and 1992, the RCHME's Air Photography Unit examined oblique aerial photographs for the county of Hertfordshire (1 600 km²). The archaeological information was mapped at a scale of 1/10,000 and a computerised record of archaeological sites was created. This database, MORPH, contains 2,639 records relating to sites from Neolithic period to the twentieth century.

Zusammenfassung

Zwischen 1990 und 1992 hat der luftphotographische Dienst der königlichen Kommission historischer Denkmäler von England Luftaufnahmen untersucht, die vom Herzogtum Hertfordshire aufgenommen wurden (1 600 km²). Die archäologischen Informationen wurden kartographisch im Masstab 1 : 10 000 erfasst und die Datenbasis MORPH erstellt, die 2 639 Verzeichnisse enthält, die dem Zeitraum von Neolithikum bis zum 20. Jahrhundert entsprechen.

BACKGROUND

Hertfordshire is a county immediately to the north of London with an area of approximately 160,000 ha (1,600 km²; fig. 1). The mapping of the crop-mark archaeology of the county was one of the RCHME pilot projects jointly funded by English Heritage, the government body with responsibility for funding much archaeological work in England, and for the statutory protection of archaeological sites. In order to maximise the potential of newly discovered information a complete re-transcription of all cropmark archaeology

was undertaken at a scale of 1/10,000 between 1990 and 1992. The re-transcription used all available oblique aerial photographs for the county held either by the National Library of Air Photographs (NLAP) in Swindon or by the Cambridge University Committee for Aerial Photography (CUCAP). Due to time constraints oblique photographs from more local sources were not sought out or examined. Hertfordshire differs from current National Mapping Programme projects now under way in that upstanding earthworks were omitted from the transcriptions and vertical photographs were not routinely consulted.

Once transcription had been completed all the sites mapped were recorded on a computerised database using the MORPH program commissioned and designed by the Air Photography Unit

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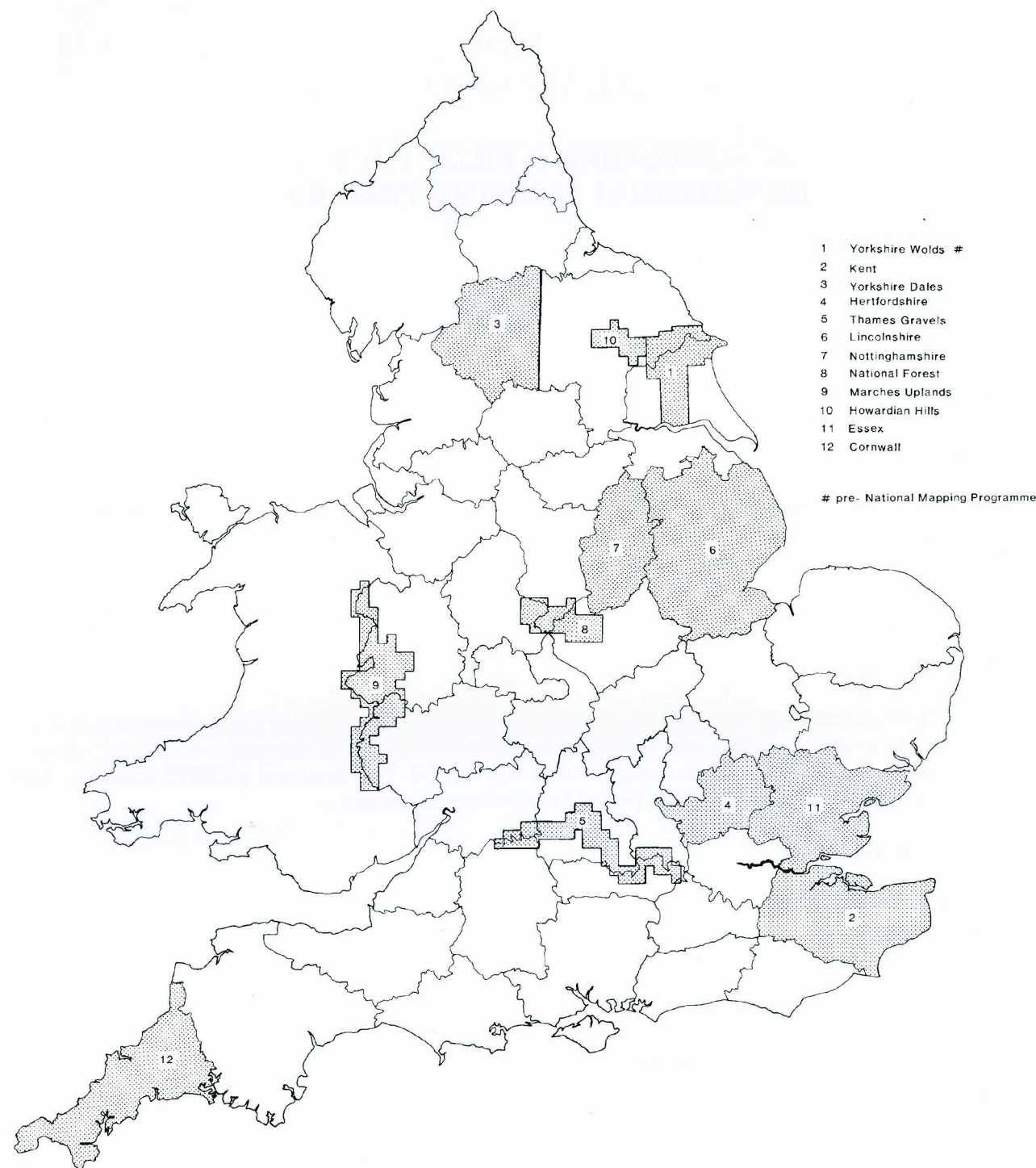


Fig. 1 : NMP Projects completed or in progress in 1993/4.

(EDIS *et al.* 1989). This program allows for the systematic description of archaeological sites and for their morphological characteristics to be recorded. Analysis of the sites in terms of shape and size characteristics, and the production of computer-generated distribution maps, forms part of final report. Throughout the remainder of this article the term "cropmark" should be taken to be inclusive of both crop and soil marks.

The MORPH database for Hertfordshire contains information relating to 2639 sites within

328 spatially related complexes. Cropmarks occur throughout much of the county (see fig. 2), but the highest density of recorded sites lies on the chalk ridge in the north-east. The concentration of sites along this ridge can partly be explained in terms both of the responsible soils overlying the chalk and of the disproportionate attention to which the area has been subjected in terms of reconnaissance, because of a known occurrence of crop-marks. The distribution of cropmark sites throughout the county and indeed the whole country is biased. It is affected by five factors :

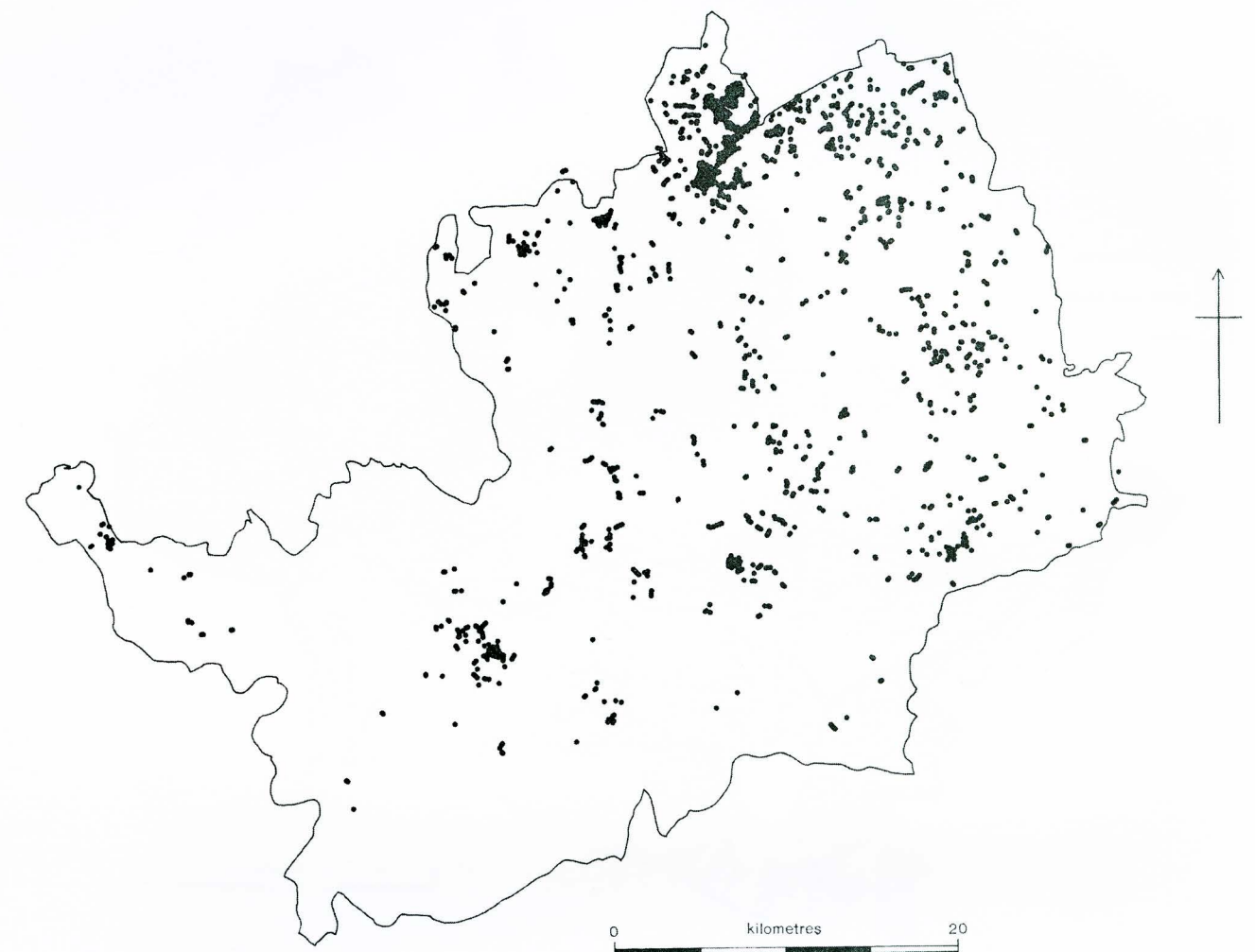


Fig. 2 : the total distribution of crop marks in Hertfordshire.

- A) - the differential land use over the past 10000 years;
- B) - the variation in underlying geology and the corresponding soils;
- C) - the variation in the levels of reconnaissance;
- D) - the density of urban areas within the county;
- E) - restricted airspace around commercial airfields.

With a population approaching 1 million (preliminary 1991 Census figures) there are densely-settled urban areas in much of Hertfordshire. As would be expected of a county immediately to the north of London these are concentrated in the south and south-west but are also to be found in other parts of the county. The total area designated as urban is 22 %. Other areas that do not produce cropmarks include woodland (7 % of the total county area), and orchards and leisure areas (6 % of the total county area).

The geology and topography of Hertfordshire are varied. In the north-east of the county a chalk ridge, rises to a maximum height above sea level of 168 m, whilst in the north-west a similar ridge of chalky till and plateau drift terrain rises to a maxi-

um height of 244 m. These two areas together form an eastwards extension of the Chiltern Hills. To the south of the chalk there are deposits of London Clay. As a result there is a corresponding variability in soil types (see fig. 3). Grey rendzinas are predominant on the north-eastern chalk ridge, whilst in the east calcareous pelosols are the most common soil types. There are deposits of typical argillic brown earths in the valleys of the rivers Rib and Ash. It is on these three soil types that crop marks occur in the highest densities. The stagnogleyic soils in southern Hertfordshire are largely unproductive of cropmarks.

Figure 2 shows a distribution of all cropmarks in Hertfordshire. The concentration of reconnaissance on the north and east, in the area of the chalk ridge is clear, and this biased distribution is likely to continue until a systematic aerial archaeological survey is undertaken for the county. The distribution of crop-marks is also affected by the urbanisation of the county and the restricted air space of Luton and Stansted airports; especially in the north-west over an area of potentially responsive soils.

RESULTS

After initial transcription and recording of the 88 maps, at 1/10,000 scale (each map covers 25 km²), data analysis was undertaken. This followed two basic approaches:

1° - sites falling within the currently identified range of monument classes were grouped together on the basis of their interpretation and were then considered in terms of their morphological characteristics;

2° - sites falling outside this range were grouped together on the basis of their morphological characteristics wherever possible, into what may represent new monument classes. The structure of the database and the fact that identical characteristics were recorded for each site within any given type meant that in each case it was very easy to compare like with like. Possible dates or functions for an entire group of sites were suggested when one of the sites within the group had been subjected to more detailed investigation such as field walking, geophysical survey or excavation.

Figure 4 shows the relative numbers of MORPH site types in Hertfordshire. From this it will be seen that linear features and enclosures are by far the commonest site types plotted. Sites from all periods from the Neolithic to Post Medieval (up to 1945) have been transcribed.

Neolithic long barrows in Hertfordshire provide a good example of the techniques used. Prior to the project there were seven crop-mark sites interpreted as long barrows in the county: the database was then searched for sites with morphological similarities to long barrows. The criteria used by Loveday and Petchey were adopted, namely, "Enclosures with a length to breadth ratio greater than 2:1, and wider than 15 m" (LOVEDAY & PETCHEY 1982, 17). The search of the database produced 42 sites fulfilling these criteria and the crop-mark plots of each of these were examined visually. As a result all but two were discarded. These two were also thought to be long barrows and the database was amended accordingly, giving a new total of nine crop-mark long barrows in Hertfordshire. Five of the sites initially interpreted as long barrows are oriented with their long axis east to west. Orientation was therefore one of the discriminating criteria used when visually exami-

ning the 42 potential long barrows. The long axes of the two sites identified after the morphological search are also oriented east to west. Three of the long barrows identified at the initial interpretation stage, and interpreted as such by the Hertfordshire County Council Sites and Monuments Record (SMR) and/or the Royal Commission's National Archaeological Record (NAR), do not actually fulfil the 2:1 length to breadth criterion of Loveday & Petchey (1982). This suggests that further work is needed on the morphological characteristics of this well known class of monuments.

For many of the enclosures it was not possible to suggest a period or probable function from examination of cropmark evidence alone. For example, six square enclosures form a morphologically similar group. Each has an internal area of 1 600 m². The majority have angled corners, all have no internal features and all are of unknown date. They may have had a similar function which has reflected itself in their morphological characteristics and they can therefore be targeted for further investigation. In some cases however it was possible to be more specific about period and function. This resulted when one or more of the enclosures within the group had been the subject of fieldwalking, excavation or other forms of more detailed investigation. Interrogation of the database produced a group of five polygonal enclosures. All have angled corners and five sides, and three of the five have internal areas between 2,250 m² and 3,50 m². The other two enclosures are much larger in area and they have been grouped with the three other pentagonal enclosures on the basis of their similar morphological characteristics and visual appearance. One of the five sites is within the former precincts of St Albans Abbey and has yielded Belgic pottery and other Iron Age material. It was therefore possible to suggest each of the five enclosures may be Iron Age (see fig. 5).

One of the most intriguing groups of sites to emerge from the analysis consists of what have been interpreted as the remains of 46 ploughed-out pillow mounds (late medieval mounds constructed as rabbit warrens; fig. 6). All are concentrated in the north of the county, on the chalk ridge. In the majority of cases, they take the form of two parallel ditches, between 5 m and 30 m in length. Over half (63 %) are between 8 m and 12 m long; the four longest sites consist of

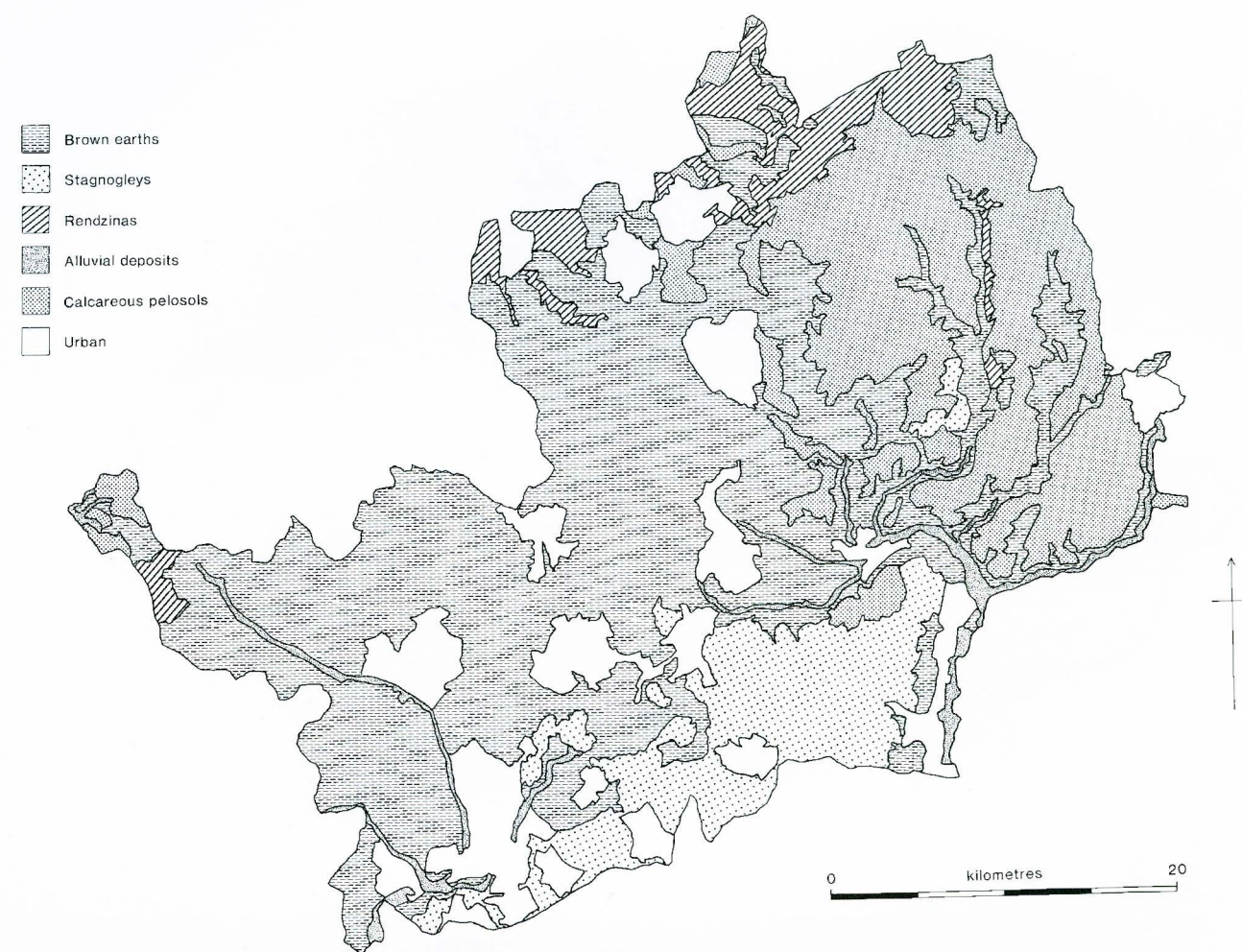
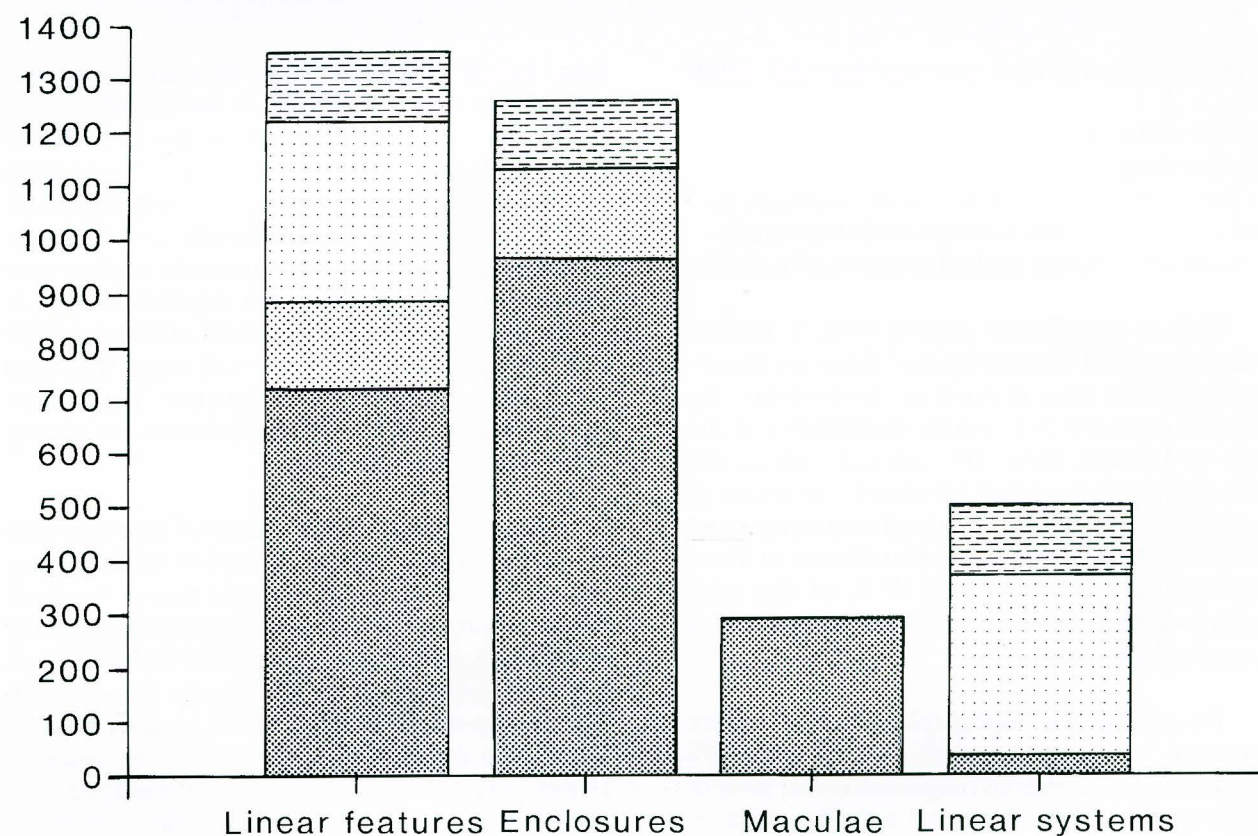


Fig. 3 : the soils of Hertfordshire.



192 Fig. 4 : the relative numbers of MORPH site types in Hertfordshire.

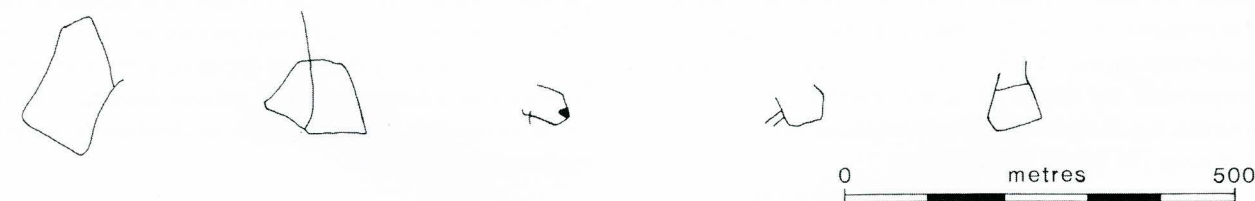


Fig. 5 : a group of five pentagonal enclosures which possibly date from the Iron Age.



Fig. 6 : **cropmarks** of possible pillow mounds and a multiple linear ditch, Ashwell, Hertfordshire. (BPL 56 Cambridge University Collection of Air Photographs : copyright reserved).

two sets of closely spaced parallel ditches. A tentative interpretation is that they are pillow mounds. With the exception of 11 of the sites, they all occur in groups of four or more, which increases the likelihood of this interpretation being correct. Pillow mounds usually occur in groups. Of the sites in these groups the ditches of the vast majority run across the contours; this can be compared with the upstanding pillow mounds at Ditsworthy Warren in Devon (BERESFORD and ST JOSEPH 1958, 72). Over half of the total number of sites identified lie in two groups on a south-west facing slope. Their dimensions are also comparable to those of some earthwork pillow mounds, e.g. Sulgrave in Northamptonshire which is 12 m long (RCHME 1982, 141).

Although it might perhaps be expected that they would be more widespread, pillow mounds occur at only a limited number of localities. A modern agricultural origin for them can be discounted as most have been photographed as crop marks over several years. With the exception of the largest group, most are in the proximity of round barrows. One of the single sites lies immediately to the north of a double-ditched long barrow inside which two parallel ditches are just discernible. It is possible that morphologically similar crop marks are being produced by two very different types of site, or that the provisional interpretation of pillow mounds needs to be reviewed. This site type undoubtedly merits further investigation.

CONCLUSIONS

Copies of the transcriptions produced were sent to both English Heritage and to Hertfordshire County Council. This allowed the cropmark archaeology to be included in the development control process at a local government level via the County Council, and also to be included in the national research and protection programmes of English Heritage. A written report summarising the cropmark archaeology in Hertfordshire was produced to accompany the transcriptions (FENNER, 1992). Included in this report are recommendations for further work. These are most important as it is not

intended that the report be regarded as the definitive statement about the archaeology of Hertfordshire. It is merely the foundation for further research from the point of view of both aerial photographic work and other forms of investigation e.g. documentary research, fieldwalking, further aerial surveys and small-scale excavation.

Of the 2,639 sites transcribed and entered to the MORPH database, 1207 are "new" in that they have not previously been recorded by the NMR or by the SMR. As such they form a major corpus of new data to be synthesised and examined by others in the study of the archaeology of Hertfordshire.