

'We were always chasing time.' *Papers presented to Keith Blood.*
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Archaeology and the Ordnance Survey Revisited: Field Investigation by the Ordnance Survey Archaeology Division 1947-1983.

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Introduction

The depiction of antiquities on Ordnance Survey maps is as old as the Ordnance Survey (OS hereafter) itself but it was not until 1920, with the appointment of O.G.S.Crawford as Archaeology Officer, that this aspect of mapping was formally established within the organisation. The Archaeology Branch which Crawford created grew through many vicissitudes to become the Archaeology Division under his successor, Charles Phillips. Both these men published their autobiographies and other works in which the development and organisation of the Archaeology Branch and Division are recorded (Crawford 1955, 154-67, 214-31 *et passim*; Phillips 1959; 1980; 1987, 96-122; see also Owen and Pilbeam 1992, 64-5, 94, 152-4) but virtually nothing has been written about the work of the archaeological Field Investigators at the 'sharp end' of the job (exceptions are Mead 1989 and Linge, this volume).

The public face of the OS's involvement with archaeology is most obviously seen in the various Historical and Archaeological Maps, or 'Period Maps', which have been published from time to time and the history of which has been summarised by Hellyer (1989). The real significance of the OS's archaeological endeavor, however, lies in the immense amount of background research and fieldwork which went into the compilation of information, both for the Period Maps and for the depiction of antiquities on general maps at all scales. The 'OS 495' record cards, Record Sheets and 'Antiquity Models' created by the Archaeology Division became ultimately the basis for the National Archaeological Records of the Royal Commissions on Historical Monuments in England, Scotland and Wales and for all the Sites and Monuments Records maintained by County Councils and amenity bodies. However, despite the fact that the work of the OS Investigators forms the basis for the whole archaeological record in Britain, archaeologists remain largely ignorant of the context in which that work was undertaken, the parameters laid down for its execution by the OS and the way in which the field sections had to operate.

This lack of understanding leads to unfortunate

misconceptions and the appearance of comments which, because they are unqualified, can appear patronising; such as that 'while the sites recorded by the OS are located accurately and identified correctly, they rarely constitute a full record' (Lowe and Barber 1988, 21).

It is important, in view of the central role of the OS Record, that its generation be better understood, in the same way that an excavation report must be seen in its historical context. It is the purpose of this paper to review the working programme of the OS Archaeology Division, to highlight the day to day operations and problems of the field sections and to assess the OS's Archaeological Record in its role as the basis of the current archaeological record in Britain.

The Work Programme¹

Although Crawford had contrived to have himself appointed to the permanent staff of the OS as Archaeology Officer in 1920 his position was always precarious. He was personally unpopular with some of his colleagues and superiors, and archaeology was regarded by many in the OS as peripheral. The 1920s were in any case a time of economic cutbacks for the OS and little progress was being made with long-overdue map revision. The Davidson Committee changed the situation with their report in 1938, which set the programme for future revision. They were also in favour of archaeology and it was as a result of their report that W.F.Grimes was appointed Assistant Archaeology Officer in the same year. Previously Crawford had worked alone except for an assistant 'on loan' for a period and a few draughtsmen, though he had recruited a number of 'Honorary Correspondents' to help him with his fieldwork and record collecting in various parts of the country. Despite the difficulties of his situation Crawford had managed to build up a vast amount of archaeological data in his card indexes and on his Six-Inch (1:10560) record maps by 1940. Crawford was well aware of the value of this record and with great foresight he moved the maps out of the OS offices in Southampton to a private house in Wales, thus preserving

them from the air raid in 1940 which destroyed most of his record cards as well as much of the OS's equipment and property. Crawford's maps and the record cards for Scotland and parts of northern England survived the war to form the nucleus of the OS Archaeology Record which Phillips and his staff were to create subsequently.

Archaeology Branch effectively ceased to exist for the duration and Crawford retired in 1946. After Grimes moved to the Museum of London the post of Archaeology Officer was given to Charles Phillips, who had been one of the Honorary Correspondents before the war. Phillips at once set about the expansion of the Branch, which was to become a Division, in order to fulfill the recommendations of the Davidson Committee for the proper treatment of antiquities on OS maps at all scales by means of a co-ordinated research and survey programme. By 1948 he had recruited about ten members of staff, amongst them J.Fox as Superintendent and W.G.Stanhope-Lovell, who was to take a leading role in the establishment of the Record.

This was a time of expansion for the OS as the recommendations of the Davidson Committee, delayed by the war, were at last put into effect. A general resurvey on the National Grid at 1:1250, 1:2500 and 1:10560 (later 1:10000) basic scales, to be completed by the mid 1980s, was to be undertaken on a regional basis and revision of the maps was then to be 'continuous' with permanently established Regional Offices. This offered an enormous challenge to the Archaeology Division which, with its tiny resources, would have to work at such a speed as to keep up with the Field Division surveyors. There was one factor working in favour of Archaeology, however; the general revision would start in the most built-up (1:1250) areas, where archaeology suitable for mapping is slight, and move later to the rural areas where such archaeological sites are more abundant. This gave Archaeology Division a breathing space of about three years and Phillips used this to the full for recruiting and training staff and establishing the Record.

The only records Archaeology Division had in 1947 were Crawford's Six-Inch map sheets with his marginal notes, brought back from Wales by Grimes, and the few surviving record cards. Phillips was determined to build up a non-intensive but systematic Record. He had three reasons for this. First, he needed some information with which to brief his field sections before he sent them out to undertake survey work. Secondly he needed a source of information for the Period Maps, a project begun by Crawford which he intended to continue.

The third reason that Phillips gave (1980, 46-7) was that there was a desperate need for a public non-intensive record of archaeological sites and monuments beyond the immediate requirements of the OS. Possibly Phillips regarded his third reason as the most important and certainly this has proved to be the case; archaeological sites were under threat as never before. Wartime production and construction had destroyed countless sites and Phillips identified quarrying and open-cast mining, forestry, New Town and other building, and road construction as continuing threats; existing archaeological bodies could not hope to deal with this problem but, Phillips said (*ibid.* 47), the OS Archaeology Division, by creating a basic non-intensive record of all

known and suspected archaeological sites, could do something to stem the loss of knowledge consequent upon these developments. However, many of those who worked for Archaeology Division in these years doubt whether this third reason was really in the forefront of anybody's mind at the time. They were not aware of it. For them the whole process of recording, fieldwork and revision was simply and exclusively to position and portray antiquities accurately, and name them correctly, on the basic scale and Period maps. Therefore it was by accident that the Record grew to be more than a back-up to map production.

After much experimentation in 1947-8 the form of the Record was fixed. It was to consist of cards (OS 495s) ordered by the National Grid, each one representing one site and containing a classification (the 'Latest Correct Description'), an accurate grid reference, brief details of the site, references to previous publications and other authorities, and in some cases a survey or photographs. The Record was essentially 'site-based'. The 'site', as the individual object of record, could be an upstanding earthwork, the 'site of' a previously existing monument or a findspot. The cards were supplemented by a cartographic record in the form of Six-Inch Record Sheets with the sites located on them. Some entities, such as Roman roads, could not easily be fitted into this form of Record and special Linear Files were created to deal with them, though the linear feature would be marked and annotated on the Record Sheets in which it lay. The Linear Record consisted of strip maps, usually at 1:10560/1:10000 scale, showing the course of the feature with relevant annotations and a supporting apparatus of illustrations and authorities, as in the standard Record (ADI II E). Though it may have been the intention that the Record should take in all archaeological sites, whether they would be required for the published maps or not, in practice pressure of time meant that field effort was to be dedicated almost entirely to work for the maps. The compilation of such a Record obviously required an immense input of effort, initially on the part of the office staff, at Southampton or the temporary base at Chessington, who had to undertake a complete literature search. Incredibly this was brought more or less up to date by 1955 and thereafter could be maintained as books and periodicals came into the Division's library. This library, which consisted principally of the essential county periodicals but contained much else besides, was built up at considerable cost to OS; the libraries of the Society of Antiquaries and the British Museum were also consulted frequently by the Record staff (Stanhope-Lovell 1976, 3). Field staff were to add to the Record not only by surveying known sites (and making new discoveries) but by visiting museums to record unpublished finds. Sites found by air photography were added to the Record and air photos were also put to practical uses, such as in defining the extent of field systems, thereby avoiding extensive field investigation. Archaeology Division possessed a considerable library of air photographs, with copies of the Crawford and National Monuments Record collections. It also had access to the RAF National Survey, which was held by OS. Phillips had come to an arrangement with Dr St. Joseph that the Cambridge Committee for Aerial Photography would be supplied with OS maps in exchange

for air photographic information. This arrangement was ended in about 1970 when OS reneged on the deal.

The Record side was under the supervision of Stanhope-Lovell. He was from a middle class background and was more scholarly than the average OS recruit. Phillips notes that he 'had a notable determination to carry out all that he began to a successful conclusion' (1987, 102), a characteristic well nigh indispensable for the task in hand.

By 1965 the OS was selling photocopies of parts of the Record to County Councils and other public bodies. Ten years later, when the Record contained about a quarter of a million cards, Archaeology Division agreed, at the request of the CBA, to be custodian of a 'National Non-intensive Archaeological Record' (Stanhope-Lovell 1976, 2,6).

Clearly if the Archaeology Division was to keep up with the pace of the general revision it needed more field staff but recruitment was always a problem. It was understood that the Archaeology Officer and Assistant Archaeology Officer would be graduates with archaeological qualifications, though even this rule was relaxed towards the end, but all other members of staff had to be recruited from existing OS staff by internal trawls. It might therefore have proved difficult for Phillips to find enough people with an interest in and knowledge of archaeology and, because of the poor promotion prospects within the small Archaeology Division, difficult to retain them. In fact Phillips was remarkably successful in attracting men (and of course they were all men) of the right quality, mainly young surveyors from the Field Division, who he could train by means of field trips, lectures and prescribed courses of reading, and many of whom became skilled archaeological Field Investigators. Their story will be detailed below. Suffice it to say here that field activity began in 1949 in Sussex, despite the reluctance of the financial controllers of the OS to allow archaeology staff to go into the field at all. Fieldwork was sporadic until 1952 when recruitment had advanced enough to permit the establishment of an archaeology field section in each of the six OS Regions. These field sections remained part of the Archaeology Division and did not come under Regional control until the late 1970s. The aim was for the field section to complete its investigation of an area ahead of the Regional field surveyors so that their surveys, known as Antiquity Models, could simply be applied to the Master Survey Documents (MSDs). At first the Field Division officers were suspicious of the competence of the Archaeology field sections but they soon learnt to accept the archaeological detail supplied at face value. Even with more than 20 surveyors in the field, however, Archaeology Division had trouble keeping ahead of revision and some areas were less intensively checked than others, while some had simply to be left for later revision.

The activities of the field sections were still supplemented by local Correspondents who were issued with Six-Inch maps. These were recalled to Southampton from time to time for the information to be assimilated into the Record. The work of these Correspondents was of variable quality and the cover they provided was far from complete. Whereas for Crawford the Correspondent system

had been vital, its role in the post-war establishment was less significant; indeed Stanhope-Lovell (1976, 3) considered it a failure.

The depiction of antiquities on the maps was a bone of contention between OS and Archaeology Division from the 1960s onwards, the main problem being the use of hachures for the portrayal of earthworks. The battle began during a departmental investigation into the use of symbols on the 1:2500 and 1:1250 maps. OS suggested that hachures be abandoned and that an antiquity should be shown simply by a pecked line around the perimeter with its proper name or a descriptive term applied in the centre. Archaeology Division resisted this proposal vigorously, arguing that an antiquity was as real a feature as any other in the landscape and must be treated accordingly. OS accepted Archaeology Division's position on this matter for the time being. At about the same time symbols ceased to be drawn freehand but were applied to the maps from printed film; printed hachures are adequate for modern features such as railway embankments, but produce too mechanical an effect for the depiction of antiquities. The issue was revived in the early 1970s when digital mapping techniques were first introduced. Hachures continued to be applied to the maps manually but OS remained hostile to their use.

In 1:10560/1:10000 areas Archaeology Division faced depiction difficulties of another kind, the problem being to represent antiquities as accurately as possible within the limitations of the small scale. This entailed a degree of generalisation, which was not a problem with 'spot' antiquities such as crosses, single barrows or cairns, though in the case of a barrow a minimum of five hachures had to be stipulated. The generalisation of more complex antiquities was never satisfactorily achieved. The difficulty was further compounded by the 1:10000 map being drafted to a specification which allowed it to be reduced photographically for the 1:25000 Second Series.

As working methods in the field and in the office were adopted and developed a manual was produced. These Archaeology Division Instructions (ADI) grew into a considerable file containing regulations governing all aspects of the Division's responsibilities and procedures from 'Abbreviations, book & periodical titles' to 'Working records' via 'Logan Stones' and 'Margary numbering, use of'.

The post of Assistant Archaeology Officer was revived in 1948 with the appointment of Peter Gouldesborough. He was replaced by A.L.F. Rivet in 1950. Until 1958 the main responsibility of the Assistant Archaeology Officer was the compilation of the Period Maps, freeing his chief for the pressing business of revision and the Record. However, in that year Rivet took charge of the new Archaeology Division Branch Office in Edinburgh with responsibility for revision and Record work in Scotland. J. Fox succeeded Rivet on his resignation in 1964 and the post reverted to headquarters at Southampton.

There were two reasons for establishing the Branch Office in Edinburgh. First, there had been considerable criticism of the archaeological content of the new One-Inch (1:63360) maps, especially in Scotland. Secondly, the 1:10560/1:10000 survey of Scotland was about to begin. The

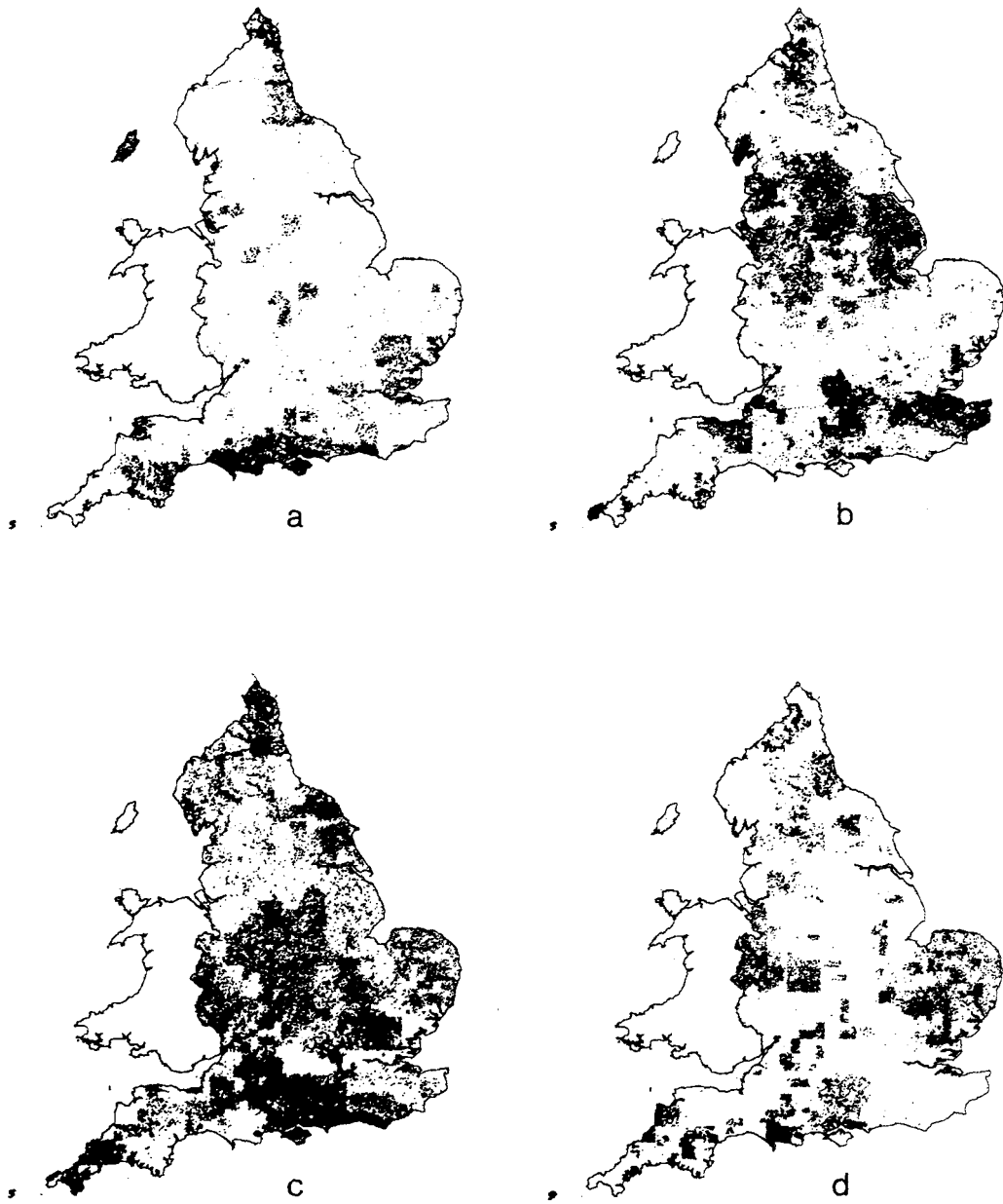


Fig. 1. Sites surveyed by the Archaeology Division in England: a, 1947-1955; b, 1956-1965; c, 1966-1975; d, 1976-1983. Crown copyright. NMR.

problems with the One-Inch maps arose because Archaeology Division had neither sufficient personnel nor the resources to revise the maps themselves. Due to the lack of information in the Record for Scotland, Archaeology Division had appealed to the Scottish Royal Commission for assistance. The Commission was supplied with copies of the relevant One-Inch maps and asked to amend the archaeological nomenclature, particularly in regard to obsolete terminology. This the Commission did but Archaeology Division, largely through its Superintendent J. Fox, ignored much of the advice. The birth of the Edinburgh Branch Office was the direct result of the wrathful correspondence which ensued and which reached the office of the Director General of OS.

Charles Phillips retired in 1965, at which time the total staff of the Division numbered about 60, and was replaced as Archaeology Officer by R. Feachem from the Scottish Royal Commission. Feachem maintained an extraordinarily low profile within the Division which was thereafter effectively run by Fox. Fox himself took over as Archaeology Officer in 1975.

In 1973 OS decided that it could no longer be responsible for recording and surveying 'site of' and findspot information unless this work could be financed by an external source. As this information was vital to the work of the Inspectorate of Ancient Monuments they awarded a fixed annual contract for the work. Time spent on this 'invisibles' work was then logged and monitored by the Division Management Accounting System. When the fixed contract sum was spent such work ceased until the next financial year. This was perhaps the first move in the OS campaign to dilute the work of Archaeology Division and ultimately to rid itself of its archaeological responsibilities.

In 1976/7 the Archaeological field sections were transferred to the control of the OS Regions, causing much disruption to the work programme, and Archaeology Division reverted to a Branch in anticipation of the run-down in staff following the completion of general revision. Archaeology having reverted to the status of a Branch the new Archaeology Officer, A. Clark, was appointed at the lower grade of Assistant Manager and therefore had relatively little political leverage. The writing was on the wall and the Serpell Committee Report of 1979 led to the suppression of OS Archaeology Branch whereupon, in 1983, the staff and the Record were divided amongst the Royal Commissions on Historical Monuments in England, Scotland and Wales.

The peripheral status of archaeology within the OS that had pertained in Crawford's time still existed after the war and, though Phillips had built the Division up to a position of some strength by the mid 1960s, it could not last. That the demise of Archaeology was orchestrated by OS over a period of a decade or more seems clear. Its inevitability on completion of the post-war re-survey programme also seems beyond doubt.

Investigators in the field²

'We were always chasing time'

(Keith Blood)

From the late 1940s until the early 1980s OS deployed archaeological Field Investigators (FI) in every corner of the United Kingdom. All were recruited from the existing ranks of OS staff. None had any formal archaeological training and few had any knowledge of archaeology before they joined the Division; despite this some of them became expert at the observation, identification and depiction of antiquities. Others, it has to be said, did not. However, the ability of even the best of the FIs to undertake archaeological mapping to a high standard was restricted by the rules laid down by OS for their operation and by constant pressure from their superiors in OS for speed in the execution of their duties. OS was not, after all, in the business of undertaking archaeological research but of making and publishing current maps.

As a general rule OS Archaeology Division did not set out to find new sites, except through air photo investigation (ADI III D 1(a)). The task of the FIs was simply to check the depiction of known sites. If in travelling between these sites an FI made a new discovery, that was a bonus. In time many of them developed an interest and became adept at spotting likely locations, to which they made detours; many new sites were discovered in this way but it is important to understand that this was not part of their brief and was, in fact, strictly against the rules (ADI III E 2.3). It is therefore inappropriate to expect the OS Record to be comprehensive. Many sites, including some relatively prominent ones, escaped the Record not because OS FIs failed to recognise and record them but because their work routes did not lie near them. The danger, because of this factor, of using the OS Record to compile distribution maps of classes of archaeological monuments has been pointed out by Halliday (1990, 60).

Similarly, not all classes of earthwork were regarded as being within the OS mandate, because not all classes of earthwork could be published on the maps. As a result a DMV, for instance, would be surveyed but its associated ridge-and-furrow and field tracks would not. The FIs did not have any discretion in such matters (ADI III E 3.2(a.ii) and III G 1 a 4).

Just as the OS Record is not comprehensive, neither is it consistent. Some FIs failed to develop any real interest in archaeology and had a lackadaisical approach to their work. One or two FIs were even reluctant to go far from their vehicles and sites remote from roads were unlikely ever to be visited by them; the reports of these FIs too frequently consist only of the terse comment, 'No change', the term normally used when a site was found to be correctly depicted on the existing maps. The managers of the Archaeology Division were not unaware of the problem; in the mid-seventies they sacked a number of inefficient FIs, sending them back to mainstream jobs with the Regional field teams, and replaced them with new recruits.

Nevertheless, the amount of 'new' archaeology captured by the FIs was enormous. In the 1960s it was

possible to anticipate a good career in OS Archaeology Division. The end of the national resurvey was still about 15 years away and there was a vast amount of work to be done, especially in the highland zone; the FIs felt themselves to be part of OS and had a high degree of enthusiasm and loyalty for the organisation. However, by the mid-1970s the situation had changed. OS was clear in its determination to close down Archaeology Division. Consequently those FIs with more interest in archaeology than in the OS began to distance themselves from the organisation; this was easily done in areas remote from Southampton. Alan Ayre had been appointed head of the Inverness office in 1967. A man of boundless energy, though not a very experienced archaeologist, he was a good OS field man; he would always go over the hill to see if there was anything there, and encouraged his colleagues to do the same. He would devise wide sweeps and circular routes to increase the possibility of finding new sites. Rules of thumb were developed for getting to know the area, to identify more and less likely locations for settlements, and checking them. This system began under Ayre as a mild bending of the OS regulations, but continued through the later 1970s by FIs who were increasingly out of control of OS and no longer feeling much loyalty to it.

The existing Record does not necessarily reflect the diligence of the individual FI. The OS 495 cards originated as the authority for the publication of an antiquity name on the map. They developed into the record cards that are well known to-day in SMRs and the NMR, but a strict brevity was always maintained. Many FIs wrote copious field notes on the sites they visited but few of these survive; these field notes went through three, and at times as many as six stages of editing, before they were typed onto the cards³. It was not unknown for several pages of notes to be reduced to a couple of lines of typescript. The field notes themselves were destroyed (ADI III A 3.1); OS did not see itself as responsible for the maintenance of any but the simplest non-intensive Record. Record staff also had their work heavily edited, and were not given the opportunity to check the final version (Nicky Smith, pers comm).

The rapidity of the resurvey programme, particularly in 1:10560/1:10000 areas, was another serious constraint on the ability of the FIs to do their job as well as many of them would have liked. They seem to have accepted constant criticism from their superiors on this issue with philosophy and even humour. The demand for speed was felt by the Regional OS surveyors as well; one surveyor in Scotland received a very severe letter reprimanding him for his slow progress; he pasted the reprimand to a piece of thick card, pinned it to the wall of his office and wrote under it, 'A Stiff Letter.'

It goes without saying, perhaps, that the FIs could visit any site only once. They did not have the luxury of multiple visits, with the benefits accruing therefrom so eloquently described by Fleming (1988, 39).

Because the information gathered by the FIs was geared to map publication and because each site published had to be fully labeled there was a strong presumption in favour of positive identification. Though FIs were encouraged to discuss any conflicts or difficulties of

interpretation in the text of their reports, the Latest Correct Description had to be a definite statement. Neutral terms such as 'mound' and 'enclosure' were employed but there was a reluctance to use them. The Record therefore consists largely of definitely classified sites, whereas in reality many of these classifications are doubtful or even erroneous. The terms 'possible', 'probable' and 'alleged' were used extensively but unfortunately these subtle and meaningful qualifiers lost prominence, in England at least, on the initial computerisation of the Record.

Having made these general points about the policies and circumstances which affected the FIs, we can look in more detail at the development of the field sections and their day to day working methods.

The first archaeological surveyors were recruited in the autumn of 1948 and their initial training began the following spring; a short introduction to British archaeology and archaeological literature was followed by instruction from Phillips in the general principles and techniques of field archaeology, reinforced by visits to various typical sites in southern England. The application of aerial photography to archaeological fieldwork was explained. As the recruits were already trained surveyors, further instruction in this area was limited; the use of the plane table was expounded for the benefit of those who had not previously used it. In January 1952 the first full archaeological field course was held and new entrants were then posted to their field sections. Further courses were initiated as the field establishment increased and refresher courses were held at intervals.

In September 1949 the field programme began. Surveyors were sent out on two pilot schemes to gain experience and to develop efficient working methods. The two areas, West Sussex and Essex, were chosen for their contrasting geology, topography and archaeology. Further pilot schemes were carried out on Dartmoor and on Hadrian's Wall.

Following the evaluation of working methods and procedures provided by the pilot schemes, the county was chosen as the most convenient unit for recording and fieldwork. Initially the field sections were responsible for their own recording, carried out in the county Reference Library, Record Office and local Museums. By this means the surveyors became acquainted with the area and its antiquities in advance of fieldwork, and the recorders at Chessington were able to concentrate on compiling the Record index which was, in due course, to be sent to the field sections for investigation. County investigation progressed well throughout the 1950s but it was not destined to be completed.

The increasing momentum of the 1:2500 Overhaul programme for the national resurvey forced Archaeology Division to drop County Investigation in order to fulfill the Overhaul Diagram Requirements (ODR), with Archaeology surveyors providing Antiquity Models prior to the start of the Regional surveyors' work in the diagram. This began in 1958 to provide archaeological information for Overhaul diagrams in areas not yet covered by the County Investigation programme. This put enormous pressure on the Archaeology Field Sections and involved frequent

movements between diagrams in order to meet the Overhaul programme start dates. In the two years between March 1959 and March 1961 Norman Quinnell, for instance, had to shuttle between Somerset, Hampshire, south Wales, north Wales, Devon and Cornwall (Mead 1989, 8). Sometimes the Archaeology surveyors were able to deal with previously published antiquities only. The intention in these cases was to return to these areas later to bring them up to County survey standard but this was seldom achieved; little County Investigation was ever done in the whole of northern England, for instance. During quiet periods in the Overhaul programme County Investigation was resumed but this ad hoc regime was inevitably inefficient. The imperfection of this enforced work programme accounts for many of the weaknesses in the Record. ⁴

In 1952 there were six Archaeology Field Sections, one to each OS Region, and in the early 1960s an extra Section was formed in Scottish Region, based in Inverness, to deal with the additional work attending the new 1:10560/1:10000 survey programme. Each Field Section comprised a Grade III surveyor and two Grade IV surveyors. Officially the Grade III was responsible for administration and the training and general supervision of the Grade IVs. With such small Field Sections, however, the Grade III was more the senior hand than a supervisor or administrator; he would spend most of his time on fieldwork either working alongside a Grade IV or taking up a sheet himself. Most tasks were undertaken by 'single man working' and some FIs did not see their supervisors for days on end, which could occasionally lead to problems with quality control and the maintenance of morale and necessary support.

Single man working was considered to be the most efficient means of deploying the Division's relatively meagre field workforce. This precluded the possibility of instrumental survey but the Archaeology Division FIs demonstrated brilliantly just how much can be achieved by graphical survey methods. Armed only with tapes, prismatic compasses, the ubiquitous optical squares - known affectionately as 'popeyes' - and pocket sextants, the FIs supplied archaeological detail to a high degree of accuracy in every type of terrain in the British Isles. Only in rare circumstances were they defeated and forced to fall back on more time-consuming instrumental methods. Field Sections were expected to borrow an instrument if they needed one, presumably from the Regional offices, and were not necessarily expected to have any staff qualified to use one (ADIII E 3.2(b.iv)).

The ability to locate a site precisely in the landscape and to survey it accurately by resectioning, by extending lines and by other traditional surveying techniques is an area in which most archaeologists are untutored. These skills, as well as a true appreciation of the capabilities of various mapping scales, were ingrained in the FIs and enabled them to enhance the OS Record to a remarkable degree. Graphical survey, though a low-technology method, is highly accurate in the hands of skilled surveyors. Moreover, because it involves intensive physical contact with the site or landscape, it affects the way the practitioner sees the archaeology, increasing the awareness of spatial and chronological relationships.

The 'vehicles of field work' (ADI III E 1.3), or paperwork, with which FIs were equipped were record cards, field sheets, Antiquity Models and strip maps for Linears. The field record cards were originally foolscap sheets called OS 108s, on which Record staff would supply any information likely to be of use to the FI, such as the addresses of local informants; the FI would then use this form for his report which was subsequently transferred to the OS 495s. The ADI specified that 'Written work will be tidy, legible, well-arranged and clearly expressed ... Good arrangement and clear expression are necessary to accurately reflect the investigator's knowledge and observation' (III E 2.20(b)). Apparently management were allowed to split infinitives, however. Brevity was also stressed: 'All written work ... must be set out to meet, but not to exceed, the purpose of the records requirements' (*ibid.* (c)). The field sheets were simply expendable copies of the Record Sheets.

The Antiquity Model comprised old County Series 1:2500 sheets and was used in the first place by the FI to provide an accurate annotated survey of the archaeological detail, secondly by the Regional surveyor who transferred the drawing to the MSD and thirdly to issue instructions to the fair draughtsman as to the appropriate proper name, descriptive term and typeface to be applied. Finally the antiquity model was returned to Archaeology Division to be affixed to the Record card.

When a completed block of work was passed back by the FI to his superiors criticism could be sharp: 'The field report should have been more detailed and a sound argument for presenting the work as a fort put forward ... The penning to put it bluntly is terrible. Where you have added to published slopes your bottoms are as thick as the pub. tops and there is nothing to be said for either individual tadpole drawings or the way they have been used to depict the detail ... You might try spacing out with a ruler and setting your slopes off with a setsquare' (MS Remarks regarding Craigmawr, Radnor (now Powys), in the possession of S. Ainsworth).

Ground photography was recognised as an 'efficient and economical method' of recording antiquities such as buildings, crosses, standing stones and cairns or for illustrating specific points in a report (ADIII E 2.9) and FIs were supplied with cameras. Prints from their photographs were attached to the OS495 record cards.

In 1959 survey for the 1:10560 map areas began in the north of Scotland. This programme presented the Archaeology surveyors with new problems in archaeology, survey and depiction as well as access, terrain and climate. Many types of antiquities encountered in the highland zone were new to the OS surveyors and familiarisation was hindered by the paucity of recent research and documentation. The Royal Commission provided some assistance to OS in this phase of activity.

In parts of the highland zone the absence of roads and tracks caused problems of access. In a nine-hour working day as much as six hours could be spent walking and only three hours on 'progress'. Regional surveyors could call on the services of a helicopter to solve this problem but because Archaeology survey had to be done

in advance this luxury was generally denied to Archaeology FIs. Occasionally arrangements were made for the use of a helicopter to visit sites which would otherwise have been inaccessible, such as early monastic stack settlements in Shetland. On most occasions however, FIs were obliged to row themselves to island sites. The Inverness Field Section bought its own fibreglass dinghy in 1965. Though small enough to fit in the back of an estate car this dinghy proved to be heavy and unmanageable. It was used extensively in the survey of the Uists, Benbecula, Barra and adjacent islands which included many loch sites. The boat was so difficult to control that they gave up rowing and paddled backwards, carrying the boat from loch to loch, or dragging it with a home-made harness, on a pre-planned, circular route over an eight or ten hour day. This was exceptionally hard physical labour; the crannogs of the islands were all surveyed by the two youngest and fittest members of the Section. After this experiment they abandoned the dinghy and thereafter hired local boats as they were needed, occasionally hiring 40ft. fishing boats to take them to the remoter islands - at the convenience of the fishermen.

Survey in 1:10000 areas was generally restricted to a summer season from May to September with FIs working a seven-day week. Some attention was given to the health and safety of FIs. They were given a special clothing allowance and issued with a 'survival pack' containing a torch, whistle and fluorescent orange sheet to aid a search party. The FI was also required to leave in a visible position in his car a map showing his intended route. The health and safety rules appear to have been remarkably successful; in all the years when FIs were in the field, in some of the toughest terrain in Britain, there were no deaths and no broken limbs among staff while on duty, though there were plenty of sprained ankles and stories of miraculous escapes.

The archaeological survey of 1:10560/1:10000 areas was undertaken by air survey methods, the plots being field-checked by the FI. While survey was undertaken at 1:10560 Archaeology Division supplied an Antiquity Model at that scale but when the scale changed to 1:10000 a more complex system was required to transfer detail accurately from the 1:10560 Antiquity Model to the 1:10000 Master Survey Document (MSD). Archaeology field investigation was carried out a year in advance of air machine plotting and the FI received copies of the air cover on which he marked any antiquities. He supplied additional control points, either normal map detail or natural features, if an antiquity could not be clearly seen on the photograph and supplied a divorced survey tied in to these points on a separate Advice Sheet. He also supplied a large scale (up to 1:1250) survey for the Record. If the air machine plotter had difficulty in plotting the antiquity the FI completed the survey using the control points he had established. This method proved adequate for most types of antiquity but more extensive sites, such as depopulation settlements or shieling groups, caused difficulties. In fact such sites were not within the OS mandate, which had a terminal date of 1714, but the Scottish archaeological community, led by Horace Fairhurst, persuaded Rivet to include them in the survey programme. It was clear, however, that OS could not afford the time to deal with every site in these classes; in the case of

depopulation settlements effort was restricted to those which could be named and only a representative sample of buildings was surveyed; occasional exceptions were made for un-named sites with particularly well-preserved remains. If the FI considered that the houses were visible on air photographs he would contact the air machine plotter and ask him to supply them, giving the number of buildings; if the air machine plotter saw 25% or more of them this was considered a representative sample. A similar approach was taken in the case of shielings, action being confined to groups in close proximity to 'airigh' names. Later one or two more depopulation settlements, such as Suisnish on Skye, were added to the Record by the zeal of ex-Archaeology surveyors working for the Regions.

Though the Archaeology Division, following the Royal Commissions, had adopted a terminal date of 1714 some flexibility was allowed; 'fundamentally significant structures' of the Industrial Revolution could be included, as could 'certain natural features with historical or folk-lore associations' (Stanhope-Lovell 1976, 2-3). Wade's Roads in Scotland, though outside the mandate, were always dealt with by the Field Sections when encountered, because they were features of wide interest and because considerable information about them was already available in the literature.

As we have seen, OS was not greatly concerned with advancing the frontiers of archaeological knowledge but on occasions this attitude might be relaxed, if only in the interests of cartographic expediency, or where cartographic expediency could be used to sell the idea to the OS. An example of this occurred early in the 1:10000 survey programme when Archaeology surveyors discovered large concentrations of small cairns in addition to those already depicted on the 1st Edition maps; the distribution of these cairns was known to extend from Shetland and Orkney to Yorkshire and Derbyshire and into Wales, but there was no information available as to their interpretation. If they were burial cairns, as was often assumed, OS would be obliged to survey them, which would be an immense undertaking. If, however, an alternative interpretation could be found, the obligation might be avoided. An intensive scrutiny of some of the better specimens was instigated, including large scale (1:1250) surveys, and it was established, to the satisfaction of OS, that the cairns were the clearance heaps of prehistoric field systems. Therefore OS had only to apply the term 'Field System' on the map and survey action was unnecessary, except in those cases where there was clear evidence of a funerary function. The results were published by Feachem (1973) in his capacity as Archaeology Officer. Despite the subsequent demonstration (RCAHMS 1978, 8-10) that small cairns without visible cists, kerbs or other indicators of funerary function, did sometimes contain burials and that the 'cairnfield equals cultivation' equation was not necessarily correct, Archaeology Division had made a valuable contribution to the study of prehistoric agricultural systems in highland Britain. Opinions differ amongst ex-Archaeology Division staff as to Feachem's role in the cairnfield episode; some say he took the credit for it by publishing the results under his own name though he had taken no part in the project, while others take the view that research into early agricultural systems was one of

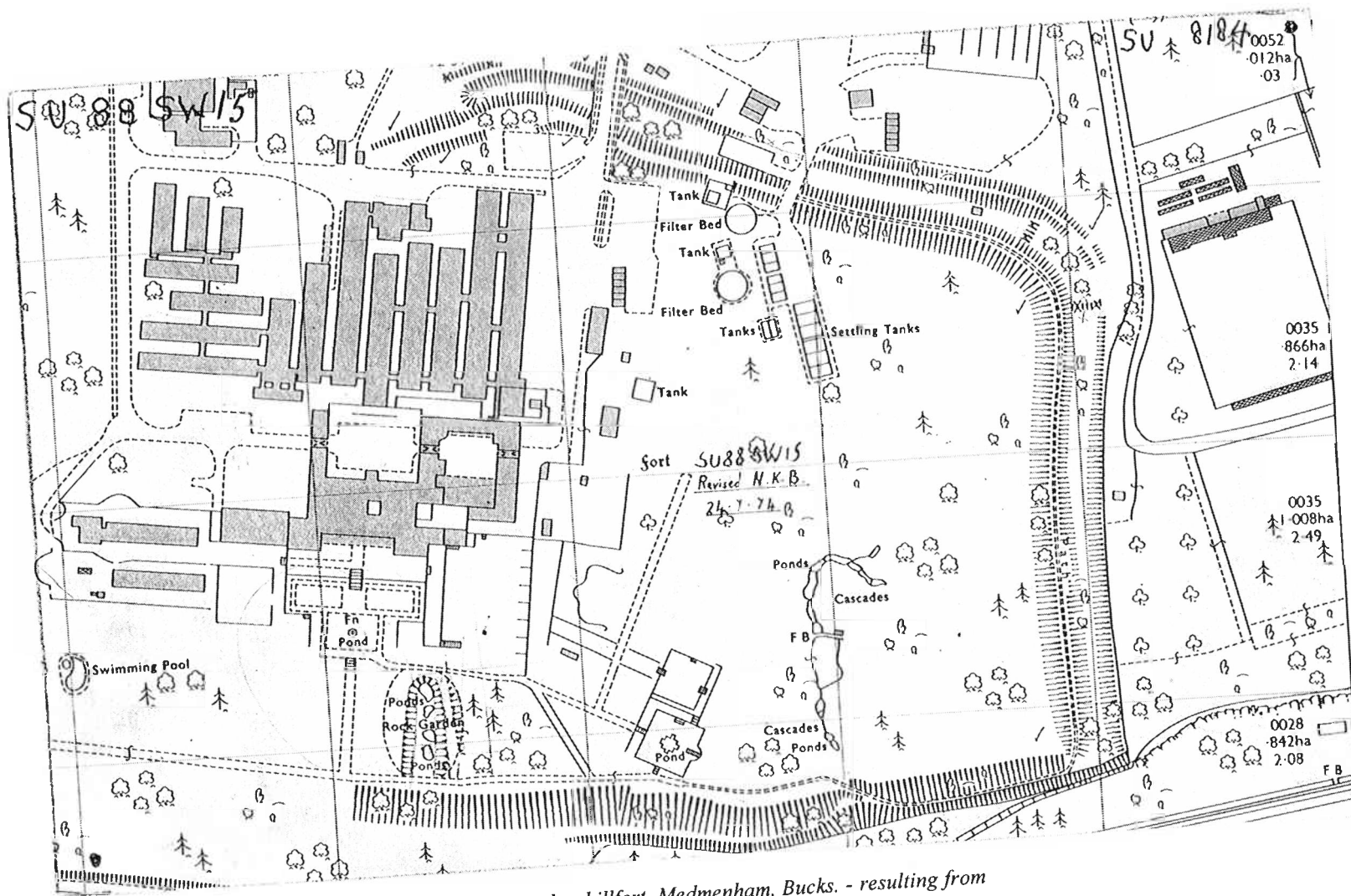


Fig. 2. Illustration card for SU 88 SW 15 - Danes' Ditches hillfort, Medmenham, Bucks. - resulting from Ordnance Survey map revision in 1974. Crown copyright. NMR.

Feachem's own academic interests and that he was using OS FIs as his personal research workers.

Other specific problems led to one-off research programmes. Field investigation of iron bloomeries in the Furness area of Lancashire (now Cumbria) took place for a week in July 1956 because of problems noted by Record staff. These sites had been published on earlier Six-Inch editions, labelled as Roman bloomeries and omitted entirely on a recent edition due to the lack of evidence for this dating. A combination of documentary research and field investigation enabled a number of these sites, probably of medieval and post-medieval date, to be restored to future editions. Another research project was the 'Iron Age Exercise' which took place in Scotland in the late 1960s and early 1970s, geared to the production of a Period map, the *Iron Age Map of Northern Britain*, which was never completed.

The rigid form of the site-based, non-intensive Record led to the loss of potentially valuable information in some circumstances. The 1:10000 air mapping of the Cheviots showed a wide range of historical features, such as old field boundaries and ridge-and-furrow, but these were erased by the Archaeology Division Field Section responsible, without copies being made. The reason for this was that, though some FIs argued that they should be put into the Record, there was no mechanism for including such 'landscapes' in the site-based Record. A considerable, if small scale, landscape survey was thus lost. Nevertheless one archaeological landscape, at Grassington, N. Yorkshire, was surveyed by OS, in collaboration with Arthur Raistrick, in 1964. This document, a 1:2500 air survey with ground survey additions and annotations by Eric Waight and Dr. Raistrick, survives in the NMR, but it is unique.

Until 1973 'sites of' and findspots were recorded and surveyed as the Davidson Committee had recommended. Fieldwork for this aspect of the task included visits to Record Offices to examine sources such as tithe maps, enclosure awards and estate maps for significant field- and place-names. Museum registers were also consulted for siting information. The evidence was then checked on the ground but field effort was proportional to the perceived importance of the antiquity and the likelihood of establishing an accurate site or findspot. The proper names of antiquities were also recorded and, where possible, confirmed by local enquiry. The FI attempted to confirm that the name remained in local use but if this proved impossible it would not result in the removal of the name from the map; the principle was that names which are themselves of antiquity should not be subject to local whims. English proper names did not often cause problems but Gaelic or Welsh names could; advice on these matters was obtained from the School of Scottish Studies in Edinburgh University and from the Board of Celtic Studies in Wales.

The transfer of the Archaeology field sections to the OS Regions in 1977 placed them under the control of the Chief Surveyors, Geodetic Services, and meant that the Regions could call on archaeological surveyors to do non-archaeological work, which they increasingly did. This

decision must be seen as a move in the OS scheme to close down Archaeology Division. Gradually the Archaeology field sections were disbanded and their members absorbed into the General Revision sections. Some splendid rearguard actions were fought; in central Scotland, John Linge insisted on finishing the work in hand on the Antonine Wall before being put on to general surveying duties; but eventually only Norman Quinnell's team in the south-west of England and Keith Blood's team in the north of Scotland were doing any archaeological field work. The other side of this coin is that after the demise of Archaeology Branch non-archaeological surveyors were occasionally sent out by the Regions to survey archaeological sites - not an entirely happy situation for the integrity of the Record. A summary of Archaeology Branch manpower (typescript annotated table in the possession of S. Ainsworth) shows a fall in total staff levels from 69 in 1975 to 34 in 1982 and notes that 'The steady decline in office strength is due entirely to retirement and transfers out by personnel anticipating Serpell and not wishing to leave OS ... in the event the unconscionable delay in Serpell proved embarrassing.' About a dozen Record staff joined the Royal Commissions on the closure of Archaeology Branch. The number of 'Archaeology trained surveyors willing to transfer to RCHMs' was estimated at 16. In fact less than ten FIs transferred to the Royal Commissions on Historical Monuments in 1983.

The Ordnance Survey legacy to British Archaeology

It is now sixteen years since the OS Archaeology Division merged with the Royal Commissions in England, Scotland and Wales. Ultimately fewer staff moved to the new organisations than was anticipated, and the OS-style recording programmes and field techniques have been substantially modified over that time. The development of national archaeological mapping programmes post 1983 has to be the subject of another paper.

As is stated in many learned papers and as we stated above, the OS Record Cards are the backbone of the computerised National Monuments Record inventories, and of county based Sites and Monuments Records. However, in such overarching statements the specific achievements and legacy of OS archaeological activities, particularly field survey, can be reduced or taken for granted.

This may be contentious but the authors of this paper believe that the OS Archaeology Division delivered at least five major contributions to British Archaeology, which should not be forgotten.

[1] *The National Non-Intensive Record*

Seen in retrospect rather than by intent, the OS Archaeology Division completed a 'national non-intensive record of archaeological sites' in mainland Britain in a systematic and disciplined manner. No other archaeological organisations, even the Royal Commissions with their remit to deliver national inventories, have yet equaled that achievement.

This is not and never could have been a 'complete' record, but in terms of observing and mapping major

upstanding monuments of the traditional prehistoric and medieval periods, principally in the rural landscape, the OS made a major contribution.

In 1983 the card index was substantially up to date in terms of bibliographic trawling; the OS had delivered to the Royal Commissions the capability which they did not have at that time of producing a national computerised inventory, and the possibility of national distribution plots by monument type.

[2] *Data Standards and Documentation*

It is perhaps not a surprise that an organisation with a strong and historic military background and pedigree should have developed very capable information flowlines, work schedules, documentation and data standards. The fact that they achieved all of these elements, which are now embedded in modern archaeological management jargon in such delights as MAP2, MIDAS and PRINCE methodology, in the hazy pre-RESCUE days of the 1950s, is a remarkable contribution. As anyone who has had to write up historic excavation archives from the 1950s to 70s will know, archaeologists at that time were a little bit relaxed about documenting procedures, processes and findings. It is possible to place the OS record in context because the OS documented their procedures in a methodical and accessible manner through the developing ADI series, a structured recording and archive system, and publications (e.g. OS 1973).

As we have suggested, the documentation process may have been too rigid in editing out some of the creativity of individual Investigators, but overall it does allow a user of the record awareness of the context within which the work was created.

[3] *Air Photograph Interpretation and Mapping*

Other than the pioneering work by Crawford, the OS is rarely given any credence in the published histories of archaeological aerial photography, interpretation and mapping (see for example Wilson 1982, Riley 1987 and Bewley 1993) and is merely listed as a potential source of photography. As we have indicated above, the systematic use of aerial photography for both office based transcription and as a supplement to field survey was well established, particularly with regard to the 1:10000/1:10560 basic scale mapping projects in the upland zones. This combination of using air photography integrated with ground survey was well established as a day-to-day technique before the creation of national Air Photograph libraries, grant funding for regional flyers and air survey based National Mapping Programmes.

[4] *Basic Scale Survey*

The OS field teams mastered the art of economic, accurate basic scales mapping of monuments in the field. Their pragmatic use of basic survey equipment - tapes, compasses, optical squares - and the natural confidence of people who knew where they were in the landscape, resulted in clear simple depictions of the most complex monuments. Despite the OS investing in new technologies

of map production the battle to retain the hachure was won, and the hachure still remains today as the most efficient way to show field archaeology on maps. In England the introduction of OS Field Investigators to the Royal Commission's survey teams revitalised the programme of archaeological survey, which developed from individual monument recording to the total landscape surveys of the 80s and 90s. OS Field Investigators like Keith Blood continued their mapping and interpretation work wearing two hats. Fig. 3 shows the sites Keith worked on in England for the OS and RCHME. Taken with all the monuments Keith recorded in the Scottish Highlands (Davidson *et al.* this volume; Linge, this volume) it illustrates the input and value of the far travelled OS field investigators to British archaeological landscape recording.

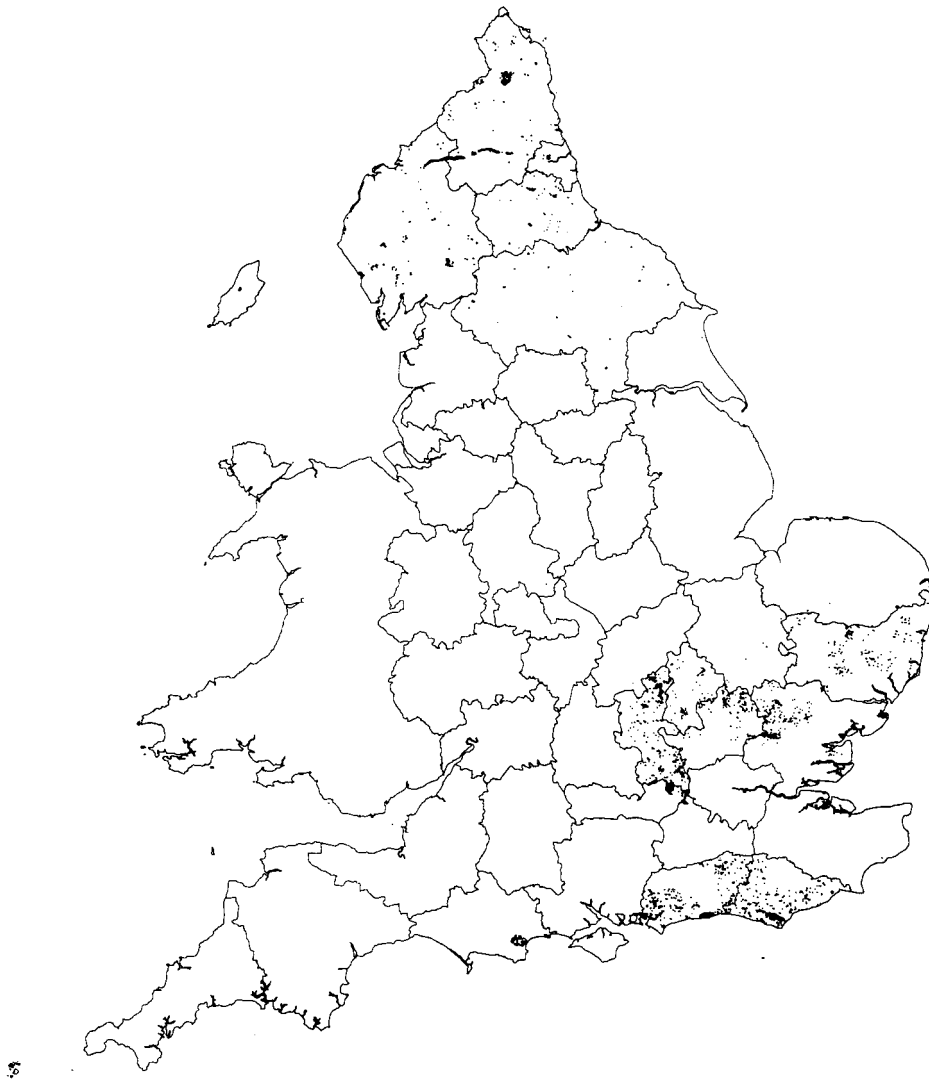
[5] *Public Involvement and Voluntary Recording Schemes*

Another unsung element of the OS Archaeology Division was its use of a wide range of honorary correspondents - enthusiastic amateur and professional archaeologists who were issued with copies of 1:10560 record maps (and more detailed mapping where appropriate) to which they added sites and find spots they had located and investigated locally (OS 1950; OS 1958). Between the 50s and 70s this programme was probably the only significant national voluntary participatory archaeological recording scheme. The scheme itself suffered a little because of the varying quality of the records submitted, but its intent and formalisation within the recording programme showed great foresight.

It is only in recent years, with new Lottery funded projects such as Defence of Britain and the DCMS pilot schemes for the voluntary reporting of archaeological finds, that any other such national participatory scheme has been attempted. Only in Scotland has there been a healthier tradition of voluntary reporting schemes highlighted by the ongoing publication of the *Discovery and Excavation* series.

Using the Record Today

The most visible component of OS field investigation remains the depiction of monuments on all OS published mapping. The OS card index and survey drawings were assimilated into the archives of the Royal Commissions in England, Wales and Scotland. Perhaps one of the saddest elements of the OS legacy is that the computerisation of the record cards, but not the antiquity models or illustration cards, has created the impression today that the primary OS product was text. This has led to a loss of connection between survey drawing and text, and an over-reliance on the printed summary text descriptions rather than the pictures and survey drawings. Anyone making an interpretation of an OS Field Investigator's report on the basis of reading text alone is not doing the OS Field Investigator justice or doing justice to their own research. There has recently been a belated appreciation of what the OS Archaeology Division gave to British Archaeology through publications such as



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Fig. 3. Sites in England surveyed by Keith Blood whilst working for OS and RCHME.

the Monuments at Risk Survey (Darvill and Fulton 1998). Others who want to appreciate the recording work should strive to consult the records and archives in the National Monuments Records. The original cards, antiquity models and linear files are still available for consultation alongside the computerised text.

For approximately three decades the OS Archaeology Division bore the brunt of archaeological field survey and recording in mainland Britain. A principally non-expert body of staff using a combination of tried and tested field techniques with enthusiasm and initiative created the national framework on which all subsequent survey projects have been built.

Acknowledgements

We would like to record our thanks to all our ex-OS Archaeology Division colleagues for their assistance. The opinions expressed here are the authors' and do not necessarily reflect those of any other individual or institution.

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Notes

¹ Except where specified the sources for this section are Phillips (1980; 1987) and personal communications from Keith Blood.

² Except where otherwise stated, the sources for this section are personal communications from Stewart Ainsworth and Keith Blood.

³ The latter figure has been denied to us by one former senior officer of the Division but others have insisted that it is true.

⁴ There was a time-lapse in completion of the national resurvey; most of South-East England was completed by the early 1970s and County Investigation was resumed, while in the north of Scotland resurvey was still in full swing. By 1975 the majority of the Highlands was complete and only parts of southern Scotland remained.