AARGnews 1

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Editorial

My original intention was that AARGnews would be a cheaply produced newsletter on matters archaeological and aerial. I hoped it might contain shortish notes, not necessarily formal papers, on current research, problems, thoughts, views and reviews, and other frivolities - plus notice of forthcoming events. Printing would allow for drawings but not photographs, and thus hopefully direct contributors to consider archaeological problems rather than those more relevant to botany.

I hoped that the informality might encourage people working in any facet of the aerial archaeological world to offer contributions of an 'immediate' or 'incomplete' nature. In this issue, my note on Upwell is an example of this as would appear to be the paper by Anne-Marie Martin who leaves us tantalisingly awaiting the results of future work in the air and on the ground. The proposed twice-yearly issues may also facilitate opportunities for debate on such matters as, for example, those that Chris Musson suggests in his 'Chairman's Piece' - in fact if you take up Chris's suggestions we will have a full, lively and interesting second AARGnews.

Many of the contributions in this issue have been commissioned. Some were suggested by my own interests and others were requested in the hope that I could present a picture of the currently active aerial scene, albeit mainly restricted to Britain. Perhaps some of the non-contributors (more tactful than saying lazy or uninvited!) will be able to fill in the gaps in the next issue and that others of you will comment on matters following on from this issue.

While not intending to provide a running bibliography of publications relevant to aerial matters I will be pleased to receive any notes or reviews/comments on books or papers seen by AARG members. The one 'review' included in this issue, while not intending to provoke an international incident, should not be taken as a model for future contributors. I should perhaps also confess to my minimal knowledge of the French language and admit that my comments are based to a large extent on my understanding of the illustrations!

Chris Musson made an inspired comment some months ago to the effect that if I was calling the newsletter AARGnews it ought to have an AARGony Column. I pondered on the dubious pleasures of being 'Aunt Rog' but was unable to think of sufficient spoof (or genuine) problems to fill a page. But on a more serious note isn't this one of the roles which AARGnews, with its six-monthly issues, might successfully fulfil? A beginning is made by Chris Cox who has the courage to admit that she gets air sick (but not while looking through the camera), has tried various remedies and is now asking others with similar problems for their comments. As I see it, this is something of as much relevance to AARGnews as any contributions of a more archaeological nature.
'Chairman's Piece'

Chris Musson

It was some months ago, in the spring, that Rog Palmer suggested he might (while in gainful employment) find the time and resources to edit a Newsletter for members of AARG - a development, if you like, of the cyclostyled notes that Vicky Fenner and Adrian Olivier have produced after our last two annual conferences. Not being one to look a gift horse in the mouth - still less one of Rog Palmer's energy and enthusiasm - I readily agreed, only to find myself listed in his follow-up letter as one of the first contributors, with a Chairman's piece on 'Where next for AARG?' Needless to say, the months have passed, and the portentous words on future destiny have failed to crystallize in the face of a second successive summer of drought. As a result, these notes are being put together amid the wind-swept sand castles and rain-cooled ice creams of the annual family holiday, in the dying days of the summer.

So what I present are some passing thoughts which I hope will strike a chord with fellow members. In this, at least, I may be keeping to Rog's editorial intention for the Newsletter as a fairly informal newsheet in which members can without self-consciousness write specifically for fellow aerial archaeologists. Topical reports, technical developments, new perspectives and contrasting views on contentious issues might be seen as the staple diet of the Newsletter, along with announcements of forthcoming events and comments on matters already completed. (No doubt Rog will contradict me in his Editorial, if he thinks otherwise!).

Where we might run into difficulty - in terms of wider professional and academic duty - is in the presentation of substantive reports on synoptic or analytical studies of aerially-derived evidence. Perhaps this is not an issue yet, but it is certainly one which we should bear in mind - and perhaps debate in future issues of the Newsletter. Aerial Archaeology, created and produced over many years by Derek Edwards, provided a much-needed vehicle for the presentation of aerial evidence at a time when other journals seemed reluctant to carry such material. As members will know from our 1988 conference, Derek Edwards suggested a merger between AARG and Aerial Archaeology, a move which I myself received with enthusiasm at the time. In the event, the initiative raised matters of commitment and committee structure which discussions were unable to resolve, and the proposal was therefore dropped. If we are now on the verge of creating our own 'internal' journal - if only in embryo - one matter which we should address is the way in which we wish to communicate with fellow-professionals in other parts of the archaeological 'world'. Have conditions changed sufficiently over the past decade for us to feel that we can commend a regular place for aerial evidence in the 'traditional' academic journals? Should we, for the benefit of wider integration of aerially-derived ideas, make this our objective anyway, even if it means writing in a way which would be inappropriate if communicating only with fellow aerial archaeologists? Do members want to take this up in future issues of the Newsletter?
Since Rog invited me to muse upon the future role of AARG, I had better try to do so, if only briefly. One view is that we should develop into the aerial equivalent of a full-blown period-society, promoting the interests of aerial archaeology in the quasi-political spheres of funding and national priorities, as well as in the development of academic ideas and the encouragement of discussion or activities of specific interest to those directly involved in aerial archaeology. Another view - and I suspect one which commands wide support amongst our present membership - is that we should keep more strictly to Rowan Whimster's original concept of providing a forum in which aerial archaeologists (of whatever hue) can meet periodically to discuss topics of mutual interest.

To an extent, I feel, the two views are incompatible, or at least difficult to reconcile effectively within a single voluntary organization of necessarily limited membership - we have about 100 members in AARG at the moment, with 50 or so attending our annual conferences. My own inclination - an 'establishment' one, if you like - is to leave the 'political' role to the CBA and its Aerial ARchaeology Committee, every member of which is in any case a member of AARG; in this way, an important aspect of aerial archaeology is dealt with by a nationally recognized body, not beholden to any special-interest group but equipped with adequate funding and administrative support to cope with the necessary committee meetings, working parties and the like. Were the CBA not there, my feeling might be entirely different; but since it is, we are perhaps better off giving support as members of its Aerial Archaeology Committee and injecting ideas through debates of our whole membership at annual conferences. In a sense, political 'theory' and political 'application' might thus proceed side by side, with AARG as the equivalent of the various 'think-tanks' in the wider (narrower?) world of party politics. Again, do members want to present differing views on this in future issues of the Newsletter?

If we want a clue to one way in which AARG might develop, the attendance list and programme for our 1990 conference in York may give some quick guide. With contributions (whether formal or otherwise) from Germany, France, Switzerland, Sweden and Belgium, as well as from all parts of Great Britain and Ireland, we are clearly acting as a focus for international communication within the field of aerial archaeology - something which should surely aim to foster (along with related bodies in Europe and beyond) over the coming years.

Finally, a personal note from one whose greatest thrill in aerial archaeology still comes from the moment of discovery in the air. Certainly, in my own field of operations in Wales, there has been great satisfaction in the continuing advances - in both discovery and interpretation - made by Terry James in the largely-pastoral areas of the south-western peninsular, and in the discovery of significant cropmark evidence in Anglesey and the north-western peninsular of Gwynedd, not least by Mary Aris, an 'independent' flyer in the very best traditions of aerial archaeology in Britain. For myself, the greatest satisfaction has come in continuing to fill out the 'aerial landscape' in already well-worked areas of the central Borderland, and in providing
the aerial evidence to back up discoveries initially (or independently?) made from the ground - a 'new' Roman fort found just across the border into England in 1989 proved not only to have been identified already by ground observation but even confirmed by trial excavation! From my last two sorties before leaving the parched Borderland in favour of the beaches of West Wales, the greatest thrill came not from the two or three entirely 'new' hillforts/defended enclosures added to the now- quite-cluttered landscape, but from the half-a-dozen cases where previously speculative sites were changed into certain ones through the recording of unequivocal entrance-gaps in ditches revealed, after ten years or more of observation, in the parched pastureland. So much for 1989 and 1990; 1991, of course, may be an entirely different story!

17 August 1990

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SYMPOSIUM
National Association of Aerial Photographic Libraries

Date: 25 February 1991 (10.00 to 16.30)
Location: Geological Society, London
Subject: British Aerial Photography - Present Uses and Future Potential
Convener: John Henry, Ove Arup & Partners, 13 Fitzroy Street, London W1P 6BQ
        Tel: 071-636-1531 ext 2079

If any AARG members might have a suitable subject for a paper they are invited to contact John Henry.
CBA Aerial Archaeology Committee

The Aerial Archaeology Committee is one of ten specialist committees reporting to the Research Board of the Council for British Archaeology. Its main membership is drawn from regional archaeologists engaged in air-reconnaissance or 'post-reconnaissance' or both throughout Great Britain; it also has representatives (either members or observers) from such bodies as English Heritage, SDD, Cadw, and the English, Scottish and Welsh Royal Commissions. It is hoped to arrange corresponding membership for a representative of DOE (N. Ireland). The Committee meets 2 - 3 times a year.

It is concerned with all aspects of archaeological research, management and conservation which can benefit from the use of air-reconnaissance. Relevant issues include the actual conduct of air-reconnaissance, the technical aspects of photography including the storage of photographic material, the archiving of data derived from air-photographs and their integration with other archaeological records, and the widest application of these techniques in the comprehension and conservation of Britain's archaeological heritage. In each of these fields attention is paid to standards, resources, the perceived needs of British archaeology, the development of techniques, and training. The Committee is particularly concerned to see the results of air-reconnaissance used in the development of a fully integrated approach to study of the historic landscape.

There is obviously a sizeable overlap of interest (as of membership) between the CBA Committee and AARG, and both may justly claim to represent aerial archaeology throughout the United Kingdom. The difference is that the Committee meets several times a year and operates under the auspices of a recognised national archaeological body. It is thus well placed to respond to the initiatives (or the failure to take initiatives) of Government and of national bodies such as English Heritage; to monitor the distribution of grants by the Royal Commissions and others; to negotiate with the Civil Aviation Authority for legitimate concessions to facilitate reconnaissance; and in general to act as a kind of pressure group for aerial archaeology. In practice, there is no conflict of interest or confusion of role between AARG and the Committee, but there is certainly scope for better communication between the Committee and the wider membership of AARG. AARG News now provides the means to achieve this: future issues will carry news of the CBA Committee's current activities.

D.R. Wilson
Chairman, CBA Aerial Archaeology Committee
University of Cambridge, Committee for Aerial Photography

The Cambridge University Collection of Air Photographs should be well known to members of AARG. It contains about 385,000 photographs acquired since 1945 in the course of multi-disciplinary programmes of aerial survey and reconnaissance on behalf of the University. Archaeology has always been well to the fore in this work, and CUCAP is an essential port of call for archaeologists seeking air-photo coverage in addition to the relevant National Monuments Record. The address is as follows:

The Mond Building, Free School Lane, Cambridge, CB2 3RF. The telephone No. of the print library is (0223) 33-4578.

Since 1980 the University has required its Committee for Aerial Photography to cover flying costs from earned income. This has placed greater emphasis on doing work for outside bodies and on the productive use of flying time. Reconnaissance in general, and archaeological reconnaissance in particular, has been significantly reduced, unless specifically funded. Where the funds are available to commission archaeological work (as in the world of developer-funded contract archaeology they increasingly are), we will take on an archaeological project on the same basis as any other. Where they are not we will do the best we can for you, but inevitably the work will have lower priority and only receive working in the relevant area. In either case, we are able to offer vertical surveys with a Wild RC8 survey camera in addition to (or in place of) oblique views taken with a hand-held Hasselblad 70mm camera. This ability to take stereoscopic is unique amongst specialist archaeological air-photographers. For further information phone Group Captain (0223) 334577 or the undersigned on (0223) 334575.

D.R. Wilson
Curator in Aerial Photography
Air Photo Services

Chris Cox and Rog Palmer

While it might seem to be somewhat nepotic for the editor of AARGnews to publish a note on his own freelance partnership, there would have been no hesitation over its inclusion if anyone else had written to offer similar services. Indeed, in these days of developer funding and competitive tendering (which as far as we are aware has not yet been a topic at an AARG conference) it is as relevant to include Air Photo Services as it is to publish David Wilson's note on CUCAP - and, maybe in AARGnews 2, offerings by the Royal Commissions! We imagine, also, that a number of you are likely to be acting as consultants as and when the opportunities arise and this note may prompt notice of these.

Justification over, just what are we offering? Basically a mixture of, or a selection from, air photography, photo interpretation and computer rectified mapping, plus final drawing, archaeological interpretation and commentary. Chris was the last of Derrick Riley's Sheffield MA students (and the only one still in the game) and has, since 1984, accumulated over 300 hours photographic flying - mostly on a freelance or short term contract basis. Her projects included post-reconnaissance interpretation, mapping and documentation and have covered areas in the Midlands and North West of England. Photographic equipment currently includes a motor-driven Bronica (60 x 45mm) to enable stereoscopic obliques to be taken and Pentax LXs for any 35mm work. We have full black and white darkroom facilities and thus are able to offer clients fully confidential short time turn-round from photography via printing to mapping. Rog has looked at a fair number of photographs and reckons to have interpreted and mapped an area in excess of 1.5 million acres - mostly in Wessex and the Cambridgeshire Fens but with excursions into the river gravels and other areas. As well as his current job with the Fenland Project, he finds time to act as an Associate Consultant to the newly formed Cambridge Archaeological Unit and has undertaken other contracts to map various acreages for various bodies.

Our varied backgrounds combine to total thirty years' experience in aspects of archaeological aerial survey and enable us to offer a service which we believe to be unmatched outside the Royal Commissions.

Air Photo Services can be contacted via:

52 Popes Lane, Warboys, Cambs PE17 2RN or, with irregularity, by phoning Chris Cox on (0704) 63290.
Roman Logistic Support Systems along the Lippe River in Westfalia (Federal Republic of Germany (West))

Anne-Marie Martin (Bochum FRG)

1. Introduction

The paper is presented as a practical example of the uses of aerial photography, viz low-level obliques and standard vertical photographs, for overview of geographical areas, map interpretation and archaeological field work in a selected area. The impulse for this research was the participation of the author, together with Dr. Walter Sölter on the initial flights in 1983 for the Province of Westfalia. Although Air Photography Flights had been carried out for the Province of the Rheinland since 1960, no flights had been financed for the Department of the Preservation of Archaeological Monuments (Westfalia) until 1983.

Since the practical application and preparation for air-photography flights was virtually unknown in Westfalia, Walter Sölter and the author were asked to carry out the organization and practical flight planning, as well as photography and clearance, of the photography for field work and publication. (Until 1 July 1990 German nationals were not allowed to take aerial photography without special clearance procedures. The original Prussian law of 1920 was rescinded by the German Parliament effective 1 July 1990). The flights were carried out with Topographic Maps 1 : 50 000, where 'the location of known finds were entered on the maps. The offices of Bielefeld and Münster were hereby represented, however the Office of Olpe was not included in the overflights (lasting until 1989) with the excuse, that the area "is too heavily forested to find sites from the air".

1983 was a 100-year drought year, according to the meteorologists, providing an excellent opportunity to try and discover the "missing links" of the Roman military camps along the Lippe River especially as Walter Sölter was an expert on Roman industry and military history (Sölter 1970, 1975, Rheinishe 1977, p. 8-12, 1977, 1981). Especially Johann S. Kühlborn, a Provincial Roman Archaeologist, working in Münster, was interested in aerial photography of the Roman camps as a basis for local excavation. (Kühlborn in Horn 1987, in Trier (2000) 1989; in Trier (Archäologie) 1989 und Hellenkemper et al 1990. In 1983, after 6 overflights, it was possible to photograph the wall and ditch of the Roman camp Anreppen, together with the Roman gravefield, a Bronze-age "Schlüssellochgrab and two Lippe meanders, which at some time (from Roman to Middle Ages) had been rebuilt as fortifications. However, these sites have never been researched in the field, although the historical problems pertaining to the Battle of Varus and defeat of the Roman forces in Westfalia are still unsolved to the present day.

Due to discoveries of Roman support systems during other flights along the Lippe with Sölter and Günter Amtmann (Bonn), a series of logistic support systems were discovered, among them the burial field for Castra Vetera (Xanten), Roman villas (Dorsten), a Roman "Burgus" (police or customs station) or the Lippe/Rhein confluence, and last but not least medieval?/ Roman? villa west, east and south of the Roman camp Anreppen. In July of 1987 a visit was made to the Air Photo Library of the University of Keele (GB) and a "search" carried out for aerial photography dating from 1940-1945, taken over Germany by the RAF and USAF. Several series were available for the date of 20 March 1945, and Photointerpretation (Stereo) was carried out for the map L 4316 Lippstadt (1:50000) and the maps 4217 Delbrück and
4317. These had been prepared with the location of the 1983 oblique photographs and site descriptions, and the locations, place names, roads and walls taken from the manuscript maps of Albert Karl Hömberg, as well as all known sites of field finds on the TK 25 maps of the Archaeological Office at Olpe, Dr. Phillip-Rupert Hömberg. The procedure is set up according to the excellent examples given in English Publications: Bowen, Butler 1960; Frere, St Joseph 1983; Hampton, Palmer 1977; Jones 1988; RCHME 1986/7, 1987-1988; Riley 1980, 1987; Walker 1966 and Wilson 1987. In addition, background information on the conditions prevailing in Roman Times in England by reading the children's novels of Rosemary Sutcliffe, among others "Frontier Wolf" (1980). This is important for an American doing research in a foreign country: it is a detriment, that such novels of similar nature are not produced in Germany. In addition, I had the opportunity to contact Dr. Heinz Pitter (Schaumburg), who has produced many very good historical novels on the possibilities of interpreting older texts on the basis of geographical field work and map interpretation. His interest in the subject of the location of the Varus Battle (in September 9 B.C.) and his geographical knowledge and intensive field work have led to the conclusion, that not enough cognizance has been taken of the logistic support systems for the Roman troops stationed in "Germania" (Ritter-Schaumburg 1988). In addition, it is known that aerial photography will provide a multitude of previously unknown sites, as evidenced by the excellent work done in Baden-Württemberg and Bavaria (Braasch 1983; Christlein, Braasch 1981; (Braasch) 1988; Christlein 1981; Planck, Gensheimer 1983)

2. Field Work on the Lippe

After the initial flights in 1983, successive flights in 1985, preparation of the maps and research/photointerpretation of selected vertical imagery, field work was carried out specifically for examination of Roman logistic support of the known Lippe camp at Anreppen in July 1990. 1990 has been a drought year (within a 300-year period) at the same time with heavy rainstorms, so that it could be presumed that the chalk downs to the south of the Lippe would show finds in the mowed grain fields. Also the oli ways were driven along, to obtain the perspective of a “Roman” soldier, living in a peaceful, but occupied territory (much as the peaceful NATO forces have been troops of occupation in the Federal Republic of Germany). The "old" (perhaps "Roman" but possibly Neolithic) roads follow from South to North over a series of chalk “downs”, which are cut into units by the old stream beds running N-S along the geological faults in the limestone beds. Indeed, the Lippe River is fault-controlled and meanders within the very large fault structure in the limestones running almost E-W. During Roman times (and, of course, all older periods) the Lippe had enough water to be used as a sailing waterway, similar to various river systems in East Anglia. Ritter-Schaumburg has been the only historian of the present-day, who has provided data for the Lippe River.

3. Results of Field Work

The excellent work on Roman support systems in the Rheinland, for water resources Grewe (in Hellenkemper 1990, p. 196-201) and Gaitzsch on location of Roman villa rustica (in Hellenkemper 1990, p. 235-241) showed that the Roman troops in Anreppen were supported for virtually all their food, wood, water and clothing by the surrounding Germanic farms. The large number of Roman coins found at distances from 1.5 to over 10 km in southerly East
and West directions around the Anreppen camp (11) TK 5C and TK 25 4217 (83/377; 83/379; 83/101; 83/592 = Ritter-Schaumburg); 83/ 000 old Roman road and Roman graves) as well as the fact that virtually all meat, fruit, nut and grain products, as well as wool and wood was obtained from the surrounding territory (Aßkamp 1989; Aßkamp in Trier (2000) "Essen und Trinken" Dubbi 1990; Hoper 1985, 1988). However of all the sites visited finds were only made on two sites: 83/375 - 11 B "Hünenburg", prehistoric and "Roman" ? and the meander west of the Roman camp, with brick of colonial Roman type and medieval? limestone and pebble brick.

4. Field Work in the Area West of Geseke (TK 25 4317).

The main objects of interest in the field work south of the Roman camp on the Lippe were the sites 2 Hölter Mark, the trace of an old (prehistoric, Roman and Medieval) High Way -Hölter Landwehr – running North in the direction of the Lippe - and the photointerpretation sites 19 and 3A north of the railway.

Sites 2 and 19 were taken from the find maps of the Olpe Office, together with the respective find sheets (re.: p.4, Map Legends), where the finds were represented as "Roman" and are located along the Hölter Landwehr. On the Keele photos, 19 has the appearance of a Roman “Burgus”) and PI site 3A has the appearance and also size (150 m E-W, 200 + m N-S) of Roman "Marching Camps" known from Xanten to Koblenz in the Rhineland west of the Rhine (Sölter, 1977). These seem to be types of camps, which cannot definitely be dated.

5. Results of Field Work

The Holter Landwehr could be determined as an old way, with side ditches and lines of trees both North and South of Gretter Way. Along with other N-S roads running parallel N-S, the Landwehr was definitely laid out according to engineering principles to be free of Stream crossings, oriented according to polar Star coordinates and following the upper levels of the chalk downs, which dip towards the North (Lippe Valley).

All other sites visited produced no finds, with the exception of PI site 5, which is either a Late Neolithic or Early Bronze Age settlement, located on an old streambed "Schwalgrund" and earlier running again to the North; today there is no trace of the stream in the field (due to ground water being pumped out of the limestones to provide the surrounding towns with drinking water). Some "building materials", consisting of limestone slates and limestone brick, could be collected in the center of PI site 3A. Most interesting was again the location on a slight rise and with a source of fresh water in the Osterschledde on the west. -- This system was also used to provide the Anreppen ditches with water, and the accompanying streams still have flowing water all year round.

6. Conclusions

In order to interpret the location of Roman camps along the Lippe River properly, it is necessary to make more use of applied aerial photographic flights along the Lippe and in the surrounding areas (infrastructure). Also it is necessary to use maps and vertical aerial photography to investigate the surrounding territory and to assist in doing practical field work.
Map Legends

Map MET-1-3:
- Service Boundaries
- "Difficult" Areas
- Boundary between Northern and Southern MET Areas (geographical boundary)

Number of Area

"Limes" Roman Border) without Wall

"Limes" Boundary with Wall and Police Stations

Known Roman Military Camps

Rhein: 1. Xanten
2. Köln
3. Bonn
4. Remagen
5. Mainz
6. Frankfurt
7. Wiesbaden
11. Anreppen
14. Kneblinghausen

Lippe: 8. Holsterhausen
9. Haltern
10. Oberaden
12. Horn
13. Hessisch-Oldendorf


Map L 4361 Lippstad:

Map Coordinates: 346400 (E-W) 572000 (N-S)

Air-Photo Sites (1983): 83/398
Field Sites: 10 X m (TK 25 Find Maps, Olpe)
ND and +: old trees and way crosses (Medieval and older)

Maps 4271 and 4317:

Names of villages, halls, fields, high roads and border walls according to: manuscript maps prepared by Professor Dr. Albert Karl Hömberg ca. 1950 onward.

Permission to trace the information onto working maps was given by his son, Dr. Philipp-Rupert Hömberg, Director, Amt für Bodendenkmalpflege (Westfalia) in Olpe.

Computer list printouts of site number, location and conditions of finds during field work, together with map number, coordinates and (lay) field researcher were provided by Ing. Heribert Wrede, Olpe.

References of Map Sources:

Overview Meteological Map of Western Germany, taken from "Luftfahrthandbuch Deutschland", MET-1-3, Anlage 3, 20 DEC 1973, Bundesanstalt für Flugsicherung, Hannover, FRG.


Bibliography:

German Language literature:


Rainer: Bayerisches Landesamt für Denkmalpflege, München.

Christlein, Das unterirdische Bayern; 7000 Jahre Geschichte und Archäologie im Luftbild. Konrad Theiss


English Language Literature:


Riley, D. N.: Early Landscape from the Air. Studies of Crop Marks in South Yorkshire & Northern Nottinghamshire. Department of Prehistory and Archaeology, University of Sheffield, 1980.


Aerial vomits: causes, effects and solutions?

Chris Cox

I am one of the unfortunate aerial photographers who suffer from air sickness when not actually piloting the aircraft or using the camera. This debilitating affliction has long since ceased to be embarrassing, yet I am seeking a solution for my own comfort (and that of my long suffering pilot). Steep turning, use of cabin heat and long intervals of inaction seem to trigger the sickness. I am perfectly able to carry out my job, yet am left with an unpleasant 'aerial hangover' for the rest of the day.

I have tried many patent and prescription drugs, 'acupressure' wrist bands, herbal remedies and combinations of different foods prior to and during flight with varying degrees of success.

I cannot be the only vomit sufferer among you. Therefore, with the aim of finding a solution, I am initially compiling a list of available remedies and their effectiveness. So I have written this short note in the hope of encouraging anyone who wishes to eradicate this problem to contact me.


This three-part volume deals with sites recorded during the drought of 1989. Part one covers the 'cropmarkology' side of things and presents the discoveries in a range of ways including a table of sites discovered per day - a game which I hope will be confined entirely to France! The chapter will, no doubt, be of interest to aerial botanists. The second part details the 1989 discoveries in lists and a series of appalling (?enlarged) drawings while the third part covers attempts at sorting and classifying the sites into basic shapes using as a model (of method and types) those defined by Rowan Whimster for the Welsh Marches! (compare Whimster 1989, fig 19 with the volume's Table II).

The volume is additionally illustrated by a small number of colour prints which appear to have been taken through perspex (and from a low winged aircraft). An excellent record of just about all the things that ought to be avoided when collecting and dealing with the aerial evidence.

Rog Palmer - 5 June 1990
**Air Reconnaissance in Roman Britain 1985-90**

The time has come round again for another in the series of occasional reviews of new aerial discoveries begun long ago by Professor St Joseph in the *Journal of Roman Studies* and continued by the undersigned in *Britannia*. Accordingly, we invite contributions from which to compile an article surveying the period 1985-90, on similar lines to that published in *Britannia* 18 (1987).

We seek contributions from as many quarters as possible and will be writing to those we know to have been engaged in archaeological reconnaissance during the relevant period; but, please, do not feel you have to wait to be asked! All information included will have its source fully acknowledged. Our previous article may be taken as a model in determining the level of significance of material to be included and the degree to which associated fieldwork and excavation should also be reported. Discoveries made before 1985 are admissible if not reported in previous articles in the series, or if recent ground investigation has significantly modified the earlier interpretation of the photographs. Contributions should be descriptive, not mere lists, and selected photographs may be included; large plans should not be sent in the first instance, though it would be useful to know that they are available.

We should like to receive relevant material by **30 June 1991**, so please give some thought to this over the winter months.

For discoveries in **Scotland**, please write to:

Mr G S Maxwell  
Royal Commission on the Ancient and Historical Monuments of Scotland  
54 Melville Street  
Edinburgh  
EH3 7IF.

For discoveries in **England and Wales**, please write to:

Mr D R Wilson  
c/o Committee for Aerial Photography  
University of Cambridge  
The Mond Building  
Free School Lane  
Cambridge  
CB2 3RF.

G S Maxwell  
D R Wilson
National Association of Aerial Photographic Libraries (NAPLIB)

NAPLIB was founded on 27th February 1989 as an independent organization promoting the use and preservation of air-photographs. Its members are drawn from government agencies, academic bodies and the private sector and share a common concern over the danger of losing valuable photographic cover as collections are dispersed, destroyed or purged of 'out-of-date' material.

The prime purpose of the Association is the continuing preservation of extant air-photographs. Important secondary aims contributing to that purpose are to increase public awareness of the existence and the value of air-photography and to develop common standards for the storage and indexing of prints and negatives.

Membership of the Association is available in four classes. The corresponding fees are kept low to reflect the level of activity that we can currently provide.

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<thead>
<tr>
<th>Membership Type</th>
<th>Fee</th>
</tr>
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<tr>
<td>Sponsors</td>
<td>£100.00</td>
</tr>
<tr>
<td>Library Members</td>
<td>30.00</td>
</tr>
<tr>
<td>Individual Members</td>
<td>10.00</td>
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<td>Students/retired/unwaged</td>
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The next general meeting will be in London on 25th February 1991 (see notice below). Members will be able to attend this seminar at a special rate.

As a first step towards achieving more effective use of available photography, NAPLIB has decided to compile a list of air-photo collections in the U.K. Archaeologists are well known for the systematic collection of data by air-photography and many collections of archaeological photographs must exist in private or in public hands that ought to appear in any comprehensive listing. I shall be writing to county SMRs and to such private fliers as occur to me, but I am sure that I am not aware of all the collections that exist. I therefore invite all who have significant holdings with whom I am not already in touch to write to me at the following address:

The Mond Building, Free School Lane, Cambridge, CB2 3RF.

An entry in the NAPLIB list will not commit you to making your photographs available to all and sundry, but it will make public the fact that they exist. I hope that this is something already known to your county or regional SMR and to the National Monuments Record, so the new listing should make little difference to you personally. What it will do, if enough archaeological collections are listed, is to raise the profile of archaeological air-photography on the national scene. And all who contribute to the list will receive a copy of it when it is eventually distributed.

D.R. Wilson
Hon. Secretary, NAPLIB
Bacon's Farm, Upwell, Cambridgeshire: a Roman linear 'village'

Rog Palmer

The work of the Fenland Survey in Cambridgeshire has led to a modification of our knowledge of turbaries - past peat cuttings - which occur close to the boundary of the peat and silt fens in the parishes of March, Elm and Upwell. Examples are now also known in Norfolk on which discussion should appear in the second Survey volume dealing with that county (Silvester, in the press).

Perhaps of greatest importance is the secure dating, from a number of sources, of the recorded turbaries to the Roman period whereas previously they had been suggested to be of medieval date (Beresford and St Joseph 1979). This dating evidence is discussed in the third of the Cambridgeshire Survey volumes (Hall and Palmer, forthcoming) and will not be elaborated in this note.

Air photo interpretation has resulted in a considerable increase in the acreage of recognised turbaries which are usually found in regularly cut and aligned groups. Despite modern agricultural practices, the peat cuttings show on stereo pairs as slightly high silt mounds - high due to the fact that they are now filled with silt which does not shrink or compact as much as the surrounding peat, an example of the typical fenland reversed topography. Other areas of turbary are suggested by irregular, but un-natural, humpy areas on the photographs but are usually too amorphous for sensible mapping.

Traces of the major turbary groups were mapped in The Fenland in Roman Times (Phillips 1970) but were thought of then as field traces or called 'striations'. Comparing our current maps with those in that volume shows that much had then been perceived but not correctly understood - showing the way our archaeological perception can be sharpened once one simple fact has been established. We now think that the extensive peat cutting was linked to the salt making industry - much of which has been found on closely adjacent sites - and can suggest some of the transport routes by which the peat (fuel) was moved to the salterns.

That was by way of an introduction. The largest and most regular of the Cambridgeshire turbaries are those at Upwell (centred TL4895) where they cover some 60ha in a series of broad, parallel cuts which now stand up to 1 metre high (this might not sound much to most of you, but it's huge for a fenland 'earthwork'). Intimately linked to the Upwell turbaries, and a cut waterway along their north side, is a series of ditched enclosures among which have been found four localised pottery scatter sites. The figure shows the enclosures, the canal, and the turbaries but does not include the fieldwalked sites (for which see Hall and Palmer forthcoming, fig 96). Small plots of fields lie immediately adjacent to, and north of, the enclosures and can be seen intruding into the figure. With no further discussion (here) it is assumed that the small circles in the figure are examples of 'silt circles' (Riley 1945; 1946; Wilson 1978), are Roman, and are associated with the enclosures and their agrarian systems (Hall and Palmer forthcoming).
The linear nature of the enclosure system has become clear as a result of photography in May 1990 and its subsequent mapping. I would suggest that what has been mapped shows parts of a linear settlement, maybe of 'village' stature, which grew up alongside the canal and is likely to show the settlement of the peat cutters. There is some, but little, superimposition of features and clear examples of accreted units (as per RCHME definitions: Edis, et al, 1989) in 'a site' which it seems pointless to further subdivide.

Other than by proximity, the relationship between the turbaries and the enclosures is somewhat murky, but not without interest. Peat cuttings, canals and, to some extent, rivers all became silted up during the Roman period, probably late in the 2nd century AD (Hall 1987 ,41-3), with the major rivers frequently being reduced to a small central channel, still tidal, on whose banks new settlements and salterns were made. It may have been possible, therefore, to cut ditches for new settlement features on the 'dry land' of the silted turbaries - but no instances of this have been recorded, possibly due to the fact that turbaries show at their best as soil marks, enclosures as crop marks, or that any ditches cut into 'young' silt may well have been short-lived, backfilled with mobile silts and therefore not readily productive of crop marks. Along the canal, the absence of most of the abutting ditch sides (one only has been masked by the drawing process) does not offer conclusive evidence for their contemporaneity with the canal as the ditches could either have been masked by the spread of silt or cut (invisibly!) into it. The surface finds offer no useful clues to detailed dating which, presumably, would need a series of small trenches to clarify.

Other than the not very similar 'clothes line' sites in Yorkshire, I can think of no close (or fairly close) parallels to the Bacon's Farm 'village'. Any offers for the next AARGnews?

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Freelance aerial archaeology: a personal viewpoint.

Chris Cox

In writing this piece for AARGnews, I am seeking to clarify the role of the freelance aerial archaeologist in the 'aerial world', and point out the advantages, and indeed some disadvantages of freelancing, as opposed to being 'employed'.

The word 'Freelance' has always had rather attractive overtones of independence and high earning capacity, but in aerial archaeology, as in any other profession, the realities of working for yourself, either with or without a partner, can be very daunting, and many ventures fail over their first year of operation, not through lack of expertise, but through lack of business knowledge, foresight and planning. In reviewing my own plans to become a full time freelance aerial archaeologist, I can suggest some relevant points about how the job can be done most efficiently to the mutual benefit of both specialist and client, and give some idea of the practicalities and possible pitfalls of freelance work, as applicable to aerial photography and photo interpretation.

When I came into aerial archaeology as a postgraduate student in 1983, I was informed that the chances of employment solely as an aerial archaeologist were slim, but now, 7 years later, I feel that my experience in both general and aerial archaeology gives me a good chance of success as a freelance, especially with the advent of competitive tendering in archaeology. With this has arisen the need for the larger archaeological units to employ skilled specialists to undertake both research and developer funded projects in order to make the profit which in more commercially orientated professions is the sole purpose of trading and is now essential to the survival and expansion of many archaeological organisations.

The role of aerial archaeology in both research and commercially funded operations is now widely recognised as an efficient and effective survey technique. Thus opportunities arise to assess the possibilities of work which maybe both profitable and academically valid being undertaken on a freelance basis, benefiting both archaeological research and the needs of private contractors.

I began working in aerial archaeology as an 'independent flyer', funded by RCHME grants to cover several regions in the Midlands, using a privately owned Cessna 152, piloted by either myself or another pilot (a qualified flying instructor) from a small licensed aerodrome, 'legalised' by an exemption from the CAA. I soon realised that there was no provision for salary in this arrangement, and that in effect I was working only for the flying hours, which, while adding immensely to experience and the size of my flying log book, did not pay my living expenses. Therefore I began to investigate the possibilities of freelance contracts, undertaking photographic interpretation and mapping for the organisations for whom I did the aerial reconnaissance - archaeological units and County Council planning departments.
The work was irregular, and I still put in many hours flying, organising photo processing, siting and listing, for which I received no pay, so I was forced into employment as a field archaeologist. This included a large element of aerial survey which I introduced in complement to the field survey using a mixture of County Council, MSC and private sponsor funding to carry out aerial reconnaissance and photo interpretation in conjunction with fieldwalking and excavation.

This job effectively combined field and aerial archaeology, and provided the archaeological background which, in my opinion, is essential to effective air photo interpretation and data use. The demands of managing a large survey team, organising an extensive and detailed field survey, and carrying out rescue excavations as required by my employer left little opportunity to fly at times when I felt that it was necessary. As every archaeological flyer will no doubt appreciate, this situation was the cause of much annoyance and stress, as all I wanted to do, at least during the summer months and on the seemingly frequent clear cold winter days, was to fly and photograph, when in actuality I was either shifting large amounts of earth, excavating skeletons or searching for flints in muddy fields, and while enjoying and being competent in field archaeology, the practice of both specialisms under such circumstances was difficult, allowing excellence in neither.

My present position with the Lancaster University Archaeology Unit includes responsibility for the aerial element of a developer funded archaeological survey in advance of pipeline construction in the North West. My work includes flying, photography and photo interpretation, advising and liaising with field survey teams, and making recommendations to the developer in the light of aerial and ground survey evidence. This contract is short term. To be retained in this unit (which is incidentally a very good working environment) would put me back into the position of having to divide my skills between field and aerial archaeology. However, I want to utilise my skills as a full time aerial archaeologist and have therefore set up a partnership to provide a wide range of aerial photographic services on a freelance basis. If properly planned and managed, I believe this is the way forward for both myself and the potential customer, wherein we are able to focus all our skills into ensuring high quality, cost efficient and effective results.

So, what services can be offered and to whom? Most importantly, how can the freelance aerial archaeologist successfully market her or his skills and carry out the variety of tasks required, from aerial survey through interpretation to final report? In my opinion, flexibility and sensitivity to the needs of the contractor without compromising the academic viability of the work are the key elements to success in this game, involving the ability to assess the client's requirements and decide what is needed for the execution of any potential contract. This involves assessment of the need for new survey in any given case, the feasibility of that survey, and the need for examination and interpretation of existing photographic cover instead of, or in conjunction with, new reconnaissance. Therefore the services offered include elements of feasibility study, survey planning, advice - in some cases on suitable sources of funding, or budgeting - and costing of all items from salary to aircraft hire and computer use.
The ability to carry out freelance work with true independence relies not only on the possession of the right skills, but the availability of medium format camera equipment to allow high quality stereoscopic oblique aerial photography, rapid (and if necessary) confidential photo processing, computer equipment and software to enable accurate transcription of oblique aerial photo data, combined with word processing facilities, drawing materials, and last, but of great importance, suitable working accommodation. The outright purchase of the above equipment involves considerable expense, but is tax deductible, and totally necessary to any serious business venture in this field.

If new reconnaissance is to be carried out, the law, as explained by Bob Bewley in this issue of AARGnews, must be obeyed in the hiring of aircraft and pilots, and their availability of such needs to be checked out as far in advance as possible. There is nothing so frustrating as having a job to do, the weather to do it, but no available pilot. The costs for professional pilot and aircraft hire range upwards from £150 per hour, which must be accounted for in the quotations given to potential customers, plus the costs of any extra insurance which may be needed for personal injury or liability claims.

Apart from the practicalities of everyday work, freelance workers must also use the services of a qualified accountant to advise on business matters such as routine book keeping and taxation, which if overlooked can lead to nasty and embarrassing tax difficulties at the end of the year, and many unnecessary headaches for all concerned.

Having decided what can be offered, how to undertake the work, and what equipment and ancillary services are needed, it is next essential to discover your markets....
AERIAL PHOTOGRAPHY AND EXEMPTIONS
FROM THE "AIR NAVIGATION ORDER 1985".

Bob Bewley

When Rog, the editor, asked for a piece for the new AARG 'Newsletter' on aerial photography and the law I agreed to do it knowing that it is extremely difficult to be 'newsy' about the intricacies of 'Air Navigation Orders' (ANO) and 'Exemptions'. Therefore I have tried to inform and educate the reader without necessarily being able to entertain! Abbreviations abound in aviation and appended is a list of those used.

The background to the 'exemption affair' is twofold. On the one hand archaeologists want to fly to take photographs but cannot find enough Commercial Pilot's Licence holders (CPL's) with the right sort of aircraft. On the other hand there is this basic rule in aviation that a Private Pilot's Licence holder (PPL) cannot fly for 'Hire and Reward' (a technical term for cash). Thus during the 1980's it was becoming very difficult for a number of practitioners to operate legally at a time when grants for aerial photography were an established phenomenon.

A small chink of light at the end of a long tunnel was provided by the perspicacity and tenacity of Tim Gates who, in 1984, had obtained an exemption from the ANO for a Private Pilot to fly him for archaeological reconnaissance. It was this hard won success which paved the way for the system of exemptions which are now received annually in the U.K.

I should explain exactly what an exemption is; it allows a PPL holder to have the costs of the aircraft hire defrayed by the hirer, in our case archaeologists. There are certain conditions which have to met for a PPL holder to receive an exemption and I will detail these later. First I should describe the route by which the current system was arrived at.

During 1985 and 1986 that august organ of the CBA, the Aerial Archaeology Committee, was trying to solve the problem of flying legally with grants from DoE (latterly RCHME). To this end they had a meeting with the Civil Aviation Authority (CAA) on the 20th February 1986. This meeting was the result of an exchange of letters between the CBA and CAA, partly
inspired by a commercial pilot, Mr Chris Cruikshank, whose advice was invaluable. The conclusion of the meeting was somewhat gloomy, or so it appeared in a short article in British Archaeological News for July 1986 (vol. 1 No.5, p43). Two things were made absolutely clear; one that no payment could be made to a PPL holder in respect of the flight, and secondly that flights for aerial photography were considered to be Public Transport and therefore any operator must have an Air Operator's Certificate (AOC). (Had the activity been classed as 'aerial work', as glider towing or dropping parachutists is, then an AOC is not required). The implication of this was that aerial reconnaissance would have to be done with Commercial Pilots who have AOC's. Any deviation from this would not only be illegal but also invalidate any insurance policy; more on insurance below.

On the brighter side the CAA were willing to consider a way round this, if it could be shown that it was not practicable to carry out the work (i.e. there were no CPL holders with AOC's and with the right aircraft), that the 'operation' was as safe as if an AOC was held, and that any payments were only for Direct Operating Costs.

With all this in mind negotiations were opened up by Gordon Maxwell (for the Scottish Air Photography Committee) in 1986 with a view to obtaining similar exemptions to the ANO which Tim Gates had obtained in 1984. The point was made to the CAA that the flights were for archaeological research and not commercial gain. Also that the exemptions were necessary for this public service activity to continue not because the cost of using a commercial operation was high but because there just were not enough in the country. Scotland and Wales and northern England are particularly poorly served in this respect.

The Scottish negotiations were successful and building on their foundation England and Wales followed by applying for exemptions for their regional flyer's pilots. This 'co-ordination' which began in 1986 has continued every year (as an exemption is only valid one year) and there has been a great deal of cooperation and understanding shown to us by the CAA; for which we are all grateful. The CAA has altered the detail of the exemptions from time to time in the interests of safety but these have been minor tinkering; for example the requirement to send in a list of all flights done with an exempted pilot in any year. Also, an exempted pilot who is not an instructor should have a certificate of test' in his log book within the last twelve months, (this
means the pilot has to undertake a handling test to show he/she is competent to fly). Implicit in any exemption certificate is the understanding that prior to any flight the local commercial firm of aircraft operators have been contacted about their availability, and only when they have been shown to be unavailable can the exempted pilot be used. The exemptions are seen very much as a last resort; often they are the only option as there is not a commercial pilot nearby.

A copy of the standard exemption is attached to this short note for information. In applying for exemptions the CAA need to know the Pilot's name and PPL licence number, the number of hours P.1 (that is, Pilot in Command), where the 'operation' will be carried out from - it has to be a licensed airfield. (There are different types of licensed airfields, but that is another story!). Also the aircraft which will be used has to have a Certificate of Airworthiness (C of A) in the Public Transport (Passenger) Category, which means more regular checking of the engine and airframe, and not a C of A (Private) category. Each year there are over 20 exemptions issued in the UK and when you consider the actual expenditure on aerial reconnaissance for exempted pilots it is very small in aviation terms; probably less than the fuel bill for one Jumbo flight across the Atlantic!

Perhaps it is worth considering what the future will be in that aviation is an ever changing business. There is now a third category of licence, a BCPL; a half-way house between the PPL and the CPL, with the B standing for 'Basic'. In due course the CAA have hinted that they would like to see us using more of these pilots but the new licence has only been around for less than two years and currently there are not enough BCPL pilots to fulfil our need. Not that the BCPL solves all the problems; there are certain restrictions. For example a BCPL pilot who has over 400 hours P.1 can undertake a Public Transport flight as long as it begins and ends at the same aerodrome and does not go further than 25nm1 from the aerodrome! Clearly this would severely alter our crop-mark distribution pattern such that all discoveries would be less than 25 nml from an airfield (they probably are anyway come to think of it given the distribution of airfields!) . So, perhaps exemptions from this rule will have to be sought.

I mentioned insurance earlier and one fact about aviation insurance is both interesting and disturbing. Unlike the automobile world there is no legal requirement for an aircraft owner to have insurance. This does not mean to say that most people do not have insurance, but they do
not have to! Therefore it is incumbent on each individual aerial photographer to check the insurance position of the flying club/operator. Normally they will have a liability insurance cover to the tune of one or two million pounds (anything less than a million pounds worth of cover is worth questioning). As to personal insurance for death or disability it is advisable to check your own life insurance policies and your cover for light aircraft flying or if you do not have life insurance do not expect any help from either your employer or the flying club. If you are involved in more than a few hours reconnaissance my advice would be to obtain your own insurance if you are concerned about it. (Personally I find driving down the A1 much more scary than flying over it).

Finally if you do not already know about exemptions and you think you may need one, for England contact me in the RCHME office York, for Wales contact Chris Musson in the Welsh Royal Commission, and for Scotland contact Gordon Maxwell in the Scottish Royal Commission.

Abbreviations:

ANO       Air Navigation Order  
AOC       Air Operator's Certificate  
BCPL     Basic Commercial Pilot's Licence  
CAA       Civil Aviation Authority  
CBA      Council for British Archaeology  
C of A   Certificate of Airworthiness  
CPL      Commercial Pilot's Licence  
D of E   Department of the Environment, latterly English Heritage.  
PPL      Private Pilot's Licence  
RCHME    Royal Commission on the Historical Monuments of England  
RCAHMS  Royal Commission on the Ancient and Historical Monuments of Scotland  
RCAHMW  Royal Commission on Ancient and Historical Monuments in Wales
Civil Aviation Authority

AIR NAVIGATION ORDER 1985

EXEMPTION

1. The Civil Aviation Authority in exercise of its powers under Article 94 of the Air Navigation Order 1985, as amended, ("the Order") hereby exempts the Commander and the Operator listed in the attached Schedule, in respect of any aircraft registered in the United Kingdom on any flight undertaken for the purpose of the Royal Commission on the Historical Monuments of England ("The Royal Commission") from the provisions of the Order which apply by virtue only of the fact that the said aircraft is flying for the purpose of Public Transport.

2. This Exemption is granted subject to the following conditions:-
   (a) the Commander shall hold a valid pilot licence entitling him to act as pilot-in-command of the said aircraft;
   (b) the said aircraft shall have a Certificate of Airworthiness in the Transport Category (Passenger);
   (c) the flight shall be conducted from a licensed or Government aerodrome in compliance with the Visual Flight Rules set out in Rule 23 of the Rules of the Air and Air Traffic Control Regulations 1985;
   (d) no flight shall be undertaken pursuant to this Exemption other than flights approved by the said Royal Commission for the purpose of aerial survey and photography for archaeology;
   (e) no person shall be carried on the aircraft on a flight pursuant to this Exemption other than the pilot and a maximum of three employees of the said Royal Commission or persons sponsored by the Commission carried for the purpose of undertaking aerial survey and photography;
   (f) the employees of the said Royal Commission and persons sponsored by the Commission carried pursuant to this Exemption shall be informed by the Commander prior to the commencement of any flight pursuant to this Exemption that the flight is not being conducted in full compliance with the Public Transport provisions of the Order.

3. This Exemption shall, unless previously revoked, have effect from 1 December 1989 to 30 November 1990.

Signed .................................................. Date 10 November 1989

for the Civil Aviation Authority
WAR TIME REMINISCENCES

by Derrick Riley

My RAF career began on 1 July 1940, when I was called up for training as a pilot. I began flying on 25 August 1940 at Marshall’s Aerodrome, Cambridge, a field that is still in use and where the Cambridge University aircraft now flies from. In 1940 it was a grass field, and my memory stores a picture as it then was, with numerous Tiger Moths in the sky above. It was quite out of the question to have any thoughts of archaeological observations during the various stages of flying training or during the following period on an operational squadron of Bomber Command, during which I flew the twin engined Whitley. There were heavy losses of these aircraft and their crews, something I do not forget, but I was one of the lucky ones who got through to the end of their tour of operations, as it was termed, on the squadron. This was a very eventful period of my life to say the least, but I must write about archaeology, not the war. The interesting time as far as this article is concerned began in January 1942, when I was posted as a flying instructor to Abingdon, near Oxford. Here life was quieter, and when flying there was time to look out at the ground below. My duties tiara the training of pilots on a system of blind approach to the airfield, using a radio beam designed for use in bad weather when poor visibility or low cloud made the approach to the airfield difficult. Our pupils were not beginners, but were experienced pilots, usually other instructors.

I had read of Major Allen's discoveries in the country near Oxford, and hoped to see a few crop marks. At first nothing appeared, but in April 1942 two concentric green rings
appeared in a field with a crop of clover that we passed many times a day when flying along the beam to approach the runway. I managed to photograph the rings and later to visit the Ashmolean Museum in Oxford and see E.T. Leeds, the Keeper of Antiquities. Incidentally, he originated the term 'ring ditch' in his paper 'Round Barrows and Ring-Ditches in Berkshire and Oxfordshire' (Oxoniansia, I, 7-23). He said that he had excavated the site, which was one of the Radley ring ditches found by Major Allen. This was rather a let down, as I had hoped my site was a new one, but I need not have been disappointed, because much more soon became visible. To the east of Abingdon the beam passed near some famous Allen sites, the Dorchester 'Big Rings' (a large Lange with two concentric ditches, all now destroyed by a gravel pit), the Dorchester cursus, numerous ring ditches, many enclosures and much more. To the west, it ran over other crop marks in profusion all along the Thames valley towards Cirencester, where I afterwards found that many of my sites were indeed new. As a keen amateur archaeologist in pre-war days I had kept systematic notes, and at Abingdon I managed to continue this good habit, writing brief notes in the evenings. At the end of the year I compiled a short account of what I had seen, complete with map, and sent it to 'Oxoniensia'. It was gratifying to see it in print in Volume VII (1942). In spite of the war some archaeological journals still appeared, though the issues became very slim.

I got to know some members of the Oxford 'University Archaeological Society, among whom were RJC Atkinson, after the war Professor at Cardiff, and the late JSP Bradford, then about to join the army and afterwards to do most important work on the archaeological sites recorded by RAF air photos of parts of Italy and countries near it. The society was excavating a Saxon cemetery threatened by a gravel pit, to which I went twice, and here I met a girl student who is still with me!
In early 1943 my unit moved to Stanton Harcourt, about 6 miles west of Oxford, and we continued to give the same course of instruction. My notes for February and March 1943 mention a few long barrows and hill forts on the Cotswolds, and on 26 March the first crop marks. In April I saw crop marks at fourteen places. In May I made 61 entries in my note book, most of which were about crop marks, the rest including a few more long barrows and hill forts. On many different dates in June and July crop marks were again recorded. Interestingly, my notes also give brief details of the colour of the marks in a good many fields on various different dates, recording the way they changed their appearance. In August and September new crop marks were still appearing, usually in root crops or in grass, but they were less frequent. The last note of a crop mark, which was in a field of swedes, is dated 8 October. The airfield was surrounded by fields with crop marks (now much damaged by gravel pits), and in July there were even a number of ring ditches visible on the field itself. The main runway had been built across the site of a henge (the Devil's Quoits) that had been photographed by Major Allen. This was an ideal place for my archaeology, which fortunately was tolerated by both my flight commander (with whom I am still in touch) and the station commander.

There is no space here for details of the sites I saw, but it is worth mentioning the rather irregular lines that divided much ground into squares or polygons, which at first I thought were some kind of ancient fields. The late Dr WJ Arkeil, a senior Oxford geologist, gave me the explanation, now familiar, that these crop marks gave the lines of periglacial frost cracks or ice wedge casts. Dr Arkell also lent me copies of the Geological Survey drift map of the area, which gave details of the gravel terraces and made it much easier to understand the distribution of the crop sites.
We flew several times a day, not once losing flying time because of bad weather. Low cloud and fog enabled us to show how the beam could help, though in fog the pupils were not always enthusiastic about leaving the ground. Spending so much time in the air, I got to know the crop marks near the airfield very well, and in the evenings I sometimes visited the sites that were within bicycle range, making notes of the crops on them. In the latter part of our course of instruction there were a good many exercises in which we had to fly some distance from the airfield, making sure that the students had lost their bearings, which was easy because they did not have maps, and make them find their way back by using the beam. When convenient I used to take them to a crop mark site on these occasions - as good a place to start the exercise as anywhere else! This enabled me to look at the more distant sites.

On June 15 Dr Kenneth St Joseph called to see me while on official business in the area, and he came as passenger on one of my instructional flights, on which as usual we passed over many of the Upper Thames crop marks. This was my first meeting with Dr (later of course Professor) St Joseph, to whom I shall refer again later.

The station commander gave me permission to take some photographs, though there were problems because I could not ask for RAF film for a nonessential purpose and there were no films to be bought in the shops - it is difficult now to visualise how scarce everything was at that time. Fortunately ten 35 mm films for my Leica camera were somehow obtained by Mr Leeds. It was not convenient to take obliques from the twin engined Oxford aircraft we flew, because the engines on either side of the cabin obstructed the view, so I took hand-held verticals through a camera hatch in the floor at the back of the cabin. My photos were often under- or over-exposed, but some were good enough for slides
to be made for a lecture that I was invited to give late in 1942 at Burlington House to the Royal Archaeological Institute, which managed to keep up a programme during the war. This was a big occasion for me and I got leave for a day to go to London, having almost learned my lecture off by heart.

With all the data I had accumulated, together with Major Allen's photos in the Ashmolean, I had the material for a quite a long paper on the Upper Thames crop mark sites, which appeared in Oxoniensia vol VIII/IX (1943-44). This was produced under difficult conditions, and analysis of the sites was hampered by the lack of maps, which were only obtainable with great difficulty (apart from 1/250,000 and 1/500,000 RAF maps). Apparently it was thought that supplies of maps in the shops would be a help to the enemy in the event of an invasion!

The last entry in my notes made at Stanton Harcourt is dated 26 November 1943 when I photographed some ‘shadow sites’ (nearly all of which have now been ploughed away) on the Berkshire Downs. Soon after this I was posted to operations again, flying Mosquito aircraft from Graveley, near Cambridge. It was of course not possible to think of archaeology during operational flights, or ‘ops’, to use the usual slang term, but there were ‘air tests’ to be made (trial flights to check that the aircraft had no faults), during which I inevitably saw some crop marks, which I afterwards recorded in my notebook. We flew very much often than in 1941-2, and by July 1944 another tour of operations was complete. This was the last time I flew over Germany for 37 years. The next time was to be in very different circumstances – a flight over parts of Bavaria with Oberstleutnant Otto Braasch in June 1981. I have visited him several times since then and, with memories of the war fading
into the distant past, it has been a great pleasure to know that the wartime enmity of the British and German nations has long disappeared.

At the end of my 'tour' I was again pasted to non-operational duties, this time as the test pilot at a unit at Upwood (about 10 ml SE of Peterborough) which handled new Mosquitos being prepared for delivery to squadrons. I had to do a lot of flying - for example, my log book records 98 separate flights in August. Most of the flights were air tests, which of course could perfectly well be done over archaeological sites! There were many crop mark areas within a short flight from Upwood - to mention the most important, the Silt Fens, and the Ouse and Nene valleys. I could not take photographs and the Mosquito cruised at about 200 mph, hardly ideal for archaeological observation, but my notes record valuable information, much of which I later published in an article in ‘Antiquity vol 19 (1943),’

The final year of my time in the RAF was again spent as a flying instructor. My last job in this period was on Mosquitos at Bomber Command Instructor's School, Finningley, near Doncaster, where I trained instructors. The war ended while I was at Finningley, and the great RAF organisation found its task complete. There were many little used aircraft and it was possible on three occasions to make flights to record archaeological sites, using hand held RAF cameras of F24 type. Two were relatively short trips, one to the Fens, and a second to Wensleydale, but the third, a visit to Scotland in July planned by Dr St Joseph, took the best part of three days. We covered many parts of southern Scotland, both the east and west sides, flew along the line of the Antonine Wall, and went up Strathearn and Strathmore, circling Ardoch and Inchtuthill on the way. I was just the pilot of the aircraft, a ‘bus driver’, while St Joseph read the map, guided us to a long succession of
archaeological sites and took photographs. The weather was not good, with much cloud and some rain. My notes, written in the evenings, list the main places we flew over. There is no space here to describe the sites we saw, but I cannot omit to mention Carriden, near the Firth of Forth, where there were the crop marks of part of the defences of a fort associated with the Antonine Wall. I was specially interested by this and by several Roman marching camps we found, or rather, that St Joseph found.

On 29 November 1945 my log book records a 1 ½ hr Mosquito flight as instructor. I did not know it at the time, but it was to be my last RAF flight. Soon afterwards I was demobbed. I had one more publication on the way, a paper intended for the 'Archaeological Journal', with the rather pretentious title of 'The Technique of Air- Archaeology', in which I tried to record everything I had learned about the way in which sites appear from the air. At the time I was rather doubtful about the welcome that it would be given by the editor (Christopher Hawkes if my memory serves), but it appeared in 1946. I have often been glad that I made the effort to write the paper and still refer to it, though it is necessary now to remember that farming, practices have changed.
OBSERVATIONS ON THE SPECIES ‘AERIAL’

Anon

Attendance at recent AARG meetings and other gatherings of aerial people has led, though considerable research, to a preliminary classification of the species Aerial. The following brief definitions have been made on behavioural grounds following analysis of written and spoken presentations supplemented by personal observation at the bar. As with all published work, it is intended to stimulate response and any comments or proposed modifications to the typology may be welcomed. It could also serve as the basis of a 'Name the...' game for which prizes will not be given.

**Aerial archaeologist:** A very rare breed. One who not only observes and photographs from the air but who also uses the resulting information to make archaeological deductions. They are rarely seen, and far too busy to be easily identified, although traces may be suggested by a trail of blue books.

**Aerial botanist:** The most common type of aerial species. One who makes summertime aerial observations, photographs and comments about the state and changes in crop growth. They are easily identified by their call, 'Crop marks'.

**Aerial pedologist:** An occasional winter form of the aerial botanist, although more usually a rare, but related breed. One who braves the frozen winter air to make shivering photographs and comments about coloured mud. Their usual call is, 'Nobody understands soil marks'.

**Aerial photographer:** One who takes aerial photographs. Individuals of the type are not often seen (or admitted to) and usually camouflage their appearance by false adoption of the term aerial archaeologist.

**Air photo interpreter:** One who looks at aerial photographs, sometimes with both eyes open, and makes drawings of and comments on their content. Easily identified by crossed eyes and staggering walk and occasional cry of, 'No control points'.

**Air photo archaeologist:** An outspoken sub-type of the air photo interpreter and one who rashly attempts to make archaeological deductions about marks photographed, by others, from the air. This type too has crossed eyes and a staggering walk (both possibly more due to beer than work) and is frequently heard berating colleagues.