Sheetlines
The journal of
THE CHARLES CLOSE SOCIETY
for the Study of Ordnance Survey Maps

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Published by
THE CHARLES CLOSE SOCIETY
for the Study of Ordnance Survey Maps
www.CharlesCloseSociety.org

The Charles Close Society was founded in 1980 to bring together all those with an interest in the maps and history of the Ordnance Survey of Great Britain and its counterparts in the island of Ireland. The Society takes its name from Colonel Sir Charles Arden-Close, OS Director General from 1911 to 1922, and initiator of many of the maps now sought after by collectors.

The Society publishes a wide range of books and booklets on historic OS map series and its journal, Sheetlines, is recognised internationally for its specialist articles on Ordnance Survey-related topics.
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Sheetlines
Published by THE CHARLES CLOSE SOCIETY
for the study of Ordnance Survey Maps

Sheetlines 68
December 2003

Programme for 2004

Our provisional programme for 2004 is shown below. Where an actual date is not shown, this
will appear on our website as soon as it is confirmed. If you do not have access to the
Internet, but would like to know a date as soon as it is available, please send a stamped
addressed envelope to Gerry Jarvis for each visit in which you are interested. Please note that
this will only ensure you are made aware of the date, and does not guarantee you a place on
the visit.

Places on visits are usually limited to a maximum of twelve, and are allocated on a ‘first
come’ basis. Contact Gerry Jarvis, Rulow House, Buxton Old Road, Macclesfield,
SK11 0AG, telephone 01625 611594, or email visits@charlesclosesociety.org.uk.

7 April  Badley Library, School of Artillery, Larkhill
          [Limited numbers]

This visit was organised following a discussion with Tim Nicholson, who wrote an article on
Salisbury Plain maps in Sheetlines 39, April 1994. Badley Library is the repository for much
interesting information, and if you wish to follow this up, you will find details at
http://www.rsa.mod.uk/atracrsa/Information/Reference_Centre/Badley_Library/index.htm

late April  School of Military Survey, Hermitage, Newbury

We had a most interesting visit to the Hermage in 1997, and they have kindly agreed to a
further visit.

15 May  AGM at Ludlow

Details will be sent to you early in 2004.

June  London Transport Museum, The Depot, Acton

The Depot supplements the museum at Covent Garden, and houses equipment and
memorabilia for which there is no space at Covent Garden.

6 July  British Geological Survey, Keyworth, Nottingham

Another fascinating location. The visit covers not only geological maps in their library, but
their massive collection of minerals, and on our last visit, we were permitted to view their
Drawing Office. They also have an excellent shop.
June or July

Visit to Dublin

We are hoping to get to Dublin to visit Ordnance Survey Ireland (to see the old and new production facilities), to the National Archives (to see examples from the Ordnance Survey archive) and to Trinity College Library to see some of the printed maps. We are hoping also to visit the Irish Railway Record Society. This visit will take more than one day!

23/24 October

Shap Wells weekend

We have not been back to the Shap Wells Hotel for some time, where one of our members, Steve Simpson, is manager. So we are returning this year for a weekend theme on overseas mapping, including a contribution from our chairman, Chris Board, on South Africa.

17 November

Ordinance Survey headquarters, Southampton

Our annual visit to Ordnance Survey, Southampton, where we always have an excellent day.

We also intend to arrange a meeting in Lincoln in the autumn. Details will be given in the next issue of Sheetlines.

Midland Group Meetings

The Midlands Group of the Charles Close Society will meet next on Thursday, 8 January 2004. John Langford will be the guest speaker. He will be talking informally about his interest in Ireland and the OS maps he found there on his first and subsequent visits. The maps in question were of pre-partition one-inch second (coloured, folded) edition vintage.

The subsequent meeting will take place on Thursday, 13 May and this will be followed by an open discussion meeting on Thursday, 9 September 2004.

All meetings will start at 19:00 at the Voluntary Services Centre, Union Street Car Park, Union Street, Burton upon Trent (SK 246229). More information from Lez Watson at 54 King Street, Burton upon Trent, DE14 3AF, Lez4Lynne@aol.com, (01283) 541303.

The Oxford Seminars in Cartography, 2004

4 March 2004

Margaret Small (National Maritime Museum)

Evolving from the classics: the geography and cartography of Sebastian Munster

6 May 2004

TOSCA field trip – details to follow at a later date

17 June 2004

Nick Crane (writer and broadcaster)

Title to be confirmed

All seminars commence at 5pm at the School of Geography and the Environment, Mansfield Road, Oxford. Charles Close Society members are welcome to attend. For further details, please contact Nick Millea, Map Librarian, Bodleian Library, Broad Street, Oxford, OX1 3BG, tel: 01865 287119, fax: 01865 277139, nam@bodley.ox.ac.uk, or look at the website, http://www.bodley.ox.ac.uk-guides/maps/ and follow the links.
**A guide to the Ordnance Survey one-inch**

**Third Edition maps, in colour**

Roger Hellyer and Richard Oliver’s forthcoming book on the ‘coloured thirds’ is now in the final stages of preparation before being sent to the printers. The Society hopes to publish this 160 page volume early in 2004.

The book builds on the late Guy Messenger’s monograph, which has been out of print for some time, but will include a completely rewritten history and description of these classic series by Richard, together with Roger’s meticulous cartobibliography covering Scottish and Irish sheets as well as those published for England and Wales. We intend to publish the work as an A4 hardback with twenty pages of illustrations.

Full ordering details, together with information on the reduced price for CCS members, will be given in *Sheetlines* and on the website once the book is available.

**Studying maps online**

A new Yahoo Group [uk.groups.yahoo.com/group/LandrangerMapStudyGroup/](http://uk.groups.yahoo.com/group/LandrangerMapStudyGroup/) has been set up and is dedicated to the study of the Ordnance Survey 1:50,000 map. Although created by Lez Watson, it is not formally an activity of the Society. Messages for the group may be posted to [LandrangerMapStudyGroup@yahooogroups.co.uk](mailto:LandrangerMapStudyGroup@yahooogroups.co.uk)

The Editor apologises that a misprint occurs in Lez Watson’s very useful *Summary lists of Ordnance Survey maps* in the *Almanack* distributed with the last issue of *Sheetlines*. Lez’s Internet url should be [http://www.watsonv.addr.com/os-maps.htm](http://www.watsonv.addr.com/os-maps.htm) and not … .watson. … as printed at the foot of page 28.

**Mapping out the market**

An article, *History for sale, mapping out the market* by Hugo Davenport, appears on page 77 of the November 2003 *BBC History* magazine. This makes the point that there has long been interest in collecting rare and ancient maps, and continues:

> As interest in collecting has grown, especially in the last decade or so, and prices have risen, enthusiasm has grown for maps of humbler provenance. The foremost example is the Charles Close Society, which exists to study all things connected with the Ordnance Surveys (OS) of Great Britain, Northern Ireland and Ireland.

> With its own magazine, *Sheetlines*, it is in the best traditions of British amateur scholarship.

> While Drs Board, Hodson, Oliver et al may cavil at the term ‘amateur’, the Editor, very much an amateur himself, takes this as a compliment to the majority of members! The article also refers to Richard Oliver’s *Concise Guide* and the Society’s website, quotes a well-known dealer specialising in the OS and allows ‘a 62-year-old computer expert based in Cheshire’ to admit that ‘he is not averse to buying an old mug if it has a map on it’.
**Explorer news**

In a news release dated 12 November and aimed at the Christmas market, the Ordnance Survey announced that the frustration of finding yourself on the edge of a map is about to be banished for good. OS is launching an online service from where customers can order individually printed 1:25,000 *Explorer* maps centred anywhere in Britain.

The folded *Explorer* map, customised to show a chosen 20 × 20 km area on one sheet can be supplied in a water-resistant clear plastic wallet to help it stand up to the ravages of the British weather. Alternatively, you can have your map supplied flat if you want to display it as a feature on your wall. You can even choose your own title and panel illustration to make your map totally unique. Customised OS *Landranger* mapping is already available through *OS Select*, offering a tailor-made 1:50,000 map. Each 40 km × 40 km map contains a legend and the complete range of tourist and landscape symbols featured on the regular OS *Landranger* Map series.

*OS Select* maps are available from www.ordnancesurvey.co.uk/leisure or by telephoning 0845 200 2712. *Landranger* maps are priced at £15.99 each plus £2.50 postage and packing; *Explorer* maps are £16.99 plus £2.50 postage and packing.

A further news release, dated 17 November, reported on the success of the ‘free maps for eleven-year-olds’ scheme. More than 776,000 youngsters had staked their claim to a free, detailed *Explorer* map of their local area by encouraging teachers at 7158 schools to register their interest with the national map-maker.

Director General Vanessa Lawrence is quoted as saying, “This is an absolutely phenomenal response. Our printing presses have been running flat out to cope with the demand.” It is believed there are close to a million eleven-year-olds in Britain, so four out of every five children of that age will receive an *Explorer* map. The biggest take-up has been in Wales, where virtually every qualifying child has been signed up. Registration for the scheme has now closed, and already more than 650,000 maps have been printed and sent out.

**Visit to CCS Archives, Cambridge,** 19 August 2003

*Nick Jeffery*

19 August saw thirteen CCS members at the University of Cambridge Map Library for a visit to the Society’s archives. As someone who has spent an amount of time in various county and college archives I approached the visit with that frisson of excitement generated by the fact that one never quite knows what will be found in archives – and they did not disappoint.

Anne Taylor, Head of the Map Department, made us most welcome, explained the holdings of the Map Library and generously offered members a gratis selection of surplus OS material: needless to say not much persuasion was necessary!

Gerry Jarvis had then pre-arranged, via Roger Hellyer and Tony Rawlings from the Map Library, for an eclectic selection of Society archival material to be produced for our
delectation. I can only give a flavour, naturally slanted to my particular interest – the recording of historic highways.

Of general interest were the master files for the One-inch Seventh Series. These gave a good insight into the processes and controls necessary for revision, internal costing and all the other details necessary to progress a timely, accurate and cost-controlled revision.

Then there were OS Policy Statements, of which the most interesting to me was number 55, *The Showing of Public Rights of Way on Ordnance Survey Maps and Plans*, first issued in March 1954. This was prompted by the imminent ‘completion’ of the compilation of the first Definitive Map of public rights of way under the National Parks and Access to the Countryside Act 1949. I say ‘completion’ advisedly. This is because we now know (from the ‘Discovering Lost Ways’ initiative, prompted by the ‘closure’ of the Definitive Map in 2026 to claims based on historical evidence, as described by Alan Bowring in *Sheetlines 64, 7*) the original Definitive Map compiled in the 1950s is anything but ‘definitive’!

There are, according to Countryside Agency estimates, some 20,000 km of unrecorded or misrecorded PROW in England which, if confirmed by due legal process, will need to be added to the Definitive Map and thence to OS maps; not to mention the mapping requirements imposed on the OS by the Countryside and Rights of Way Act 2000, as described in Michael Richardson’s report on the visit to the PROW Unit at Cheshire CC (*Sheetlines 67, 3*). Under this a similar process to that under the 1949 Act is being gone through but this time to show land on which the ‘Right to Roam’ will be established by its designation as ‘Open Countryside’ or ‘Registered Common Land’.

Deposited archives from individuals vividly brought to life aspects related to the OS from the routine to the esoteric. For example, press cuttings (mainly from *The Times*) and correspondence from a former Director General to one in post at a time in the 1970s when the kite was flown of dropping the 1:25,000 map – or a surveyor’s pocket book recording contact details of Bed and Breakfast establishments throughout the country – nothing more than 25/- per night!

The overseas contract mapping activities of the OS are covered in material relating to contract surveys of countries as diverse as Barbados and Botswana. These files include earnest correspondence about the calibration and accuracy of surveying instruments and the necessity and economics of re-surveying.

After sating ourselves on this material, the afternoon was available for free viewing of the other extensive holdings in the Map Library. I took the opportunity to look at various eighteenth century county maps not routinely accessible, for example Andrews and Dury’s *25 miles Around Windsor*, 1777, plus a number of other cycling and hunting maps.

Finally the University had an excellent exhibition running of historic maps of Cambridgeshire – *Unfolding Landscapes - Maps of Cambridgeshire from Elizabeth I to Elizabeth II* – which fully matched Jack Kirby’s fulsome description in *Sheetlines 67, 41*.

All in all a veritable day-long cartographic feast, for which grateful thanks are due to Gerry Jarvis for his usual superb organisational skills; to Roger Hellyer, Anne Taylor, Tony Rawlings and all staff, past and present, at the Map Library for their hospitality and custodianship of the archive; to donors of material to the archive; and, last but not least, those members of the Society who have procured the supply of material, performed its cataloguing and ensured its preservation.
Visit to Aberystwyth,
19 September 2003
Chris Bartlett

Twelve members gathered under grey skies for a full day of visits to the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) and the National Library for Wales (NLW) which are both situated in the university town of Aberystwyth.

The day commenced with a morning visit to the RCAHMW (which covers all the traditional Welsh counties) at its modern offices at Plas Crûg, where we were split into two parties. Brian Malaws and his colleagues demonstrated the work of the Archaeological Mapping Section to one party, whilst the other party viewed the unique series of Welsh 1:2500 OS sheets which had been made available in the archival search and library area at the instigation of Rob Wheeler.

Commencing with the Archaeological Mapping Section, it was explained that the Commission is responsible for the provision of GIS data for all archaeological sites in Wales. Whilst OS retains overall editorial control of mapping of historic sites, it no longer retains expertise in this area and relies upon the input of the three Commissions (those for England, Scotland and Wales). The intention in the course of time is to provide all heritage data in a format which is consistent with the OS Mastermap system. We were shown a number of projects which are foreseen as potential educational tools, whereby historic mapping, in this case of the town of Montgomery and commencing with John Speed’s map, is being related to modern mapping, thus demonstrating the development of the town with the passage of time. Some problem remained with the fitting of the Speed map to OS products, since the early surveyors had apparently not resorted to measurement but had ‘scanned’ the town by eye, but we were shown how the computer is capable of stretching an historic map to fit the current map! The technique can also be used to overlay successive editions of 1:10,000 or 1:2500 sheets and to compare growth etc.

The intention of the Commission is to allow access to historic mapping from the first to the fourth epoch (First to Fourth Editions to the uninitiated) via its website (www.rcahmw.org.uk). In parallel with this work the Commission is developing a grid system based on OS 1:2500 Landmark data whereby ‘clicking’ on an individual grid cell will provide a listing of historic sites in that cell. One complication of this exercise is that there is a need to incorporate two different projections into a single grid!

We were then shown an exercise originally carried out for National Science Week whereby 3-D mapping was being used, based on OS digital data, together with the Commission’s chapel database in order to highlight the position of each chapel in Aberystwyth! With the addition of height data obtained to an accuracy of a few centimetres by a laser technique it was possible to ‘drape’ historic mapping over the OS Landform model. It was explained that the intention would be to make these techniques available in CD format for educational purposes.

Returning to the library area we were given a short introduction by Rob Wheeler to the existence at the RCAHMW of a series of Welsh 1:2500 sheet revisions which admirably demonstrate the use of blue ink (which does not respond to normal photography) in the revision process, and Rob provided us with the detailed notes which follow this report. We saw a display of unique sheets, which varied from an unpublished second edition
Cardiganshire XIV.10 of 1905, which consisted of a little shingle and some 98% empty space, to a master sheet of Pembroke Dock (Pembrokeshire XXXIX.8) which showed full detail of admiralty installations which was totally absent from the published version. The story emerged that a young Brian Malaws had rescued these sheets from a store in West London in the early 1980s, but with the absence of any sheets for Montgomeryshire, which it was alleged ‘wouldn’t fit on the Landrover’ (although, in fact, were probably already destroyed).

After a short break for lunch, we gathered again at the NLW (website www.llgc.org.uk) where our hosts were Robert Davies, Head of Cataloguing, and his colleague Gwilym Tawy. The NLW is one of the six libraries in the UK with a claim to all published works (books, maps etc) but since it was only founded in 1911 its collections date mainly from that time. However, a very significant part consists of a major collection of maps and plans, donated with the proviso that it should be housed in Aberystwyth, rather than in Cardiff or elsewhere! In his introduction to the work of the NLW Robert drew attention to the problems of justifying the retention of a major map collection, which may duplicate those held in other libraries. In these politically correct times emphasis is being given to ‘socially inclusive’ items such as exhibitions, rather than the retention of map collections (the writer supposes that almost by definition members of the Charles Close Society are ‘socially exclusive’). Robert then led us through the storage areas for the map collection, where state-of-the-art facilities and map presses were demonstrated for members’ approval, with a tremendous range of maps and plans available for study. During this tour Rob Wheeler was delighted to discover a number of ‘black on blue’ English master drawings for 1:2500 sheets on which had escaped a journey to the skip, and it only remains now to ascertain the whereabouts, if any, of their Scottish equivalents.

Finally we were shown a selection of items from the collections, notably a magnificent estate plan of Rheola in the Vale of Neath produced by Thomas Horner in the early 1800s for the owner John Edwards, at the delightful scale of 1:3168 (which transcribes to something much more mundane in inches to the mile). Horner had recently described a method of map depiction which he described as ‘panoramic chorometry’, an early form of 3-D. We also saw a copy of an early two-inch to the mile OS drawing, of which the NLW has a complete set for Wales, and finally an 1846 tithe map drawn by Alfred Russell Wallace in 1845, an unknown surveyor who later became famous as a contender with Darwin as the originator of the theory of evolution.

Thanks are due to our hosts for such an excellent and absorbing day, and to Gerry and Rob for making it happen. Members are encouraged to make the journey ‘over the mountains’ to Aberystwyth to sample the many delights on offer, or to contact the two institutions via their websites.

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Aberystwyth in 1953 – from a one-inch school examination extract provided by David Parsons. The RCAHMW is located in the new Government Offices to the north-west of Plas Crug, while land to the north of the National Library has been developed by the University. The closure of the railway to Carmarthen now permits the narrow-gauge Vale of Rheidol line to make a direct approach to the town. – CJH
Notes for visit to the National Monuments Record For Wales

R C Wheeler

Rob had arranged for the following 1:2500 plans to be laid out for us:

N1 Brecknock XXVIII.13, Second Edition, 1904
N3 Pembroke XXXIX.8, Second Edition, 1908
N4 Pembroke XXXIX.4, Second Edition, 1908
N6 Carmarthen XLVII.5, edition of 1913
N7 Caernarvon XI.6, edition of 1916
N8 Glamorgan XXXVI.8, edition of 1920
N9 Monmouth XXXIII.4, edition of 1921
N10 Monmouth XXXIII.4, revision of 1937
N11 Anglesey XI.2, edition of 1924
N12 Glamorgan XXXVII.2, edition of 1920
N13 Glamorgan XXXVI.8, revision of 1943

There were also two six-inch sheets:

A1 A County Series sheet with archaeological annotations
A2 SN67 SE

Introduction

It is known from late nineteenth century accounts¹ that revised states² of maps were often redrawn using impressions of the previous state printed in a blue ink that would not photograph. The new map would be drawn in black ink using the ‘blue’ as a key for those features which had not changed. The National Monuments Record for Wales holds a collection of 1:2500 plans covering most of Wales, which were given to them by the Ordnance Survey at Southampton some years ago and which show every sign of being a set of master drawings made in the manner described.

The maps will be described under a number of heads in turn. Although the maps have in most cases been set out chronologically, treating them in this manner will require the reader to move backwards and forwards in time.

The author apologizes for any errors and omissions in these notes. He had inspected the maps on display for less than a day and may well have made some false deductions, which he hopes will be corrected by the corporate scrutiny of the many experts here assembled.

The Blues

Describing the Blues merely as an impression of the previous edition is something of a simplification. From at least 1924, the Blue does seem to have been a normal map in all

² Sankey was of course writing about new states of the First Edition plans but it is reasonable to suppose that the same technique was used when the OS came to produce new editions.
respects except its colour. Indeed, some later Blues appear to bear prices applied by a stamp, suggesting that they were photographic copies of a normal sales copy. [Maps N10, N13]

In contrast, the practice from 1916-19 was to use an impression with line-work only – no marginalia, no names, no ornament, no parcel numbers. These are often labelled in the left-hand margin ‘A1 Manuscript’ [N8, N12]. The implication seems to be that this was a copy made at an intermediate stage in drawing the previous edition, when only the line-work had been done. If significant changes were subsequently required, it might be less trouble to revert to a black of the A1 manuscript, make changes to that and then restamp names, ornament etc, rather than re-drawing everything or deleting and redrawing names etc on a black of the full map. This might seem an unlikely course of action were it not that one does encounter revised states of First Edition plans on which the names and lettering do appear to have been completely re-done.³

The practice before 1914 seems to have been to use a later state of the drawing that still lacked names but now included ornament and parcel numbers (but not areas) [N1]. Again there are oddities. The blue of N6 runs beyond the neat lines a little, yet the master drawing of the previous edition [N5], the presumed source, stops at the neat lines. N2 presents a particular challenge, having parcel numbers in Pembrokeshire – which is the county it was being used as a Blue for – but line-work only in Carmarthenshire. The latter county was drawn on a different meridian so for what purpose had its line-work been drawn on a Pembrokeshire manuscript? It is clear that there is much to be learned from the Blues in this collection about 1:2500 drawing practices. N4 has contours on part of the Blue – it was one of the very few First Edition 1:2500 plans to show contours around military installations. The representation of these installations will be covered later.

**Drawing in black (and cadmium)**

N1 shows drawing practice at the start of the century. Buildings are hatched, the edges are ‘shaded’ – i.e. the lines to south and east are thickened. Streams are drawn, not in black (although that is how they would appear on the finished map) but in cadmium, a reddish-brown which would photograph. Was this merely to assist the OS in distinguishing streams from field boundaries or was there some thought of using colour separation to produce a blue printing plate (possibly at a smaller scale)?

N3 (of 1907) still has buildings hatched but the shading is being applied in an erratic manner. Or is there significance in whether a building is shaded or not?

N6 (1913) is the earliest specimen seen where the building fill is in blue-grey wash. I suggest that, depending on exposure or film, this could be made to photograph or not as desired. A black outline plate could be produced without it, a fill plate with it, the latter being blurred to remove any line-work and this could then be combined with pre-drawn cross-hatching (or screened black, if preferred) and added to the black outline to produce the final printing plate. It sounds complicated but it would save much labour in drawing cross-hatching.

The map also shows construction lines where a building has been added next to the Quarry Arms in Crwbin. The pencil lines extend the walls of the building until they intersect pre-existing features, which is possibly how the new building was surveyed.

³ e.g. Middlesex V.12
Note the alterations made 1924 to the foreshore at Rhosneigr, lines to be deleted being drawn with red crosses, the new lines being in cadmium. So perhaps the use of cadmium was solely for the avoidance of confusion among the draughtsmen.

N7 has been included because of the note top right about an area that had to be re-plotted. Does that mean re-surveyed or something less?

N9 (1924) gives an example of an urban area. Where tramlines have been deleted – e.g. to allow space for a name – some brown can be seen. Is this cadmium or just acid staining from the ink? Note that buildings are hatched once again. The last use of blue-grey fill I noted was on a map of 1919.

N10 (same sheet, 1937) has been included to show examples of re-drawing done solely to reflect new (and inferior) drawing styles. St Stephen’s and Holy Trinity churches have both been laboriously stripped of their buttresses to produce a bland shape that could equally be a kinema.

N12 (1939) now has neither building fill, nor hatching, nor shading.

N13 (1943) is included to show that production of 1:2500 plans did indeed continue during the war.

Signing off

The procedure whereby work was examined and approved can be deduced from the signatures in the margins. These indicate the various processes into which the OS had divided the work and also the dates at which the whole process was completed.

What will be termed here the general stage started the period being signed off in the right-hand margin. The normal elements can be seen on N5: Drawing, Typing & Stamping, Examination, Stamping of Areas, and Examination of Areas. N6 (1913) is the earliest example seen of a more elaborate subdivision: Drawing, Typing, Examination, Bracing of Parcels, Stamping Parcel Numbers, Stamping Areas, Examination of Areas. With this more elaborate system, a stamp was applied in the bottom margin to accommodate the various stages.

The marking of levels constituted a separate process. This was initially signed off bottom left in two elements: Typing of Levels and Examination of Levels [N5]. From 1913 [N6] an initial element, Insertion of Levels, was added and a rubber stamp used to save the labour of writing. N3 (1907) shows the addition of the initial Insertion of Levels without the convenience of the rubber stamp.

The third process was the final approval by the responsible officers. One sheet of 1904 [N1] manages with a single signature. Thereafter, sheets are signed off by two officers.

By the late 1930s the procedure had become much simpler. N6 (1939) shows neither the general stage nor the levels stage and is signed off by a single Lieutenant Colonel. N13 (1943) dispenses even with that – no doubt Royal Engineers officers had better things to do.

Security deletions

Certain types of site were not to be shown on large-scale maps on public sale. The rules dictating what was to be excluded varied over the years. It has always seemed probable that uncensored versions of maps were indeed produced, but no such versions have been found, or, if found, have not been recognized as such.

N4 and N3 provide examples of master drawings including features which would quite definitely be excluded from the published map: in this case Pembroke Dockyard and the
‘Defensible Barracks’ to its south. Extracts from the published sheets are included for comparison.

The first part of the process was the inclusion of the note: ‘This plan contains War Department [or Admiralty] property’ in the top margin. This indicated that the plan required review before publication. In some cases, such as for normal barracks (e.g. at Brecon [N1]) the only matter deleted prior to publication was the ‘WD Property’ note itself.

Actual execution of deletions was not altogether consistent. For example, along Melville Street [N3] the Officers’ houses have been removed and the north line of Melville Street has been redrawn lest anyone spot the shading and deduce the presence of buildings on the other side of the wall. In contrast, on N4, the building slips themselves have been deleted but the regular recesses for dry-dock gates left in the outline must not have been unduly difficult to interpret. The bench marks along Front Street, even away from the dockyard, have been deleted; whereas on N3, those on the dockyard wall itself have been retained, necessitating the restamping of heights.

Areas, that is the mensuration of parcels, could raise their own problems. The Defensible Barracks on N3 formed a parcel in its own right (480) but it also served to separate parcel 478 from 492. Once the barracks was deleted, these parcels were no longer defined on the map and their areas were certainly wrong. Creating a new parcel number for the combined area of 478, 480 and 492 seems to have proved too difficult: the published version of the map dispensed with all three and anyone trying to calculate the area of Barrack Hill from the published map is doomed to failure.

The foreshore is, of course, Admiralty property and here OS practice was at least systematic, though its purpose is unclear. Foreshore parcel numbers and areas, together with associated braces, were drawn in cobalt, a dark blue which would photograph or not according to the precise process used. An example may be seen on N4: the parcel number adjacent to ‘Building Slips’, a brace next to the ‘W’ of ‘West Lanion Pill’. All these cobalt parcel numbers seem to have carried a letter suffix, so that their removal would not leave gaps in the sequence of numbers. N11 provides another example of cobalt parcel numbers. Here the ‘Admiralty Property’ note itself is in cobalt, to save the need for manual deletion.

When the rules for security deletions were tightened about the time of the Second World War, this was dealt with by applying a stamp to sheets that required it, to prohibit further publication until they had been reviewed. Examples are at N10, N13. Note also the ‘MoT’ stamp on N10.

This brings to an end the account of the 1:2500 drawings. The library also holds six-inch maps used by the Archaeology Branch at the Ordnance Survey. They are not nearly so interesting cartographically but a couple of examples have been included to show the nature of the material.

*Archaeological annotations*

A1 is a County Series six-inch sheet with notes on finds and archaeological features. It seems to have served the function now taken by the Sites and Monuments Record.

A2 is a National Grid sheet seemingly indicating a post-War version of the same system. Note the decline in neatness. Devotees of road numbering systems will see that the Romans beat us to it!
Seventeen members enjoyed visiting the OS Headquarters in Southampton on 8 October, some members having travelled considerable distance to this most popular venue.

Chris Evans, a corporate strategist, opened the meeting, with a brief insight into the way the affairs of OS are moving, and how the financial objectives set down by the Government were being achieved over a five year period which ends in 2005. It quickly became clear that Vanessa Lawrence, the Director General and Chief Executive of OS, exercised considerable freedom and staff support in enabling the organisation to stay ahead of its worldwide competitors with a large-scale programme of new developments. Some impressive statistics were outlined such as that while costs had risen only 20% in twenty years, revenue had increased by 300%. Sadly this has been achieved in part by a reduction in headcount from 3500 to 1800 over a similar period. At this stage it became clear that the organisation was steaming ahead with some amazing initiatives and that mapping, in the context in which many of the Charles Close membership were interested, represented just a small part of OS activity.

Simon Bartlett, the Data Collection and Project Manager, then gave a presentation on his role and sphere of influence, followed by Steve Clark, who is responsible for the collection of data from external sources (CODES). OS are increasingly reliant on information provided by outside resources and this requires constant verification before processing, for example some 20% of current data is further updated within one year of receipt. Our party was now running seriously behind schedule and the traditional tour of print production and the map shop began to look doubtful.

A much shortened lunch break in the staff canteen enabled us regain some time, and Dave Kaye became our guide for a tour of the print and finishing departments. This was to many the highlight of the visit. Here the remarkable impact that modern technology has had in the past few years was very evident. This is resulting in enormous savings to OS, on map production and the ease of updating existing maps, and in more regular updates to the public. Encircled by vast quantities of maps in various stages of assembly, the society members were now having a field day. The visit schedule fell further behind: there was so much to interest everyone. Particularly there was much support from the visitors to the fine initiative by OS to provide every school in the country with a free Explorer of their choice for each first year secondary school pupil.

We were now seriously late and there was no option but to dramatically re-schedule the remainder of the visit, and cancel most of the afternoon session, but to the satisfaction of everyone the afternoon was rounded off by a surprise gathering to meet Mr Duncan Shields, Director of Strategy. He presented the society with a framed reproduction of an original field survey sheet given to Sir Charles Arden-Close in 1947, the work of a Charles Arden-Close produced fifty-two years earlier in 1895, when he surveyed the border zone between what was the Niger Protectorate and the German colony of the Cameroons. The presentation made by Mr Shields was in recognition of the close links between the OS and the Charles Close Society. The map was accepted on behalf of the society by Gerry Jarvis.

The day was concluded by a visit to the shop which had kindly delayed closure for our party.
Some notes on the origins of GSGS 4338
(or the first layered Ordnance Survey quarter-inch map of Ireland)\(^1\)

Roger Hellyer

The Ordnance Survey quarter-inch map of Ireland had roots much older than its counterparts either in England and Wales or Scotland. It was the scale chosen by the Irish Railway commissioners for the map to accompany their 1838 parliamentary report, and, though its six sheets were ready too late to be included, it was an instant success on publication in 1839 and subsequently proved its worth as a valuable base map for other purposes, especially Richard Griffith’s geology map. It remained available long after the appearance of its successor. This was the *New Edition* map of 1887, which was published in four large sheets laid out to accord with the sheet lines of the one-inch map, meeting at the south-east corner of sheet 97. Sheets of the same dimensions were apparently already in use as a skeleton base map for administrative purposes, but to the public at large the map evidently had little appeal. But there were no further developments until the introduction of colour printing for small-scale maps at the turn of the century. To take advantage of this the dimensions of the sheets of the Ireland quarter-inch had to be reduced, and they were recast into a small-sheet format by subdividing the two columns of the large-sheet map into three and the two rows into six. The north-west and south-east corner areas covered nothing but water, and the remaining sixteen small sheets were published, each measuring 18 by 12 inches, in outline by 1904 and in colour with hill shading by 1905. In spite of at least one attempt by OS Southampton again to recast the map in a new series on five larger sheets measuring 34 by 25 inches, it was to survive in its sixteen small-sheet format until the Second World War and beyond.

The mapping was wholly redrawn, and reduced from the contemporary one-inch based on the first revision. The Geological Survey of Ireland took up the map in 1914, but their published coverage never extended beyond sheets 2, 5, 11 and 16. The OS made a start on a second edition, based on the second revision, but only one sheet, 16, was ever published, and that by the Geological Survey, in 1921. After partition in 1922 the Ordnance Survey of Ireland (OSI) continued to reprint the map, especially the hill shaded edition, and reprints as late as 1951 have been recorded. There may well have been later ones as well, with the replacement 1:250,000 five-sheet map not even begun before 1958. The outline edition also remained in the OSI catalogue, at least until 1949. Ireland’s Department of Defence made use of the map, in particular in the form of an outline printing with blue water plate.\(^2\) What has also recently come to light is a version of the hill shaded edition, overprinted with the red metric grid which until now has only been known for its association with the abortive 1:20,000 map that OSI started to publish in 1934, of which only six series sheets appeared.\(^3\)

At the quarter-inch scale the area covered by the grid, at 10 km intervals, seems to have been

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\(^1\) With apologies to those whose view it is that a War Office publication should not be considered an Ordnance Survey map, even when the design, revision and printing may have been done at Southampton.

\(^2\) Several such special printings probably dating from the 1930s have been recorded in the Military Archives, Cathal Brugha Barracks, Dublin.

\(^3\) Sheets 432, 433, 450, 451 in 1934-5, sheets 452, 453 in 1939-40, with reprints of the first four.
the whole island of Ireland east of 95 km E. The copy recorded was used by a member of the Air Corps.

One of the first maps made of the province of Northern Ireland after 1922 was a quarter-inch map, made by lithographic transfer of the relevant sections of the small sheet series. The joins were all too painfully obvious. An outline and water edition was printed in Southampton in 1922. A hill-shaded edition was made available to the Irish Boundary Commission in 1925, but it failed to see the light of day since the report, together with its accompanying map, was suppressed.\(^4\) The Northern Ireland map is best known in its *Northern Ireland Road Map* form, first printed in 1926, updated in 1931 and reprinted in 1935. Another version showing *Average Annual Rainfall (1881-1915)* appeared with the Ulster Year Book in 1929. A gridded War Office quarter-inch map of Northern Ireland was issued in 1925; no copies are known to survive, but its 1933 successor, GSGS 3942, was overprinted in purple with the War Office Irish Grid, and this was certainly yet another version of the same map.\(^5\)

With the outbreak of war in 1939, the War Office required gridded quarter-inch coverage not just of the north, but of the whole of Ireland, and the immediate solution was to supply this from the OS small-sheet map. The GSGS number allocated was 4142. As to reproduction material, it may be that the OS had ensured duplicates were in Southampton before they left Ireland in 1922, or they had perforce to approach the now independent Ordnance Survey in Dublin. But whatever the source, the War Office had printings of 10,000 copies of all sixteen sheets run off in 1940, either duplicated and printed by 515th Corps Field Survey Company, Royal Engineers, or on its own presses.\(^6\) The grid was overprinted in purple. The civilian printing firm Robinson took care of any reprints. A second edition followed in 1941, again printed by the 515th Corps, with the grid overprinted in a distinctly blue shade of purple.\(^7\) Classified roads in both editions were in red. Upon their arrival in Ireland the United States Army issued their own version of the Second Edition, printed in October 1942 by the Army Map Service (AMS) ‘for use by war and navy agencies only’. The grid was in yet a third colour, red. Grid data was revised to September.\(^8\)

But the legibility of the map was quickly found to be wanting, and those troops attempting to use it complained of indecipherable place-names and of a road and rail network that was difficult to comprehend. These were clearly complaints supported by their superiors, and on 2 March 1942 Lt Col Shewell, at the time the Assistant Director of Survey, British Troops in Northern Ireland (AD Svy, BTNI), produced as requested a detailed specification for a Third Edition of GSGS 4142, copies of which he sent to the Ordnance Survey and GSGS.\(^9\) He portrayed the need for a new map as most urgent, and asked for its completion to

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\(^4\) A copy of the map is in the PRO, at MPI 1/402.

\(^5\) A copy of the map is among those transferred in 2001 from the Defence Geographic Centre to the British Library, at Maps MOD GSGS 3942.

\(^6\) Copies are in the Geography Department Library, Reading University.

\(^7\) Copies are in BL Maps MOD GSGS 4142 and the Bodleian Library, Oxford.

\(^8\) Copies are in the New York Public Library, and the Library of Congress, Washington DC. In view of subsequent developments, the printing of this map is surprisingly late; had they waited just one more month they could have used the new map that is the subject of this article – indeed its two Northern Ireland sheets, where one assumes the troops primarily were, had been in print already since August. Or perhaps communications between allies was not yet all they might have been!

\(^9\) See the appendix for the text to this document. All quotations are taken from documents in the GSGS 4142 Series file, at present still with Defence Geographic and Imagery Intelligence Agency, DGIA, under consideration for transfer, probably to the PRO. In quotation some abbreviations have been expressed in full, without further comment. Full stops
the new specification within three months, and the first ten sheets, if possible, by 15 May 1942.

On 5 March the possibility of a new map came up in conversation between J C T Willis, at the time ADI (Maps) for the Air Ministry, and (presumably) Colonel Martin Hotine for GSGS. The question of the depiction of airfields on maps formed part of their discussion, and, in his letter to the GSGS the next day, Willis expressed the Air Ministry view that any airfields already known by the Germans should appear on RAF operational maps. He went on to add ‘In this connection, I have lately been in touch with the Chief Intelligence Officer in Northern Ireland and feel that it would be a very good thing if aerodrome locations could be shown on the new ¼” map of Ireland which was discussed yesterday. I do not know whether you will be able to manage this. If so, I will find out exact details from the security folk as to what may or may not be put on’. Hotine, for GSGS, added a marginal note to this: ‘We might turn this into ground-air’, and the whole matter was apparently discussed further at a map production conference later in the month.

Whether there was an immediate response from the OS as to a new map with revised specification is something that at present I have not discovered; either there was, and that it was negative, or Hotine did not await their response, because the following day he sounded out the opinion of his colleagues, and another day later, on 8 March, wrote, not to the OS, but to John Bartholomew in Edinburgh asking for his advice and assistance:

My dear Bartholomew

We last met at lunch at the Ordnance Survey some years ago when, among other things, I had the job of endeavouring to remove the dog from the manger in the matter of Ordnance Survey copyright. I have also had the privilege of being shown over your place in Edinburgh.

A large question now arises on which we should be most grateful for your help.

Troops in Ireland are at present having to use the old engraved ¼-inch series as the only available small scale map. There are some quite justifiable complaints about this, largely owing to the fact that the names are too small or so obscured by detail as to be almost illegible, combined with the fact that the roads and railways are not sufficiently clearly shown. As you may imagine, the complaints are taking a more concentrated form with the arrival of American troops there, although to be sure the Americans have little to boast about in the way of maps in their own country.

There is no way as far as I can see of doctoring up the engraved ¼-inch. It would mean complete redrawing and as you may imagine, our overseas commitments at the moment are so heavy that I am most anxious to avoid this if we possibly can. It has occurred to me that a far better alternative in the interests of the war effort generally would be to utilise your excellent ¼-inch series of Ireland.

We should have to arrange for a rapid revision of this map and for gridding it and printing in very large quantities. In effect it would have to be turned into a GSGS military series. My present information is that your remaining resources would be unable to compete with a job of this magnitude in anything like the short time available. It seems to be a question therefore of taking over from you reproduction material on some agreed basis and in abbreviations such as G.S.G.S. have been omitted. Underlinings have been omitted except where intended as emphasis.

10 ‘Consider this with a copy of the existing edition and speak’ was a comment added in his hand to the top of Shewell’s specification on 7 March. Major W D C Wiggins also added his initials to the document both on the seventh and the eighth; perhaps Hotine’s instructions were to him.
in such a form that we could most expeditiously carry on. Needless to say, the military edition would not either now or ever be placed on sale.

As the matter is urgent I am proposing to send Bickmore, who used to be an employee of yours and is now an officer on my staff here, to Edinburgh to discuss the matter with you sooner than [?to] do so by an interchange of letters, although naturally any arrangement finally reached would have to be confirmed in writing. If I could possibly do so, I would prefer to come up myself, but unfortunately the extension of the war over the remainder of the globe makes this impossible at the moment. May we rely on your sympathetic consideration and help?

Yours sincerely, [signed] M Hotine

At the same time, Captain D P Bickmore was instructed to communicate again with the OS, which he did on 9 March. He made the point that AD Survey BTNI seemed to be requesting a complete redrawing of the quarter-inch map of Ireland except for the blue plate, which seemed a very large undertaking especially in the time given. One would have thought this was already self-evident to the OS. He suggested to the OS two other possibilities, either the Bartholomew quarter-inch map in seven sheets, which GSGS were considering, or ‘brushing up’ GSGS 4127, the half-inch map of Ireland. The OS were asked to consider this as an alternative to redrawing GSGS 4142, and to inform GSGS of their opinion.

Bartholomew’s reaction to Hotine’s approach was evidently positive, and Bickmore went to Edinburgh on 13 March for discussions with the company. He sent them a copy of his report on 17 March, asking for confirmation of item 4a, which had been left open. Though in parts quite technical, the report is interesting enough, perhaps especially to students of the Bartholomew company and map, to warrant complete transcription here:

GSGS ‘M’
Bartholomew’s Ireland ¼" map.
Report on visit to Bartholomew's on 13/3/42

1. Material
   a. The black base which includes all roads and rivers etc., of the ¼" series is on copper and negatives. These negatives are for printing down on to flat bed plates.
   b. Two pulls of the black base of each sheet on good paper which were available are herewith.
   c. No plates or stones exist for the layers sea washes or road fillings of any sheets. These are rubbed off after each printing and prepared again when a new printing is required.

2. Possible form of supply of basic material –
   a. See 1 b above. These black pulls could be photographed and then corrected or vice versa.
   b. Enamels of the base can be supplied in a matter of a day or so from negatives. These would probably have altered size less than the black pulls and additions and deletions could be made on to them direct. (Bartholomews have the necessary enamels available).
   c. Duplicate negatives could also be supplied in a day or so.

3. a. Revision (and alteration of sheet lines?) together with preparation of road fillings and layers etc., could be done on set offs from any of the three above media since the base carries all the limiting line work e.g., contours. Existing published sheets would form colour models.
b. Bartholomews are most anxious to undertake revision and plate preparation themselves. They state that with their present resources they could definitely complete the entire job including printing of all sheets within 12 weeks of receipt of our detailed requirements and revision material. The first 2 sheets could be ready in 3 to 4 weeks and the remaining 5 pro rata. They would like, under these circumstances, revision material in the form of corrections marked up on black pulls. They implied that with their special photographic system of layer and road filling preparation they could prepare the layers and fillings more quickly and with better fitting than either we or OS could. The printing of quantities up to 40,000 would, they say, be a mere flea bite for them. They also said that unless printed very carefully the map which is delicately drawn might thicken up. In this connection they state that they have from the OS ample stocks of paper.

c. They also suggested that as an interim measure their existing stocks of the ¼" might be overprinted with a grid. These stocks by sheets are – Sheet 1 – 2763, 2 – 3306, 3 – 3610, 4 – 3039, 5 – 1463, 6 – 3175, 7 – 3014.

4. Terms
   a. For supply of enamels or negatives etc., of the base of the map they are considering a charge of £100 per sheet. They are letting us know definitely whether this would be OK for them (they wanted to discuss it further between themselves).
   b. For supply of whole production as at 3 b above they would charge standard rates as for OS work – viz., time in man hours plus approximately 10% for overheads, profits etc.
   c. For supply of existing stock as at 3 c they would charge 6d per copy and if they were overprinting them, extra as in 1 b above.

5. General Note.
   Bartholomews are most unwilling to undertake merely the supply of their original material without doing any of the revision or reproduction work that will be involved. Hence their price for original material only is pretty high. They say they are beginning to run seriously short of reproduction work for the OS so that this job in toto would be a most useful sop.

There was a map production conference on 19 March at which the matter would have been discussed further, after which the file is silent until 28 March, when Colonel Cheetham for the OS spoke on the telephone to Hotine. During the previous few days the OS had evidently made the time to get back to the drawing board and come up with a proposal for a revised quarter-inch map of Ireland recast on new sheet lines. Hotine’s handwritten summary of the conversation dated 29 March reveals that he thought positively enough of the OS ideas to decide straightaway against the Bartholomew map. He would write to Bartholomew himself to apprise him of his decision. Most of his other comments were repeated in a memorandum dated 30 March written by Major W D C Wiggins, one of his staff officers, to the Ordnance Survey:

GSGS, Stratford House, Suffolk Square, Cheltenham, 30 March 1942
Ref No 3775/GSGS
Director General, Ordnance Survey, Southampton, copy to AD Survey, BTNI.
GSGS maps of Ireland
GSGS 4142 Ireland ¼" 2nd Edition
This is to confirm telephone conversation (Colonel Hotine – Colonel Cheetham) of March 28th.

1. It has been decided to proceed with recasting and revision of the present GSGS 4142 series and not to utilise Bartholomew’s ¼" map.

2. Sheet lines to be recast. New size to be suitable for emergency local static printing [Hotine’s note mentioned ‘slightly smaller than double-demy’]. It is understood that details of size (?) double crown) have been sent to you by AD Survey, BTNI. When you have investigated this question will you please refer the proposed sheet lines to AD Survey, BTNI, copy to this office, for approval.

3. The following modifications to the present GSGS 4142 are required –
   i. Clear names.
   ii. In some cases road casings have run together. These should be cleared. If possible road casings of major roads should be widened. Minor roads should not be deleted unless essential for clarity. Fourth classification, minor roads, to be shown by a single line. This means removing one of the present double lines.
   iii. Add contours and layers vide para 2(d) of AD Survey’s letter CV/S/4/1/35 of March 2nd. [see appendix]
   iv. Delete isolated homesteads vide letter CV/S/4/1/35 of March 2nd [Hotine’s note referred to the ‘present pepper-box effect’].
   v. Enlarge Headings and Notes. Sheet numbers to be on both top corners.

4. Since the map is to be dual purpose the following modifications are required for Air use.
   i. Railways to be emphasized.
   ii. Principal spot heights to be bold and if necessary “boxes” to be cleared in the layers.
   iii. Isogonal ticks to be added round the margins.

5. Though this edition of GSGS is being called “Second” some sheets [in fact all] appear already to have been published as second edition, by AD Survey, BTNI. It is understood that all sheets in the new edition will be called “Second Edition” and will supersede the current editions whether first or second.

6. 500 copies of all sheets to be sent to AD Survey, Western Command and AD Survey, Scottish Command, vide Director of Survey’s letter HF/7204/CV of March 15th.

[The remainder of the document referred to the half-inch GSGS 4127 and one-inch GSGS 4136].

AD Survey BTNI, Lt Col Shewell, added some pertinent comments in a secret and undated memorandum to GSGS Cheltenham (copy to OS). His particular concern was how the sheet lines of the new map would overlay Northern Ireland, and furthermore he was quick to suggest that to refer to the new map as a second edition of GSGS 4142 would lead to massive confusion:

Quarter Inch Map

1. It is very desirable that Northern Ireland should be covered by one or at most two sheets. I do not think one sheet practical owing to the awkward shape of the remainder of the country.

2. The same rules relating to size of plates and work will apply as in the case of 1" Edition [GSGS 4136] vide notes and drawing forwarded with my CV/S/4/99 dated 24-12-41 to DGOS.
3. Reference para 5 of the above GSGS letter. There is a printed edition of GSGS 4142 running into many thousands of each sheet. If still numbered GSGS 4142 it should be marked Third Edition. I understand from telephone conversation with Major Wiggins that it will be the 1st Edition of a new GSGS Series.

4. When sheet lines have been decided upon I will send you a printing order.

Though undated, this memorandum probably reached GSGS before 2 April, when the next map production conference was held. There was a positive reaction to both of Shewell’s concerns, with a decision to allocate to the new quarter-inch map a different GSGS number, and, though the matter was not immediately resolved, there was evidently a commitment to accede to his request that coverage of Northern Ireland be in no more than two sheets. Finally, on 15 April 1942, came Major Wiggins’ reply to AD Survey BTNI (copy to DGOS):

1. i. With reference to your letter CV/S/4/1/60, undated, the sheet line question is being investigated and proposals will be submitted to you, see para 2 of this office letter 3775/GSGS of March 30th and minutes of Map Production Conference April 2nd.
   ii. The new Ireland ¼” series will be GSGS 4338.

2. [irrelevant]

3. Will you please place your printing demands direct on OS. These to include 250 copies of each sheet to WO Store 306, Elveden Place, Alperton, London, NW10 and to No.8 Field Survey Depot.

Sheet lines were organised on grid sheet lines to standard dimensions of 160 by 120 km, sheets 1 and 2 being portrait in order to achieve full coverage of Northern Ireland. As will be seen from the accompanying index diagram, sheet lines were drawn up that conformed with those of the one-inch GSGS 4136, already into its third edition by 1942. All seven sheets were published in First Edition between August and November 1942 in Ground/Air style. 39,000 copies of each of the two Northern Ireland sheets were printed in August, and 31,000 of each of the other five followed. For some reason the Ground/Air heading was missing from sheet 2. The War Office Irish Grid was printed in black at 10 km intervals, numbered in red; the section of Great Britain on sheet 2 covered by the War Office Cassini Grid was numbered in purple. Air information was not added, though isogonals were overprinted in red. Road classification was to 1 January 1942 throughout the island.

It is interesting to compare the map as published against its predecessor in the light of Shewell’s specification as set out in the appendix, and Hotine’s subsequent decision to produce a map also of use to airmen – ie a ground/air edition. The comparison I have made is limited to the sheets covering the Belfast area – sheet 5 in GSGS 4142 against sheet 2 in GSGS 4338. First, the black plate – as to names, their number was drastically reduced, except for those written over water. County names were untouched, and other names which survived were indeed enlarged, and detail below them cleared. The depiction of roads only partially seems to have followed Shewell’s instructions (though these had already been modified by the time of the Wiggins document of 30 March): first and second class roads are no wider, nor are any lines thickened. The colour infill, as set out by Shewell, apparently defined their classification satisfactorily. But minor roads previously shown as single lines are deleted, and unclassified minor roads newly shown by single lines. Railway lines are certainly thicker, perhaps even thicker than intended by Shewell, once it had been decided to give the map a ground/air classification. The open circle railway station symbol was
introduced, but there appears to have been little improvement to the depiction of railways crossing roads, and no bridge symbol in the area I examined. The opportunity was taken for some revision of the railways themselves, for instance the 1934 south to west curve north of Belfast, avoiding reversal at Greenisland, was added. There was some urban revision incorporated as well, especially in the Belfast area where new docks and building development were added. Isolated homesteads, however, were subjected to widespread deletion. Changes on the red plate followed Shewell’s wishes, though the international border was ruled, not stippled. Shewell stipulated no change to the blue plate, but the needs of airmen required a much deeper blue for coastal waters, and this was done. Furthermore inland open water appeared in solid rather than ruled blue. Tree symbols underlying the green woodland plate were deleted. Willis’s suggestion that airfields be shown obviously did not impress ‘the security folk’, as he called them, and there is no sign of Belfast (Harbour) or Aldergrove airfields.

As to contours and layers, Shewell’s instructions were later revised. There is only one plate, which is brown, but the contour and layer intervals were changed, to 200, 500, 800, 1000 feet, and thereafter at 500 feet intervals, with additional contours at 1250 and 1750 feet. The change away from Shewell’s suggested 250 foot intervals probably reflects practice on the one-inch map, GSGS 4136, where contour levels increase only at 100 foot intervals between 100 and 1000 feet; thus contours drawn at 250 and 750 foot levels were not generally available. An adjustment of these to 200 and 800 feet respectively was presumably considered the most acceptable compromise in the short term. Spot height boxes were cleared from the layers, and the heights themselves were in most cases adjusted. Shewell’s instructions in sections f and g concerning the grid and marginalia generally seem to have been followed to the letter, though one thing he did not specify was any alteration to the colour of the grid, or its values. These matters were seemingly decided later, as, of course, were the sheet lines themselves. His later request that Northern Ireland be covered in one or at most two sheets was complied with.

I conclude with a brief summary of the subsequent history of the series: the US Army finally printed their own first edition (AMS 1) in 1950, with the AMS series number M522. Their printings included the ‘black arrow’ magnetic variation diagram, not present on the OS sheets of 1942. GSGS 4338 was published in its second edition, with heading *Northern Ireland and Eire*, in 1953-4, now overprinted with the virtually identical Irish National Grid. Air information was overprinted, in blue. As sheets came up for reprint in the 1960s the GSGS number was superseded by the SSD M522. The same sheet lines were used in 1956 for GSGS 4865, the *RAF Topographical map*. As well as the grid, this series had a graticule and air information overprinted in blue.

I am most grateful for the permission of the authorities at DGIA to use the documents quoted, and also to Brian Garvan for his advice and assistance.

Appendix

To:- Director General, Ordnance Survey; Repeated Officer in charge, GSGS.
Secret. CV/S/4/1/35
From:- Assistant Director of Survey, British Troops in Northern Ireland

Subject:- GSGS 4142 (¼") Proposed 3rd Edition
1. I have been asked by the Staff to put up a proposal for a new and much improved edition of the ¼" Map of Ireland. Will you please consider the production of an entirely new (and largely redrawn) edition of the GSGS 4142 series.

2. The following suggestions are made:-
   a. Outline Plate. To be redrawn with the following modifications:
      i. Number of small names reduced by about 33½ per cent.
      ii. Principal names to be bolder.
      iii. Names generally to be written clear of detail, or detail omitted under them.
      iv. Roads. All roads now shown by single line to be omitted unless bearing 3rd Class or higher road classification, when they should be shown by double line. All roads now shown by double lines, which do not receive a 3rd class or higher classification to be shown by single line. First and Second class roads to be slightly widened, first class roads to have one line thickened. (See also notes re Red Plate).
      v. Railways. To be revised from information to be supplied by me. The railways to be considerably bolder, also railway stations more clearly marked. Over and under rail and road bridges to be clearly differentiated.
      vi. The number of isolated homesteads to be greatly reduced. Only those at crossroads and other important points, or bearing a name to be retained.
   b. Red Plate. Road fillings as follows. 1st Class – Solid Red, 2nd Class – Red Peck. (Third class will be uncoloured double line roads, while unclassified roads will be single line, see notes on Outline Plate). Road classification to be taken from GSGS 4136 3rd Edition. Boundary between N. Ireland and Eire to be shown by narrow band of Red Ruling as on 2nd Edition (or Red Stipple for preference).
   c. Blue Plate. No change. Sheet 12 needs a Blue Plate and the water to be taken off the outline plate. Minor amendments from GSGS 4136 3rd Edition.
   d. Contours and Layers. (Two plates?). A contour and layer plate to replace the existing hill shading, and a second layer plate if possible. Suggested contour interval 250 feet. Layers at 250', 500', 750', 1000', 1500', (and 2000'?). It is thought that not less than 5 layers are required, but if 4 layers could be got onto the contour plate, the layer at 750' might be omitted, and a plate saved. On the other hand, if two plates could be managed, the result would be much better, and a 2000' layer could be introduced on certain sheets which require it.
   e. Green Plate. No change.
   f. Grid Plate. On certain sheets, eg Sheet 5, on which there is no horizontal Large Square Grid line, the small figure of the full 100,000 metre reference does not appear. Suggest that all figures nearest the sheet corners, in addition to those on the Large Square lines, should show the small 100,000 metre reference figure. Amend Grid Convergence and Magnetic Variation to be correct at centres of sheet edges. Magnetic Variation to be brought up to date.
   g. Generally. Improvements and amendments to Legends, Conventional Sign boxes, and border generally.

3. I have been asked to express the hope that this edition might be available by 1 June 1942, and if possible the first ten sheets viz Nos 1, 2, 4, 5, 7, 8, 10, 11, 13, 14 by 15.5.42.

[Signed Lt Col H A L Shewell], AD Survey BTNI.
Survey Directorate, Headquarters, British Troops in Northern Ireland, Home Forces. 2.3.42.
Quarter-inch map of Ireland, GSGS 4338, in relation to one-inch series, GSGS 4136
The Ancient Borough of Monmouth

Ken Hollamby

A couple of years ago I was asked to trace the boundaries of the ancient Borough of Monmouth and relate my findings to the modern boundaries. My starting point was the description in the Borough Charter granted by King Edward VI on 30 June 1549.

The Mayor, Bailiffs and Commonalty shall have the returns and executions of all the King’s Writs and Precepts, as well as in the Borough as in the Foreign within the metes and bounds viz., the bridge of Malibroke, Brodestone, Radbrooke, the bridge of Little Troy, Portefelde, Badyputt, Ricardeforde and Maynstone Crosse by circuit of the said town.

This is typical of an early charter. There is no map and the boundary of the town is described as a route linked by well-known landscape features. My first reading showed that there were two bridges, a field, a brook, a ford, a stone and a cross. Only Badyputt gave no immediate clue as to its geographical nature.

Using the resources I had to hand I took out our library copy of Pathfinder Sheet 1087, Monmouth, 1979 ‘A’, scale 1:25,000 and started my search. The southern boundary soon fell into place. Little Troy has survived as Troy Farm, Radbrooke as Redbrook and Portefelde as Portfield. Some of the others proved more troublesome to identify.

This is when I turned to the 1832 Reform Act which has a descriptive section and a definitive map. The compilers of the Act thoughtfully opened their description by stating that ‘The Borough of Monmouth is defined by a Charter of the 3rd year of Edward VI. This Charter sets out the limits of the Borough’. This established that the 1832 boundaries were identical to those in 1549. By comparing the two I was able to identify the key points on the circuit. The ancient boundaries of Monmouth were defined by walking and the Act stated that the last perambulation took place seven or eight years before 1832.

By the end of the exercise I was able to produce the following table.

<table>
<thead>
<tr>
<th>Edward VI</th>
<th>OS map</th>
<th>Grid ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge of Malibroke</td>
<td>Footbridge NE of Dixton</td>
<td>SO 522137</td>
</tr>
<tr>
<td>Brodestone</td>
<td>Broadstones</td>
<td>SO 537124</td>
</tr>
<tr>
<td>Radbrooke</td>
<td>Redbrooke</td>
<td>SO 536105</td>
</tr>
<tr>
<td>Bridge of Little Troy</td>
<td>Troy Farm</td>
<td>SO 508112</td>
</tr>
<tr>
<td>Portefeld</td>
<td>Portfield</td>
<td>SO 493115</td>
</tr>
<tr>
<td>Badyputter</td>
<td>Bailey Pitt</td>
<td>SO 487128</td>
</tr>
<tr>
<td>Ricardeforde</td>
<td>Rockfield</td>
<td>SO 483149</td>
</tr>
<tr>
<td>Maynstone Cross</td>
<td>Manson</td>
<td>SO 505149</td>
</tr>
</tbody>
</table>
The boundary of the Ancient Borough of Monmouth
German maps of England of World War II
and associated publications

R C Wheeler

German geographical intelligence on the UK from World War 2 has been in the public domain for some time. Oliver Rackham used Luftwaffe reconnaissance photographs in his work on ancient woodland. Charles Close Society members were shown the ‘military object’ folders on a visit to the Imperial War Museum in 1992. The investigations that stimulated this article arose originally from following up the Ordnance Survey’s odd treatment of a shell filling factory\(^1\) and wondering how the German agencies had responded to this erroneous information. Results were inconclusive but the sheer extent of the German material came as a surprise and will no doubt be just as surprising to all but a few readers.

Before going further, a disclaimer is needed. My knowledge of the subject is extremely shallow and there is scope for a much more thorough review or, better, a cartobibliography. Until these are produced, these few pages may serve as an elementary guide to the material that is available. In particular, it may be of use to those who have acquired specimens of German products, often defaced and cropped,\(^2\) and who may be trying to understand the abbreviated marginalia that have survived.

The article will concentrate on material of a topographical nature. General maps on a scale smaller than 1:250,000 are not covered. It will also concentrate on maps of England, for which the material is slightly richer than for Wales or Scotland. The UK is perhaps a little special in that German effort was focused in the period from 1937\(^3\) to October 1940, when invasion plans were abandoned. Nevertheless, similar publications were produced for a wide range of countries, though naturally the richness of the material varies with distance from Germany and with the extensiveness of the base mapping that was available.

Material is listed here by originating service and branch. This has been done, firstly to facilitate the use of library catalogues; secondly because different originators had different interests; and thirdly because one must avoid the assumption that material was shared freely between agencies – although it will be apparent that much exchange of data did occur.

1. **Army**

The great German innovation of the nineteenth century had been the creation of a permanent General Staff, the *Generalstab des Heeres*. This was divided into branches, or *Abteilungen*.

a. Maps

The production of maps and other geographical products was the task of the *Abteilung für Kriegskarten und Vermessungswesen*, often abbreviated to *Gen St d H Abt f Kr u Verm*. Their editions of foreign maps\(^4\) were normally described as *Sonderausgaben* (Special Editions)

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1. At Quedgeley, Gloucestershire. It first appeared on the one-inch in 1936 despite having been demolished in 1926, as a result of cursory one-inch revision based on six-inch maps.
2. In 1944, many allied maps were printed on the reverse of German maps from depots that had been over-run.
4. i.e. reproductions of the products of foreign mapping organizations, often with e.g. a German grid.
with date as, e.g., VI 40 (for June 1940), or as Vorläufige Sonderausgaben (Provisional Special Editions). The system provided for Truppenausgaben produced by mapping units in the field, but it is unlikely that such editions exist for UK maps.

The following series were produced:

(i) 1:25,000 by reduction of OS six-inch onto re-cast sheet lines. All English counties were said to be covered except the North and West Ridings of Yorkshire, Derbyshire, Nottinghamshire, Leicestershire, Rutland, Shropshire, Staffordshire and Westmorland.

(ii) 1:50,000 by enlargement of the OS one-inch but without the yellow road fill. The most up-to-date sheets available were used, so the series mixed Popular and Fifth Edition sheets (as did the Second War Revision in the UK!). Initially, OS sheet lines were retained, which led to some Popular Edition sheets being required only because of small strips which the corresponding Fifth Edition sheet failed to cover. OS sheet numbers were retained, but where the same number was used for both a Popular and a Fifth Edition sheet, the Popular number bore an ‘a’ suffix. By a remarkable coincidence (or was some renumbering required?) all the ‘a’ sheets largely overlap a Fifth edition sheet of the same number. From as early as December 1940, the ‘a’ sheets were eliminated by extending the area of the corresponding Fifth Edition sheet. This resulted in a hybrid map where symbols changed as one crossed an imaginary line, something of which the user was not warned in any way. Eight sheets were available as Wirtschaftskarten, though no specimens have been encountered: were these derived from the Land Utilization Survey?

(iii) 1:100,000 by enlargement of OS half-inch. The standard forty-sheet series was available, as were the handful of new Large Sheets (Cotswolds, Greater London, etc). The old outline sheets on county lines were also published.

(iv) 1:250,000 by enlargement of OS quarter-inch. This started with the OS sheet lines, but it would seem that some progress at least was made in re-casting the series on sheet lines that avoided overlaps. By 1944, they were being replaced by a 1:200,000 on graticule-based sheet lines, with names re-lettered according to German cartographic conventions. OS quarter-inch material was also used in a five-sheet series of the English Channel (Der Kanal) which employed 1:200,000 French material for the opposite shore. Submarine contours are in fathoms on the English side and in metres on the French side. Those parts of the sea covered by neither an English nor a French sheet are uncontoured.

(v) Smaller scales are not covered here.

I have not noticed any editing or correction of the topographic content of these maps. It would be interesting to know of any corrections or updates that have been spotted.

b. Mil-Geo dossiers

Militärgeographische was a term used for products which took the basic topographical information, together with additional material, and applied military knowledge to it in order

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5 Sheets 94, 96, 115, 123, 124, 125, 132.
6 Sheet 125 in CUL Maps 35.016
7 See forthcoming article by C Board. The sheet lines followed a new universal system, the Deutsche Heeres Blattschnitt (DHB).
8 The BL catalogue indicates subsequent expansion by a further two sheets.
present it in a form of greater value to the military commander. The *Abteilung für Kriegskarten und Vermessungswesen* produced two products of this sort which we might now term dossiers. The first, *Militärgeographische Angaben über England*, comes in a number of portfolios or *Mappen*.

(i) *Mappe A* provides an interesting collection of small-scale maps on different themes. One covers population density. Another is an Operations Map in two sheets at 1:500,000, not quite a ‘going’ map as UK Armoured forces would understand it but going beyond layering to distinguish regions of convoluted relief from mere plateaux. There is a map of power stations and the National Grid, and another of the trunk telephone network and radio-telephony stations. The latter acknowledges the assistance of *Chi OKW*, the ciphers branch of the Armed Forces HQ. It also includes an inset of the London to Birmingham co-axial cable with locations of main and subsidiary amplifying stations. However, having provided such a map, the compiler clearly felt his task was done: there is no indication of where in St Albans the first main amplifying station might be, nor whether the coaxial cable itself is buried or hung from telegraph poles alongside the main road. To round off the portfolio, there is a booklet of fuzzy photographs showing different landscape types.

(ii) *Mappe B* offers a 1:20,000 town plan of London.

(iii) *Mappe C* provides coastal maps and photographs in a series of volumes running up the west coast to Oban and up the east coast to the Tay. The photographs are somewhat unappealing: all too many lines of fuzzy beach huts. Perhaps more interesting are the reverse sides of the sectional maps: one copy re-uses medium-scale maps of France and the Netherlands.

c. *Objektkarten*.

The second dossier produced by the *Abteilung für Kriegskarten und Vermessungswesen* has a confusingly similar title to (b), namely the *Militärgeographische Einzelangaben über England*. More informative is its sub-title, the *Militärgeographische Objektkarten und Objektbildern*. They will be referred to here as the Object Maps.

They were issued in folders, each containing one sheet of the 1:250,000 series, overprinted in purple with the symbols for the different types of ‘military object’, principally industrial installations. Where towns had a significant number of military objects, a 1:10,000 sheet (or sheets) was provided, the areas of these sheets being outlined in purple on the 1:250,000. The selection of ‘military objects’ within these 1:10,000 sheets was more extensive: for example, every railway bridge seems to have qualified and to have been duly overprinted in purple. Notes were also provided stating, for example, the products of any factories shown.

With each folder came a booklet of photographs of military objects, the *Objektbildern*, about 100 low-resolution images from the area of each folder.

Grand in its conception, this scheme was flawed by shoddy execution and by the inadequate base of topographic intelligence used to support it. If one takes, for example, the 1:10,000 sheet covering Lincoln one finds that all but one of the engineering works are

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9 Capable of carrying forty simultaneous conversations, according to the BT website.
10 BL C104.e.13 – within the Humanities collection.
annotated ‘product unknown’ – this in a city which had been one of the main centres of production of tanks and aircraft in World War I. The gas works is marked but not the electricity works, despite the latter being shown on the OS 1920 Town Map. The building marked as the Town Hall is actually St Swithin’s Church Hall, some 100m along the road. Finally, a purple ‘Railway Bridge’ symbol was overprinted on each of Lincoln’s many level crossings!

The photographs are no better so far as Lincoln is concerned, the one Object depicted being Le Tall’s mill, a splendidly tall brick windmill of the 1830s, lacking its top and largely surrounded by later buildings. The caption quotes a production rate of 20 tonnes/hour (an order of magnitude too large – perhaps someone had confused bushels with tonnes) but the map records that the location of this most interesting building was unknown. Taken together with the gratuitous information about the production rate, this suggests that the photograph may have been copied from a trade magazine: certainly a very similar photograph appeared in the English magazine Milling in the 1920s.\textsuperscript{11}

Overall, one gains the impression of a product gleaned from the libraries of Berlin and starting to lose touch with the military requirement which had first called it into being.

d. The Heeresplankammer

The Heeresplankammer (Army Map Room) was closely associated with the Abteilung für Kriegskarten und Vermessungswesen. It did not itself publish maps,\textsuperscript{12} but it did produce a catalogue (known as a Planheft) for each country, listing in detail the products summarized at (a) to (c) above and with diagrams of sheet lines. Successive editions of the Planheft Grossbritannien have been drawn on in producing the above account.\textsuperscript{13}

e. Fortification Maps

The Army’s Intelligence Branch, known as ‘Foreign Armies’, had by 1940 been split into two branches, covering the Western and Eastern theatres. Abteilung Fremde Heere West produced a series of overprints to all the maps listed at (a) up to the 1:250,000 scale, showing such anti-invasion defences as they were aware of. Of the 1:250,000 series of these Befestigungskarten Grossbritannien, Sheet 12 is the only one I have encountered. Of the 1:50,000 series, at least nine sheets were produced in November and December 1940 covering SE England from the Thames to the Solent. One sheet (124) explicitly acknowledges the assistance of the Luftwaffe, but it must be presumed that most, if not all, of the detail on the overprints was derived from air reconnaissance. The 1:50,000 overprints include a certain amount of topographical updating, such as the Crawley by-pass.

Only a scattering of 1:25,000 sheets have been seen by the author, all covering eastern Kent and dating from June and July 1940. These have two separate overprints, a red one with fortifications, and a purple one with topographical revision: for example housing development on sheet 1/74, the buildings of Lympne airfield on sheet 1/75. The fortification plate indicates by cross-hatching areas rendered unusable for the landing of aircraft by the

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\textsuperscript{11} Lincolnshire Past & Present 36 (Summer 1999), pp7-10.

\textsuperscript{12} That is to say the English sheets are declared to be published by the General Staff, even though the Heeresplankammer may have provided much of the technical effort needed for their production.

\textsuperscript{13} BLML has copies but they are awaiting conservation and do not yet have entries in the map catalogue.
erection of obstacles (Sperranlagen), something for which it is unlikely that any detailed British records exist.

2. **Air Force**

All Air Force publications were nominally issued by the Oberbefehlshaber der Luftwaffe. The Luftwaffe had a Generalstab like the Army’s. In the same manner as the Army, it had a superior Führungstab, whose members frequently also headed branches of the General Staff. Thus the intelligence function, for example, was carried out by the Fifth Abteilung but, since the head of that branch was also 1c of the Führungstab, its publications are sometimes credited to Führungstab 1c.

a. **Maps**

The Seventh Abteilung (Kart. und Luftgeo.) was responsible for the production and supply of maps. They also produced a catalogue (Verzeichnis),\(^{14}\) listing the cartographic products available at that time through map stores. This notes the availability of relief maps at scales down to 1:25,000. However, the only 1:25,000 relief map was for Dover and the 1:50,000 and 1:100,000 relief maps were only available for Dover and other port areas. The full range of Army-produced maps was also available, although the only fortification maps listed are those at 1:50 000.

b. **Luft-Geo**

The 7th Abteilung also produced a Luftgeographisches Einzelheft. Despite its title it came in multiple volumes. BLML has Band 1.1 Südengland (1942) and Band 1.2 Ostengland (1943).

Typically, each town in the area described is illustrated by a vertical air photograph and an oblique. The caption generally points out any objects of cultural significance; also industrial areas and items, such as bridges, of military significance. For example, the view of Lincoln draws attention to the Cathedral and the Castle on the hill, the river basin with the adjoining railway yards, and the ironstone quarries to the east of the city.

According to the Verzeichnis, the Army’s Mil-Geo dossier (1b above) was available through Air Force map stores, but not the Object maps (1c above).

c. **Target Cards**

The Fifth Abteilung (Foreign Air Forces) had always had ‘target study’ as one of their duties. As early as 1931, it was maintaining a file of target cards (Zielstammkarten) – literally 12×16-inch grey index cards.\(^{15}\) Each target bore a number: GB for the country, two digits for the target type (e.g. 73 = airfields) and up to three digits to identify the particular target. By 1940, the cards had generally been replaced by manila folders containing an aerial photograph of the target, a large-scale map with features from the photograph transcribed

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\(^{14}\) Reichsminister der Luftfahrt u. Oberbefehlshaber der Luftwaffe / Generalstab 7.Abdt. (Kart.u.Luftgeo.) Az.:45c Nr. 365/42(II) Verzeichnis der bei der Luftwaffe vorhandenen Karten, Luftgeographischen Bearbeitungen, Reliefs und Militärgéographischen Arbeiten, dated 1 January 1942. (It is understood that a copy has been passed to the PRO – reference unknown.)

\(^{15}\) Kahn, *op cit* p.382.
onto it, further information on the target, such as critical nodes, and information to assist in locating the target.

For example, the Ruston and Hornsby works in Lincoln (GB 82 47 & 48) is carefully marked on a vertical aerial photograph. Advice on navigation is given (find the Humber, follow Ermine Street which runs due south, and Lincoln is at the far end); locations of nearby RAF stations were noted. Critical facilities (Lebenswichtige Teile) were noted for both East and West sites but in a somewhat mechanistic manner: the ‘machine- and work-shops’ noted as critical for the West site actually constituted 90% by area of the buildings on that site!

The Imperial War Museum holds the principal collection of target cards in the UK. They may be inspected by prior appointment. The RAF Museum at Hendon also has an extensive and well-organized collection.

d. Special Series.

The Führungstab 1e also published reports giving the same information as the target cards for all targets of a particular type. These are known as Sonderfolge des „Frontnachrichtenblattes der Luftwaffe“.

BLML has at least two: London – utilities; and Night-bomber airfields.16

What can these products tell us about the historical geography of the UK that we do not know already from other sources? Essentially it is only those products that had an intelligence input (where the term is taken to exclude the re-issue or re-arranging of existing UK maps) that have something to contribute. The Luftwaffe target cards are valuable here, as is all the copious imagery from which the target cards were derived. Among the cartographic products, it is principally the fortification maps that stand out as an important source, particularly the 1:25,000 series. It would be useful to know whether any survive beyond the few sheets in BLML.

Reviewing the products in this way also clarifies their intended uses. I hope it has also served to dispel the confusion, widespread among those who have only encountered the former, between Army military objects and Air Force targets.

Stations on Landranger maps

K M Bromley

It would be interesting to know of the Ordnance Survey’s criteria in categorising stations on the Landranger series as principal (red rectangle) or basic (red circle). I mention this because their present classification is inconsistent as described below.

For the purpose of this exercise I have limited myself to England south of the northern boundaries of sheets 172 to 178 inclusive. I have nothing against the rest of Great Britain, but

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16 BL Maps 46.c.24 and Maps 46.d.3.
to cover all 204 sheets would be too complex, and it seemed sensible to confine myself to an area where I can add in some local knowledge. Also, a glance at other *Landranger* sheets indicates that the situation is by no means peculiar to southern England.

My attention was first drawn to this scenario when I noticed that my own principal station of Guildford (*Landranger* 186, grid reference 991497) is correctly shown as such, but Woking (186, 006587) is not. This is curious, given that a Surrey County Council survey indicates that both are equally busy. My interest thus aroused, I took a visual trip along the Waterloo to Weymouth line only to discover that this was not an isolated case. Waterloo along with all London termini, Clapham Junction (176, 272755), Southampton (196, 413122), and Bournemouth (195, 097920) are all honoured with the red rectangle; and I have no quarrel with any of these. But Weymouth’s principal status (194, 679796) is harder to justify, especially when Wimbledon (176, 249707), Woking, Basingstoke (185, 637526), Eastleigh (185, 458191), and Poole (195, 012911) along the same route are refused this accolade.

Perhaps Weymouth provides the clue in that the Ordnance Survey equates seaside resorts with principal stations; and given that Bognor Regis (197, 934994) and Littlehampton (197, 024022) both qualify in OS eyes does lend mileage to that theory. But in that case, why do the larger Eastbourne (199, 610991) and the very much larger Torquay (202, 905635) only merit a basic station apiece? And if we accept the Bognor Regis and Littlehampton classification, then the nearby Barnham (197, 958043) on the main Brighton to Portsmouth line must, by definition, be even more of a principal station. Yet it languishes with the basic red circle.

The seaside resort / principal station equation is well and truly demolished with the red circles at Broadstairs (179, 391680), Margate (179, 348705), and Ramsgate (179, 372657).

The Great Western main line from Paddington fares no better. Again, there can be no quarrel with the rectangular Reading (175, 714738) and Bristol Temple Meads (172, 598725), not to mention Exeter St David’s (192, 911933) and Plymouth (201, 476553) on the Cornwall line. But then one would expect Slough (175, 978802), Didcot (174, 525905), Swindon (173, 149852), Bath (172, 736645) and Bristol Parkway (172, 624796) to be worthy of similar status. The lack of the coveted rectangle at Slough is especially odd when one notices the principal station on the Windsor branch (175, 966769). Granted, Windsor station’s buildings have been impressively restored, and it must have a large input of foreign visitors. But the fact remains that it is a single line to a single platform with a half-hourly shuttle most of the day; whereas Slough has eight trains an hour, each way, off peak, plus the Windsor shuttle.

A particular oddity in Kent is the principal status of Maidstone East (188, 759562). Maidstone is certainly a town of some importance, but is it really that much busier than stations in nearby towns of broadly similar size, e.g. Sevenoaks (188, 522553) or Rochester (178, 640693)?

I do not pretend that this résumé is all-embracing in the area under review and, no doubt, more eagle-eyed members will find other inconsistencies. More to the point, it will be fascinating to see if anyone can come up with a logical explanation for the present distribution of principal stations which, in places, verges on the random.

I have saved the best till last. Gatwick Airport (187, 287413)? An ordinary station? Surely not!
These are difficult times for the country’s mountain statisticians. The trouble began with metrication. There is no need to explain to an informed readership the crucial importance of the figure 914.4, nor to draw attention to the fact that it does not appear on the map. In effect 914m represents the range 913.51 - 914.49m and so replaces 2997 (in part), 2998, 2999 and 3000ft (in part). As there is only a 10% possibility of a 914m spot height measuring a genuine 3000ft, only summits with a minimum OS height of 915m can be considered for Munro status. This loss of accuracy is surprising in view of the advances in science and technology of recent years, but the OS firmly decline to publish summit heights to any part of a metre.

The adverse repercussions of metrication are more far reaching in the case of that other object of devoted study, the cataloguing of the Corbetts. These are the Scottish hills of between 2500 and 3000ft. They are triply dependent on precise data because, as well as the height criteria, they must have a minimum drop of 500ft all round to qualify. The metric equivalent of 2500ft is 762m which has an imperial range, in spot height terms, of 2498 - 2502ft. The required drop of 152.4m no longer corresponds to marked contour differences.

The concerns of the more nervous of the fraternity are compounded by their fears about global warming and the melting of the Greenland ice cap, also by reports that the sceptred isle is sinking, or maybe tilting. There is a dim understanding that the OS have somehow managed to get on a level with the French but what, these Jeremiahs fret, would happen if Brussels decreed that the measuring kit be taken to some outlandish location such as the Mediterranean, where the sea has an altogether improper mean level? What future then for the south pier at Newlyn? Faced with so many problems and worries it is natural to look for comfort in the greater difficulties that have befallen others.

Worse things have happened in Switzerland where, sixty odd years ago it was discovered that the national datum level – the Pierre du Niton, Geneva – was not 376.86m but 373.6m above sea level (note the fearless attitude to the decimetre, even the centimetre). The Swiss instinct in such circumstances is to blame the happy go lucky Austrians, but in this case it was the incompetent French who were at fault, they being in charge of measurement between the Channel coast and Lake Geneva. As an interim measure, 1940s sheets of the Eidgenössische Landestopographie bore a curt footnote that map heights throughout the sheet were three metres too high. Corrections were made to subsequent editions, but in one valley the perceived injury was permanent.

Although there is no Alpine equivalent of either Sir Hugh Munro, Bart or J Rooke Corbett Esq., a more or less agreed list of 4000 metre peaks exists and keen pride is taken in having one or more within the parish. Hence the dismay in the Saas valley when the Fletschhorn (4001m) became the Fletschhorn (3998). Without giving the matter proper thought, the local council made a public appeal to visitors to the Fletschhorn (not a very popular climb) to each add a stone to the summit cairn so that the stolen metres could gradually be recovered. It was soon pointed out that a successful platform would need to be substantial in girth as well as height and would call for a considerable tonnage of stone and...
some building skills. The councillors had begun to consider the propriety of spending local taxation on having the job done professionally when the Eidg. Landestopographie, allegedly prompted by an opponent of the scheme, resolved the whole issue in magisterial terms by stating that, whatever man made structure might be added to the summit, the official height would remain 3998m.2

We could have told them that, illustrating the point with a brief account of the Ben Lawers precedent. Until the OS punctured local pretensions, Ben Lawers had been credited with a height of 4015ft, attributed to the barometric survey of 1776 made by General Roy. In 1852 a RE party encamped for several summer weeks near the summit established, by triangulation, a corrected height of 3984ft.3 The publication of this reduced figure on the first edition of one-inch sheet 47 in 1869 was not well received in the neighbourhood. In 1878 Malcolm Ferguson, a local man, or Malcolm Fergusson, a Glasgow man, accounts vary, undertook corrective measures at his own expense. On 5 July he employed two masons to supervise thirty volunteers who, in the single day, built an outsize cairn. The volunteers were each rewarded with the gift of ‘a handsome volume of Gaelic poetry’, which largesse must have come as a disappointment to the depraved majority who would doubtless have preferred a few drams. The reported base diameter of 45-50 feet was probably an exaggeration but the cairn was certainly twenty feet tall, which allowed a four-foot margin for wear and tear. The enterprise was well recorded by guidebook writers but was never recognised by the OS nor, I believe, by Bartholomews or any other map publisher. These snubs would have been matters of principle, but they also proved shrewdly prescient. Ben Lawers was a Victorian tourist mountain. Baddeley’s Guide (1884 Edition) is informative: ‘From Ben Lawers Hotel (Temp) to the top and back 4-5 hrs. Ponies may be taken to within half an hour of the summit. Charge, pony and guide 5s each’. This entry remained unchanged, with the same prices, until the 1908 edition and possibly later. Under the pressure of weather and tourist traffic the cairn soon began to collapse and is considered to have fallen significantly short of its target by the end of the century, although enough survived for a few years longer for visitors to make the dubious claim that by standing on the remains they were able to raise their heads above 4000ft. As recently as 1949 the Blue Guide misleadingly refers to the summit as ‘artificially raised to 4000ft by means of a cairn’. In the same year the Scottish Mountaineering Club, meticulous and authoritative, noted that ‘Little of this 1878 cairn remains and a pile of stones some 7ft high marks the summit of the mountain’.

The whole ridge has since been resurveyed resulting in assorted height gains and losses. The Fletschhorn has shrunk to 3993m. A cautionary tale indeed. To labour the decimal point, near neighbours on the revised 1:50,000 map include Lagginhorn (4010.1), Inner Rothorn (3527.4), Böshorn (3267.6) et al.

When Sir Hugh published his list in 1891, Ben Lawers was number ten in order of height but in 1921 Sgor an Lochain Uaine in the Cairngorms was demoted and Lawers rose to ninth position. In 1997 Sgor an Lochain Uaine was reinstated and Lawers reverted to tenth highest. These are matters for advanced students.
This research was undertaken to review the early Ordnance Survey mapping held at The National Archives. It aims to track the early mapping process by identifying the relationships between the foul and fair copy manuscript maps and the engraved maps that laid the foundations of the Ordnance Survey. It focuses predominantly on the Topographical Survey and the early years of the OS, between 1784 and 1819. The Trigonometrical Survey is included as it progressed in tandem with the Topographical Survey and together they formed the general survey of Great Britain. Other late eighteenth-century published county mapping is included as it played such an important role in forming the house style of early OS mapping. It must be stressed that only maps held at The National Archives have been reviewed and as such it is a snapshot of certain activity and not a complete list.

This paper does not aim to be an exhaustive trawl through the archives, but attempts to establish links between previously unrelated maps and to assist in their cataloguing. This in turn paints a clearer picture of the evolution in cartographic techniques, which established the OS house style, initially for the one-inch Old Series. For a summary of the chronology of the Topographical Survey see Appendix 1.

During this study it was evident that the early mapping was influenced by a number of factors, such as the threat of invasion and the need to protect the British coastline; hence the earliest surveys being undertaken in the Channel Islands and along the south and east coast where there was a military need. This paper will not focus upon this, the scales debate or the influence of European mapping on the style of the one-inch. Also, the research excludes northern England, Scotland, Wales or Ireland, as it focuses on the earliest mapping of the Ordnance Survey and the surveying that led up to it.

The following tables tread a chronological path, attempting to identify maps that illustrate the different stages of the mapping process, from foul/rough plans (field sketches) to final published maps. Identifying map styles, key individuals and a chronology of the early mapping helped to uncover more maps within the archives that could help fill in some of the gaps in the picture of early Ordnance Survey. Surveyors and draughtsmen that appear throughout the early topographical mapping are detailed in Appendix 2.

John Warner was an early engraver on topographical survey, as was Thomas Yeakell (Senior) who was an accomplished engraver. During the early years of the Ordnance Survey the important engravers were Thomas Foot, Ebenezer Bourne, Benjamin Baker, W Tovey and John Palmer; see Appendix 3. The map publisher William Faden remained an important figure throughout this period and published the first ‘Ordnance Survey’ one-inch county map, that of Kent, on 1 January 1801. It was engraved by Thomas Foot, who worked for Faden; probably in the Drawing Room at The Tower. By February 1801, he was employed at The Tower. The second county was Essex, published on 18 April 1805. This was the first set of maps to be both engraved and published by the Ordnance Survey at The Tower.

It should be noted that the distinctions between early published mapping, topographical survey and Ordnance Survey are not as clear-cut as suggested below. This arbitrary distinction is of my own choosing to distinguish between the surveying, engraving and
publishing. It should also be noted that this is a work in progress, dependent upon available time and resources. I would like to thank Geraldine Beech whose advice has been invaluable in untangling this work.

Table 1: Trigonometrical Survey of England

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>The National Archive PROCAT Reference</th>
<th>PRO British Isles Cat No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[?c1799]</td>
<td>Kent: Triangulation from Reculver to Dover; possibly Secondary Triangulation for Trigonometrical ‘fixing’ of the topographical survey of Kent, ?c1799.</td>
<td>MR 1/560</td>
<td>1108</td>
</tr>
<tr>
<td>1795</td>
<td>Devon &amp; Dorset: Continuation of the Triangles of the Trigonometrical Survey; by Lieutenant Colonel Williams.</td>
<td>MPI 1/202</td>
<td>1990</td>
</tr>
<tr>
<td>1810-1816</td>
<td>Re-triangulation of Great Britain: showing Ordnance stations of British Isles.</td>
<td>MPHH 1/272</td>
<td>7</td>
</tr>
<tr>
<td>[1834]</td>
<td>Ordnance triangles for principal and secondary triangulation; Engraved, with coloured MS additions.</td>
<td>MPH 1/43/10-11</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 2: Late eighteenth century published mapping – southern & eastern counties of England

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>The National Archive PROCAT Reference</th>
<th>PRO British Isles Cat No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1778-1783</td>
<td>Four sheets of ‘an Actual Topographical Survey’ of Sussex, surveyed by Gardner &amp; Yeakell, at 2 inches to 1 mile (1:31,680); engraved by Yeakell.</td>
<td>MR 1/1409</td>
<td></td>
</tr>
<tr>
<td>1778-1780</td>
<td>Sussex, from Chichester to Brighton, surveyed by Gardner &amp; Yeakell, at 2 inches to 1 mile (1:31,680); engraved by Yeakell. Sussex sheets 1 &amp; 2: published 1778 &amp; 1780 respectively.</td>
<td>MR 1/1169</td>
<td>1866</td>
</tr>
<tr>
<td>1783</td>
<td>Two copies of the third sheet of ‘actual Topographical Survey’ of Sussex, from Ovingdean to Eastbourne, surveyed by Gardner &amp; Yeakell, at 2 inches to 1 mile (1:31,680); engraved by Yeakell.</td>
<td>MPH 1/244</td>
<td>1867; 1868</td>
</tr>
<tr>
<td>1783</td>
<td>Survey of the County of Suffolk, (in 6 sheets), surveyed by J Hodkinson, at 1 inch to 1 mile; engraved &amp; published by W Faden.</td>
<td>MPH 1/301; WO 78/5694</td>
<td>3010</td>
</tr>
<tr>
<td>*1778- [c1785]</td>
<td>Survey of Hampshire &amp; Sussex, surveyed by Gardner and Yeakell (Senior), at 1 inch to 1 mile; possibly proof copies, possibly engraved by Yeakell.</td>
<td>MPH 1/559</td>
<td>1485</td>
</tr>
</tbody>
</table>
| Note: Eastern part appears to be based on sheet 1 of the Topographic Survey of Sussex, at 2 inches to 1 mile, published 1778.  


Table 3: Topographical Survey

The cartographic trends that evolved throughout the above County surveys can be seen to continue with the early Ordnance Survey mapping. William Gardner and Thomas Yeakell were surveyors already employed by the Duke of Richmond (Master General of the Ordnance) whilst producing the Sussex one-inch map between 1778-1783. They became key figures in the development of the Topographical Survey.

In 1784 William Gardner was recruited by the Board of Ordnance and undertook the survey of Plymouth. However, the Topographical Survey could be deemed to have actually started with the promotion of Gardner to the new position of Chief Surveying Draughtsman in 1787, to head up a surveying team. The surveys were to be as per Gardner’s survey of Plymouth, at 6 inches to 1 mile (see below). However, according to W A Seymour, by 1799 the scale for the Survey of Great Britain followed that of the early topographical survey of Sussex, at 2 inches to 1 mile (see above); rather than that of Kent, which was started at a scale of 6 inches to 1 mile and completed at 3 inches to 1 mile. This decision appears to have been made predominantly on account of cost and time.

The following table looks chronologically at the records in The National Archives. It distinguishes separate field sketch ‘foul’ plans showing topographic detail and hills; outline plans, without hill detail; ‘fair copy’ coloured manuscript plans with hills and proofs and final versions of engraved Topographic Survey county maps.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>The National Archive PROCAT Reference</th>
<th>PRO British Isles Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1787</td>
<td>Original Topographical Survey sketch maps (foul or rough plans), surveyed by William Gardner [with Cubitt, Lauzun, Pink, Yeakell and Gream], at 1 inch to 300 yards (1:10,800).</td>
<td>MPH 1/21</td>
<td>2405</td>
</tr>
<tr>
<td>[1795]</td>
<td>Fair manuscript copy, by order of the Master General of the Ordnance, surveyed by Gardner &amp; team.</td>
<td>MR 1/1172</td>
<td>2410</td>
</tr>
<tr>
<td>1795</td>
<td>Proofs of the map of Jersey, (in four sheets); engraved by J Warner.</td>
<td>MPH 1/344; MPH 1/254; MPH 1/235; MPH 1/462</td>
<td>2411-2414</td>
</tr>
<tr>
<td>[1795]</td>
<td>Engraved map of Jersey, (in four sheets); with manuscript colouring.</td>
<td>MPH 1/41</td>
<td>2409</td>
</tr>
<tr>
<td>1795</td>
<td>Final engraved set of maps of Jersey, at 1 inch to 300 yards (1:10,800).</td>
<td>WO 78/5549; MPH 1/604</td>
<td></td>
</tr>
</tbody>
</table>
Guernsey

*1787-[?1795] Termed: ‘Original Ordnance Survey’, surveyed by William Gardner & George Pink, at 1 inch to 300 yards (1:10,800) – on six manuscript sheets and part of one engraved sheet. MPHH 1/30 2366

*1787-[?1795] Coloured MS fair copy and engraved copies, at 1 inch to 300 yards (1:10,800). MR 1/1139 2367

1795 Final engraved map of Guernsey, at 1 inch to 300 yards (1:10,800); engraved by J Warner. WO 78/5547; MPH 1/603; MR 1/1334; MR 1/1389; OS 5/203

Southern & eastern counties of England

1784 Survey of Plymouth and environs, surveyed by W. Gardner, by order of the Duke of Richmond, at 6 inches to 1 mile. MR 1/1385; MR 1/1199 2051; 2052

*[?1791] Original survey of the Isle of Wight, rough manuscript drawings, at 6 inches to 1 mile, by Gardener et al or possibly Dawson. MPH 1/776

*[?1791]-1793 Topographic Survey of the Isle of Wight, ‘Dawson’s foul plan…’, manuscript drawings by Robert Dawson, at 2 inches to 1 mile. MR 1/489; WO 78/1648 1823

*[c1799] Topographical Survey of Kent sketch maps (foul or rough plans), surveyed by (?Gardner), at 3 inches to 1 mile on dorse of engraved Guernsey sheet (** is on the assumption that the engraved map is published version). MPH 1/30/7 1107

*1788-1799 Topographical Survey sketch maps of Kent (& part of Sussex), foul or rough plans, surveyed by Yeakell, at 3 inches to 1 mile (1:21,120). MPH 1/773

*[c1799] Topographic Survey manuscript ‘fair’ copies of Kent & Sussex, surveyed by Gardner & Yeakell, at 3 inches to 1 mile (1:21,120). MR 1/597-600 1103-1106

c1792 Topographic Survey of Surrey and part of Hampshire, manuscript outline plans; surveyed by Gardner et al, at 3 inches to 1 mile (1:21,120), without hill relief. MPH 1/594/1

1794 Topographic Survey of Sussex, manuscript outline plans; surveyed by Yeakell, Wright and Hobbs, at 3 inches to 1 mile (1:21,120), with Trigonometrical Survey triangulation points and lines, but without hill relief. MPH 1/594/2-5

[1794] Topographic Survey of Sussex, manuscript fair plans with relief, at 3 inches to 1 mile (1:21,120). NB: MPH 1/299/5 is engraved version. MPH 1/132 1869

1795 Topographical Survey of Sussex, surveyed by Gardner, Yeakell (Junior) & Greem, at 2 inches to 1 mile (1:31,680); engraved by Foot; published by Faden. NB: First published map based upon Triangulation Survey, which served as model for future surveys. MR 1/1404
Topographic Survey of Hampshire, 'Budgen’s Rough Plans' of New Forest and Portsmouth, at 3 inches to 1 mile. MPH 1/220 1486

Hampshire Topographic Survey of New Forest, Budgen’s Foul Plans, at 3 inches to 1 mile. Forms central section of MPHH 1/220. MPH 1/580 1488

* denotes amendments to catalogue entries.

Table 4: Approximate printing dates for Ordnance Survey ‘Old Series’ one-inch publications

Following directly on from Table 3, this table looks chronologically at the earliest published mapping of the Ordnance Survey. This has helped to identify key phases of the development of early cartographic style of the Old Series. For example, it shows a transition in hachuring and feature depiction on maps and the types of map border presentation used. This helps to date sheets, particularly damaged, partial or combined sheets where the publication detail is lost. It is important to note that the original (first) publication date remained unaltered as the printing plates were amended. Features such as railways and Martello towers help pinpoint date ranges for these later editions. Manuscript additions give a good indication of latest possible date, but this can obviously be much later than the map edition. For the purposes of this paper I have omitted this date from the date range.

The appearance or absence of features does not necessarily give a latest date, but it can give the earliest print date for a sheet, for example, the Thames and Medway Canal. The first stretch from Gravesend to Higham was started in 1800 and completed by 1801. The second stretch was a tunnel to the Medway east of Strood, started in 1819 and opened in 1824. Understandably none of the canal was included on Faden’s Kent map (1801), but it did not make it onto the first publication of Essex (1805) either, possibly due to its military use to link Woolwich and Chatham or through poor intelligence gathering. However, it is on later versions, possibly due to the end of the Napoleonic War.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>The National Archive PROCAT Reference</th>
<th>PRO British Isles Cat. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 January</td>
<td>Kent – ‘General Survey of England and Wales…of the County of Kent, With Part of the County of Essex’, engraved by Foot, published by Faden, (numbered 1-4 along different sheet lines from Old Series; includes offshore detail).</td>
<td>MPH 1/299/1, 2 &amp; 4</td>
<td>947</td>
</tr>
<tr>
<td>18 April</td>
<td>Essex – 1st Part of General Survey of England &amp; Wales, Ordnance Survey one-inch Old Series sheets: I, II, XLVII &amp; XLVIII; engraved and published with a ‘piano key border’, at The Tower; (includes offshore detail and hill hachures).</td>
<td>MPH 1/299/6</td>
<td>1305</td>
</tr>
<tr>
<td><em>[c1805]</em></td>
<td>Essex (&amp; part of North Kent coast west of Isle of Sheppey) – OS one-inch Old Series sheets I, II, XLVII &amp; XLVIII, engraved and published at The Tower, possibly proofs of first publication in 1805. Not as published: numbered I-IV, with a draft single line border, southern sheets with offshore (Thames River and Estuary) detail, northern without offshore detail, and none with hill hachures. NB: Later editions were without offshore detail.</td>
<td>MPH 1/299/1, 2 &amp; 4</td>
<td>947</td>
</tr>
</tbody>
</table>
*[c1805] Essex – four OS one-inch sheets engraved, with Thames Estuary offshore detail, and published at Tower. Probably proofs (northern sheets numbered III and IV) with 'neat line' border, not as first published with 'piano key' border.

1805 Essex – four OS one-inch sheets engraved and published at Tower (some without border detail).

1805 Essex (& part of Kent) – part of OS one-inch Old Series sheet II; published at The Tower in 1805.

11 October 1809 Devon - 2nd Part of General Survey of England & Wales, Ordnance Survey one-inch Old Series sheets: XX-XXVII; engraved and published with a 'piano key border', at The Tower. NB: Sheet XX had part of south Wales included after first issue.

1809 Devon (& parts of Cornwall, Somerset, Dorset and Hampshire) – proofs of OS one-inch sheets, engraved at The Tower:

1809 Devon (& parts of Cornwall, Somerset, Dorset and Hampshire) – OS one-inch Old Series sheets, engraved & published at The Tower: MPH 1/133/

MPH 1/133: sheets: XXII, XXIV & XXV;

MPZ 1/37: bound set of N Devon sheets: XX, XXI, XXVI & XXVII.

10 April 1810 Hampshire – Ordnance Survey one-inch Old Series sheets: XI; engraved and published with a 'neat line border', at The Tower.

1810 Hampshire - OS one-inch sheet: XI, engraved at The Tower.

1 June 1810 ‘Ordnance Survey of the Isle of Wight and Part of Hampshire’ – Ordnance Survey one-inch Old Series sheet: X; engraved and published with a 'piano key border', at The Tower.

1810 Isle of Wight & part of Hampshire – OS one-inch Old Series sheet: X, engraved at The Tower.

1811-1816 NB: Restriction imposed on sale of maps to the public by autumn 1811 to spring 1816. During this time there was only publication for military purposes. These maps generally retained their original publication dates.

1811 Dorset (with parts of Hampshire, Wiltshire, Dorset and Somerset) – Ordnance Survey one-inch Old Series sheets: XVII & XVI (10 April); XV & XVIII (1 August); engraved and published with a 'neat line border', at The Tower.

10 April 1810 Part of Dorset – OS one-inch sheet XVI, engraved & published at The Tower, 10 April 1810 (probably proof version).

1810-1811 Dorset & Hampshire – proofs of OS one-inch sheets XVI and XVII, engraved at The Tower. MPH 1/761/ 2-5

MPH 1/761/2 and 3 are proofs of 4 and 5; 2 with a publication date of 10 April 1810. MPH 1/761/4 and 5 are numbered XVIII and XIX respectively, not as sheets XVI and XVII as published on 10 April 1811.
*1810-1833* Hampshire & Dorset – OS one-inch sheets XI, XV & XVI, engraved by Baker & Bourne, later edition with ‘piano key’ border, published at The Tower, [c1824-c1833].

1811-1872 Part of Dorset – OS one-inch sheet XVII, engraved & published at The Tower, originally published, 10 April 1811; later copy printed from an electrotype, 1872.

1813 *Cornwall (5 January) & Sussex (1 February) - Ordnance Survey one-inch Old Series sheets: XXVIII-XXXII & V & IX; engraved and published with a ‘neat line border’, at The Tower. Proofs and military use only?*

*[c1813]* Sussex OS one-inch sheets - proofs of one-inch Old Series sheets V & IX, engraved at The Tower and published February 1813, (1816 for public use).

1813 Cornwall (inc pt Devon) – probably proofs of OS one-inch Old Series sheets: XXX & XXXI; engraved at Tower.

1813 Cornwall - OS one-inch Old Series sheet: XXXI; engraved at Tower, electrotyped 1876. (Later copy of sheet originally published 5 January 1813).

**1 May 1816** South Kent (republished) & Surrey - Ordnance Survey one-inch Old Series sheets: IV & VIII; engraved and published with a ‘neat line border’, at The Tower.

**14 August 1817** Parts of Hampshire, Wiltshire and Somerset - Ordnance Survey one-inch Old Series sheets: XII, XIV & XIX; engraved and published with a ‘neat line border’, at The Tower.

**1 January 1819** North Kent (republished) - Ordnance Survey one-inch Old Series sheets: III & VI; engraved and published with a ‘neat line border’, at The Tower; (excludes Thames Estuary offshore detail).

*1805-[c1855]* Kent Surrey and part of Essex, from Canterbury to Aldershot – 7 parts of OS one-inch Old Series sheets: I, II, III, VI, VII & VIII; engraved at Tower, originally published between 18 April 1805 and 1 August 1822. Later editions which exclude Thames Estuary offshore detail and depict Martello Towers and certain railways, [?c1840]-[?c1855].

*1816-c1859* Kent county set OS one-inch Old Series sheets III, IV, V & VI: engraved at Tower; originally published 1 May 1816 and 1 January 1819. Later copies: III-VI printed [c1851]; VI [c1859].

1819-1889 Kent sheet III: engraved and published at The Tower; border annotation railways inserted to November 1889.

1805-[c1854] Kent and Essex sheets engraved at The Tower: III & VI: these later editions depict Martello Towers and certain railways, III published [c1845]; VI [c1844]. I (4 quarter sheets): published with some railways and a full ‘piano key’ border, [c1840-c1854]. II: published with ‘piano key’ border but without Thames Estuary offshore detail, [?c1840].

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 May 1816</td>
<td>South Kent (republished) &amp; Surrey - Ordnance Survey one-inch Old Series sheets: IV &amp; VIII; engraved and published with a ‘neat line border’, at The Tower.</td>
<td>MR 1/1308</td>
<td>1115</td>
</tr>
<tr>
<td>14 August</td>
<td>Parts of Hampshire, Wiltshire and Somerset - Ordnance Survey one-inch Old Series sheets: XII, XIV &amp; XIX; engraved and published with a ‘neat line border’, at The Tower.</td>
<td>MR 1/1337</td>
<td>1117</td>
</tr>
<tr>
<td>1 January</td>
<td>North Kent (republished) - Ordnance Survey one-inch Old Series sheets: III &amp; VI; engraved and published with a ‘neat line border’, at The Tower; (excludes Thames Estuary offshore detail).</td>
<td>MR 1/1359</td>
<td></td>
</tr>
</tbody>
</table>
1805-
[c1857] Kent and Essex sheets engraved at The Tower:
III & VI: these later editions depict Martello Towers and
certain railways, III published [c1851-c1857]; VI printed
from an electrotype [c1856]-[c1857].
I: published with some railways and a full ‘piano key’
border, [c1854].
II: published with ‘piano key’ border but without
Thames Estuary offshore detail, [?c1840].

* denotes amendments to catalogue entries.

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APPENDIX 1: Chronology of the Topographical Survey

<table>
<thead>
<tr>
<th>Date</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1784</td>
<td>Plymouth</td>
<td>Gardner employed by the Board of Ordnance. Undertook a survey of Plymouth and environs. NB: He previously worked as surveyor for the Duke of Richmond.</td>
</tr>
<tr>
<td>1787</td>
<td>Jersey</td>
<td>Gardner made Chief Surveying Draughtsman and a ‘surveying party’ was formed from a ‘Corps of Draughtsmen’ at The Tower.</td>
</tr>
<tr>
<td>1787</td>
<td>Guernsey</td>
<td>Six-inch survey carried out by Gardner et al.</td>
</tr>
<tr>
<td>1788</td>
<td>Kent</td>
<td>Six-inch survey carried out by Gardner et al.</td>
</tr>
<tr>
<td>1791</td>
<td>Isle of Wight</td>
<td>Survey by Gardner and a team excluding Yeakell and McLauchan.</td>
</tr>
<tr>
<td>1791</td>
<td>Bagshot</td>
<td>Survey by Gardner</td>
</tr>
<tr>
<td>1792</td>
<td>Sussex</td>
<td>Trigonometrical survey ordered to furnish Gardner with revised triangulation survey.</td>
</tr>
<tr>
<td>1784</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1787
Jersey
Six-inch survey carried out by Gardner et al.
1787-1788
Guernsey
Six-inch survey carried out by Gardner et al.
1791
Isle of Wight
Survey by Gardner and a team excluding Yeakell and McLauchan.
1792
Bagshot
Survey by Gardner
1792
Sussex
Trigonometrical survey ordered to furnish Gardner with revised triangulation survey.
1792-1794 Sussex Survey detail above supplied for Gardner’s use.
1795 Sussex Surveyed by Gardner, the Late Yeakell (Senior) and completed by Gream; engraved by Foot; published by Faden. NB: This served as model for future surveys.
1795 Kent Gardner ordered to complete the map of Kent for the Board of Ordnance.
1799 Kent Kent survey completed at a scale of 3 inches to 1 mile.
1799 Agreement that surveys should now be carried out at 2 inches to 1 mile.
1799-1800 Essex Survey of Essex by Gardner.
1801 Kent Map of Kent published by Faden.

APPENDIX 2: Chronology of surveyors based at The Tower

<table>
<thead>
<tr>
<th>Date*</th>
<th>Surveyors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1784-1800</td>
<td>William Gardner, Chief Surveying Draughtsman at The Tower (London) from 1787</td>
</tr>
<tr>
<td>1782-?1795</td>
<td>Thomas Yeakell (Senior), Chief Draughtsman at The Tower</td>
</tr>
<tr>
<td>1787-1817</td>
<td>George Pink</td>
</tr>
<tr>
<td>1789-1795</td>
<td>Thomas Gream</td>
</tr>
<tr>
<td>1794-1817</td>
<td>Charles Budgen</td>
</tr>
<tr>
<td>1791-1817</td>
<td>Robert Dawson</td>
</tr>
<tr>
<td>1782-1817</td>
<td>Thomas Yeakell (Junior)</td>
</tr>
<tr>
<td>1791-1799</td>
<td>John Ross-Wright</td>
</tr>
<tr>
<td>1793-?1796</td>
<td>Henry Hobbs</td>
</tr>
</tbody>
</table>


APPENDIX 3: Chronology of engravers at The Tower

<table>
<thead>
<tr>
<th>Date*</th>
<th>Engraver and Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 1801-1804</td>
<td>Thomas Foot and Mr Knight recruited.</td>
</tr>
<tr>
<td>1802</td>
<td>Ebenezer Bourne recruited – lettering was his area of expertise.</td>
</tr>
<tr>
<td>1804</td>
<td>Benjamin Baker replaced Foot.</td>
</tr>
<tr>
<td>1808</td>
<td>W Tovey replaced J Baker.</td>
</tr>
<tr>
<td>1808</td>
<td>John Palmer ‘promoted’.</td>
</tr>
<tr>
<td>1813</td>
<td>By this date R Tovey expertise at hill engraving was recognised.</td>
</tr>
</tbody>
</table>

* Dates based on W A Seymour, *A History of the Ordnance Survey*. 
Kleptomaniac or cartoholic?
An enigma possibly understood...

Gerry Zierler

Musing on why my young son Rupert was a talented junior cartographer with no encouragement from me made me think back to my own young teenage days. For fun (or was it masochistic pleasure?) I wasted countless hours diagrammatising the passenger railways map of Greater London, beating British Railways’ effort by several years. Real maps played a part too in the masochism, particularly where public transport was involved, and a lifelong obsession with collecting transport maps was born.

Then came the joys of charging around Epping Forest as an army cadet, armed with the Ordnance Survey one-inch, plus the larger-scale escape from school by bicycle on the mid-1960s land use survey: another lasting interest ensued as more areas were visited and OS sheets collected. Later I discovered the joys of aeroplanes, and discovered that navigation was a doddl, provided I had the map and could see the ground! Later in life meant that a few spare bob were available (before the family started!) and an office near the British Museum meant that far too much time was spent looking at, drooling over and, unfortunately, buying a lot more maps in those over-priced Bloomsbury shops.

My new family learnt to tolerate surprise visits to second-hand bookshops, as the quest for atlases and maps became farther flung. Armed with the knowledge that I collected maps, friends would generously ensure that I collected still more. As the collection grew and somehow squeezed itself into a central London house, I noticed that the question increasingly asked was: ‘why collect maps?’

I had to think of a response and, since the collection is truly catholic and more quantity than quality, I explained to people that it was the cartography that drove me. This had the benefit of excusing me in the eyes of the cognoscenti why I did not possess any Blaeus or suchlike, at least that were not reproductions. As space began to run out, I started to ask myself the reason why!

Cartography was indeed the real answer, but since there had been no formal training I had no idea why I enjoyed it so much. Then came a revelation. I received from my mother a photographic copy of her father’s field notebook from the First World War. My English grandfather Larman was an engineer, architect, and brilliant artist. The original notebook is a bound pad of thin, tracing-like paper filled with his neat writing, mostly training notes, and exquisite drawings of buildings and views from his travels in action, principally around the Somme.

I had yet to visit northern France, so the places named meant nothing to me. But, at page 62, I stopped in disbelief. Above the exquisitely detailed pen-and-ink drawing was the caption: ‘Bomb proof dug out – Topographical Dept, Foucaucourt, March 1917’. There, on the tables, were the pens, the ink, the tools of his trade, … the maps.

I never knew Grandpa – he died before I was born – but now I knew more about him. Amongst his many talents he was a cartographer! Did this explain my own love of maps? I think so – indeed, I hope so.
Bomb proof dug out - Topographical Dept. Forecourt
March 1917.
I talked this over with my TV news editor friend, Rob Kirk, who had researched his own great-grandfather’s life: his trials, tribulations, and ultimate death in the same neck of the woods, and we decided to head off to Picardy in time for the 81st anniversary of the ‘big push’.

As luck would have it, my cousin, with the now familiar generosity of friends and relations in the know about my cartoholic tendency, had recently passed to me the trench maps which his father had used in WWI. A second look showed that he and his brother (Grandpa!) had been in the same area, and at about the same time. I mused whether one had helped to make the maps the other was using. Here in my hands was Great Uncle’s map of a field near German-held Bapaume, complete with semicircular gun-ranging lines and the tell-tale hole left by his dividers.

A week or two later, we were standing in the same field, on the same spot, holding the same map that had been held there by Uncle Bernard nearly a century before. I swear I could see the enemy in his trenches, but it may have been my imagination. What was certainly not imagination was the shrapnel which, eight decades later, no doubt had been hurled in his direction and still lay there to be picked up, in his now neatly cultivated field of action.

We set off to follow in Grandpa’s footsteps, armed with the names of numerous billets scribbled inside the cover of the field notebook. We found the same farmhouses, the same canal banks, the same cemeteries he had so beautifully and painstakingly drawn. The neat sketch map of his raiding party proved that the enemy trench was now a few metres beneath the autoroute. Foucaucourt is now unremarkable, just a blink or two on the N-29 from Amiens to St Quentin, but I looked again at the detail of his map-making bunker: the ‘map boxes used as food store’; the windows made of (map?) cloth; the candles next to the many bottles of ink and rolled maps in a neat rack.

At the time, I wondered if this discovery completely explained why maps turn me on. But now, of course, we know for sure: if you look closely at the human genome map, there’s a cartography gene…
Answer corner

Puzzle corner in Sheetlines 67 asked you to find a number of locations.

1 The westernmost point on the mainland of Great Britain is generally taken to be Ardnamurchan Point, 56º 43.6' N, 6º 13.4' W. This is a useful example to teach the dangers of map projection. If your answer was Land’s End, 5º 43' W, then you were probably looking at an OS map drawn on the Transverse Mercator Projection. The National Grid makes Land’s End appear to be over 7km west of Ardnamurchan Point. Of course, if you want to start an argument in the pub you can always suggest that now the bridge has been built, the Isle of Skye is part of the mainland…

2 University, in Birmingham, and IBM, on the line from Glasgow to Wemyss Bay, are both stations on the National Rail network, so you would find the route between them on a railway map or in the timetable.

3 The navigable channel to Bristol city docks through the Severn estuary is included in the city limits. This channel begins at the two islands of Steep Holm and Flat Holm. For administrative purposes, Flat Holm is part of the City of Cardiff. Hence, surprisingly, the two cities abut at ST 223646, as shown on this inset from Explorer 151.

4 The Islets of Langerhans are groups of cells in your pancreas. Apologies to anyone who spent hours poring over OS gazetteers!

5 As shown on Explorer 117, you will find Little Piddle Down and Little Puddle Bottom in Dorset at SY 7096.

6 The spectacular railway spiral was constructed at Ddualt (SH 679420) when the Ffestiniog Railway built a new line to avoid the Tanygrisiau Reservoir.

7 The Derbyshire borough of Glossop was created in 1866 with a boundary defined, in part, as a circle of one mile radius around its town hall. The Peak District National Park boundary followed the same line, making a very visible circle on the OS map.

8 The sub-sea level trig. point is on the Little Ouse at TL 617897.

Puzzle corner will resume once enough new ideas have been submitted!
List of survey methods, approximate start date and locations: 1:1250, 1955–65

John Cole

This is a continuation of the earlier listing printed in Sheetlines 67, page 29.

1955  
**air graphic:** Canterbury, Hucknall, Reading  
**air machine:** Harwich  
**chain survey:** Aberdare, Armadale, Barrow, Bathgate, East Grinstead, Hoyland Nether, Irvine, Jarrow, Merthyr Tydfil, Rochdale, Sandwich, Seaham, Swindon

1956  
**air graphic:** Bradford, Deal, Emsworth & Havant, Folkestone, S tafford, Shipley, Weymouth, Widnes  
**air machine:** Kirkintilloch, Maidstone  
**chain survey:** Ellesmere Port, Hamilton & Motherwell, Herne Bay, Mansfield, Mexborough, Peterlee, Rhondda, Rawmarsh, Sheerness, Swinton, Troon, Wath upon Dearne  
**tachy:** Chester, Colwyn Bay, Ilkeston, Kilmarnock

1957  
**air graphic:** Rugby, Taunton, Watford  
**air machine:** Ashford, Burnley, Colne, Nelson, Padiham  
**chain survey:** Dore & Totley, Halifax, Huddersfield, Preston, Prestwick, Worksop  
**tachy:** Chorley, Faversham, Hinckley, Lydd, New Romney, Sittingbourne, Treharris, Workington

1958  
**air graphic:** Aldershot, Crewe, Farnborough, Farnham, Littlehampton, Rhyll, Runcorn, Warrington  
**air machine:** Doncaster  
**chain survey:** Maldon, Sevenoaks  
**tachy:** Ayr, Bargoed, Barnsley, Blythe, Brynmawr, Durham, East Kilbride, Ebbw Vale, Llandudno, Romford, Taff Vale, Tenterden, Tonbridge, Tredgar, Tunbridge Wells, Wrexham, York

1959  
**air machine:** Blackpool, Fleetwood, Keighley, Lytham & St Annes, Northampton, Rickmansworth  
**tachy:** Bacup, Eastwood & Heanor, Haslington, Rawtenstall

1960  
**air graphic:** Leyland, Loughborough, Reigate  
**air machine:** Ashton under Lyne, Staines  
**chain survey:** Bolton upon Dearne  
**tachy:** Abercarn, Aldridge, Bognor Regis, Blaenavon, Bridlington, Brownhills, Chesterfield, Guildford, Guiseley, Whitehaven, Yeadon

1961  
**air graphic:** Amersham & Chesham, Grimsby, Hertford & Ware, Shrewsbury  
**tachy:** Abertillery, Chichester, Corby, Cwmbran, Dorking, Dumbarton, Inverness, Leatherhead, Ormskirk, Perth, Stevenage, Uxbridge, Wilmslow, Pontypool, Prestatyn

1962  
**air machine:** Bedford, Hitchin, Lincoln, Newark, Southport  
**tachy:** Barnard Castle, Bridgend, Bury St Edmunds, Camborne & Redruth, Carlisle, Chertsey, Dumfries, Greenock, Grantham, Gourock, Harlow, Hemel Hempstead, Horsham, Irlam, Leek, Macclesfield, Malvern, Northwich, Rushden, Scarborough, Scunthorpe, Port Glasgow, Weybridge, Woking, Yeovil

1963  
**air machine:** Harpenden, Hereford, High Wycombe, Horley, Kings Lynn  
**tachy:** Arbroath, Ardrossan & Kilwinning, Basildon, Godalming, Peterborough, Thurso

1964  
**air machine:** Aylesbury, Banbury, Basingstoke, Bishops Stortford, Boston, Bromsgrove, Buxton, Cheshunt, Chippenham, Cobham, Cowes, Douglas IOM, Fawley, Hoddesdon, Newbury, Redditch, Skegness  
**tachy:** Cambridge

1965  
**air machine:** Ashton-in-Makerfield, Bangor, Bridgwater, Cannock, Cumbernauld, Glenrothes, Kenilworth, Leighton Buzzard, Milford Haven, Newport IOW, Potters Bar, Ryde  
**tachy:** Camberley & Frimley, Haslemere
From 1965 to 1989 between ninety and one hundred further locations were surveyed or resurveyed at 1:1250 scale; the majority utilising the air machine method. Some of the exceptions and their approximate start dates are as follows: Newton Aycliffe, 1970; Herstmonceux, 1971; Telford, 1972; Hawick, 1973; Milton Keynes, 1975; Chipping Sodbury & Yate, 1976; Warminster, 1987 and Stamford, 1988.

In spite of what was implied in the previous article, tachy was the method at the first four locations and in central Milton Keynes, where air machine was used in the south and electronic distance measurement in the east and southwest. This last method was also employed at Warminster and Stamford.

Many of the chain survey locations eventually utilised the tachy method in spite of revision points having been fixed in many instances. Tachy was also used additionally in many air survey locations, especially around the fringes. Additional chain survey was also employed at early air graphic locations (pre 1956). A number of places in the 1955-65 list employed at least three methods: London and the Aldershot district, all four.

It has not been possible to establish the method utilised at forty locations surveyed in 1985-89, nor the survey dates of the following, thought to be pre 1965: Corringham and Stanford le Hope (chain survey), Formby (air machine), Glossop and Hadfield (air machine), and Wickford (air machine).

Although the original blocks, four maps each, of East Grinstead and Newhaven were chain surveyed, the subsequent survey of the remainder of the towns (and including Peacehaven and Seaford in the case of the latter) was by air machine.

Corrections identified in the previous article thus far are start dates: Christchurch, 1949; Totton (Hants) 1950; method: Bexhill, air graphic. The average of 14 RP/APs given for air graphic maps should be treated with some caution. Whilst Bexhill, Broadstairs, Margate, Ramsgate and Worthing can be added to the list previously given, Bradford, Dover and Shrewsbury samples averaged only three, and it is probable that Leicester should be in this category. Grimsby was another exception, of the five maps (and parts of five others) examined, a partial map had three RPs, whilst the others displayed two, one or no traverse stations (shown as a dot on road or pavement, usually indicative of a tachy survey). Tachy was also initially employed here but only on the west side according to an OS source.

Having examined the RP album for SX9163NE at Torquay, the original RP total was 126.

**Short queries**

*Bench marks and spot heights*

I was intrigued to read the authoritative statement by Major Washington concerning these features at page 23 of *Sheetlines 67*. Accepting that he was referring to specific large scales and in 1890 a number of questions arise.

- In context can ‘principal’ and ‘roads’ be defined?
- To what extent is the statement applicable to other scales?
- Is the statement valid for earlier and / or later dates?

Some of the ‘roads’ along which levels are shown should hardly be dignified by the name. As a mere user of maps I look hopefully to ‘technical’ members for advice.

*P Justin McCarthy*
I own (somewhere) an *Authentic Map Directory of the West Riding of Yorkshire*, Geographia, 1933. About ten or fifteen years ago I pestered a very helpful map shop counter staff to show it to the A-Z, Geographia and OS reps. I wonder if that was what prompted the current rash of ‘County Street Atlases’?

However, the West Riding one has only orange for buildings and black outline, nothing else. I have heard that there was an *Authentic Map Directory of South West Lancashire and North East Cheshire*, and that it was in full, glorious, multi-technicolour! Forty years ago I thought I had got one taped, but a promise was broken and I never saw it! Does anyone know if such really did exist, and where I might see and consult one … even purchase? A treasure and no doubt at a price to match.

Were there ever any others in the series? I can imagine a London version and probably a Glasgow / Edinburgh one. Historically fascinating, beautifully presented, and ripe for reproduction!

*David D Higgins*

**Any more answers?**

*Peter Warburton’s hesitant query in Sheetlines 67 has baffled the experts! Roger Hellyer writes, as joint author with Richard Oliver of the forthcoming guide to the ‘coloured Thirds’.*

Readers may have noticed Peter Warburton’s note on page 49 about one-inch Third Edition Scotland sheets which have the word ‘Expansion’ in the bottom left hand corner. This accompanies a double headed arrow, and may be placed either to the left of or underneath the left end of the legend. There are illustrations of both in *Sheetlines*. Peter is not alone at being perplexed by this.

We have noted this word ‘Expansion’ on thirteen Scottish sheets, on printings first issued between 1907 and 1909. In all cases the word appears upright at the left end of the legend. The sheets we have recorded are 8, 25, 26, 30, 34, 37, 42/50, 44, 48, 49, 52, 53, 54. In the case of sheets 37, 42/50, 48, 49, 53, 54 we have found second states where the word appears underneath the left end of the legend instead, written horizontally.

This of course leads straight to the question of whether any further sheets mentioned above also exist in this second form, and secondly to whether there are any further instances to be recorded in either form. If any collectors can add to this list, please let us know. And if anyone can answer Peter’s request for a convincing explanation of why the word appears at all, it would be good to include it in the book.

*This request for information was posted on the ordnancemaps Internet discussion group a few weeks ago and has so far produced no further hard information. The new book is on the point of going to press. Please contact Roger immediately if you do know the answer!*  

*Peter Warburton, himself, comments on Roy Beacham’s query about the Bridgegate in Chester:*

I had a look this morning at the Bridgegate (*Sheetlines* 67, 48). My first thought had been that the inscription was a mason’s mark dating from the rebuilding of 1782 and nothing to do with the bench mark on the adjacent block, but the rivet is puzzling. On the other hand bench
mark rivets are, I thought, associated with horizontal marks. You have probably had authoritative and quite different views from the better informed.

*Actually, we have not! Any more thoughts?*

---

**Kerry musings**

**David Archer**

The first time I can remember seeing a real bench mark was whilst walking on Exmoor over thirty years ago, when we spotted one on an ancient wooden gate post that lay rotting in a damp hedge. I was surprised that it had been cut on something that could both rot and be easily moved. But early last August, when the weather people thought that Kerry might replace Cheltenham as the hottest recorded place in the UK, I renewed my association with these wonderful little symbols. Within a few days, I progressed from being aware of them to being curious, then quite interested, fascinated and finally obsessed. Addiction was pronounced within a fortnight; but only to cut bench marks on stone. Those on wood or brick surfaces, although pleasant, are not really my sort of thing, whilst metal flush brackets have yet to stir me. But given time, who knows?

I had been gathering information on what I call the archaeology of the Ordnance Survey, artefacts showing that the OS had visited an area: old cannons associated with base line measurements, triangulation pillars, projecting brackets, flush brackets, bench marks and other marks placed during field work; fundamental bench marks protected within a rectangle of iron railings, heavy metal man-hole type covers bearing the letters OS. This sort of thing. Very quickly, I seemed to home in on normal cut bench marks. Supposedly four inches square, they consist of two elements, the broad arrow that indicates government property (as in convicts’ clothing) pointing upwards to the centre of a horizontal bar cut at a known height above a datum point. After a few evenings reading about them, I had got to the point where more reading was futile, I just had to go out and find some. Of course, I had seen bench marks before, and often pass one, cut on the cottage across the field, but now I wanted to see them in a totally new light. I knew a lot more about them and why they existed. My reading told me that they are frequently destroyed, but many very old ones still exist.

Thus, on a Monday evening, I got out a fairly recent large-scale map of Newtown and noted three marks to look for when we went shopping the following morning. And a brilliant sunny morning it was. The first mark was in aptly named Market Street, and from the map, appeared to be just beside the alley to the right of the electrical shop. Spot on. About hip high, a nice clean bench mark was cut into slightly weathered, softish cream stone. It was larger and more substantial than I remembered previously seen marks, but it was a bench mark, cut into the wall for anyone to see. I was probably the only person who had knowingly seen it for years. Goodness knows how long ago it must have been when someone had actually gone to look for it as I had done. I quickly made my way around two corners to the side of the Robert Owen museum, a fine red brick building in the art nouveau style with lovely smooth, brilliant white dressed stone details. There, basking in the sunshine, knee high, was a perfect example. Crisply cut, with the slight shadow from the sun emphasising the lines of the arrow and its bar across the top. If there had not been so many people around
I would have touched it. Beautiful. My new-found enthusiasm was certainly well founded. I was delighted, and knew that I was well and truly hooked on these things. But coming down to earth, the shopping had to be done, and on the way home I kept an eye open for the third mark on my list, which should have been somewhere in front of the Welsh Calvinistic Methodist church on New Road. Passing in the car, we spotted it on a low stone wall, hiding six inches behind a lamp post. Probably trying to keep out of the sun.

All afternoon I kept thinking about the marks and wished that I had inspected the third one more closely. How did they fit into the general scheme of levelling? What age were they, given that the style appears to have been constant since they were introduced over 150 years ago? Were all three cut at the same time? How many old marks had been destroyed during Newtown’s redevelopment? Lots of questions. In the evening I studied the Alan Godfrey reprint of Newtown, as revised in 1901, which showed another building on the museum site and no first mark. The third mark was shown and was therefore the oldest. But how old? Was it part of the initial levelling? When was New Road laid out or when was the Bethel built? Subsequent reading showed that the museum was built as a library in 1903, but the Market Street building did exist at the time of this revision (and the original survey), so why was a mark not cut then? My ignorance of the technical side of cartography and surveying was all too apparent.

One wonders what the reaction was of nineteenth century building owners whose permission was sought for marks to be cut? Were they pleased or annoyed to be singled out? “And why do you need to know how high this particular brick is above the sea at Liverpool?” Although under the Survey Act of 1841 the OS could legally cut marks without consent, they were liable to pay compensation for damage, though one assumes amicable co-operation to have been the norm. The actual symbol is a very attractive design and not at all unsightly. After 1840, triangulation stones had the broad arrow pointing to the centre hole, so for levelling it seems logical to have the arrow pointing to the height bar, showing it to be government property and making the whole more substantial and so much easier to find. A skilled job it must have been for the assistants who undertook the work, having to cut marks on a great variety of stones, bricks and wood. I wonder whether they ever made mistakes and cut a second one beside a botched attempt? What was the procedure when a mark was subsequently found to be wrong due to later subsidence? Would they deface or erase it? The rate of destruction it appears, has always been high. Wooden marks rot and garden walls are pulled down. Bricks receive a coat of render or pebbledash and whole areas of towns are demolished. Luckily, a lot of marks are on listed buildings, which gives some element of preservation. If they can be identified and have survived, the very first and last marks cut should surely by preserved and have a plaque beside them.

I do not know enough about levelling to be able to predict likely locations, and life is too short and dangerous to walk around looking at the base of walls all the time, so I prefer to rely on maps to find examples. Most members will know the nearest mark to where they live or work, but be warned, bench marks are rumoured to be the next craze amongst CCS members. So start now, get a modern Ordnance Survey or Alan Godfrey large-scale map of your area, an early 1:25,000 even, and go out and find some. Once found, you will always glance at them when passing, and will keep looking for them wherever you go, knowing that the Ordnance Survey will have been there before you. Next time you see a bench mark, say hello, introduce yourself, make it feel noticed, photograph it even. It must be very lonely, sitting on a wall in all weathers, forgotten and unloved.
**Ordnancemaps topics**

The *ordnancemaps* Internet discussion group has continued to be active. The full archive will be found at [http://www.yahoogroups.com/ordnancemaps](http://www.yahoogroups.com/ordnancemaps) but here is a sample of the content:

**Maps as wallpaper**

Alan Bowring started a discussion on using Ordnance Survey maps as wallpaper:

> A visit to the National Trust’s Attingham House outside Shrewsbury last year revealed a room – was it the former classroom? – papered with one-inch Seventh Series OS maps.

*Given that the room was quite sizeable, a fair piece of country was portrayed on the four walls.*

I also seem to recall that a wall of the stairwell at ‘Scarthin Books’, Cromford in Derbyshire boasts tiled OS mapping – this may have been at 1:25,000 scale. (By the way, for those who do not know it, it is the sort of place which would appeal to those with an interest in the esoteric, including of course, maps old and new).

Several members contributed other examples, including Richard Dean:

> I have constructed many large wall maps using both OS and other mapping, the biggest using Landrangers to fill two walls of a large Victorian house converted to offices. Water-based pastes do cause permanent stretching of the paper, which most users can live with, the main problem being that it is largely in one direction. My worst experience was with a set of AA road maps, some sheets being printed with the ‘grain’ of the paper N/S, and others E/W – after much cursing and massaging of wet paper the result was less than satisfactory. The old Bartholomew’s half-inch and 1:100,000 were also a challenge, as the detail rarely matched properly at the joins. OS maps are a dream in comparison!

Chris Tennant provided this advice:

> We have just achieved a long cherished dream and wallpapered Seventh Series maps in our house. Actually we went much further than the original dream, because we live in a tall town house which just happens to be the same height as the whole country on the Seventh Series. We have therefore run the whole of the Seventh series up the party wall in the hallway/stairwell of the house across five floors. Obviously there are interruptions between the floors, but the result is better than I could have hoped for. We have Penzance in the bottom corner in the basement, and at the top going into the apex of the roof we reach Mainland in Orkney. My advice is not to get too hung up on perfection: we bought a complete flat sheet set from David [Archer], but it had various different editions – there are some interesting pre-Beeching / post-Beeching intersections, and the M8 goes nowhere at one join. But these make for fascinating detail and should not be avoided in the search for a perfect join. The whole effect is beautiful, and the close-up is too interesting – it takes a long time to get upstairs.

*We asked a decorator to do the job, and I have noted down his tips below – basically he says the paper is very good quality and it is easy to work with. It probably took about two weeks. David helped a lot by sending needed duplicate maps overnight with unfailing promptness – it actually makes little difference if you use flat sheets or folded as long as they have not been used much. The using definitely stretches them.*

*Use standard ‘wallpaper border’ adhesive, i.e. ready-mixed: it comes in two types, one with a yellow lid and one with a red, use the lighter version with the yellow lid. The maps do not shrink: but you should soak each sheet individually for exactly the same amount of time to ensure that any shrinkage/expansion is uniform: in fact the greater risk is expansion if you soak the sheet for too long a time. It’s an aggressive adhesive so you only have a short time (seconds, not minutes) to move the sheet around on the wall. Varnish it with an acrylic varnish – there’s one called ‘dead-flat’ varnish made by Polyvine. Main problem is wherever the wall is uneven, you just have to think ahead and anticipate how it will impact surrounding sheets. The only bit of Britain that was a real headache was around Stratford – is one of the maps slightly off-scale here? I would definitely recommend decorating with the Seventh Series to anyone!*
**Letters**

**Exploring missing territory**

I have recently been collecting data about the ‘offshore islands’ of the British Isles, and so was most interested to read the article *Exploring missing territory* by Alan Bowring in *Sheetlines* 67. My work does not extend to sandbanks and other potentially migrating areas, but there are still several more anomalies to report, one of which is perhaps of even more significance than those that he quotes.

First, I have one small correction: Eddystone Rocks are shown on *Landranger* 201 as an inset, at least since edition B1 in 1994. Also, though Alan refers to Dubh Artach which has a marginal mention on *Landranger* 48 but does not appear at the 1:25,000 scale, he omits Skerryvore (NL 840263) which is similarly mentioned in the margin of *Landranger* 46 but is not on any Explorer sheet.

A significant group of offshore rocks is the ‘Seven Stones’ at about SW 0524. These are clearly marked on the 1:250,000 map ‘Road 7’ but do not receive even a marginal mention on *Landranger* 203 or *Explorer* 101 or 102.

The worst case of all, though, is the island of Hartamul (now spelt Thairteamul), 2½ km east of Eriskay in the Outer Hebrides and even closer to South Uist. This small (about 1¼ hectares) island at NF 833114 is clearly shown on *Landranger* 31, but it does not appear on either *Explorer* 452 or 453 (though Eriskay is shown on both). It may be small, but it is not exactly remote from other land and does not deserve this ignominy. Or perhaps it is rather proud of its unique status? (To be fair to the OS, I had initially recorded two such cases, the other being Craigem on *Landranger* 13 at NB 169432 which I could not find on *Explorer* 458 or 460, but later discovered lurking on sheet 459. Which is fine, but it ought also to be shown in a small extrusion on sheet 460. However it would be quite absurd to place Hartamul on any sheet other than 452 or 453.)

As a matter of interest, the Irish seem once again to have done rather better. All their offshore points, even Fastnet Rock, appear on the relevant *Discovery* map. There are only two insets (Foze Rocks on sheet 70 and Tuskar Rock on sheet 77); Rockabill just squeezes onto sheet 43 as an extrusion.

For the identification of all these minor offshore points in Britain, the best source is the 1:250,000 series. Even though now called ‘Road’ maps (a very reasonable title for their main market) they are meticulous in their depiction of the outliers – so far as I can see, Skerryvore is the only exception, as it is obscured by the large inset for Islay. ‘Road 2’ has no fewer than six insets, including one for Rockall and Hasselwood Rock which are unlikely ever to receive any wheeled transport! (I surmise that the OS were ‘encouraged’ by the MoD or the Foreign Office to include them on all maps to add weight to Britain’s claim following formal annexation in 1955.) Sule Skerry and Stack Skerry are also granted an inset on this sheet (though not on ‘Road 1’ where one might be more likely to seek them). Now I do not complain at their inclusion on this series of maps – far from it. But I do agree with Alan that the *Landranger* and *Explorer* series should also be totally complete in their coverage. And could we please have insets rather than marginal notes for all of these islets. Even if there is little or no detail to show, insets are much more conspicuous, and there is always plenty of space since the relevant map is, by definition, coastal.
'The map complete' from Arthur Ransome, Secret Water. London: Jonathon Cape, 1939 (above) and extract from one-inch Seventh Series Sheet 156, Ipswich (below). © Crown Copyright NC/00/1340.
Does any reader know the heights above MSL of the highest points of the many tiny outliers mentioned here or in Alan’s article, or have any ideas of potential sources of this information?

David Purchase

The Thirty-Nine Steps lead on …

Most people interested know that the Arthur Ransome books based in the Lake District were mostly built upon real places, renamed. The singularly appropriately named TARS, The Arthur Ransome Society, has most of them taped. However, when I first read Secret Water (much the best of the lot!) I felt that it, too, was a real place. The children’s librarian in Castleford (then of the West Riding) encouraged me to keep going through every Ordnance sheet all round the coast until I found it – Hamford Water and the Walton backwaters in Essex. The thrill and excitement of finding that I was right kindled a burning desire to go and see it. I achieved this on the night after the Great Train Robbery … 1963(?), and thought I had found the robbers’ lair! We subsequently camped there many years – but that is another story.

However, there was another children’s story island location (this time in the middle of a river somewhere in the West Country) which I managed to trace, though I have not yet visited. I remember they strung a goat across to it on a pulley! I may still have the books somewhere and will ‘come again’ if and when I can trace them, now that I know other people may be interested. ‘Bevis’ was somewhere near Swindon, ‘Pooh’ was in Ashdown Forest, but anyone know ‘Brendon Chase’? Moonfleet (and another I cannot remember) was Chichester(?) Harbour, though I may be confusing this with another. Anything based on Poole Harbour? It seems to me we have the basis of a regular series of articles in Sheetlines concerning literature and Ordnance maps. Thirty-Nine Steps has a lot (of fun) to answer for!

David D Higgins

Blackpool Party Conference

I was well received on the Ordnance Survey stand at the recent Party Conference in Blackpool by David Lovell who said I was the first Charles Close Society member to visit them. I was presented with an item of hiking equipment, bearing the Ordnance Survey name and logo, for which I am most grateful and which I displayed for the three days I was there and found most useful for carrying the mountains of bumf being handed out.

David and I discussed my collection of Seventh Series maps and difficulties I was having with www.old-maps.co.uk. I am finding excessively long response times to searches by ‘place name’. He had no solution, and I wonder whether other members are having similar difficulties. Co-ordinate searches seem to work quite well with reasonable response times.

Tim Hadfield
Small repairs to antique maps

Having been the co-organiser of the ‘very successful’ map cleaning and repair workshop run by Graham Moss several years ago I read with considerable interest the IMCoS bulletin reproduced in Sheetlines 67. I was particularly interested to read the advice on surface cleaning which states:

… using a nutmeg grater, grate a Staedtler Mars Plastic eraser. Rub the gratings gently in a circular motion using a pad of cotton wool. Note that the Draft Clean in pads or loose powder form are not recommended for the removal of surface dirt owing to abrasion and the problem of particles becoming embedded in the paper fibres ‘.

The reason for this interest is that anyone who has used Graham Moss’s booklet, A collector’s guide to the care and repair of books and documents, will note that on page 29 Graham writes:

… use a Dry Cleaning Pad to clean the surface of the area … the pressure required using a conventional eraser on a large area of paper can too easily lead to rips and creasing. Also they tend to be made of plastic, which leaves minute and virtually immovable fragments in the paper fibres, or include abrasive grits which remove blemishes by removing the paper that the blemishes are on … better practice is to use the Draft Cleaning Pad, or the loose powder that’s inside them. These pads were first developed deliberately to clean mouldy documents. The surface dirt is gathered up by the powder, and then brushed from the cleaned surface.

So, what advice to we take? The authors of both documents seem to be offering contradictory advice. Does anyone have a contact where we could obtain a definitive view?

My personal suggestion, having used the dry cleaning pads successfully on large-scale early OS maps without causing surface damage, would always be to try a small area first whether you follow the advice and methods promoted by IMCoS or Graham Moss.

David Parsons

A well-merited rebuke

The illustration used to fill page 34 comes from a serendipitous purchase by the Editor at the Chester Oxfam shop while on a luxurious ‘Orient Express’ day excursion from Cardiff – not his normal mode of travel! Checking with the author whether the illustration was acceptable provoked the riposte, “Please bear in mind that tourists in Chester are supposed to admire the architecture and not go sneaking round the charity shops depriving locals of bargain maps”.

Peter Warburton is, of course, a Chester resident.

The Editor trying, unsuccessfully, to look suave when reboarding the Orient Express. Note red carpet and Oxfam bag.
New maps
Jon Risby

This list covers small scale maps published between 21 July and 26 October 2003. They are listed by series, and in sheet number order. The columns are as follows: Sheet No. / Title / Edition / Copyright date / Full revision date / Latest revision date / Date of publication. There is also a list of those maps due for publication by OS up to 31 December 2003 (in order of their proposed publication).

After the list of OS maps is a résumé of maps published by Alan Godfrey between July and October 2003.

OSGB

Landranger – new editions

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Explorer – new editions

These are all noted as ‘Revised for selected change 2003’. No full revision date is given.

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Tour Map series – new publication

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Routeplanner map – new edition

Routeplanner 2004  A  2003  May 2003  June 2003  08/08/03

Irish maps

Discovery maps – new editions

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Forthcoming OSGB Maps

The following maps have been announced for publication.

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Explorer – new editions

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Tour Map series

Costwolds  A  29/10/03
Yorkshire Dales  A  05/11/03
Peak District  A  19/11/03

Forthcoming Irish maps

Discovery maps – new editions

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City Map Series – new editions

Galway Street  October 2003
Waterford Street  29/10/03
**Alan Godfrey Maps**

Details of Alan Godfrey’s reprints of old OS maps are available from Alan Godfrey Maps, Prospect Business Park, Leadgate, Consett, DH8 7PW, [http://www.alangodfreymaps.co.uk/](http://www.alangodfreymaps.co.uk/), tel. 01207 583388, fax 01207 583399.

The columns are as follows: County / Sheet number / Title / Date of map / Month of issue.

| County Antrim | 32.16 | Ballymena | 1903 08/03 |
| Cheshire      | 9.15  | Sale (Brooklands) | 1908 10/03 |
| County Durham | 7.05  | Gateshead Fell & Sheriff Hill (new edition) | 1895 10/03 |
| Edinburgh Large Scale | 29 | Edinburgh New Town | 1877 10/03 |
| Essex         | 52.08 | Chelmsford (South) | 1895 08/03 |
| Fifeshire     | 35.12 | Central Kirkaldy | 1894 09/03 |
| Hampshire     | 13.13 | Farnborough | 1930 10/03 |
| Hampshire     | 14.15 | Tidworth | 1936 10/03 |
| Huntingdonshire | 22.02 | Godmanchester | 1924 10/03 |
| Lancashire    | 48.16 | Colne (North) | 1910 08/03 |
| Lancashire    | 56.04 | Colne (South) | 1910 09/03 |
| Lancashire    | 103.08 | Eccles | 1905 09/03 |
| Lincolnshire  | 45.12 | Market Rasen | 1905 08/03 |
| London Large Scale | 7.41 | Upper Baker Street & Regents Park | 1870 09/03 |
| London Large Scale | 7.62 | Regent Street | 1869 08/03 |
| Nottinghamshire | 38.14 | Nottingham (North) | 1913 08/03 |
| Renfrewshire  | 2.11  | Port Glasgow | 1896 08/03 |
| Renfrewshire  | 8.07  | Renfrew (North) & Yoker | 1896 10/03 |
| Shropshire    | 13.02 | Ellesmere | 1924 09/03 |
| Staffordshire | 17.03 | Silverdale | 1898 09/03 |
| Sussex        | 4.09  | Three Bridges | 1909 09/03 |
| Warwickshire  | 8.07  | Erdington (Chester Road) | 1913 10/03 |
| Warwickshire  | 14.02 | Birmingham (Saltley) | 1902 08/03 |
| Warwickshire  | 14.14 | Sparkhill & Greet | 1903 08/03 |
| Worcestershire | 10.11 | Northfield (South) | 1903 08/03 |
| Worcestershire | 10.12 | King’s Norton | 1903 10/03 |
| Yorkshire     | 110.04 | Filey | 1926 08/03 |
| Yorkshire     | 275.14 | Darnall & Wombwell (North) | 1904 08/3 |
| Yorkshire     | 283.02 | Wombwell (South) & Lundhill | 1901 08/03 |
| Yorkshire     | 294.14 | Eccleshall Village | 1902 08/03 |

**England and Wales one-inch**

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<td>West Radnorshire (includes a map of Abbey-Cwnnhir)</td>
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