From Artefacts to Anomalies: Papers inspired by the contribution of Arnold Aspinall

University of Bradford 1-2 December 2006

The Ancient Monuments Laboratory and its Geophysics Section
An Imperfect History

Andrew David
English Heritage,
Fort Cumberland,
Eastney,
Portsmouth PO4 9LD
02392 856764
Andrew.David@english-heritage.org.uk

Introduction

Last year the Ancient Monuments Laboratory, the 'AML', or 'The Lab', as it was more familiarly known to many of its friends, would have celebrated its 55th anniversary under that name. Although it lost its old tag back in 1999, as it merged with into the larger and more integrated Centre for Archaeology, it can be reported that, despite this penultimate upheaval, it survives intact after more than half a century - if not in name, then more prosaically as the major part of the Archaeological Science and Archaeological Archives Team, of the Research Department of English Heritage.

Delving back in time, through what records remain (mostly civil service files) has been a mixed experience: not only for revealing the relentless struggles that the laboratory went through in its formative years as a sort of back-room state antiquities service desperately trying to cope with the increasing flood of material from Ministry excavations; but for knowing more personally of its later coming of age during the culminating years of 'rescue archaeology', and then on into the PPG16 era. There is, however, the sobering realisation that much of the earlier concerns, and the tribulations they engendered, still ring so familiarly today. The earliest records include the perennial worries about what the Laboratory's research role should be, versus its service role; how can it keep pace with increasing demands; equip itself, and cope with a huge backlog – all with limited resources. Staff inspections, budget and manpower shrinkages, grading issues, reviews, reorganisations, re-badging and relocations have featured at one time or another throughout all these years, and will surely continue. Nonetheless, in its current incarnation the Lab survives surprisingly intact, looking forward to the next half century!

Early history

How did it all begin, in the days long before quangos, when Ancient Monuments and their protection was a responsibility vested with the Ministry of Works?

The first stirrings of what would become the AML still need to be properly sorted out. Even in the late 1950s, no-one seemed to be quite sure. The second of many reports on the Lab, undertaken by the Organisation and Methods Branch of the Ministry of Works in 1959 declares that it 'apparently began as a Finds Preservation Workshop in the 1920s when the British Museum could no longer conveniently handle the Ministry's finds'. The work then consisted entirely of the treatment, restoration and preservation of museum pieces and finds from Ancient Monuments in the Ministry's charge. Scientific examination or analysis was seldom required; if it was necessary a request was made to the British Museum or the Victoria & Albert Museum' (MoW, 1950, 1). There was a pause throughout the course of the War, 'but operations were resumed in 1946, apparently on the same basis as before, and continued until the appointment of the present officer-in-charge of the laboratory in 1950' (*ibid*). This individual was of course none other than a 29 year-old chemist called Leopold Biek, more universally known to posterity as Leo. What help he had to start with is unclear but later he had three technical assistants and some clerical help for half a day a week. It was from this moment that the Ancient Monuments Laboratory took shape.

Four years after Leo's appointment an inspection of the work of the laboratory reported that about 75% of his work was 'purely technical and concerned with the actual preservation of finds' but mention crept in of 'research, including chemical and X-ray analysis, photography and spectrography (the latter carried out on the Courtauld Institute's equipment). A later report, in 1958, stated that the Lab's duties were 'scientific examination (X-ray, microscopic, chemical), cleaning and conservation of finds from guardianship and rescue sites'; it also acted as a 'technical agency through which soil samples, geological specimens etc are submitted to outside specialists for analysis', and, finally it acted as a 'technical agency through which special surveys are arranged eg megger surveys by the Test Branch, Harwell isotopes (Stonehenge)'. Whilst scientific work, including geophysical survey, was therefore obviously and characteristically being encouraged by Leo this was typically under his own initiative - as the O&M report points out that 'there was no trace of any instruction, direct or implied, that this should have taken place'. Indeed, the Chief Inspector of Ancient Monuments explained at the time that the 'Ministry's small laboratory was to treat finds to the extent necessary for the writing of excavation reports', and that therefore treatment rather than analysis was the main intention.

To begin with, the Laboratory had a floor space of only 200 sq feet on the 4th floor of Lambeth Bridge House, but in 1958 was moved to more palatial accommodation, of 700 square feet, on the ground floor, at a cost of £2,385. There was no increase in staff, though, and with Leo often off on his travels visiting digs, a backlog was building up in the basement, and finds might remain there for two years before they were examined or treated. The inspectors of O&M made it clear, amongst other things, that this unsatisfactory situation was happening because of the intrusion of analysis, or research, at the expense of treatment. The result was a dry series of directives to the officer-in-charge including an instruction to concentrate on cleaning and preservation of finds, and that other services should be curtailed.

The staffing level remained largely unaltered for several more years. Despite the dry directives, however, Leo evidently continued his frowned upon practice of 'analysis' and at some point thereafter the Laboratory sub-divided itself into two – a Conservation Section, utilising the original laboratory space, and a Research Section,

both of which still had to operate with a combined staff of only three qualified individuals and a clerical officer. In 1963, or thereabouts, the Conservation Section was evicted from Lambeth Bridge House and moved into the offices of the former Colonial Office at Sanctuary Buildings, Great Smith Street, in Westminster SW1. With so few staff, divided between two locations, and the pace of rescue archaeology picking up all the while, it comes as no surprise that the Lab would struggle to cope. Indeed, in July 1964, the problems of its accommodation and limited output were raised in Parliament, a sure symptom of lobbying from those archaeologists unhappy at prolonged delays with the treatment and reporting of their finds. Despite the leverage this provided, progress continued to be slow. The official response was surprise 'at the very substantial changes in the scale of staffing the laboratory proposed' and it was recommended that the Treasury should conduct a review - and in the meantime that the Lab should just get more help from institutions such as universities and the British Museum. The review the following year confirmed the serious problems with the backlog but it was not until 1966 that the Treasury grudgingly agreed to the appointment of a Chief Laboratory Officer remarking, sniffily, that 'taken as a whole, however, this service can hardly be regarded as essential and we therefore think you should move slowly in the matter of additional staff'. 1966 was, however, a turning point. In September that year, John Musty, a chemist from the staff of the Army Research and Development Establishment at Porton Down, was appointed as Chief Laboratory Officer, Leo was side-lined, and the total staff complement rose to a dramatic eleven.

The 'Rescue' years

The stresses the Lab was enduring were of course as much a direct reflection of the escalation of archaeological fieldwork as of the waywardness of staff or of departmental stinginess and indifference. In his reminiscences Geoff Wainwright has noted that archaeology in the 1960s seemed in good heart and that the decade 'was truly the age of innocence' (Wainwright 2000, 913).
The Ministry was funding ever-larger excavations by its inspectorial staff and a variety of substantial projects were happening across the country undertaken by these and others; and by the end of the decade the rescue imperative was gathering pace. The increasing flood of finds and samples, concomitant with an accelerating acknowledgement of the role of science (Brothwell and Higgs 1963) was more than the Lab could cope with, on top of its legacy from earlier years.

Once John Musty was in the driving seat he applied his energies to a fresh campaign for recognition and recruitment. One of his first moves was to add a third section to the Laboratory – a Geophysics Section, albeit composed of just one newcomer, a former Assistant Physicist in charge of the Micro-Assembly Laboratory of the Distillers Chemical and Plastics Company who was an archaeologist in his spare time and had been inspired by Richard Atkinson's first use of electrical resistance to map buried ditches, at Dorchester-on-Thames, Oxfordshire. This was of course Tony Clark who had gone on in 1956, to help John Martin invent the Martin-Clark Resistivity Meter - successfully tested the following year over the Roman town wall at *Cunetio* in Wiltshire. Tony was thus well qualified to become the first full-time professional archaeological geophysicist in the country, joining the Lab in March 1967.

The Ministry had already recognised the value of Atkinson's work and had encouraged him to use resistivity surveying at Brian Hope-Taylor's excavations at Old Windsor. The method was also taken up by the Ministry's own Test Branch who made other surveys using their Megger Earth Tester and even made what mst have been pioneering experiments with multiple electrode configurations. On his arrival at the Lab, Tony joined in with this work and before his first year was out had already undertaken 19 surveys, mostly single-handedly but with help from the Test Branch for 8 of them. The intention was quoted to be 'to derive data in advance of excavations so that guidance could be given to the excavators, and to amplify excavation results to save the expense of additional cuttings' (AML Quarterly Report, March-December 1967). There had been an emphasis too on stepping up the size of areas that could be surveyed, coupled with the recognition that a range of equipment, including a magnetometer and soil augers as well as the resistivity apparatus, was needed to deal with the variety of response encountered on different sites. At Durrington Walls, a proton magnetometer survey identified a central ring ditch, which coincidentally has partly excavated this summer - nearly 40 years later, as part of the Stonehenge Riverside Project. At the same time, Tony was pressing ahead with ideas for the automatic recording of survey data, and was also in contact with Mark Howell, ordering one of his soil conductivity meters for the Lab at a cost of £145.

The productivity of surveys increased again in the following year - to 25. Indeed 1968 was a very prominent one for archaeological geophysics, starting in March with the first one-day symposium on 'Archaeological Prospection' organised at Oxford by Martin Aitken of the Research Laboratory for Archaeology and the History of Art. The programme included John Musty on the AML surveys of 1967, Tony Clark on his research into the Square Array, and Arnold Aspinall with John Lynham on induced polarization techniques. Frank Philpott turned up too and demonstrated the newly developed Plessey Company fluxgate gradiometer. Later in the year there was collaboration with the Universities of Oxford and Wales at South Cadbury; and at Burton Fleming in Yorkshire, the Universities of Essex, Oxford and Bradford, together with the Military Projects Division of the EMI company, collaborated with the AML in the testing of various instruments, including Mark Howell's 'Soil Anomaly Detector', pulsed induction meters, a proton gradiometer, as well as infra-red.

But, if geophysics was proving such a lively field, the Lab was still struggling with its other workloads and its massive backlog of material, estimated to amount to no less than 30 man-years of work, and alarming the Ministry into calling for another staff inspection. This was again critical of the depth of research being undertaken on finds, but accepted that the commitment to geophysics had 'proved worthwhile'. Nonetheless in the climate of 'manpower restrictions' even this worthwhile activity could not be supported by the requested additional Assistant Experimental Officer.

Evidently, though, the matter of the Lab's difficulties in coping with the growing mountain of samples and finds came to a head in January the following year when Nature published a highly critical editorial article entitled 'Digging but not Keeping' (Nature 221, 206-7, 1969). Although criticism of the Laboratory itself was somewhat veiled, the article condemned the 'pitiful inadequacy of resources', quoting the budget on which the Laboratory rubbed along as sounding rather like a joke, with £5000 a year for equipment and £2000 a year for running costs. The considerable investment

in excavations (£125,000/year) was blunted by the deterioration of the objects recovered; the Laboratory was still separated between two buildings; storage was inadequate; and the priorities adopted for selective treatment of material were called into question, as was - inevitably - the Laboratory's role in research. It was suggested that this should be farmed out, and that perhaps the Laboratory should be turned into a public corporation, charging investigators and owners for the work done.

As must of course have been the intention, this indictment caused a considerable flutter and was used to press home long-standing internal demands for improvements. Scarcely two months later the Minister was able to tell the House of Commons that the laboratory's staff complement had been increased from 11 to 17. However, Nature felt able to harp on, in August, about 'a conservation laboratory hopelessly overwhelmed by the amount of material dug up at the 91 sites excavated during the [previous] year (Nature 223, 1969).

Aside from all that, 1969 saw the 'worthwhile' geophysical survey programme extended to a further 26 sites. In July, David Haddon-Reece joined Tony Clark on a day-to-day fee paid basis, a Plessey Company fluxgate instrument was obtained and the first revolutionary trials of automatic recording of its output in the field were conducted, and plotting of survey data by computer had begun. Despite such obvious success, the Ministry mandarins were deaf to repeated pleas for further staff from John Musty and the Chief Inspector of Ancient Monuments, Arnold Taylor. Eventually, a small concession was made and David Haddon-Reece was made a permanent Assistant Experimental Officer in September of the following year, 1970, only made possible by the loss of another member of staff. This mean result followed on from yet another review of the Laboratory by the Ministry which recommended no change to the complement and resisted any upgrading of staff. The split accommodation of the Laboratory remained unresolved.

The effect on morale of such a review, and the on-going stress, can perhaps be imagined. The Geophysics Section was less beset by this than others and over 21 surveys were undertaken in 1970, with further development of automatic recording and computerisation. However, the stress of keeping pace took its toll on staff and concern was voiced that the number of surveys might be falling short of requirements. It must have been at about this time, or in 1971, that Tony Clark designed a wheeled electrode system intended to transfer the advantages of automatic recording of survey data to earth resistance survey. A prototype was built at Bradford and was tested in time for an introductory presentation at the Oxford Symposium in 1972. Despite such promotion, however, this development was far too unwieldy and never caught on – waiting another 30 years before Roger Walker triumphed with his wheeled cart.

Fortress House

Down south in London things were thankfully taking a momentous turn for the better. At long last the accommodation issue had been sorted out, and the Lab moved with the rest of the Inspectorate to the old home of the Ministry of Health, and of the Civil Service Department, known as Fortress House, at 23 Savile Row, W1. The Laboratory was provided with new and unified premises taking possession of all of the 5th Floor and half of the basement, on the 17th of July 1972, kitted out with new equipment including a Milliprobe (XRF spectrometer), 250 kV X-ray unit, and air abrasives.

There was also the start of an influx of new staff, such as Susan Limbrey and, shortly after, Helen Keeley who were successively responsible for Environmental Studies.

Alister Bartlett was recruited to the Geophysics Section in August 1972 and during the year the team made 22 further surveys, including the first in Scotland, and a collaboration with the British Museum at Grimes Graves. Tony Clark also began to explore, with the Plessey Company, the commissioning of a radio-navigation system for the tracking and recording of magnetometer output – another premonitory inspiration that was not achieved until decades later by the use of a different technology altogether – Global Positioning Systems.

1972, then, was probably the year in which the AML came properly of age. The work of the Geophysics Section was the subject of a TV film 'The Laboratory of the Past', filming at Ian Stead's site at Baldock as well as at the Lab itself, and the work of the Laboratory was also the subject of a display at the Physical Society Exhibition the following year. Further staff were taken on in other sections, with Justine Bayley joining permanently in January 1974 to work initially on human remains, but eventually with Leo in the Technology Section. During 1973-4 the Laboratory was visited by no less than three members of the Royal Family – the Queen Mother, the Prince of Wales, and the Queen of Denmark. During the mid-1970s the Lab achieved a momentum and belated recognition which served it well in the succeeding three decades - no less turbulent in their way than those that had gone before.

It was from the mid-late 1970s that some of the many valued but loose associations with other institutions were to some extent formalised by the setting up of University- and Museum-based contracts. This was done in order to help deal, on a regional basis, with the influx of material from Ministry-funded rescue excavations up and down the country. By 1983, there were 19 such contracts, which included specialists in various branches of the natural sciences, and in scientific dating, artefact conservation, and materials sciences.

Another very positive development was the increasing welcome offered to university students on placement from their courses in archaeology and science. One of the main suppliers of these was the University of Bradford, cementing a relationship in geophysics and materials science, going back to the late 1960s. The first Bradford placement was Averil Martin-Hoogewerf in 1977-8, and the subsequent flow of students has been sustained right up to the present day. Other universities sending their students to the Lab included London, Durham, Cardiff and Oxford. In the case of those from Bradford, the students came for six months and would learn the ropes by participating in whatever was the field and laboratory work of the moment, contributing to memorable and sometimes lasting associations. Gerry McDonnell, for instance, joined the Geophysics Section in February 1978 taking part during that time in many memorable surveys, for instance at the Meare Lake villages, and – less picturesquely – at Coleshill, near Birmingham. For some reason he chose then to dedicate his career to the archaeological science of early iron-working, first at Aston University, followed by a brief spell at the Lab, in the Technology Section, before returning to Bradford from where he has, in his turn, despatched some of his own students to the Laboratory for placement experience. Those contemporaries who found the lure of geophysics more difficult to shrug off include John Gater and, later, Dan Shiel both of whom have made successful careers in commercial geophysics and,

in John's case especially, helped to bring archaeological geophysics widespread popular recognition. Dan joined the AML in 1984, the same year as another stalwart of both institutions, Andy Payne, and together they shared in many adventures with the Lab, not least enduring the (for that time) vast survey over Maiden Castle. Several students such as these re-joined the Lab intermittently later in their careers, and Dan will no doubt remember the trials of weeks of prodding labour at Old Windsor under the watchful and quibblingly critical eye of Brian Hope-Taylor. After brief excursions into dirt archaeology, Andy Payne re-joined the Lab and is with us still. We should shortly, and not before time, be celebrating the publication of the Wessex Hillforts Project, for which much of the fieldwork was achieved by yet more Bradford alumni – Pete Cottrell and Emma Bray.

Even if the 1970s were the years in which the Lab came of age it was still lumbered with an awesome backlog of material which just grew with the accelerating pace of rescue archaeology. By the end of the decade, too, savings in manpower were again being called for. By 1979 there were 21 staff and John Musty was already fending off suggestions that the Lab should be abolished and the expertise bought in. Such was the concern about the build-up of backlog in UK archaeology generally, and the lack of resource to manage scientific analysis – the value of which was increasingly apparent to all - that the Department of the Environment set up a Working Party under the Chairmanship of Professor Dimbleby to review the situation and recommend a way forward. The ensuing Report noted the recently increased support for the Lab but was clear that this was not sufficient, and that resources should be increased nationally and better deployed to allow for scientific input. For instance, the provision for conservation might be vested in new regional conservation centres. For the Lab itself, increasing the number of specialist staff was given high priority, especially in the Geophysics Section. The university contract system used by the Lab was supported, and whilst it was felt that the Lab should undertake prioritised 'service work' it should also engage in larger projects and research. More widely, prioritisation and direction was called for and the setting up of an Advisory Committee for Archaeological Science was advocated.

If the uptake of the Report's many recommendations was piecemeal, this latter one was acted upon swiftly with the setting up in 1980 of the Science Panel of the Ancient Monuments Board, chaired by Professor Renfrew, supported by Professors Richard West and Martyn Jope. This reviewed the work of the Lab over 1980-1982 and was strongly supportive of it, although noting a loss of a third of its manpower since 1978/9. Research was given a sort of amber light: 'the Laboratory should not concern itself with pure research, but must do all the work necessary to bring out all the information needed for full interpretation of a site in its context, and in that there is bound to be a research element'. That this was so was emphasised by a strong representation from the Lab at the 22nd Symposium on Archaeometry organised by Arnold Aspinall and Stanley Warren at Bradford.

The Science Panel noted that the Geophysics Section was now responsible for undertaking archaeomagnetic dating, introduced by Tony Clark as a natural extension of his interests in magnetic prospecting, and also oversight of radiocarbon dating. Geophysical fieldwork was being undertaken by just two staff who were judged to be 'coping reasonably well' but the workload allowed only limited opportunity to develop new equipment. The addition of a further person to help with reporting and

fieldwork, and the need for access to in-house computing, was given lukewarm support. This situation remained unchanged, though, even if the survey team was augmented by a continuing succession of tireless but temporary helpers, such as David Bolton, hailing from Bradford.

Meanwhile the local and national political scene was changing. John Musty had retired from the fray by 1984, and Tony Clark briefly filled the inter-regnum, before this post was filled in September that year by Clifford Price, another chemist and an expert in the conservation of architectural stonework. On the national scene the cull of civil servants under the Thatcher regime was in full throttle and swathes of these were privatised or transferred to new quangos. In 1986 Michael Heseltine converted the Department of Ancient Monuments and Historic Buildings into English Heritage, under the chairmanship of Lord Montagu of Beaulieu.

Under this new arrangement, the Lab was fortunate enough to carry on business with increasing efficiency. Tony Clark was able to report to the Science Panel that 37 geophysical surveys had been undertaken by the Archaeometry Section (as the Geophysics Section had been re-named in view of its wider responsibilities). Geophysics itself was prominent further afield too and in January that year, under the aegis of Arnold Aspinall, Bradford University hosted a two-day symposium on 'Geophysical Surveying in Archaeology, at which Tony gave the introductory theme lecture. It was in this world that Tony was in his element, at the grass roots level, making technology work to solve archaeological problems. Back in London, though, he now felt so confined by the bureaucracy that distanced him from this that he decided to leave English Heritage, and so came to find the time to write his book 'Seeing Beneath the Soil' and to develop further his interests in archaeomagnetism and magnetic susceptibility. Alister Bartlett had already left the Lab for similar reasons and sensing wider opportunities in the commercial sector. Leo had retired back in 1982.

Despite the loss of many of the 'old guard', the Lab prospered under Clifford Price. The staff complement increased to 28 in 1988 and in April that year it even held Open Days, organised by Mike Heyworth who was then, with Gerry, a member of the Technology Section. The Archaeometry Section was lead by David Haddon-Reece, supported by Andrew David (from 1975), Paul Linford (who had joined in 1986), and yet another Bradford graduate, David Jordan. Any perceived calm was short-lived, however. The following year the threat of shortage of space at Savile Row raised the spectre of relocating the Lab again. Even with its substantial stores housed in Ruislip, the Lab was outgrowing its expensive central London space and Clifford started looking into alternative locations in Oxford, Sheffield and York. But this was a mere flutter compared to what was to come: early in the 1990s the whole of English Heritage - after much preparatory planning - was on the point of moving bodily to Nottingham. However, the arrival of a formidable new Chairman, Sir Jocelyn Stevens, put a stop to that.

All change - again

With his reputation for blood on the carpet, onlookers watched either with trepidation or barely disguised glee to see what the new Chairman would make of his new charge. Rather remarkably, the Lab remained largely below the firing line although these

were very uncomfortable times for many. In the wider world, there were other pre-occupations, however - notably the adoption of PPG16, published in 1990, and the transfer of responsibility of funding from government to the developer leading to a growing private enterprise in the provision of archaeological and related scientific services.

This sea change began very gradually to release the Lab from much of its 'service' work, and has since allowed a growing emphasis on a more strategic role, using work not covered by PPG16 to help develop methodologies, set standards for the discipline, and to help train and enthuse others. Whilst much of the work of former years has continued, the emphasis changed significantly, not least with research at last coming increasingly out of the closet.

The 1990s have therefore been a period of acclimatisation to the changing regime. They have not been without their alarms and excursions, staff inspections, organisational re-shuffles, and peer reviews. Kate Foley, a conservator, succeeded Clifford Price in 1991. Peer review of the Archaeometry Section in 1992, by Arnold Aspinall and others, was thankfully very supportive and helped pave the way, for instance, to the production of guidance documents for the profession, the first of which, Geophysical Survey in Archaeological Field Evaluation, was published in 1995. The geophysics team had been boosted by the addition of Neil Linford in 1993, and later, Mark Cole who, with Andy Payne back on the strength, brought the strength up to five.

The world of geophysical survey had by now been revolutionised, not only by the imperatives of PPG16, but by the timely availability of Geoscan earth resistance meters and magnetometers to service the need for larger scale evaluation in advance of development. The Lab adopted these instruments to great effect on a programme of 20+ surveys a year. Some of these were ambitious projects, for instance the surveys of Wessex Hillforts, as well as at Stonehenge, at Wroxeter, and at other large Roman settlement complexes in the Lark Valley, Suffolk, and at Owmby, Lincolnshire. In the three latter projects we were assisted by John Gater, Chris Gaffney and their colleagues in Geophysical Surveys of Bradford, as they then were. For its time the Wroxeter magnetometer survey was record-breaking in its ambition and coverage, and the site has since become a valued open-air laboratory for geophysical experimentation, displays and training. The mid-1990s also saw the establishment of the EH Geophysical Survey Database, and the first of a series of experiments with caesium magnetometry, culminating in the discovery of a massive timber complex of concentric timber post foundations within the stone circle at Stanton Drew near Bristol. Ties with Bradford remained strong, with formal support for the new MSc course in archaeological prospection, and for the new journal of that name.

And again

Meanwhile the tempo of internal change stepped up again. By the late 1990s, the Lab had come under the direct remit of Geoff Wainwright, as Chief Archaeologist, who appointed another conservator, Mike Corfield, to succeed Kate Foley as Head of the Lab. By now English Heritage had embarked on a process of decentralisation, setting up largely autonomous offices in each of the nine government regions. Whilst the central role of the Lab was recognised, space was ever more at a premium at the

London HQ and so the search for alternative premises re-surfaced with a vengeance. Whilst a university location was favoured by most, and institutions such as Bradford came forward with proposals, such opportunities foundered as hard economics prevailed, and the decision was made to move the Lab to the rent-free EH property at Fort Cumberland, Portsmouth, joining there with the then Central Archaeology Service and thereby creating apparently one of the largest integrated archaeological services in the world. Most people up-sticks and moved south in 1999 to the hastily re-furbished Motor Transport Shed and old Officers' Quarters at the Fort, and the Centre for Archaeology, under the leadership of Sebastian Payne, opened formally April 2000.

Such upheavals are hugely disruptive of continuity, and loss of staff, but the Laboratory teams have picked up again. The Archaeometry Branch persevered with a reducing fieldwork programme which favoured larger and often more challenging surveys, deploying newly acquired Ground Penetrating Radar equipment and caesium magnetometers, latterly mounted on a non-magnetic carrier.

And again

Any respite from re-organisation was a little brief, though, following the early departure of the Chief Executive, Pam Alexander, who was replaced by the dynamic Simon Thurley who was building on a successful upward trajectory from Inspector of Ancient Monuments, Chief Executive of the Royal Palaces Agency, and Director of the Museum of London. In tune with the government mood, Simon embarked English Heritage in 2002 on a course of 'Modernisation' to be achieved in time for its 21st anniversary in 2005. By now of course there had been at least two changes of government department, with responsibility for the heritage now falling to the Department of Culture, Media & Sport. In 2002 the National Heritage Act was passed, formalising the unification in 1999 of the old Royal Commission on Ancient Monuments and Historical Monuments of England with English Heritage, and vesting the latter with responsibility for the maritime heritage. 'Modernisation', needless to say, involved (amongst much else) further review - amongst the most challenging yet for the Lab as the need for streamlining in the wider organisation was not concealed.

The outcome was thankfully not as damaging as it might have been. After further structural re-shuffling, the teams at Fort Cumberland remain much as they were before - even if no longer identified as the Centre for Archaeology. The Archaeological Science and Archaeological Archives Team, under Andrew David, now has a current complement of 25, with the strength of the Geophysics Team, lead by Paul Linford, down to four, with Scientific Dating now as a separate team of three. Over recent years, though, there has been some severe attrition, with the Archaeological Conservation Team down to just three, and the University-based contracts whittled away to just five, mostly funded only part-time.

More optimistically, and unheard off in the not so distant past, the old Lab teams are now part of a larger Research Department, headed by Christopher Scull, bringing together complementary expertise in excavation, landscape and aerial survey, buildings survey and investigation, and images and graphics. Its greatly varied outputs include a new Reports Series, extending on the previous AML Reports Series initiated

in 1974, and now numbering over 5700; as well as a 4-monthly newsletter Research News.

Given the history so far recounted, imperfect though that is, it is satisfying to record the growth and continuing survival of archaeological science in English Heritage and its predecessors, over the last half century. Much original insight and pioneering involvement was initiated in the earlier years, and that investment has grown and continually adjusted itself with the times. If nothing else, however, such a history ensures that we remain braced for the future, looking forward to adapting to the challenges of the next fifty years…

References:

Brothwell, D and Higgs, E., 1963, *Science in Archaeology*. Thames & Hudson. London.

MoW 1959. Organisation and Methods Branch (O&M) *Report on the Ancient Monuments Laboratory*, ref EF.118/5, Ministry of Works, April 1959. Unpublished.

Nature, editorial, Digging but not Keeping, *Nature* 221, 206-7.

Wainwright, G. J. 2000. Time Please. *Antiquity* 74, 909-43.

1. Leo Biek (1922-2002): Officer-in-Charge of Ancient Monuments Laboratory 1950-1966, retired 1982.

2. John Musty 1923-2000); Chief Laboratory Officer 1966-1983?)

3. The Burton Fleming Experiment, 1968: Mike Tite (foreground) and Christopher Mullins using a PIM. The tower at the rear supported an EMI infra red experiment.

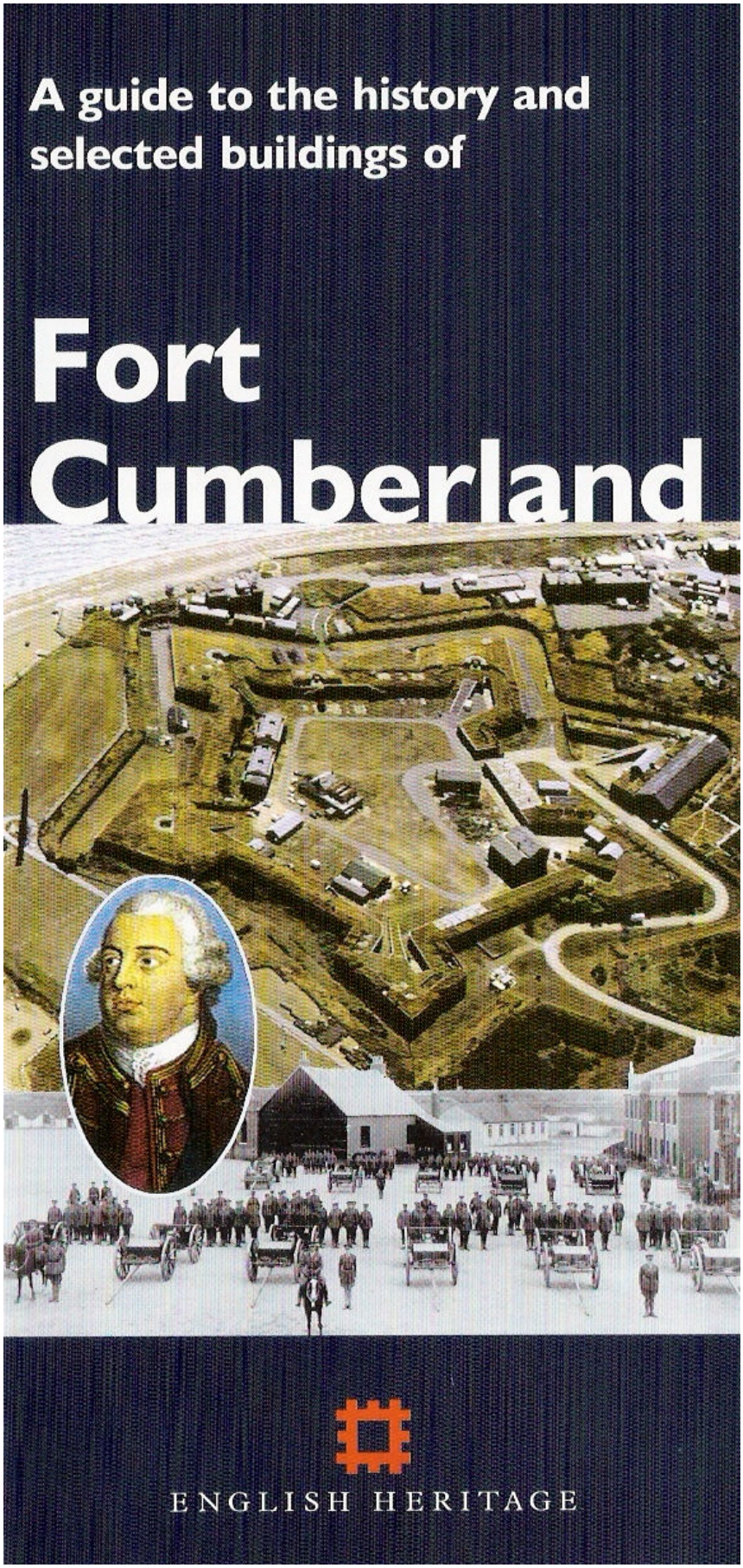
4. David Haddon-Reece operating a prototype wheeled resistivity array, c 1972.

5. The Royal visit, 1973

6. John Gater and Andrew David, Devon, 1970s

7. Gerry McDonnell: Runnneymede: archaeomagnetic dating, 1970s

8. Dan Shiel: Maiden Castle, 1986



9. Fort Cumberland

