

AIR PHOTOGRAPHY AND ARCHAEOLOGY IN BRITAIN; RECENT RESULTS *

by J. K. S. ST JOSEPH

Committee for Aerial Photography, Cambridge, England

Abstract For the last twenty years a series of annual programmes of aerial reconnaissance now sponsored by the Committee for Aerial Photography of the University of Cambridge, has ranged widely over Britain, being planned to meet the need of teaching and research. These have established that, in archaeology, aerial photography is a means of research of the greatest value, furnishing results that cannot be obtained by any other means. These surveys have brought fresh understanding to sites already known and have revealed many thousands of hitherto unknown sites belonging to different periods of archaeology.

Moreover, under favourable conditions, aerial photography may give so detailed a picture of buried remains as to disclose not only their existence but also their age and character. Thus, abundant new knowledge is becoming available about many different types of archaeological monuments including, for example, the "causewayed-camps", *cursus* and religious sites or "henges" of the Neolithic and Beaker periods, Bronze Age barrows, hill-forts and settlements of the Iron Age, remains of both military and civil zones of Roman Britain in all their wide variety, besides the deserted towns and villages, the fortifications and religious houses of the Middle Ages.

Résumé Pendant les vingt dernières années une série de programmes annuels de reconnaissance aérienne (dependant maintenant du Comité de Photographie Aérienne de l'Université de Cambridge) a parcouru une grande partie de la Grande-Bretagne. Ces programmes ont été conçus pour satisfaire aux besoins de l'enseignement et des recherches. Ces dernières ont établi que la photographie aérienne est en archéologie un moyen de recherche de la plus grande valeur, donnant des résultats impossibles à obtenir autrement. Ces relevés ont entraîné une compréhension nouvelle de sites déjà connus: ils ont découvert des milliers de sites, jusqu'ici inconnus appartenant à des époques archéologiques différents.

D'ailleurs, la photographie aérienne peut, sous des conditions favorables, faire voir tant de détails des vestiges ensevelis qu'on peut en déduire non seulement leur existence mais encore leur âge et leur caractère. De cette façon on dispose en abondance, de connaissances nouvelles de plusieurs différents types de monuments archéologiques, dont les suivants constituent quelques exemples: les "causewayed-camps", les *cursus*, les sites religieux ou "henges" de l'âge des "beakers", les tumuli de l'âge de Bronze, les *oppida* et les villages de l'âge de Fer, les vestiges des zones militaires et civils de la Bretagne romaine dans toute leur grande variété, sans parler des villes et villages abandonnés, des fortifications et des abbayes du Moyen Age.

Zusammenfassung Seit den letzten 20 Jahren umfasste eine Serie jährlicher Programme für Luftaufklärungen, welche jetzt unter den Auspizien des Komitees für Luftbildwesen der Universität Cambridge stehen, weite Gebiete Grossbritanniens, um den Bedürfnissen des Lehrfaches und der Forschung zu begegnen. Dies hat bewiesen, dass, in der Archäologie, Luftbilder ein äusserst wertvolles Hilfsmittel für die Forschung darstellt und Ergebnisse liefert, welche in keiner anderen Weise erreicht werden können. Diese Aufklärungsarbeit hat ein besseres Verständnis bereits bekannter Orte ermöglicht und viele Tausende bisher unbekannter Lokalitäten verschiedener archäologischer Perioden ans Licht gebracht.

Überdies können Luftbilder, unter günstigen Umständen, ein so deutliches Bild der begrabenen Überreste liefern, sodass sie nicht nur ihr Bestehen, sondern auch ihr Alter und

* The editor regrets that he did not have Dr. St Joseph's complete text. A summarized version is therefore given instead.

ihren Charakter verraten. Somit werden umfangreiche neue Erkenntnisse verschiedener Arten archäologischer Denkmale gesammelt, wie z.B. "Chaussée-Lager", *Cursus* und Sakral-stätten oder "henges" der neolithischen und Beaker-Perioden, Bronzezeit-Hünengräber, Hügel-Befestigungen und Niederlassung-en der Eisenzeit, Reste militärischer und ziviler Zonen des römischen Britannien in ihrer grossen Buntheit, sowie die verlassen Städte und Dörfer, die Befestigungen und Sakral-bauten des Mittelalters.

Air photographs disclose familiar landscapes from an unfamiliar point of view. In the bird's-eye view provided by an aircraft the pattern of a countryside appears spread out like a map, and the dimension of height becomes of less apparent importance. The pattern includes major natural features, like rivers and rock-formations, and minor man-made details resulting from land utilization and human settlement. Much of the value of air photographs arises from the fact that they are capable of showing, often in the finest detail, features of a landscape which maps do not record. A good air photograph will show not only the present state of a landscape, but many stages of its long development by nature or man. The value of this to geographers and geologists has long been known, but the value of air photographs for the study of antiquity is just as great, because many aspects of human history can be explored from the air more easily than in any other way.

The whole study of antiquity gains from the application of air photography to its problems. The geographical reasons for the choice of historic sites can be presented and displayed in air photographs in comprehensive views unobtainable on the ground, and there is no better way of demonstrating the control imposed by geography upon human affairs. The growth of towns and villages as reflected in their plans can be studied in air photographs better than in maps or ground views. Further, in countries long occupied by man, the structures representing his earlier activities have become abandoned, or forgotten, or obliterated in later ages.

When these remains comprise substantial works in earth or stone, such as medieval castles or abbeys, visible features may leave little doubt of their nature and purpose: yet the structural character of such buildings and their relationship to their surroundings can be demonstrated from the air in a comprehensive fashion unattainable at similarly close quarters on the ground. The sites are known of villages existing in the eleventh century, but now extinct. Sometimes they are still plain to see, but the slight mounds and hollows which mark them are best comprehended from air photographs. In earlier epochs, the visible earthworks of prehistoric times or of the Roman period and the Dark Ages are often difficult to interpret. Air photography is capable of affording a better understanding of these and of discovering others: it can throw unknown earthworks into visible relationship with other remains and so enable them to be classified and interpreted.

There are, however, innumerable smaller works of which no surface trace now remains. Ever since primitive man started to dig foundations for buildings in timber or stone, to make holes for storage or shelter, and to till fields, he has left his mark upon the earth's surface, and continues to do so at an increasing rate.

Such small features as the post-holes of his buildings, or the ditches round the fields he tilled, provide most valuable and informative evidence about the life of prehistoric communities. Hitherto, the recovery of such details has been largely due to chance, as when some stray find revealed the position of an ancient settlement. It is, however, a fact that once the land-surface has been disturbed by whatever agency, the effect of that disturbance marks it practically for ever. Even if ditches, pits, trenches and holes are filled up and obliterated, their filling never attains the same compactness as undisturbed subsoil, and will ever after tend to affect the density or colour of vegetation growing over them. Thus, differences in vegetation, best seen in bird's-eye view, reproduce the form or plan of features long lost to sight. Much here depends upon the soil, climate and type of growth. The best results are observed in arable land, since certain long-rooted cereals are most sensitive to such differences of soil. The resulting "crop-markings", as they are called, reveal to an air observer, often in great detail, buried remains of which no trace appears on the surface.

The principle is simply stated: its study and application are more complicated. Every site has its own problems and requires careful and repeated observation if it is to be photographed to best advantage. Features still existing in low relief require sidelighting with a low sun. Crop-markings must be watched until the stage of growth is reached revealing the greatest detail. In normal agricultural conditions a suitable crop may be sown in a given field only once every five or six years. Yet the fact remains that for a few months each summer, before harvest-time, the history and prehistory of Britain are displayed in her growing crops. The long succession of human cultures that have swept over these islands, the variety of British soils and the wide extent of arable land combine to make available to an air observer an exceptionally detailed and valuable body of material for the study of man's social development.