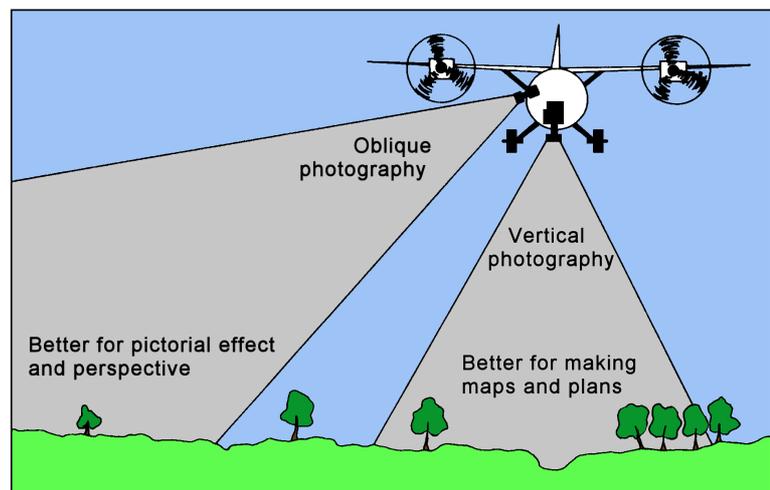


Other forms of landscape investigation on a large scale

Fieldwalking is not the only method of examining the landscape at large for signs of human activity. Aerial photography has become an invaluable tool for examining both wide areas of landscape and small individual features within the larger area. Beginning with balloon flights around the time of the First World War, then with open biplanes in the 1920's and the RAF and Luftwaffe during the Second World War, almost all of Britain has now been systematically covered. Agencies such as the Royal Commission and Cambridge University Committee for Aerial Photography commissioned much of the early work but this has been added to by many other public and private organisations. Finally, satellite-based internet resources like Google Earth have made it much more available to the general public.

How is it carried out?

Non-space photography is carried out using cameras mounted in fixed-wing aeroplanes, helicopters and even kites and model aircraft. Pictures are taken vertically (usually with fixed cameras flown in straight lines for survey purposes) or obliquely (often with hand held cameras directed at individual targets of interest) as shown here.



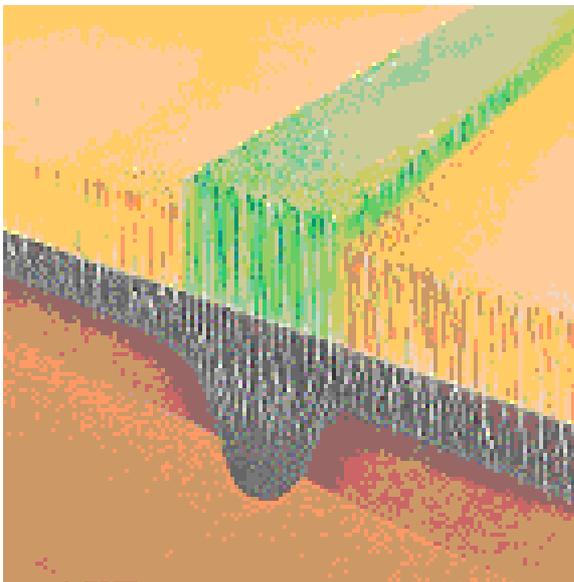
The different types of aerial photography used for archaeological purposes (modified from Renfrew & Bahn, 2004).

When is it carried out?

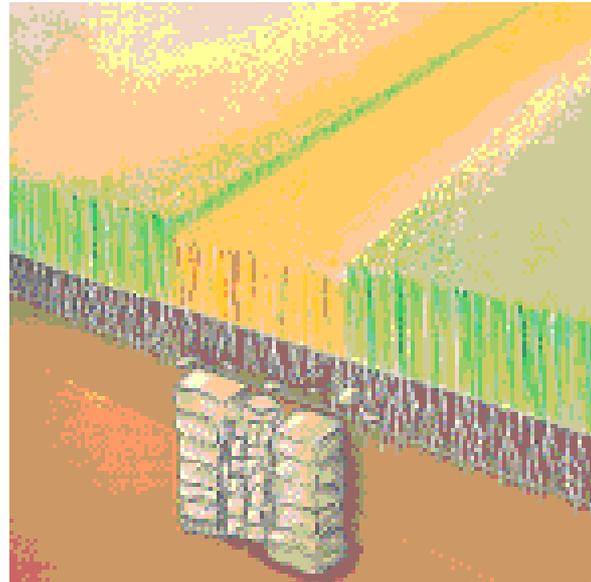
Aerial photography can be carried out at any time during the year. For example frost and light snow can be used to show up earthworks very well but the prime period is during the mid/late summer and autumn. It is during this period that cropmarks and parchmarks are generally formed and they have great value for showing what archaeological features may lie under the topsoil.

What are cropmarks?

We talk about positive cropmarks (shown in Fig. A below) or negative cropmarks (in Fig. B below) depending on whether the crop height over the sunken features is more (i.e. positive) or less (i.e. negative) than the average crop height in the general surroundings. In principle, positive cropmarks form where a feature is dug into the original land surface and subsequently re-filled over time – for example: ditches, beam slot house foundations, post holes and pits – that hold water and nutrients. Negative cropmarks form where solid features were constructed – for example: brick and stone masonry, cobbled floors and roads – that shed water and hold few nutrients.



(A) Positive cropmark (Mark Gojda)



(B) Negative cropmark (Mark Gojda)

Cropmarks reveal themselves best with cereal crops like barley (rye), wheat and oats where the longer period of green growth and taller crop of the positive cropmarks can be readily seen (as shown below at the Bradford Abbas Roman camp, here the external and internal ditches show as bright green features while the paved road through the camp shows as the horizontal parchmark from left to right, near central). In addition, well-drained soils (such as sands and chalky soils) show these marks better than poorly drained clay soils where differential growth is less.

Parch marks are a special case of negative cropmarks but they occur as brown marks on grass-covered surfaces (like meadows and pastureland or gardens) due to thin soil thickness and very dry weather conditions. Years such as 1975 – 76, 1994 – 5 and more recently in 2010 were especially good for producing parch marks.



Roman camp at Bradford Abbas, Dorset revealed in a sun parched barley crop June 2010. (English Heritage)

Examples of local aerial photographs

(1) The example shown below is an oblique view showing the cropmarks from a square enclosure near the Roman pottery kilns at Horningsea.



*(1) Roman enclosure (shown in centre), Horningsea, Cambs
CUCAP CDO 48, 28/07/1977 Copyright reserved Cambridge
University Collection of Air photographs*

Subsequent fieldwalking of this site found a heavy concentration of Roman domestic pottery (including Samian, Nene Valley and local greywares plus mortaria) together with kiln furniture and large Horningsea storage jars made on the adjacent site.

(2) This vertical view of a site at Landbeach shows the complex pattern of enclosures, trackways and house circles. Subsequent excavation revealed the occupation on the site covered the Iron Age and Roman periods.



(2) Vertical photograph of a complex site at Landbeach, showing enclosures, track ways and field boundaries.

CUCAP K17 AL 132, 7/06/1976. Copyright reserved Cambridge University Collection of Air photographs

(3) An example of parchmarks visible at ground level is shown in the photograph below. These appeared during the dry summer of 2010 near to the Home Farm site at Wimpole Hall.



(3) Parchmarks due to buried brick walls at Home Farm, Wimpole taken during the excellent summer of 2010. (CAFG)

Here two parallel lines run horizontally through the picture while a vertical line runs up the right side of the photograph. Subsequent excavations by CAFG showed them to mark the positions of the brick walls of a rectangular, single room depth building shown on 17th and 18th C maps.

References

Godja, M., <http://sparta.zcu.cz/UsersDB/Learning/airadb.nsf>

Renfrew, C and Bahn, P. 2004, *Archaeology: Theories, Methods and Practice*, Thames and Hudson, p87.