

### Sheetlines

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

This edition of *Sheetlines* was published in 2008 and the articles may have been superseded by later research.

Please check the index at <a href="http://www.charlesclosesociety.org/sheetlinesindex">http://www.charlesclosesociety.org/sheetlinesindex</a> for the most up-to-date references

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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

Number 81 April 2008

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### **Sheetlines**

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#### Forthcoming events

Here is our programme of future meetings. For further information or to book your place, email *visits@charlesclosesociety.org.uk* or call John Davies on 020 8504 1766.

Saturday 17 May, Annual General Meeting, Kingston

Full details are on a separate enclosure.

Wednesday 4 June, 2 pm, Lovell Johns, Witney, Oxfordshire

Lovell Johns (www.lovelljohns.com) provides mapping services to businesses, publishers and the public sector. We will see how they use copyright-free material as far as possible and look at recent productions including a historical atlas based on 1830 OS mapping.

Friday 11 July, 11 am, Bodleian Library, University of Oxford

The Bodleian is one of the UK libraries of legal deposit, and the largest university library in Britain, housing one of the ten largest collections of maps in the world. The buildings within the central site include Duke Humfrey's Library above the Divinity School, the Old Schools Quadrangle with its Great Gate and Tower, the Radcliffe Camera, Britain's first circular library, and the Clarendon Building.

This visit will involve an opportunity to view some of the cartographic jewels of the collection of interest to CCS members, a look at how the student community uses digital OS mapping, a chance to see the Bodleian's scanning of out-of-copyright large-scale OS mapping operation, plus a behind-the-scenes tour of the Library.

Monday 25 August (Bank Holiday Monday), Copenhagen, Denmark

We are guests of KMS (Kort & Matrikelstyrelsen, National Survey and Cadastre of Denmark, http://www.kms.dk/English/). KMS is the state-owned agency responsible for surveying, mapping and land registration for Denmark, Greenland, Faeroe Islands and associated waters. In the afternoon we visit the Royal National Library map collection.

For members wanting to make a long weekend, we will arrange additional visits before or after to suit demand.

Friday 10 October to Sunday 12th October, Conwy, North Wales

Following the success of the 2007 Whitby event, our social weekend for members and partners will again be held in an HF hotel. The programme will include talks and a local expedition.

### Maps and Surveys 2008 The Defence Surveyors' Association seminar, 21 June 2008

Following on the success of its eightieth anniversary seminar in 2007, the DSA is arranging another, similar, seminar on historical military and hydrographic surveying, mapping and charting at the Royal School of Military Survey, Hermitage, Newbury on Saturday, 21 June 2008. The seminar will run from 1000 to 1700hrs during which seven 35-minute presentations will be given. The cost of attendance is £12, to include tea and coffee breaks and a finger-buffet lunch. Bids to attend will be accepted on a first-come, first-accepted basis. Seven presentations will be given from the nine topics listed below. Those by Peter Collier and Alan Gordon are reserve presentations, to be given in the event of any cancellations:

'Castles in the air, sixteenth century fortification plans in The National Archives', Rose Mitchell.

'Mapping the East Anglian invasion coast 1799', Yolande Hodson.

'The aftermath of Dalrymple, the Admiralty Hydrographic Office 1808 to 1829', Adrian Webb.

'The report on the military map of the UK 1892, its impact on the design of British Military mapping of the 20th century', Peter Collier.

'The cruise of the Pegasus, Seaplane photography and the topographic survey of Hong Kong 1924', Mike Nolan.

'Intelligence maps of the Ardennes offensive 1944, the allied assessment of the situation based on current intelligence situation Maps', Christopher Hunt.

'Mapping for the Falklands War 1982, the photogrammetric mapping carried out by the UK Hydrographic Office', Ken Atherton.

'Crossing the digital threshold, aerial triangulation and the early use of digital equipment in military survey', Alan Gordon.

'Military geographic support to current operation, a briefing on geographical support to current operations in Afghanistan or Iraq' by an officer or soldier recently serving in the theatre of operations.

Bids to attend may now be made to Col. (Retd.) M A Nolan, Tall Trees, Broad Layings, Woolton Hill, Newbury, RG20 9TS, (01635) 253167, maptnolan@googlemail.com.

#### The Oxford Seminars in Cartography

Thursday 22 May, From A-uo to Zyryan: mapping the world's languages Giles Darkes (Cartographic Consultant)

5.00pm to 6.30pm at the Centre for the Environment, South Parks Road, Oxford.

#### Cambridge Seminars in the History of Cartography

Tuesday 6 May, Cholera mapping from 1819 to 1854: before John Snow and the Broad Street outbreak

Tom Koch (Adjunct Professor of Medical Geography at the University of British Columbia, and Adjunct Professor of Gerontology at Simon Fraser University)

5.30pm in Harrods Room, Emmanuel College, St Andrew's Street, Cambridge.

#### John Bartholomew 1923–2008

Perhaps only the eldest son of the sovereign could be more sure of his intended destiny than a boy born in Edinburgh in 1923, the fifth in a line of distinguished cartographers, all named John Bartholomew.

After war service as an officer in the Royal Engineers, John Christopher Bartholomew read geography at Edinburgh University and, following a thorough grounding in his profession, took over as cartographic director of the long-established family firm in 1953.

In the subsequent years the company produced many fine maps and atlases, in addition to their familiar 'half inch' series, but John is perhaps best known as the editor of successive editions of the *Times World Atlas*. The Bartholomew brothers had to pilot the company through a period when the technology of both printing and cartography was changing rapidly. The *Times* obituary notes John's 'kindly interest' in his employees – very important in these challenging times.

Eventually, in 1980, the business was bought by Reader's Digest and is now part of HarperCollins. The family were keen that the company's historic and very detailed archives should be preserved in the National Library of Scotland. This was made possible partly by purchase and partly by generous donations from HarperCollins and the Bartholomew family. Charles Close Society members will have seen the fascinating displays of maps, printing plates and business records laid out for us on our various visits to Edinburgh. Richard Oliver comments that the firm's archive is far and away the most important of any commercial firm in these islands.

In 1995 a wonderful collection of antiquarian atlases was donated by the Bartholomew family in memory of John's father, a trustee of the National Library, who was influential in establishing the NLS Map Room.

John Christopher Bartholomew served as president of the British Cartographic Society and of the Royal Scottish Geographical Society, and vice-president of the International Cartographic Association. He joined the Charles Close Society in its very early days, as member 21, and, although he did not keep his membership up in latter years, many of us had the pleasure of meeting this modest, religious and very approachable man. He died the day after his 85th birthday.

#### CB for DG

The Society would like to offer its very sincere congratulations to Vanessa Lawrence, Director General and Chief Executive of Ordnance Survey (and our honorary member) on her award of a CB in the New Year Honours list.

<sup>1</sup> February 2008.

#### A vision of the future



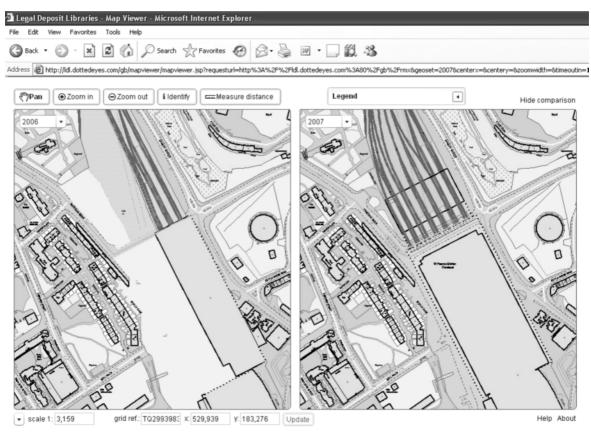
Test Valley Borough Council's Planning Committee has recommended approval of plans for the new Ordnance Survey head office at Adanac Park alongside the M271 gateway to Southampton. More than 1,000 staff will move to a modern, energy-efficient building about a mile from the current office in Romsey Road. Building work is expected to begin as early as this summer, with a completion by the end of 2009. The detailed plans for the Ordnance Survey plot at Adanac Park were part of a 'hybrid' application put forward with the owners of the rest of the site, the Barker Mills Trust. This involves outline proposals aimed at developing four other plots for future occupiers across the whole 74-acre site.

Discussions are progressing with the city council on plans to redevelop the present Romsey Road site for a mix of new business and employment alongside new housing.

# Ordnance Survey digital data system goes live in the Legal Deposit Libraries

The UK Legal Deposit Libraries have just set up a new system for viewing large-scale mapping, following the signing of an important agreement with Ordnance Survey. The agreement ensures the continued deposit of annual snapshots of the most detailed digital mapping of the whole of Great Britain.

The Libraries collectively have comprehensive archives of Ordnance Survey mapping, dating back over two centuries; originally received on paper and then microfilm, from 1998 it has been received in digital form. Until 2005, the Ordnance Survey's *Land-Line*<sup>®</sup> digital map data was made available to the public to view for permitted non-commercial purposes on standalone workstations in each Legal Deposit Library. From 2006, the OS *MasterMap*<sup>®</sup> Topography Layer has been received, updated by a new snapshot each year on an ongoing basis. All annual snapshots from 1998 to 2007 can now be explored and compared through a user-friendly viewer.



The new railway development is highlighted in two successive annual snapshots of St Pancras

OS MasterMap offers improved layers of information, allowing more precise recording of landscape change over time. The system can be viewed in all of the six UK Legal Deposit Libraries and a limited number of customised A4-sized colour printouts of any area can be made for private, non-commercial use.

Further information on the Viewer can be found at:

British Library: http://www.bl.uk/collections/map\_digital.html#OS

NLS: http://www.nls.uk/collections/maps/subjectinfo/os-mastermap.html

Further information on OS *MasterMap* from Ordnance Survey at:

http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/

Chris Fleet National Library of Scotland

# Accountancy and opacity: another Select Committee and the Ordnance Survey

#### Richard Oliver

In *Sheetlines* 64 I reviewed the investigation into Ordnance Survey by the House of Commons Select Committee on Transport, Local Government and the Regions in the spring of 2002. Subsequent developments have recently been reviewed by the Commons Select Committee on Communities and Local Government (CLG): CLG now has what passes for ministerial responsibility for OS. The investigation was prompted partly as a follow-up to the earlier report, in particular the recommendation that there be a clearer distinction between OS's public service and commercial activities, and partly by the ending of the National Interest Mapping Services Agreement (NIMSA) in December 2006. NIMSA was the last relic of direct 'public funding' for OS. The report, issued on 2 February 2008, is not quite as elaborate as that of 2002: all the evidence is in the form of written submissions. The OS made two submissions: the second commented on some of the other evidence.

There is not space here to discuss the report and evidence in detail, and much must be passed over. The main recommendation is that

In the interests of transparency, particularly given Ordnance Survey's dominant market position, we recommend that it seek to distinguish as clearly as possible in its annual accounts between the activities it undertakes purely because it remains a quasi-governmental national mapping agency and those it conducts on a firmly commercial basis. We accept that the absence of public funding and the requirement wholly to fund itself place Ordnance Survey in a unique position, which will make a total separation of its activities difficult to achieve.<sup>3</sup>

Practically all the submissions ask for this accounting separation, and it is evident that there is a strong desire for access to 'unrefined' as well as 'refined' data such as *OS MasterMap*: OS's view is that this not really practicable, and that 'unrefined' data and its 'public task' are by no means the same thing. The associated accounting opacity seems difficult to defend in an age of increasing 'cost centres' and attention to productivity. Greater openness might make the *status quo* easier to defend, or at any rate explain.

Neither the Select Committee nor OS comment on much of the evidence, and indeed charity demands that some of it be characterised as misunderstanding rather than misrepresentation. (OS refers to 'speculative assertions'.<sup>5</sup>) Though there is a strong element of complaint about OS's commercial attitude, and some good invective, it is difficult to gain an impression that, should OS continue on its present basis as a wholly self-supported trading fund, there is any real alternative to its present price structure. The present arrangement may be unsatisfactory for those who believe that OS data is overpriced, or that a substantial

<sup>&</sup>lt;sup>1</sup> Richard Oliver, 'The gorilla and 433 million TOIDS: a Commons select committee and the Ordnance Survey', *Sheetlines* 64 (2002), 9-14.

<sup>&</sup>lt;sup>2</sup> House of Commons – Communities and Local Government Committee – Ordnance Survey – Fifth Report of Session 2007-08, [HC 268], London: The Stationery Office, 2008: available for downloading at www.parliament.uk: referred to hereafter as SC 2008.

<sup>&</sup>lt;sup>3</sup> SC 2008, report, 17.

<sup>&</sup>lt;sup>4</sup> SC 2008, evidence, 73, 74.

<sup>&</sup>lt;sup>5</sup> SC 2008, evidence, 75.

element depends on transfers between government departments, but it can be defended on the basis that, whatever may have been the position in the past, since 2007 OS has been completely independent of subvention, and indeed makes a modest profit. (Indeed, pace the critics, it appears to be healthy enough to be able to offset the loss of that element of the NIMSA subvention that paid for rural revision.) None of the OS's numerous critics seem to have engaged properly with this, or suggest a convincing alternative. A reform of OS accounting might be illuminating for discussing alternative methods of funding, but it might merely confirm what seems to be implicit: that a self-funded OS is only possible by selling much of its data in what some see as a needlessly over-elaborate and 'over-specified' form. The alternative would be for OS data collection and maintenance – the 'unrefined' data – to be funded wholly by the taxpayer. Of course, it is arguable that in practice national and local government payments represent at least a significant minority of OS income; against this, it may be argued that the mapping has to come from somewhere, if not from OS. But that is not an argument clearly worked out here. The money-go-round, perhaps the weakest element in present arrangements, goes largely unmentioned. It seems to be easier to complain than to suggest or analyse.

That said, there are some interesting things in the evidence. Intelligent Addressing, a private sector organisation that has experienced considerable problems with OS, observes justly that 'the issue is not a vote-winner', that it is seen as an low-priority administrative problem, and that 'the consequences are normally passed for resolution by those with the power to question and initiate change in the public sector to those who have neither'. Both Intelligent Addressing and, interestingly, the Ministry of Defence suggest that OS should be split into public service and commercial sectors, and the MOD suggests that there be 'a government funded national geographic database capability' and a separate commercial arm, though neither suggests that the commercial activities be privatised.

The second OS submission includes a revised definition of its Public Task, undated, but approved by ministers after the Select Committee began its work, and arguably outmanoeuvring both the Select Committee and the critics. This includes justifications for the various datasets and map scales. Many of these are fairly obvious, but it is interesting to note that the 1:25,000, which not so very long ago OS would have been glad to be rid of, is both the National Standard for education and outdoor activities, and also a NATO standard training scale, though it is to be suspected that the later is *posse* rather than *esse*: the 1:50,000 is noted as 'essential' for defence.

It may be, though, that all this will be enforcedly altered by the implementation of the EU Infrastructure for Spatial Information in the European Community (INSPIRE), intended to facilitate data sharing and reuse, which must come into force in the UK by 15 May 2009 at the latest. This may make the present system whereby national and local government use revenue from taxation to purchase or licence data from OS unsustainable. The Public Task document might survive this unscathed; will the trading fund be so favoured?

<sup>&</sup>lt;sup>6</sup> SC 2008, evidence, 20.

<sup>&</sup>lt;sup>7</sup> SC 2008, evidence, 22, 47: for a privatisation scheme see Richard Oliver, 'Why the Ordnance Survey needs its history', Sheetlines 80 (2007), 6-19, especially 19.

<sup>&</sup>lt;sup>8</sup> SC 2008, evidence, 76-83.

SC 2008, evidence, 80, 81.

<sup>&</sup>lt;sup>10</sup> Directive 2007/2/EC of the European Parliament and of the Council, March 2007.

## A helping of Roseberry Topping David Shirt



Roseberry Topping with visits organiser, John Davies, in the foreground

Whitby is one of our favourite places, so my wife Sandy and I jumped at the chance of joining the CCS social weekend there on 5-7 October 2007. We were accommodated very comfortably in Larpool Hall, a large country house run by HF Holidays, on the south side of the town.

Whitby itself, however, was not the main item on the menu for this weekend, though Roseberry Topping was. You might imagine, as we did, that this is a version of the famous 'summer pudding', but we were soon to be put right. On our first evening we were treated to a presentation by David Taylor and David W Taylor of the Great Ayton Community Archaeological Project. It might well have been named the Roseberry Topping Project, because that was the subject of their activities – and it showed just how effective it can be when all effort is channelled into a single area of research.

Roseberry Topping, it turns out, is the name of a prominent hill on the northern edge of the North York Moors, close to the village of Great Ayton. It is an outlier of Jurassic sandstone, with a height of 320m and a distinctive profile that makes it a landmark for many miles around. It has had a long and fascinating history of mineral exploitation, the principal targets being ironstone and alum. For most of its history the hill had a conical shape that was likened to the traditional 'sugarloaf', but a major collapse in 1914 – probably caused by mine subsidence – reduced it to a distinctive half-cone with a craggy vertical cliff.

I cannot resist an aside here (wearing my etymologist's hat), because the name of the place is so odd that it demands an explanation, and for that we have to thank the Vikings who settled here in the Dark Ages. It seems that the name Roseberry began life as an Old Norse name *Óðins bjarg*, meaning 'Odin's rock or crag', making it one of the very few pagan placenames in England. (The route by which this became transmuted to Roseberry is too long and tortuous to explain here.) The second element, Topping, is from an Old Norse word *toppen* or 'hill'.

We were thus well prepared for the weekend's main excursion to Roseberry Topping on the Saturday, led by the two David Taylors along with Dr Ian Pearce. Parking by Aireyholme Farm, the childhood home of Captain James Cook, we set off in fine weather on what proved to be a bracing but not over-strenuous walk. The unique shape of the Topping quickly came into view and we could see that the slopes were heavily pockmarked by former mining activities. On closer inspection the remains of more recent industrial activity were visible, and a number of pits, holes, and tunnels were concealed among the bracken. From the summit the views were spectacular, as was the vertiginous cliff left by the 1914 collapse. We eventually came back down the hill and gathered at the 'summer-house', an enigmatic stone structure on the lower slopes that is reminiscent of an eighteenth-century folly. A splendid picnic lunch was kindly provided for us there by the members of the Great Ayton Project, and we thank them warmly for giving us such an interesting day and for looking after us so well.

For the afternoon the party split up and we went our various ways. A number of people went to see the (supposed) Roman Road on Wheeldale Moor, and the Beck Hole Incline on the Whitby to Pickering railway. (This is George Stevenson's original line of 1836, which was later superseded by what is now the North Yorkshire Moors Railway.) Accompanied by Richard Oliver, Sandy and I paid a visit to Rosedale in the centre of the Moors to see yet more industrial archaeology. Here again the quarry was ironstone (if you'll pardon the pun) and we walked along the route of the former railway that took away the ore. The most obvious remains there were the massive kilns used for 'calcining' the ironstone to reduce its weight prior to transport. Many thanks to Richard for showing us around.

[Another etymological aside: the 'ironstone' we are talking about here is iron-rich sandstone. We live in Hook Norton in North Oxfordshire, which grew rich on its former ironstone industry, but in our case the 'ironstone' is an attractive brown limestone that is widely used locally for building.]

Altogether an excellent day out, and the perfect way to work up an appetite for dinner. This was followed by an evening of stimulating conversation in the bar.

There were no planned communal activities on the Sunday so we went into Whitby to explore some of its hidden corners, followed by a long but relaxed drive home. Warm thanks to John Davies for organizing such a pleasurable weekend.

The Great Ayton Community Archaeological Project has published a 208-page hardback, Roseberry Topping, edited by Ian Pearce and lavishly illustrated by landscape photographer Joe Cornish, who lives locally. The book is currently out of print, but well worth snapping up if you can find a copy.

#### The GeoInformation Group

#### John Winterbottom

Fly with Google Earth to Aberdeen, Coventry, Bradford, or to one of many UK cities and you will see at the bottom of the image the copyright notice for The GeoInformation Group whose *Cities Revealed* TM product range has supplied the aerial imagery you are admiring.

The company is located in the attractively modernised old pumping station building in Fulbourn, near Cambridge, where seven members of the Society were made very welcome indeed by Dr Seppe Cassettari, CEO and joint owner, and by Chris Going, MD of GeoInformation Historic.

Seppe introduced us first to the 'modern' high-resolution imagery of their flagship product and talked about their ground-breaking use of aerial photography and cutting edge computer technology since the company formed in 1994. We learned about the relationship between image scale, flying height and camera lens size, the change from film to digital cameras about two years ago and about some of the factors that affect aerial surveys such as weather, time of year and day, and flying restrictions imposed by air traffic control. A key to the success of this product is the processing that is carried out on each frame to ensure that the combined mosaic has a consistent appearance. Imagery can be supplied to customers' special requirements: an example of this being a request to make the rivers more blue and the trees greener for a tourist publication. The GeoInformation Group have production operations in India and South Africa where much of this post-processing of images is carried out.

Full details of the full range of *Cities Revealed* products can be found on their web-site;<sup>1</sup> but during the visit we were privileged to have Seppe show us examples from the 'Historic', 'Building Class', 'Land Use' and 'Building Height' products and to have their key features explained.

For the historic product the aerial imagery has been sourced from archives of RAF, Luftwaffe and USAF aerial survey film taken between 1939 and 1952 and is used by clients in many ways. One example would be to see if new building developments are at risk from unpleasant legacies such as contamination from previous chemical works or even from unexploded bombs. The historic images can be viewed superimposed onto modern data using software supplied with the product.

Customers often need answers, not just data, to help with their decisions; the building class and land usage products are examples of how this can be provided by means of imagery processed to show the age and type of building structure and the way in which land is used. The imagery is colour coded to show seven age bands, seventeen structure types and 52 categories of land usage.

LIDAR (Light Detection and Ranging) surveys are used to provide the 'Building Heights' data base which can be viewed as a colour coded image showing the height of the ground above sea level and with building heights indicated to an accuracy of  $\pm 0.5$ m. This data has many uses for planning such as predicting the appearance of a skyline in a proposed development.

In this largely paper-free environment we were seeing examples of the *Cities Revealed* brands from a projector connected to a laptop; and now Chris Going took over the controls.

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www.citiesrevealed.com

Chris is a leading authority on all matters concerned with historic archives of reconnaissance photographs from the Second World War and cold war period and his presentation was informative and enjoyable. Millions of aerial photographs were taken during the period and inevitably many have been lost or destroyed. Many have, however, survived and can be found in archives such as The Aerial Reconnaissance Archives (TARA), at Keele University. We looked at examples of photographs of an area surrounding a railway bridge in Germany which was bombed on an almost daily basis by the Allies and were shown how it is possible to see, amongst about 2,500 craters, the smaller ones made by bombs which did not explode. This information is still being used today to locate unexploded bombs in areas of new building development. We also saw a mosaic of reconnaissance frames taken on D-Day beaches with amazing clarity such that individual soldiers can be seen on the beach. The D-Day aerial reconnaissance is a subject that Chris has researched in great detail and his work in this area is recorded in an excellent book which he co-authored with Geo-Information Group colleague and Managing Director Alun Jones.

This was a most interesting and enjoyable visit, providing us with an insight into the world of aerial photography both past and present. Our thanks are due to Seppe and to Chris for giving up their valuable time for us and for their warm and friendly hospitality.

# Visit to Quickmap, Luton Nick Jeffery

It was many years ago that I first remember seeing Charles Joseph Minard's wonderful 'carte figurative' depicting Napoleon's disastrous 1812 Russian campaign. This related geographic location, the devastating reduction of his forces as the campaign progressed and prevailing temperature. I couldn't help but be reminded of this (in the use of visual techniques for depicting the flows of people) during the visit to 'Quickmap', the hosts of the CCS visit to the intriguingly (and accurately!) named 'Hat Factory' in Luton on 16 January 2008.

Nine members were welcomed by a triumvirate of ecologically-minded versatile individuals – Steve Cousins, Andrew Sutton and David Sherriff – who created this business some ten years ago and see themselves not so much as cartographers but as designers. If you can envisage the presentation of data related to geographical features as being a continuum between, say, the London Underground map created by Harry Beck in 1931, where the predominant emphasis is on the different lines and linkage between stations and their geographic location is highly distorted, and 'classic' OS mapping, true to geographical detail but with no specific information emphasis, then Quickmap's products fall in between these two extremes.

Their main work has been to prepare travel maps using concepts based on nodes of 'activity centres' and 'interchange points' which are the focus of the maps. Activity centres are identified from a combination of such characteristics as the presence of banks, shops and taxi ranks. This then enables the designer to establish a hierarchy of information provision

www.evidenceincamera.co.uk/who.htm

Chris Going, Alun Jones, *D-Day: the lost evidence (above the battle)*, Crecy Publishing, 2004, ISBN 0-85979-097-5.

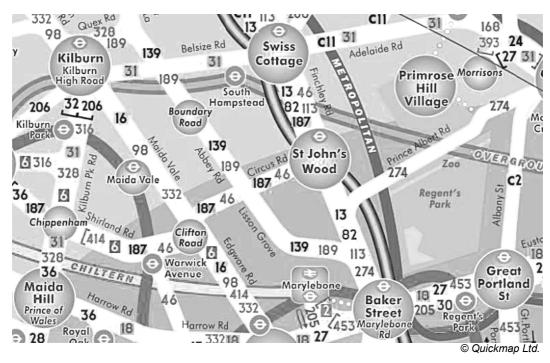
For those not familiar with this it can be found at: http://en.wikipedia.org/wiki/Image:Minard.png.

including routes, frequency, connections and fare structures and present this information in a variety of ways, the normal presentation format being a 'node and spoke' arrangement. The object is to present the key information in an easily assimilable manner that meets the users' needs, rather than those of the provider, and hence builds confidence in the potential user that a viable, accessible network is available. Although there is a national database available for transport nodes (NaPTAN, National Public Transport Access Nodes) Quickmap's approach is to directly survey the area under consideration to establish the relative importance of the node. An interesting measure of the 'scale' of a city is that by their methodology London has 416 nodes; Glasgow has 126, a reflection on their relative vitality and variety.

Major work has been done in the London area including pocket *London by bus* (launched by Ken Livingstone in 1999), *London tube and walk* and *London all-on-one* maps, the latter showing buses, tubes, trains and streets. Showcasing their work is the A1-sized *All London travel planner*, the first integrated travel map showing all buses, tubes and trains within the M25 area.

Another interesting aspect of their work is 'Map movies', started in 2001 as internet-based rapid-download route or event animations. It's far easier to watch these than describe them so visit *www.quickmap.com* and click on one of the map movies shown. My favourite was the Notting Hill Carnival one, which employs a combination of techniques to show a vast amount of information in a vivid and easily digested way.<sup>2</sup>

All in all a fascinating insight to the plethora of choices that must be confronted when presenting complex information to a non-specialist audience – what to include / what not to include / what is important / what is unimportant / how to present it / how to market it. I must admit that next time I go to London, having come away with a Quickmap *London all-on-one* map, I'll certainly be a bit more adventurous in my travel choices!



This monochrome extract does less than justice to the clarity of the 'London all-on-one' map, a sample of which may be downloaded in full colour from www.quickmap.com/downloads/freeA4download1.pdf

Members attending this year's AGM will find a Kingston map movie available on the same website. – CJH

#### UK civil air charts

#### Chris Higley

The International Civil Aviation Organization requires each member state to produce an Aeronautical Information Publication (AIP). Within the UK this is a responsibility of the Civil Aviation Authority, housed in a tower block in Kingsway, right in the heart of London.

The AIP lists the constantly updated regulations and navigational information for all civil flying in the country and, at the start of the Society's visit to the CAA Aeronautical Charts and Data Section on 4 March our hosts, Jo Suter and Rick Davidson, explained how this 'bible' is used to generate the information appearing on the Visual Flight Rules charts used by the general aviation community.

The country is covered by eight 1:250,000 and three 1:500,000 VFR charts, each consisting of a specially generated Ordnance Survey base map on which the CAA superimposes aeronautical information – the navigational aids and facilities of aerodromes, obstructions, restricted airspace, air traffic control boundaries and so on. The charts themselves are then printed by OS as conventional laminated flat sheets. A separate 1:50,000 *London helicopter chart* is also produced using OS *Landranger* base mapping.

The information on these charts is safety critical and rapidly changing. The changes are noted in *notices to airmen* (NOTAMS) and in monthly amendments to the AIP; new editions of each chart are produced at approximately yearly intervals. Although all VFR charts must conform to an overall ICAO specification, some national variation is allowed. Until now, the UK VFR charts have been produced on an aging Laserscan system. The comparatively small number of individual sheets does not justify the cost of an 'all-singing, all-dancing' automated approach to their production and, instead, Anne Edwards demonstrated how the work was now being transferred to a PC, making effective use of a standard software package, Adobe Illustrator, supplemented by her own traditional cartographic skill in positioning symbols and captions, to produce a clear and visually attractive product.

Scheduled, commercial flights are routed along recognised airways and their pilots do not have a need for VFR charts. However, all pilots do require detailed information about the airfields that they use. Regular surveys are commissioned by each airfield and the information from these goes to provide a range of local charts, all produced by the CAA and included in the AIP.

We had already begun to realise that the three-dimensional view of an aeronautical chart was different to the two-dimensional surface view of a conventional map. How different became apparent when Mike Viney and Bill Rose introduced us to the instrument approach charts and ICAO standard plans of individual airfields – the latter now being produced to a new specification resulting in a detailed plan of great clarity for everything within the airport perimeter but totally ignoring everything outside the boundary, which is of no relevance to the pilot and cannot be checked from the airfield surveys.

There is mounting pressure to introduce charts for GPS based navigation. Adoption of GPS could remove the need for expensive instrument approach systems and other radio navigation aids at airfields, but has a hidden danger. By default a GPS receiver will show altitude above a particular ellipsoid designed to be a best fit to the whole Earth. This

Sheetlines 57, 27.

ellipsoid surface can differ significantly from Ordnance Datum Newlyn (mean sea level). Altimeters are currently calibrated to show heights above mean sea level, and these are the altitudes used on aeronautical charts. An aircraft measuring its height with a GPS, and not taking this into account, may find itself a lot closer to the land surface than it expects.

The overriding need to keep clear of anything into which the aircraft can crash was emphasised by Ian Cox initiating us into the concept of frangible and non-frangible obstacles and 'Type A' charts, which are produced for each airfield showing the minimum safe angle of climb and any obstructions which could be a danger to an aircraft during takeoff. Nervous flyers should not look at the chart for London City Airport! The required angle of climb is also a significant commercial consideration since it is an important factor in calculating the maximum permitted payload for the aircraft.

A common theme in several of our recent visits is that modern technology now enables a very small team to produce professional quality maps. The eight current staff of the Aeronautical Charts and Data Section of the CAA are housed in a single open plan office; their productivity is remarkable. This was a most instructive visit and a fascinating glimpse of a very different view of the world. We can only regret that not all the members of the Society who wished to attend could be accommodated. Our thanks go to all the staff at the CAA for their very friendly welcome and great generosity with their time.

VFR charts cost £13.99 each and are available from a number of stockists listed on the CAA website at <a href="https://www.caa.co.uk">www.caa.co.uk</a>, the main agent being Airplan Flight Equipment, <a href="https://www.afeonline.com/shop">www.afeonline.com/shop</a>. 'Type A' obstacle charts will also be found on the CAA website. The full AIP, including downloadable copies of the other charts for individual airfields, is available online from the NATS Aeronautical Information Service website at <a href="https://www.ais.org.uk">www.ais.org.uk</a>. There is no charge for access but it is necessary to complete a simple registration procedure.

Jeppesen and other commercial publishers also use the information from the various national AIPs to produce their own charts. UK charts for military aviation are the responsibility of No 1 AIDU, RAF Northolt.

### The largest printed Ordnance Survey map ever ... probably! Paul Marriott 1

In early 2007 I received a call from Suzanne Hills at Mapland Scotland with an enquiry to purchase Ordnance Survey 1:50,000 scale Landranger map tiles in digital raster format. It soon became apparent that Suzanne's enquiry was for complete coverage of Scotland at 1:50,000 to include all of the Scottish Islands.

The business plan from Mapland was to print the map, to scale, as a giant walkover map and jigsaw for educational purposes in Scottish Schools. Meridian Maps was in a unique position to work on this amazing project with our parent company John E Wright & Co Ltd who operate a large graphic display business. This was completely new ground for the John E Wright team who had previously worked on floor graphics and who daily produce exhibition display material.

<sup>&</sup>lt;sup>1</sup> Business Manager, Meridian Maps @ John E Wright. Meridian Maps is an Ordnance Survey licensed partner and mapping and data centre.

Over 600 Ordnance Survey 1:50,000 map tiles were electronically stitched together creating enormous computer files. The files were then digitally printed onto 37  $1.5m \times 3m$  plastic boards, using solvent free UV inks. These inks reduce the environmental impact but also add extra durability when compared to self-adhesive floor vinyls.

A large flat bed digital cutter using an optical recognition software package then produced 180 jigsaw pieces from the 37 plastic boards and Mapland Scotland was created. Each jigsaw piece is approximately  $1m \times 0.7m$  making up a total area of 120 square metres showing Scotland to scale at 2cm to 1km, 1:50,000.

The giant walkover Mapland Scotland jigsaw map measures  $15m \times 8m$ , close to the size of a badminton court and shows the whole of Scotland including all of the islands. Mapland Scotland will be offered to primary and secondary schools throughout Scotland, running educational programmes where pupils learn, discover and participate, giving an experience that is unforgettable.

On 23 January 2008 Mapland Scotland was launched at Dynamic Earth in Edinburgh. The giant map/jigsaw is assembled on the floor and is completely walkover. Guests at the launch had their Scottish geography put to the test as they were invited to assemble Mapland Scotland from the 180 randomly mixed jigsaw pieces: twenty minutes later the giant map of Scotland was complete.

Caroline Boyle, Head Teacher Kilchrenan Primary School said, "It was super to see the children being so active in their learning and actually being able to walk on Scotland. They enjoyed making the map and seeing where all the towns etc joined together. It has huge potential to being able to provide cross curricular activities."

Further information at www.maplandscotland.co.uk, also www.johnewright.com and www.meridianmapservices.co.uk. As a giant walkover jigsaw map, Mapland Scotland is:

- Probably the largest Ordnance Survey map ever printed?
- Possibly the largest ever printed map?
- Also the largest jigsaw in the world?

However if you know different I would be pleased to hear from any member – you can email me at *paul.marriott@johnewright.com* <sup>2</sup>.



This subject could also keep the correspondence columns of *Sheetlines* busy! – *CJH*.

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### Sheet lines, sizes and style: a Scottish problem solved? Richard Oliver

A commonly-asked question, albeit more in conversation than in print, concerns the sheet size of the original one-inch map of Scotland, on which work began in 1852. Whereas the one-inch (1:63,360) maps of northern England and of Ireland were based on a full-sheet size of  $36 \times 24$  inches (91.48  $\times$  60.98 cm) within the neat line, but were engraved and at first published as quarter sheets  $18 \times 12$  inches  $(45.74 \times 30.49 \text{ cm})$ , those of Scotland used a standard size of  $24 \times 18$  inches ( $60.98 \times 45.74$  cm) and always bore individual numbers. This is all the more striking, as the Irish and the Scottish maps were authorised in April and December 1851 respectively, and have geodetic and stylistic similarities: the use of the Bonne projection, the naming of hills in 'Egyptian', the naming of railways and canals in sloping Egyptian capitals, a simplified border, and diagrams showing adjoining one-inch sheets and constituent six-inch sheets. All these set them apart from contemporary English sheets. Less often remarked on are two aspects of design of most of the earlier Scottish sheets, and a few later ones. One, the use of reverse-sloping lettering for watercourses, has a parallel on two Irish sheets, and no English ones; the other, the use of an 'engrossing' style for naming water bodies and most coastal features, is unique to the Scottish mapping. Whilst sheet size and style of lettering might appear to be separate problems, the answers suggested here to them are closely related. Also discussed here is the episode of the 'full sheet series' phase of numbering the one-inch New Series mapping of England and Wales of circa 1869-73. Considerations applicable to sheet size questions are also applicable to this problem.

#### Sheet sizes in Britain and elsewhere

The Scottish sheets were occasionally referred to by contemporaries as 'half-sheets'. It is useful at this point to consider what the practical justifications might be for 'half sheets', and whether there are parallels elsewhere in Britain or Europe.

One justification might be that a sheet size of around 24 × 18 inches is a more convenient one to handle than is a 'full sheet' of 36 × 24 inches although, because the OS printed the maps on paper with a wide margin (about 3 inches or 7.5 cm) to left and right, this theoretical advantage is not as great as it might first appear. A similar consideration applies to quarter sheets in relation to 'half sheets'. Quarter sheets were first introduced in 1829 in order that four engravers could work at once on the equivalent of a full sheet, but at the expense of sheets that were comparatively small compared either with OS practice hitherto or with contemporary commercial rivals such as the Greenwoods.<sup>2</sup> The quarter sheets were thus in effect conceived of as 'cells', and the lack of inner margins on early states of the first three sheets to be 'quartered' (43, 54, 55) supports this view. 'Cell' or 'section' construction of copper-engraved mapping seems to have been little used in Britain, though it was extensively

Report of the Departmental Committee... to inquire into... the Ordnance Survey [the 'Dorington Committee'], British Parliamentary Papers (House of Commons series) [BPP (HC)] 1893-94 [c.6895], LXXII, 305, evidence, q.600.

The size of plates used by the Greenwoods varied, according to how a particular county was to be divided up. The plates for their first map of Yorkshire (1817-18) measured about 29.5 × 25.5 inches, giving a 'map area' of about 28 × 24 inches, which would include an outer border on 'outside' sheets. Rather smaller plates were used for other map areas measured (Somerset (1822), 24 × 25.75 inches; Worcestershire (1822), 23 × 21 inches; Surrey (1823), 23.5 × 19.5 inches), but this does not invalidate the general point.

used for drawing photo-lithographed maps, such as the one-inch Fifth Edition and Seventh Series.<sup>3</sup> With 'half sheets' it was still possible for two engravers to work at once on the equivalent of a  $36 \times 24$  inch full sheet, and so this might be a compromise solution. That said, quarter sheets were used in Ireland because the geologists liked the size though, as John Andrews has pointed out, there was nothing to stop them cutting up full sheets for ease of handling in the field.<sup>4</sup>

There are two obvious parallels with Europe. One is the use of the Bonne projection. John Andrews has suggested that this was adopted for the Irish one-inch on the advice of Captain William Yolland, who was Executive Officer (i.e. second-in-command) of the OS until October 1852.<sup>5</sup> As Yolland had been sought for the OS in 1838 on account of his mathematical abilities, this seems highly likely. It seems much less likely that it was the idea of Lt-Col Lewis Alexander Hall, the Superintendent of the OS, who was appointed in 1847 as an outsider, and who had to rely on Yolland and other subordinates for technical advice. Yolland may have been influenced by the popularity of the Bonne projection elsewhere at this time: it was used for the 1:80,000 Carte de l'Etat Major of France, begun in 1832, and the 1:100,000 Carte Dufour of Switzerland, begun in 1842. The mapping of England and Wales used the Cassini projection, which was easy to construct but distorted angles and areas. The theoretical advantage of the Bonne projection was that it was equal-area, but in practice that was, as Brigadier Winterbotham remarked in 1936, 'for what that is worth. For the 1-inch of Scotland it is worth little.' The area of Ireland is similar to Scotland and the comment applies equally there: Brian Adams had some difficulty in confirming that the oneinch of Ireland really did use Bonne rather than Cassini.<sup>8</sup>

The other parallel is the sheet sizes of these two series. The French 1:80,000 was in sheets measuring  $80 \times 50$  cm ( $31.48 \times 19.67$  inches) within the neat line; the Swiss 1:100,000 sheets measured  $70 \times 47$  cm ( $27.53 \times 18.50$  inches). The French 1:80,000 was designed to replace the 1:86,400 Cassini *Carte de France*, the sheets of which covered an area of 40,000  $\times$  25,000 toises, a map area of about  $90.23 \times 56.39$  cm (about  $35.51 \times 22.19$  inches), *i.e.* very similar to the  $36 \times 24$  inch 'full sheet' standard for Ireland and northern England.

#### Mathematical considerations: smaller sheets an illusory advantage

At first sight a small sheet size appears more flexible, and it is certainly the case that there is less mapped area. 205 quarter sheets covered Ireland; had all four quarters of the notional 59 full sheets been produced, then 236 quarter sheets would have been necessary, 31 of which would have been effectively blank. Similarly, the familiar small sheet series of the New Series was numbered from 1 to 360 (though some combinations resulted in only 348 plates), but it was originally laid out as 104 full sheets, *i.e.* equal to 416 quarter sheets.<sup>9</sup>

One-inch Seventh Series sheets covered an area of  $40 \times 45$  kilometres, but were usually drawn in 'sections' covering  $10 \times 10$  km, which were assembled for photography.

<sup>&</sup>lt;sup>4</sup> J H Andrews, A paper landscape: the Ordnance Survey in nineteenth-century Ireland, Oxford University Press, 1975, 231.

Andrews, A paper landscape, 230.

<sup>&</sup>lt;sup>6</sup> 'Statement' accompanying Colby to Inspector-General of Fortifications, 9 December 1846, in The National Archives (Public Record Office) [TNA/PRO] WO 55/963.

<sup>&</sup>lt;sup>7</sup> H S L Winterbotham, *A key to maps*, London and Glasgow: Blackie, second edition, 1939, 43.

<sup>&</sup>lt;sup>8</sup> Brian Adams, 'The projection of the original one-inch map of Ireland (and of Scotland)', *Sheetlines* 30 (1991), 12-15, reprinted in Brian Adams, *Projections and origins*, London: Charles Close Society, 2006, 22-25.

Ounting is complicated by the 348 including the Isle of Man sheet, which was always published as a 'full' sheet, though numbered as five small sheets (36, 45, 46, 56, 57): thus the calculations which follow tend to put the small sheet series at a slight advantage to the full sheet series.

However, what is gained over a full sheet series in not preparing quarter sheets wholly blank within their neat lines tends to be lost in the margins. The reason for this is that it is usual to provide a border, latitude and longitude values, sheet number, scale bar, and explanatory matter, and in series mapping, such as the one inches of England and Wales, Scotland and Ireland, it is usual to repeat all this matter for each sheet. It therefore follows that these details would occur 104 times on the New Series 'Full Sheet Series' (FSS), but 348 times on the small sheet series (SSS).<sup>10</sup> (The statistics introduced here are tabulated in the Appendix.) The standard plates used for the one-inch for much of the nineteenth century extended an average of 1.5 inches (about 3.8 cm) beyond the neat line (usually somewhat less in the upper margin and somewhat more in the lower margin), so that, for example, a plate for a Scottish 'half sheet' (HSS) of 24 × 18 inches would be 27 x 21 inches; one for a  $18 \times 12$  inch 'small sheet' or 'quarter sheet' would be  $21 \times 18$  inches, and one for a  $36 \times 24$ inch 'full sheet' would be 39 × 27 inches. Thus although the use of a larger basic sheet size would produce a significant increase in redundant map area and copper within the neat line, it would result in a reduction in total plate area outside the neat line. Thus for England and Wales 348 SSS on 21 × 15 inch plates would occupy 109,620 square inches of copper, whereas 104 FSS on  $39 \times 27$  inch plates would occupy 109,512 square inches. (It is worth noting here that in the second quarter of the nineteenth century the actual standard sizes of plate being used by the OS were quoted officially as  $21.25 \times 15.25$  inches and  $38.5 \times 26.5$ inches. 11) By the mid 1890s, with the coming of the Revised New Series, the standard plate size was enlarged to 23 × 17 inches for the SSS; so 348 such plates would occupy 136,068 square inches, whereas 104 FSS on 41 x 29 inch plates would occupy 123,656 square inches. <sup>12</sup> For Ireland, 205 SSS on 21 × 15 inch plates would occupy 64,575 square inches of copper; 59 FSS on 39 × 27 inch plates would occupy 62,127 square inches.

A possible alternative to the familiar 132-sheet HSS layout for Scotland (sheets 1-131 plus 57A: a total plate area of 74,844 square inches) would be a FSS. Using the same starting-point near Ben Lawers as was actually used late in 1852 for the HSS, 80 FSS plates (84,240 square inches) would be necessary to cover Scotland, including Orkney and Shetland, following contemporary practice of using butt-jointed landscape-shaped sheets throughout. The FSS represents an increase of 131 *per cent* in map area, but only about 113 *per cent* in plate area. The increase for the FSS is due to the relative irregularity of the area to be mapped: Scotland is not quite so compact a shape as are England and Wales or Ireland. A SSS would need about 243 sheets to cover Scotland, or about 76,545 square inches of copper. A HSS would need about 190 sheets and 107,730 square inches of copper to cover England and Wales and 84 sheets and 60,102 square inches to cover Ireland.

<sup>&</sup>lt;sup>10</sup> I have used 'FSS' in order to avoid confusion with the Third Edition 'Large Sheet Series' (LSS). Both terms are relative: the map area of a standard modern single-sided 1:25,000 *Explorer* sheet is 120 × 80 cm, *i.e.* 47.22 × 31.48 inches, and a map area of 1486 square inches, *i.e.* 172 per cent of the map area of a New Series FSS.

<sup>&</sup>lt;sup>11</sup> TNA PRO OS 3/279, *passim*. Measurements of printed copies are affected by paper shrinkage, which may be of the order of 1 in 100 to 1 in 50.

I am concerned here, strange as it may seem from the results, to try to make the calculations seem to favour the decision actually taken to use SSS and HSS rather than FSS. The nearest approach to a published FSS sheet was that for the Isle of Man, which was notionally composed of parts of sheets 14 and 20; had a single sheet been used for the Isles of Scilly, as in the SSS, then FSS sheets 100 and 104 would have been combined, and only 102 FSS plates would have been needed, reducing the total area to 107,407 square inches. It is worth noting that the enlargement in plate size for the SSS seems to have been prompted by the fitting in of a legend: on the Scottish HSS it was possible to avoid enlargement, as there was already sufficient space, and this would apply with still greater force to a FSS.

Both SSS and HSS formats involved engraving significantly more border, including divisions for graticule dicing, than would the FSS: excluding the corners, each SSS sheet had 60 inches of border, *i.e.* a total of 20,880 inches for 348 plates, each HSS sheet had 84 inches, *i.e.* a total of 11,088 inches for the 132 plates for the original map of Scotland, and each FSS sheet had 120 inches, *i.e.* 12,480 inches for 104 plates of England and Wales and 9,600 inches for the 80 FSS plates considered necessary to cover Scotland.

Another method of evaluating the 'efficiency' of a particular sheet size in a map series is to calculate the percentage of the plate which is occupied by the map. For the SSS on  $21 \times 15$  inch plates it is  $68.5 \ per \ cent$ ; for HSS on  $27 \times 21$  inch plates it is  $76.2 \ per \ cent$ ; and for FSS on  $39 \times 27$  inch plates it is  $82.1 \ per \ cent$ . (As a comparison, a standard 1:50,000 Landranger, with a map area  $80 \times 80$  cm printed on  $100.0 \times 89.0$  cm paper, scores  $71.9 \ per \ cent$ .)

Thus the benefits of a SSS or HSS over a FSS are not all they may seem: practically, unless the coast or other border is very irregular, they seem to be 'cell' construction and user-convenience.

(It is to be noted that these considerations apply to monochrome mapping, in which the sea areas are blank; they do not necessarily apply to gridded or colour-printed mapping where the sea area is occupied by grid or tint, which is the invariable modern practice, though they would apply to early OS colour-printed mapping, which used water-lining or vignetting, but no grid or equivalent. A further complication affecting modern mapping is that sheet layouts are often not butt-jointed, especially in the vicinity of the coast, but are laid out in a more sophisticated way to suit users, and often with the use of insets, and sometimes with the marine content of coastal sheets minimised by putting the legend in the sea area: these characteristics are well demonstrated on the OS 1:25,000 *Explorer*, and the current French 1:100,000. <sup>14</sup>)

#### The problems of sheet layouts

<sup>15</sup> This index is in TNA PRO OS 2/649.

It is possible that a series of calculations along the lines of those given above were carried out at Southampton in 1852 and pointed to a HSS being a better option for Scotland than a FSS or SSS. This by itself suggests that efficient use of copper could have been the determining factor. It is to be noted that all the calculations set out here have the advantage of working with precise mapping of the Scottish coast, such as was not available in the early 1850s. This is demonstrated by the earliest known index for the Scottish HSS, in which, for example, the sheets we know as 32 to 34 are numbered 35 to 37 and what we know as sheets 117 and 118 are 127 and 128: the mainland proved to be not quite so extended to the north as had been anticipated. Conversely, what appears on this index as sheet 61 was evidently thought unnecessary when the definitive numbering was decided on, but had to be revived later as 57A. The seven sheets covering Lewis (originally 102, 103, 109-111, 116 and 117) were first published in 1858 with an independent numbering system: they only received their definitive numbers (98, 99, 104-106, 111, 112) in 1862. All this demonstrates the difficulty of allocating sheet numbers when the position of the coast is insufficiently known.

<sup>&</sup>lt;sup>13</sup> The plates used for the six-inch in Great Britain in the mid-1840s were 38 × 26 inches, but the 'border' was little more than a narrow band of graticule dicing: this gave a map area of 87.45 *per cent*.

Such non-butt-jointed sheet lines are sometimes referred to as 'arbitrary', which seems a pretty *arbitrary* use of language. The *systematic* use of butt-jointed sheet lines *systematically* reduced OS 1:25,000 sales for decades; with the introduction of the more flexible sheet lines of the *Explorers* sales shot up.

This immediately begs a question. The Appendix shows that an Irish HSS would show a small but definite saving of copper over both SSS and FSS, and the shape of the country was reliably known by 1851, in a way that it was not in Scotland: so why, if a HSS was an efficient use of copper for Scotland, was it not equally efficient for Ireland? This is implicitly answered by the next section, and a careful attention to chronology.

Scottish half sheets: who was responsible?

The earliest reference to the use of  $24 \times 18$  inch sheets for Scotland is on 4 December 1852. in a memorandum from Captain John Cameron, who was in charge of the computations, to Captain William Driscoll Gosset, who succeeded Yolland as Executive Officer: this refers to 'the arrangement of the sheets decided on by Lieut Colonel Hall', and goes on to describe precisely the geodetic basis, with an origin at 57°30′ North, 4° West. 16 The one-inch of Scotland was effectively authorised some twelve months earlier, as a result of the Treasury adopting recommendations by the Select Committee on the Ordnance Survey of Scotland, which had sat earlier in 1851, that the six-inch (1:10,560) scale be dropped in favour of survey at two-inch (1:31,680) and publication at one-inch. Two-inch survey began almost immediately, but in September 1852 resumption of six-inch survey was authorised and further two-inch survey was abandoned. Such two-inch survey as was made had as its first priority a tract of country around Edinburgh; this may have been for 'political' as well as for as 'operational' reasons, as much of the pressure which led to the appointment of the Select Committee came from that city. 17 That there would have been no point in surveying at two-inch areas already surveyed at six-inch is neatly exemplified by Haddingtonshire [East Lothian], much of which had been surveyed at six-inch when the two-inch was ordered, and which was completed at the smaller scale; after six-inch work was resumed the county was completed at that scale, and the two-inch work went unused. By late 1851 the whole of Edinburghshire [Midlothian] had been surveyed at six-inch, and this would have provided material for reduction to oneinch. (We shall return to this later in discussing the 'style problem'.)

One of the more remarkable pieces of evidence to the Select Committee of 1851 was given by Yolland on 27 June when, in answer to a question by the Chairman, the Hon. Francis Charteris, he said that a one-inch map of Scotland, selling at the same price as that of England and Wales (2s, [£0.10] per sheet), and in full sheets of  $36 \times 24$  inches representing 864 square miles (2237.6 square kilometres), would cost £3.10s [£3.50], *i.e.* (though it was not explicitly stated thus) there would be 35 sheets. The only way of reconciling this with the 80 FSS sheets of 864 square miles extent suggested by the writer's experiments is that an estimated figure for the total area of the Scottish mainland in square miles was divided by 864. Previously, Yolland had said that a composite six-inch map of Scotland would occupy  $126 \times 216$  feet ( $38.4 \times 65.8$  metres), *i.e.* would cover an area of  $252 \times 432$  miles, which is approximately correct. At this time no one-inch of Scotland was authorised, and it is

<sup>&</sup>lt;sup>16</sup> TNA PRO OS 2/649, 7.

Richard Oliver, 'Unfinished business: the lost Ordnance Survey two-inch mapping of Scotland, 1819-1828 and 1852', Sheetlines 78 (2007), 9-31, esp.25-27.

Report from the Select Committee on Ordnance Survey (Scotland)..., BPP (HC) 1851 (519), XX, 359, evidence, qq 1660-2. Report from the Select Committee on Ordnance Survey (Scotland)..., BPP (HC) 1851 (519), XX, 359, evidence, qq 1647, 1655. The idea of a composite of this size was not as outlandish as it may seem, as the Select Committee was sitting at the same time as the OS was exhibiting some large composite maps of counties at the Great Exhibition, the largest being one of Lancashire some forty feet high: see Richard Oliver, 'The Ordnance Survey and the Great Exhibition of 1851', The Map Collector, 50 (1990), 24-28.

understandable that Yolland should have made what proved to be a wildly inaccurate estimate, but the important point is that he seemed to be thinking in terms of  $36 \times 24$  inch sheets;  $24 \times 18$  inch sheets were evidently not yet thought of.

Although the one-inch of Ireland was authorised by the Treasury in April 1851, it was only authorised by the Board of Ordnance on 28 January 1852. The necessary computations for the sheet lines began under Yolland's direction in Southampton a few weeks later, though the mapping was drawn and engraved in Dublin.<sup>20</sup> Calculations of positions and convergences in Scotland with reference to the 57°30′ North, 4° West origin were being undertaken in March 1852, but these appear to be concerned with general principles rather than the minutiae of sheet lines.<sup>21</sup> By early December, and the first reference to 24 × 18 inch sheets, Yolland and Hall had fallen out, Gosset was Executive Officer, and the computations were under the charge of Cameron, who had until October been in charge in Dublin.<sup>22</sup>

Gosset may be a man who has not had his due, because of the patchy survival of OS records. In 1852 he would have been aged about thirty, or a little over.<sup>23</sup> Hall's successor, Colonel Henry James, credited Gosset with having suggested that photography be used to aid map reduction, though it was only under James that this came about.<sup>24</sup> As Yolland had resisted publishing a version of the one-inch with contours in 1851, it would seem that the imaginative leap of dual format publication for the one-inch map – with hills, or in outline with contours – was probably Gosset's rather than Hall's. 25 It would therefore be in keeping for Gosset to suggest a rethinking of the sheet size for the one-inch of Scotland. Timing is crucial: by mid-November Yolland had left Southampton, yet computation only began a few weeks later. Had Yolland thought of 24 × 18 inch sheets for Scotland he might surely have thought of them a few months earlier when the computing for Ireland was being put in hand. Similarly, as Cameron had previously been in charge in Dublin, if he had felt that a change in sheet size was desirable he might surely have raised the point, and if it was acceptable to Hall by late 1852 it would surely have been acceptable less than a year earlier. It may also be germane that at some time during 1852 Gosset visited Paris and the Depot de la Guerre in order to study French methods of relief depiction, in the course of which he would have been

<sup>21</sup> TNA PRO OS 2/647, pp 100-2, 110-6, 120-5: these make sense of the otherwise puzzling reference in pencil to Lewis calculations in May 1852 in TNA PRO OS 1/649, 24.

<sup>&</sup>lt;sup>20</sup> Treasury minute, 17 April 1851, on papers 4945 and 6713 in group 26071 in TNA PRO T1/5720B; Ordnance minute, 28 January 1852, TNA PRO WO 47/2282, 1045-6; Andrews, *A paper landscape*, 230 (n.4 cites Yolland to Cameron, 20 February 1852).

The falling-out is documented in detail in a file, 'Hall & Yolland – original correspondence', apparently still in OS library (item 4690): there are quotations in W A Seymour, *A history of the Ordnance Survey*, Folkestone: Dawson, 1980, 124-5.

The following details are recorded in T W J Connolly, ed. R F Edwards, *Roll of Officers of the Corps of Royal Engineers from 1660 to 1898*, Chatham: Royal Engineers Institute, 1898 [annotated photocopy in TNA PRO library, 358.2 ROL oversize]: commissioned in Royal Engineers as Second Lieutenant 20 June 1840, Lieutenant 27 May 1843, Second Captain 11 November 1850, Captain 13 January 1855, Lt Col 3 August 1863, Colonel 3 August 1872; commissioned in Army as Major 9 November 1862, Colonel 3 August 1868, Major-General 24 September 1873, when retired on full pay; died in London 18 May 1899. Gosset joined the OS on 13 March 1842, and the various stations recorded for him in 1842-5 suggest that he was on geodetic work: from 1845 he was one of the officers in charge of survey parties in south-west Scotland (TNA PRO WO 17/2756: monthly returns, 1809-50), and footnotes to published maps suggest that he continued on this work until the turn of 1851-2. It is unclear when he left the OS, though it was evidently shortly after Henry James became its head in 1854: the two may well be related.

<sup>&</sup>lt;sup>24</sup> Ian Mumford, 'Lithography, photography and photozincography in English map production before 1870', *Cartographic Journal*, 9 (1972), 30-36, especially page 33.

Report from the Select Committee on Ordnance Survey (Scotland)..., BPP (HC) 1851 (519), XX, 359, evidence, qq 1570-1; Report from the Select Committee on the Map of Ireland, BPP (HC) 1852-3 (921), XXIV, 393, evidence, qq 251, 277, 280.

bound to encounter French 1:80,000 sheets. However, a series nearer home was Cary's half-inch map of England, Wales and southern Scotland, completed in 1832, and by 1852 being published by Cruchley: its standard sheet size was about  $24 \times 19.5$  inches within the neat line. In the early 1850s this was the only 'series mapping' on a relatively large topographic scale covering southern Scotland, and as such it might have been used by the OS as a makeshift for administrative purposes.

I suggest, therefore, that the idea of the  $24 \times 18$  inch sheet size was Gosset's, and that he may have got the idea from either the French 1:80,000, the Swiss 1:100,000, or the Cary-Cruchley half-inch.

#### The style problem

The earliest one-inch mapping of Scotland falls into three geographical groups: a 'Galloway' group, of Wigtown and Kirkcudbright shires; an 'Edinburgh' group, of Edinburgh and adjoining areas; and a Lewis group, of the Island of Lewis. The borders and marginalia of these sheets differ from contemporary English practice, but are consistent with that on later Scottish one-inch mapping, and need not be considered further here. The 'Edinburgh group' differs from contemporary English one-inch mapping in that hills are named in lower-case 'Egyptian', and railways and canals are named in forward-sloping Egyptian capitals. Otherwise the basic principles are those of the English mapping: for example, lighthouses are named in ordinary italic 'stump'. I will call this the 'standard style'. The Galloway and Lewis groups are similar in style to each other, but differ in other respects from the 'Edinburgh group': lower-case Egyptian is used to name lighthouses, reverse-sloping lettering is used to name watercourses, and a distinctive 'Engrossing' style is used to name water bodies and all but the largest coastal features. I will call this the 'ornate' style.

Most of the Galloway mapping was published in 1856-7; the Lewis sheets are all dated July 1858; the Edinburgh sheet was published in February 1857. Later sheets mostly followed the style of the 'Edinburgh' group: Wigtown and Kirkcudbright shires were completed in the 'ornate' style, and the remainder of the Outer Hebrides were completed in the early 1880s in 'ornate' style. Consequently sheets straddling county boundaries were sometimes a mixture of 'standard' and 'ornate' styles. Whilst it is evident that the 'ornate' style was decided against in principle at some time, its retention for the Galloway group can be explained by the policy of using electrotypes of the series mapping, suitably cut and reassembled, for indexes to the six-inch mapping of counties. Stopping the 'ornate' style at the county boundary at least ensured consistency by county. No one-inch index is known for Lewis. The 'ornate' style was presumably revived in the early 1880s so as to give consistency to the mapping of the Outer Hebrides, an area of relative cartographic as well as geographical isolation. <sup>29</sup>

<sup>26</sup> Report from the Select Committee on the Map of Ireland, BPP (HC) 1852-3 (921), XXIV, 393, evidence, qq 272-4.

The series was advertised as 'half the scale and half the price'. It was eventually taken over by Gall and Inglis (by which time it was being printed from lithographic transfers), and was apparently abandoned *circa* 1914: the plates reputedly went for scrap during World War I. The measurements are based on an engraved example and a lithographed example from the writer's collection.

These are the dates of publication in outline-with-contours form: the versions 'with hills' followed somewhat later. They may not be wholly reliable, particularly for Lewis, for the National Library of Scotland has a copy of Lewis sheet 6 (later sheet 98), printed in October 1858, which still lacks contours and a publication date. The British Library's 'legal deposit' copy of sheet 32 was printed on 22 April 1857. [These dates have been elucidated by Roger Hellyer.]

<sup>&</sup>lt;sup>29</sup> For this reason, most of sheet 90, containing the northern part of Skye, is in the 'standard' style but a fragment in the north-west, part of Harris, is in the 'ornate' style.

It is immediately obvious that there is no neat chronological progression from the 'ornate' to the 'standard' style. A possible explanation, purely on the evidence of the maps, would be that the Edinburgh area was a high priority for publication for political or public relations reasons, and that it 'jumped the queue': it includes a substantial part of Linlithgowshire, surveyed at 1:2500, and therefore later than Galloway or Lewis. On this thesis, the 'ornate' style was that decided on originally for the Scottish one-inch, but was decided against when the Galloway and Lewis groups were part complete and the 'standard' style decided on.

In fact, the documentary evidence is at odds with this. A Parliamentary return prepared in late May 1857 gives the following sequence for beginning the one-inch engraving: Edinburghshire, January 1853; Wigtownshire, June 1853; Kirkcudbrightshire, July 1853; Lewis, February 1854; Haddingtonshire, November 1854; Fife and Kinross, December 1854; Linlithgowshire, November 1855. Thus the sequence of development would appear to be: (1) adoption before January 1853 of the 'standard' style for the Edinburghshire mapping; (2) substitution of the 'ornate' style by June 1853; (3) a reversion later to the 'standard' style.

Assuming this to be the case, what is the explanation? It has already been hinted at above: the replacement of Yolland by Gosset in the autumn of 1852. An essential preliminary to engraving was the preparation of a manuscript drawing at the one-inch scale, and where the scale of survey was the six-inch, as in Edinburghshire, it would be sensible to prepare the drawings by six-inch sheet lines. (An early printing of Lewis sheet 4 (later sheet 105) in the British Library retains some faint six-inch sheet lines in places, evidently engraved to guide the fitting of the manuscript to the plate, though the primary control was by the trigonometrical points pricked into the plate and also appearing on the drawing.<sup>31</sup>) As the sixinch sheet lines were on the Cassini projection and various county origins, it would be necessary to re-compute the sheet corner positions in terms of the Bonne projection and oneinch sheet lines. This computation work, however, need not delay the preparation of the oneinch drawings, and it would be possible to begin the drawing as soon as draughtsmen were available: I suggest that this was some time during 1852, before Yolland was replaced by Gosset, and that the differences of the 'standard' style from that used in northern England can be explained by ideas of Yolland's. Once Gosset had taken over, he was in a position to argue for his ideas, and it is noticeable that the 'ornate' style only starts to appear on the Galloway sheets, of which the engraving started about eight months after Gosset became Executive Officer, thereby giving time for him to suggest the style, have it approved by Hall, and have it incorporated in the one-inch drawings.<sup>32</sup> In August 1854 Hall was succeeded by Major (soon to be Lt-Col) Henry James, shortly afterwards Gosset left the survey and Cameron became Executive Officer. With these changes, it seems relevant that the one-inch

Return, with regard to the Ordnance Survey in each County of Scotland..., BPP (HC) 1857 (63-Sess.2), XXVII, 413. It should be noted that this gives March 1857 for commencing the engraving of Ayrshire (although a small portion had been included on sheet 3, nominally published in outline a year earlier), and describes both Lanark (a tiny portion on sheet 32) and Peebles (a considerably larger portion on sheet 32) as 'Not commenced': the 'answer' is perhaps that this refers to the start of engraving of sheets containing a substantial portion of these counties. Thus the date of November 1854 for Haddingtonshire perhaps refers to the start of sheet 33, rather than the portion of that county in sheet 32, and similarly that of December 1854 for Fife to the start of sheet 41.

<sup>&</sup>lt;sup>31</sup> This is the copy in the open-access set of the outline format in the British Library Map Library: the faintly visible sheet lines are the vertical one dividing sheets 26 and 32 from 27 and 33, and the horizontal dividing sheets 20 and 21 from 27 and 28.

<sup>&</sup>lt;sup>32</sup> It is perhaps stretching imagination a little to suggest that another reason might be that a few years earlier Gosset had been the officer in charge of some of the field survey in Galloway.

engraving of the next county, Haddingtonshire, was started in November 1854, at about the time that James told the OS office in Dublin that he wanted the one-inch of the United Kingdom to be in as uniform a style as possible.<sup>33</sup> By that time it may have been too late to do anything about the simplified borders adopted in Scotland and Ireland (it is possible that Cameron had a hand in this, as preparation of the Irish map was in hand before he left Dublin in October 1852), and the use of Egyptian for hills and railways, but the distinctive features of the 'ornate' style were evidently to be curtailed as soon as the counties for which the style was being used were complete. In Ireland the reverse-sloping style was used for watercourse names on sheets 121 and 148: it is possible that there was a verbal order to adopt this, before James's appointment, and that, as there were no one-inch county indexes in prospect in Ireland to complicate matters, that the style was confined by sheet lines rather than by counties.<sup>34</sup> The 'ornate' style proved to be an episode rather than a standardised style. It symbolises the change from Hall and Gosset to James and Cameron.

There was a 'battle of the scales': perhaps there was a miniature 'battle of the styles'. 35

#### The New Series Full Sheet Series

Whilst the Scottish 'half sheets' were numbered individually from the start, and individual sheet numbering replaced quarter-sheet numbering in Ireland in November 1858, numbering by quarters lasted for much longer in England and Wales. In July 1872 a replacement of all the pre-1847 one-inch mapping of southern Britain – what we know as the 'Old Series' - was authorised by the Treasury: this is familiar to us as the New Series, numbered individually as (nominally) 360 'small' sheets. However, the earliest known New Series sheet, prepared before the project was formally authorised, is that published as 272, but bearing the number '76 SE'. It was the discovery of this in the winter of 1983-4 that solved a mystery pertaining to the Isle of Man sheet, notionally Old Series sheet 100. On the Hills version, in early states, 'Sheet 14' and 'Sheet 20', divided by a line, appeared adjacent to the eastern neat line: this did not fit any hitherto known numbering system for six-inch or one-inch maps. Extrapolating back from 76 SE/272 demonstrated that this was a symptom of an early intention to treat the New Series as a quarter-sheet series, which would have involved renumbering Old Series full sheets 91-110 as sheets 1-24, and this was unexpectedly confirmed when a quarter-inch index of south-east England, dateable to the early 1870s and showing both six-inch and New Series FSS sheet lines, came to light in 1990 in Alan Godfrey's collection.<sup>37</sup> Recently further indexes of this type, in more fragmentary form, have been found.<sup>38</sup> The appearance of the familiar New Series numbers, ironically on the outline

<sup>&</sup>lt;sup>33</sup> James to Leach, 28 November 1854, OSLR 1429: OS of Ireland records, National Archives of Ireland.

That said, the Irish reverse-sloping episode is still not neatly explained. The Egyptian style for hill-names was adopted in Ireland, but apparently only in 1856.

<sup>&</sup>lt;sup>35</sup> Not an original phrase: it was applied by contemporaries to the mid-nineteenth century rivalry between classical and gothic in architecture.

The number '76 S.E.' was engraved, forward-reading, on the bottom left of the plate, so it is reverse-reading bottom right when printed.

<sup>&</sup>lt;sup>37</sup> This copy was formerly in the hands of John Bartholomew and Son, and was from that part of the firm's map collection which was sold off in the early 1980s.

The earlier discoveries were reported in Richard Oliver, 'New light on the New Series', *Sheetlines* 12 (1985), n.p. [7-11] [the accompanying index to the FSS was omitted from this as first published, but was added to the combined reprint of *Sheetlines* in 1991], and 'New cartographic discoveries' [sic; what is an 'old' discovery?], *Sheetlines* 29 (1991), 27. The fragmentary indexes are in TNA PRO OS 3/420, and cover parts of Cheshire, North Wales and Cambridgeshire: this volume was only transferred to the PRO relatively recently, having formerly been in the OS Library at Southampton.

edition of the non-standard Isle of Man sheet, dated November 1873, demonstrates that the FSS scheme was abandoned by then.<sup>39</sup>

Whilst it is nice to have conjecture confirmed, nonetheless the question remains as to why, when it had been abandoned in Ireland in 1858, was numbering as quarter sheets revived in England over a decade later? One answer might be habit and continuity, a more durable example of which was the design of border, used on most of the sheets of northern England which were to be renumbered in the 'new series', and itself a modification of that used for earlier 'old series' sheets. Another explanation might be that it was intended to provide for the possibility of treating the quarter sheets in the long term as 'cells', which could eventually be combined into full sheets by electrotyping. As we have seen, it would be possible to demonstrate by calculation that the extra sea area of a FSS would be largely offset by a reduced area of marginalia. A reliable ten-mile (1:633,600) map was available for southern Britain in 1870, in contrast to the position in Scotland twenty years earlier, and it would have been easy to calculate accurately sheet lines and sizes and quantities of copper.

And there were precedents for joining quarter sheets into full sheets. In 1862 what had been the four quarters of Ireland sheet 31 were combined to form a Dublin district sheet, and in 1863-4 two of the first English Old Series sheets to be published in quarters, 43 and 55, were republished as full sheets made up from joined electrotype duplicate plates. It might be objected that the Dublin sheet was a logical follow-up to the London district sheet, produced in 1857 by combining electrotypes of seven plates, and reissued in 1861, but sheets 43 and 55 are less easy to explain away.

#### The timing of the origins of the 'New Series'

From the early 1860s Old Series sheets 1-90 have to be seen in the context of the 'cadastral' 1:2500 resurvey of southern Britain, studied by a Select Committee of the House of Commons in 1861-2 and authorised by the Cabinet on 14 March 1863. One of the arguments for the resurvey put forward by James was that the alternative was to revise the one-inch, at a cost of £500,000: between the report of the Committee and the Cabinet decision there was a correspondence in *The Times* which (fortuitously?) made the point about one-inch outdatedness. In the short term, there was less one-inch revision rather than more: whereas since the 1840s some urban expansion and various incidental changes had been noted in the course of adding railways, now revision was confined to railways, and to the addition of spot-heights along the lines of primary levelling. The values for these were published in book form in 1861: their rather restricted spatial distribution suggests that they were more to illustrate the text than to provide information supplementing the hachuring. On the other hand, between 1867 and 1873 there was a programme of refurbishing the worn hachures on

There was some limited addition later of spot heights supplied by detailed levelling in the course of 1:2500 survey: a notable example is sheet 10, where later states (1870s onwards, exemplified by the copy used for the David & Charles facsimile) have a relatively dense net of altitudes on the Isle of Wight.

<sup>&</sup>lt;sup>39</sup> The earliest known complete index to the New Series is 'Index no. 2A' accompanying the *Report of the ... Ordnance Survey... 1873*, BPP (HC) 1874 [C.952], LII, 681, and therefore dateable to early 1874: this shows the familiar 360-sheet numbering, including sheets 243 and 260 [FSS 68 SE and 77 NE].

<sup>Correspondence and leaders in</sup> *The Times*: 17 Sept 1862, p.6, c.5; 20 Sept 1862, p.12, c.2; 22 Sept 1862, p.6, c.4 and p.7, c.3; 23 Sept 1862, p.10, c.6; 24 Sept 1862, p.6, c.4, p.7, c.3; 25 Sept 1862, p.11, c.2; 26 Sept 1862, p.5, c.6; 27 Sept 1862, p.7, c.5. For the £500,000 figure see James's evidence in *Report from the Select Committee on the Cadastral Survey*, BPP (HC) 1861 (475), XIV, 93, evidence, qq 86, 207-16, esp. q.212; for authorisation, see papers in group 17170 in TNA PRO T1/6451B, especially Gladstone to Hamilton, 14 March 1863.
There was some limited addition later of spot heights supplied by detailed levelling in the course of 1:2500 survey: a

Old Series plates, sometimes with dramatic results. <sup>42</sup> It is interesting that Old Series hachure-repair apparently came to an end shortly after the authorisation of the New Series. Nor need the conversion of sheets 43 and 55 to full-sheet format need necessarily be interpreted as a 'long-term' measure: the electrotype plates from which sales copies of Old Series sheets were printed were replaced periodically as they showed signs of wear, and for a period sheet 33 was published as a landscape-shaped rather than portrait-shaped sheet. Thus the repair of hachures and combining of quarters did not necessarily indicate that the Old Series had much of a long-term future after 1863: this work seems to have been regarded as maintenance, chargeable to publishing, rather than a capital cost chargeable to the Parliamentary vote. <sup>43</sup>

26

The ostensible reason for authorising the New Series was the realisation by the War Office that the Old Series was out of date, and that a replacement was desirable. This can be traced to a report on aspects of the Franco-Prussian war by Captain Charles Wilson, who had had OS experience and would be its head from 1886 to 1894, in which he noted the outdatedness of the maps used by the defeated French. It would have been easy to connect outdated French mapping and military disadvantage with similarly out-dated mapping in England, and draw an uncomfortable conclusion: at any rate, in May 1871 the War Office asked the OS for an updated one-inch.

When James had the engraving of 76 SE put in hand is unclear, but there are two pieces of evidence from 1869 that indicate that by then he was determined on complete replacement of Old Series sheets 1-90 by mapping on a single national, Delamere, projection, and that he was only waiting his chance to obtain formal authorisation. One is an inelegant sentence in the OS annual report: 'A new edition has also been commenced to be engraved of those sheets in the South of England of which the Cadastral Survey has been completed.' The other is some quarter-inch index maps of Cheshire, evidently designed for internal use to illustrate monthly progress returns, which are dated '186\_', and carry the New Series FSS quarter-sheet lines and numbers. This might suggest that James had a change of mind in the late 1860s, away from patching up the existing mapping, in favour of a new, re-engraved series.

Or was James biding his time? Had he had replacement in mind for much longer, perhaps even before the Select Committee of 1861-2 examined the case for the 1:2500 resurvey? The aborted re-engraving in the later 1850s of the re-surveyed Old Series sheet 10, covering the Isle of Wight, was perhaps a victim in the first instance of the decision in 1859 to resurvey the island and some other areas at 1:2500 for defence purposes, but these limited defence surveys opened the way to the 1:2500 resurvey authorised in 1863, with its implications for an updated one-inch. It may be that work on sheet 10 was abandoned as much because of

<sup>&</sup>lt;sup>42</sup> Compare, for example, the two ['Red Label'] copies of Old Series sheet 65 in the British Library [open access] collection of 1863 and *c*.1867. This work is referred to in OS annual reports for 1867 to 1873: see especially *Report of the ... Ordnance Survey... 1867*, BPP (HC) 1867-68 [4008], XLII, 727, 9.

For an indication of how such work was paid for see *Report of the Departmental Committee... to inquire into... the Ordnance Survey*, BPP (HC) 1893-94 [c.6895], LXXII, 305, evidence, q.542.

<sup>&</sup>lt;sup>44</sup> C W Wilson, 'Notes on a visit to Metz and Strasbourg in November 1870', in TNA PRO WO 33/22.

<sup>&</sup>lt;sup>45</sup> Report of the ... Ordnance Survey... 1892, BPP (HC) 1893-94 [C.7001], LXXII, 649, 8.

<sup>&</sup>lt;sup>46</sup> Report of the ... Ordnance Survey... 1869, BPP (HC) 1870 [C.61], XLIII, 623, 9. This point has apparently not been noticed before. The only sheets for which resurvey data was fairly complete in 1869 were New Series 271, 272, 330, 331, 344 and 345 (FSS 76 SW and SE, 90 SW and SE, and 99 NW and NE).

<sup>&</sup>lt;sup>47</sup> These are in TNA PRO OS 3/420.

<sup>&</sup>lt;sup>48</sup> See Richard Oliver and Roger Hellyer, 'The one inch Old Series: more discoveries – yet more questions', *Sheetlines* 80 (2007), 26-39, esp. 34-37.

developing a longer-term strategy of replacing sheets 1-90 by a completely re-engraved map on a single meridian with a standard sheet-size, as of the shorter-term consideration that the Isle of Wight was about to be resurveyed. The amount of extra or changed detail affecting the recently resurveyed sheet 10 likely to be generated by 1:2500 re-survey would surely have been modest. It may be germane that in 1859 the OS began work on a quarter-inch map of England and Wales, which was projected using the Delamere origin, and the sheet lines of which did not coincide with those of the one-inch, unlike an earlier quarter-inch geological map, constructed by grouping one-inch sheets. Another pointer towards a re-engraved map was that the pre-1852 Old Series sheets were only available hachured, whereas all later one-inches derived from six-inch and larger-scale material were also available in outline-and-contours form. It would be anomalous to have dual-format one-inch mapping in northern Britain and in Ireland, but to retain single-format mapping in the south.

The inception of the new map in 1869, yet its only being formally authorised some three years later, is probably to be explained by political considerations. In 1870 the OS was transferred from the superintendence of the War Office to that of the Office of Works. This meant that any new 'military' map would be paid for from the Works vote, yet at this time the First Commissioner of Works was Acton Smee Ayrton, who seems to have been a fanatical opponent of any sort of public expenditure, and who would hardly welcome the addition of the OS to his department's financial burden. <sup>50</sup>

#### 1871: full sheets in Britain and in Ireland

Whatever the precise timing of its conception, the new one-inch map derived from the resurvey might in the first instance be prepared in quarter sheets, but might in due course be reissued in electrotypically-joined full sheets. An interest in a FSS might be set off in the late 1860s by the starting of the engraving of the Isle of Man sheet.<sup>51</sup>

There was another consideration affecting a FSS scheme. Up to November 1866 quarter or 'small' sheets were priced at a quarter of the price of full sheets: then a revision of prices to reflect more closely the costs of printing resulted in one-inch quarter sheets or equivalent being priced at 1s (£0.05) and full sheets at 2s.6d (£0.125). For those buying a complete set, or an extensive area, there would be a definite advantage in a FSS over a SSS. On the other hand, someone of more modest aspiration whose area of interest came at the junction of four FSS sheets would have to pay 250 per cent more for four FSS than for four SSS.

In 1871 there was another flurry of interest in combined sheets in Ireland, recorded in an exchange of correspondence between Dublin and Southampton. On 18 February Cameron wrote to Major Wilkinson, in charge in Dublin:

I have spoken to Sir H. James to ascertain his wishes about the joining of the quarter plates. There is no doubt the large plates look the best, but if we have to keep up two sets of plates and revise from time to time, it makes a serious difference of expense, and if we cancel the quarters, the Public would have some cause to complain in having to buy the more expensive article.

<sup>51</sup> Report of the ... Ordnance Survey... 1869, BPP (HC) 1870 [C.61], XLIII, 623, Index no.2; Report of the ... Ordnance Survey... 1870, BPP (HC) 1871 [C.301], LVI, 729, p.6.

Richard Oliver, 'The origins of Ordnance Survey quarter-inch mapping in Great Britain, 1837-72', Sheetlines 15, 9-14.
 For the transfer of the OS to 'Works' and for a feel for Ayrton's views see papers in group 22049 in TNA PRO T1/7021B; for the authorisation of the New Series see papers in group 1160 in TNA PRO T1/7200B. These show that the mid-Victorian Treasury, whilst careful of national funds, was by no means an unintelligent 'Scrooge' department.

On the whole Sir Henry thinks you had better not join any more except the four quarters containing Dublin.

#### Wilkinson replied:

I will abandon the idea of joining any more. The Belfast composite sheet is just ready and if Sir Henry would permit it I should like to be allowed to join the four sheets embracing Galway, the four taking in the City of Cork & the four which will shew the whole of the Lakes of Killarney: this last will be a very interesting tract of country.

Sir Henry permitted it, but so far no evidence has been found that the Cork, Galway and Killarney sheets were prepared: it is possible that this is because no hill-plates were available for these areas in the early 1870s. <sup>52</sup> However, composites of Inishowen and Drogheda *were* prepared at about this time. Though seemingly not documented, the plates are extant, and they are listed in an Ordnance Survey catalogue of February 1873, which also lists a composite for the Coleraine-Ballymena area: hill-plates were available for all these areas. All the Irish combined sheets were still being advertised in January 1901. These do not fit the original FSS combinations of the 1850s – each is the southern half of one and the northern half of that below it - but by themselves they suggest the ghost of a butt-jointed arrangement, contradicted however by the Belfast sheet, which has at its centre the meeting-point of four erstwhile FSS sheets. A second Dublin sheet was made in 1890, butt-jointed to the Drogheda sheet; the earlier Dublin sheet was kept in print. <sup>53</sup>

It may be that it was the problem of the considerable price increase for those with a limited area of geographical interest which led to the demise of the New Series FSS, and it may be that the number '76 NE' on the future SSS 272 was already obsolescent in concept, if not in operation, in the summer of 1872. Within eighteen months the FSS was dead, and individual numbers were allocated to 'new series' sheets.

#### Acknowledgements

This is one of a number of papers which have been preliminaries to writing an 'introductory essay' to accompany a cartobibliography by Roger Hellyer of the engraved one-inch mapping of the United Kingdom produced between 1847 and 1914. Much of the detail description and arguing here takes advantage of Roger's work, and he has made some valuable suggestions and corrections, though of course all deficiencies, eccentricities and weaknesses remain mine.

<sup>52</sup> Correspondence of February-March 1871 in National Archives of Ireland OS 5/3603: I am grateful to Roger Hellyer for extracting it, and we are both grateful to Professor John Andrews for guidance on this material.

The Drogheda and Inishowen plates are in National Archives of Ireland OS 106/21: for this reference and for those in the 1873 catalogue I am indebted to Roger Hellyer. Irish SSS combinations are: Inishowen: 1, 2, 5, 6; Coleraine, 13, 14, 19, 20; Belfast, 28, 29, 36, 37; Drogheda, 91, 92, 101, 102; Dublin [1862], 101, 102, 111, 112; Dublin [1890], 111, 112, 120, 121. All six combinations are still listed in the 1901 Irish catalogue; that the other three sheets were not listed might be taken as indicating that they were not prepared. Galway might have combined 105, 106, 113, 114, Killarney 172, 173, 183, 184, and Cork 186, 187, 195 and 196, though it is to be noted that all three are 'off-centre', whatever combinations of undivided SSS are used: could this be another reason why these were not proceeded with?

#### Appendix 1

#### Comparative statistics for various basic sheet sizes

All measurements are in inches or square inches.

#### **England and Wales**

England and Wal	ies		
	SSS	HSS	FSS
Sheet size within neat line	$18 \times 12$	$24 \times 18$	$36 \times 24$
Area within neat line	216	432	864
Total number of sheets needed	348	190	104
		82,080	
Total map area (square inches)	75,168		89,856
Increase in map area compared with SSS (%)	0	109.5	119.9
Length of border per sheet	60	84	120
Total length of border for series	20,880	15,960	12,480
Size of plate	$21 \times 15$	$27 \times 21$	$39 \times 27$
Area of plate	315	567	1053
Total area of copper for series	109,620	107,730	109,512
Area within neat line as percentage of copper	68.6	76.2	82.1
Percentage of copper needed compared with SSS	100	98.3	99.9
Percentage of copper needed compared with HSS	101.7	100	101.7
Percentage of copper needed compared with FSS	100.1	98.4	100
Ireland			
Tretailu	222	*****	Fac
	SSS	HSS	FSS
Sheet size within neat line	$18 \times 12$	$24 \times 18$	$36 \times 24$
Area within neat line	216	432	864
Total number of sheets needed	205	106	59
Total map area (square inches)	44,280	45,792	50,976
Increase in map area compared with SSS (%)	0	103.4	115.1
Length of border per sheet	60	84	120
Total length of border for series	12,300	8,904	7,080
Size of plate	$21 \times 15$	$27 \times 21$	$39 \times 27$
Area of plate	315	567	1053
Total area of copper for series	64,575	60,102	62,127
Area within neat line as percentage of copper	68.6	76.2	82.1
	100	93.1	96.2
Percentage of copper needed compared with SSS			
Percentage of copper needed compared with HSS	107.5	100	103.4
Percentage of copper needed compared with FSS	103.9	96.7	100
Scotland			
	SSS	HSS	FSS
Sheet size within neat line	$18 \times 12$	$24 \times 18$	$36 \times 24$
Area within neat line	216	432	864
Total number of sheets needed	243	132	80
Total map area (square inches)	52,488	57,024	69,120
Increase in map area compared with SSS (%)	0	108.6	131.7
Length of border per sheet	60	84	120
Total length of border for series	14,580	11,088	9,600
<del>-</del>	•		-
Size of plate	21 × 15	27 × 21	$39 \times 27$
Area of plate	315	567	1053
Total area of copper for series	76,545	74,844	84,240
Area within neat line as percentage of copper	68.6	76.2	82.1
Percentage of copper needed compared with SSS	100	97.8	110.1
Percentage of copper needed compared with HSS	102.3	100	112.6
Percentage of copper needed compared with FSS	90.9	88.8	100

#### Plagiarism with large-scale maps

#### Rob Wheeler

Colby's circular of 1816 which tightened up the practices of the Ordnance Survey included a prohibition on the use of pre-existing maps: 'Nor are local surveys of any kind to be had recourse to except for the insertion of alterations and improvements whilst in progress.' If the modern reader finds this strange, it is from surprise that so obvious a principle should need to be spelled out.

The prohibition would have been seen as strange by the surveyors who received it, but for the opposite reason: copying previous surveys (with such checking and revision as might be thought necessary) was absolutely normal and to prohibit it gave them unnecessary work. The purpose of this article is to set out some of the evidence for the ubiquity of this practice. As it happens, all my evidence concerns Lincolnshire maps being produced for civil engineering purposes. However, I see no reason why Lincolnshire should be exceptional; and arguments based solely on estate maps would be open to the objection that for an estate surveyor to base his work on a previous survey of that estate would be no different from an Ordnance surveyor basing his work on a previous Ordnance map.

My first example I have already quoted in *Sheetlines*: <sup>2</sup> in 1813, according to Charles Budgen, General Mudge arranged for him to borrow various drainage plans. He had these reduced to the two-inch scale and used them to compile OSD 279. So Colby was actually putting a stop to a practice his predecessor had actively facilitated.

My second and third examples concern the very fine twenty-inch plan of Lincoln which J S Padley published in 1842. Padley was also surveyor to the Lincoln Court of Sewers, which was responsible for ensuring that the rivers in the part of the county around Lincoln carried water away in an efficient manner (but had no responsibility for sewerage in the modern sense of the word). The Court of Sewers decided on 18 September 1844 to have maps produced showing lands liable to pay drainage rates; tenders were invited, and Messrs Dykes & Cooper, of Newark, won the contract. Their maps, at three and at six chains to the inch, include part of Lincoln already mapped by Padley, and are dated 1845 and 1846.<sup>3</sup> Now the easiest way to demonstrate that a map has been copied is by the reproduction of an error. Unfortunately, the quality of Padley's map is such that I am not aware of any errors in the relevant part of it. However, one building in that area was rebuilt in 1844; it carries that date on its gable. Furthermore, it was rebuilt on a site slightly different from that of its predecessor. The Dykes & Cooper map shows detail in Lincoln almost identical to that shown by Padley. That in itself does not prove anything: two surveyors working to similar standards could presumably choose to depict the same topography in exactly the same way. But to show the predecessor of the 1844 building in a survey which cannot have been started before the very end of 1844 is an impossibility unless that survey drew on earlier material.

We now move from Courts of Sewers to sewers of the modern sort. In 1848, Lincoln City Council conceived the idea that it might be necessary to acquire a 'system of

<sup>&</sup>lt;sup>1</sup> TNA OS 3/260 p 224. A fuller account is in Harry Margary, *The Old Series Ordnance Survey maps of England and Wales*, Volume 3, Lympne: Harry Margary, 1981, xxi.

<sup>&</sup>lt;sup>2</sup> Sheetlines 76, 48.

<sup>&</sup>lt;sup>3</sup> This extract will be included in R C Wheeler, Maps of the Witham Fens, Lincoln Record Society, forthcoming.

<sup>&</sup>lt;sup>4</sup> It may be found behind the Post Office sorting office. It escapes mention in Pevsner and its function is unknown.

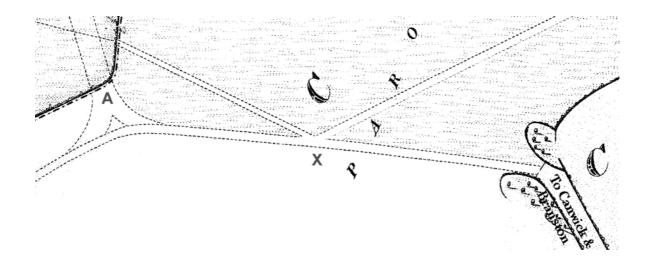


Figure 1: Padley's Engraved Plan, 1842 edition

The road from Canwick heads west to enter Lincoln by the medieval Bargate. At X, a minor road joins it from the NE and a footpath heads NW providing a more direct route to Lincoln. The wide new road at A was the planned line of the new direct road from Canwick into Lincoln.

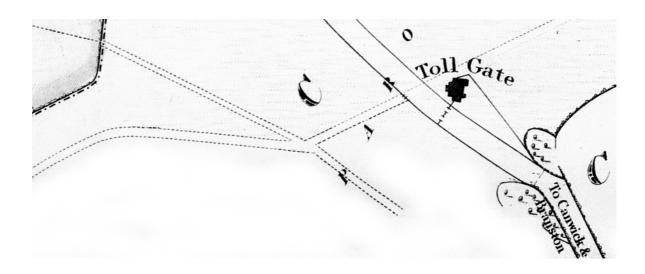


Figure 2: Padley's Engraved Plan, 1851 edition

The new road has been built but by a more direct line. The old road east of X has been deleted (though imperfectly – the broken line of its southern boundary can be seen immediately west of the old gate into the common). A new footpath heads SE from X; the varying widths of tracks here and their awkward alignment on the map arises from the reluctance to delete more material from the 1842 plate than is absolutely necessary. The new toll gate is shown – a double gateway to cope with the anticipated traffic – together with the adjoining toll house, the whole grouping being labelled 'Toll Gate'.

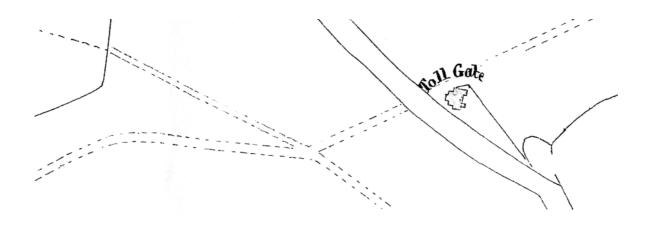


Figure 3: Giles's Sewerage Plan, 1849

The arrangement of the tracks at X exactly mirrors the 1851 Padley. (So also does the lettering 'Toll Gate' even though the gate itself is not shown!).

underground sewerage', notwithstanding its considerable reluctance to pay for such an innovation. In December 1848, it commissioned a report from a civil engineer, George Giles of London. Giles's report of 1849 was based on a map showing the system he was proposing (although the full map was not published as part of the report). That map survives in two versions, at two chains and four chains<sup>5</sup> to the inch. Unlike all the later sewerage maps for Lincoln, this is drawn on a fully detailed topographical base map. It shows developments later than 1842 and at first sight appeared to be a detailed survey of Lincoln, independent of Padley's 1842 map and its 1851 revision.

However, suspicions were aroused by the very great similarity between Giles's depiction of blocks of central Lincoln and the 1842 map. The principal differences here could be explained by hasty copying: in particular, a number of the internal divisions between buildings had been omitted. The key piece of evidence was St Margaret's churchyard, where the paths on the Giles map were exactly the same as those on Padley's 1842 map; moreover, the junction of two paths on the Padley map had been obscured by lettering, and the corresponding junction on Giles's map was omitted, even though there was no lettering to provide an excuse.

More remarkably, where changes had taken place since 1842, Giles's depiction of those changes bears a remarkable resemblance to their depiction on Padley's 1851 revision. Again, paths turn out to be the clinching evidence, this time the varying widths of paths on South Common. The reason for the variation on Padley arose from the need to minimise deletions on the copper plate: one path had previously been a road and had been retained at this width despite its downgrading; the other was newly added in 1851 so was shown at the normal width for a path. The only plausible explanation for this was that Padley had already undertaken the drawing for a revision but had not proceeded to the stage of updating the copper plate. This updating of the plate only took place in 1851, after further revision on the ground. Meanwhile, Padley must have supplied a copy of his MS revision to Giles. Further

<sup>&</sup>lt;sup>5</sup> Local studies collection, Lincoln Central Library.

evidence for this hypothesis is provided by dating Giles's base map on the basis of datable alterations to buildings; his map turns out to depict Lincoln as it was in 1847, the year before his report was commissioned.

My fourth example concerns a map produced by Padley himself. In 1857, responding to concern about the state of the Trent embankment at Spalford (alias Spaldford), the Lincoln and Nottingham Courts of Sewers agreed to undertake repairs and commissioned a map from Padley showing which lands had been flooded when a breach had occurred at this point in 1799. The map was based on evidence from (elderly) witnesses, combined with instrumental contouring of the flood level. Since a base map would be required extending beyond the areas mapped by Dykes & Cooper in 1845-6, the Lincoln Court resolved<sup>6</sup> that application should be made to all occupiers of more than 100 acres for maps and plans of their lands. We know that at least one such occupier, Richard Wells of North Scarle, provided a plan, because he subsequently claimed a discount of 6d per acre on his rates in recognition of its use

Having shown that this practice was widespread (at least within Lincolnshire) and was encouraged by authorities ranging from General Mudge to the Lincoln Court of Sewers, it is useful to examine how this affected professional practice. The Ordnance Survey today regards its topographic database as its greatest asset. J S Padley had a topographic database too. It consisted of some hundred tracings, some of plans he had produced for a client, some of other surveyors' plans dating back as far as the 1760s. The tracings are rarely smart: names are usually in cursive script and buildings would almost certainly need revision 'by eye' before anything was submitted to a new client but they are good enough to save the need to re-survey from scratch. Topographical data could be traded, too. In 1871, Padley provided tracings of the village of Harmston and the park of Harmston Hall to a firm of Lincoln solicitors. He charged 21s for the making of each tracing, but also 30s for the use of each map. But also 30s for the use of each map.

All this would change when the OS County Series maps became available – at the end of the 1880s for Lincolnshire. Topographical data of the highest standard became ubiquitous and relatively cheap. And the surveyor in private practice who could make a map from scratch – and knew how useful it was not to have to do so – became a figure of the past.

#### It's all said and done

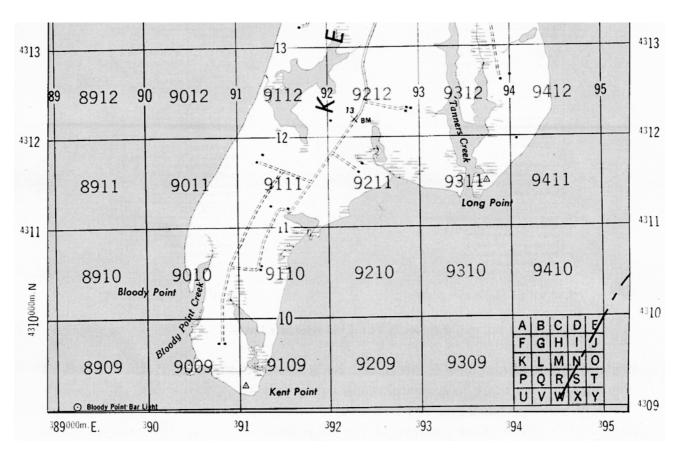
David Archer points out that *Said and done: the autobiography* by poet Roger McGough, published in 2005, should not be confused with *Said and done: the autobiography of an archaeologist by O G S Crawford*, best known to members as the first archaeology officer of the Ordnance Survey, and editor of Antiquity.

<sup>&</sup>lt;sup>6</sup> Lincolnshire Archives (hereafter LAO), UWIDB 5/3/4, minutes of 14 June 1857.

<sup>&</sup>lt;sup>7</sup> It survives in large part, as LAO, Padley 2.

<sup>&</sup>lt;sup>8</sup> LAO LCL 5001, p151.

## The Target-Area Designator grid Mike Nolan



'The TAD grid as shown on a large scale map', taken from figure 6 in Grids and grid references, AMS technical manual 36, 1950.

I first came across the Target-Area Designator (TAD) grid some years ago when researching the maps of 'The Last Campaign', the Australian and American invasion of Borneo in 1945. On many of the large-scale maps of the Labuan and Brunei Bay areas the 1,000 metre grid squares include, quite obtrusively in my view, the four-figure grid reference of the square in large open-case numerals. In the marginalia, the standard grid reference instruction box is subscribed with supplementary instructions 'For Target-Area Designation'.

TAD was an American system, probably originally conceived for use on charts by the US Navy. It came into use towards the end of the Second World War on both charts and large-scale maps used by the US Navy and Marines, and was designed for use by all US armed forces in joint operations.

The aim was to give a quick, easy and accurate reference to a specific small area (one twenty-fifth of a grid square) without recourse to following the marginal referencing values into the sheet, a difficult procedure for pilots flying small, fast aircraft in operational conditions. This area reference was to be achieved by showing the numeric four-figure grid reference centrally in each square on the face of the sheet, and adding to it a letter designating one of the twenty-five 200-unit sub squares from A in the upper left corner to Y

in the lower right corner. TAD was not however mentioned in the then current 1944 edition of the American Army map reading manual, but it was fully described in a U.S. Army Map Service (AMS) memorandum, dated February 1945. In August 1945, amendment 1 to that memorandum, the extension of its use to include maps with the British Grid was promulgated.

In January 1950, a full description of TAD was included in the Army Map Service technical manual 36, *Grids and grid references*, from which the illustration to this note was taken.<sup>5</sup> This manual also mentions its standard use at that time on the US Navy 1:50,000 Approach and 1:25,000 Bombardment Charts. Of these naval charts I know nothing and an enquiry made to the United Kingdom Hydrographic Office has not elicited any information.

In November 1950, Change 1 to reference 1 was issued, adding paragraph 38.1, 'The TAD Grid Reference'. By March 1952, the TAD grid was also described in a US Marine Corps instructional pamphlet. <sup>7</sup>

TAD was included in the 1956 edition of the American army's map reading manual, FM 21-26, but by this time, possibly as a result of the adoption of the Universal Transverse Mercator grid, it had been relegated to a section entitled 'Other grids and location systems'. By 1958 use of the TAD grid had been discontinued, but charts bearing the system were probably in use until much later. <sup>1</sup>

From the AMS memorandum 425, the Target-Area Designator grid was a joint Navy-Army method for giving grid references on large-scale maps of the Pacific theatre of operations in joint operations. For 1:25,000 scale maps, black ticks at 200 yard intervals (for yard-gridded maps) were shown on the inside of the neat line. An orange overprint (Orange-Buff QI) was added to show grid lines at 200 yard intervals. The four-figure grid reference of each 1000 unit square was shown centrally in that square in open case in Purple 12. Within each 1000 unit square letters designating each 200 unit sub-square were to be added from A in the NW corner to Y in the SE corner in Purple 12, with I and O underlined to avoid confusion with numbers. In practice, only a few sample squares on a sheet were fully lettered and wherever possible these were positioned in an open water area or in a land area containing little or no mapped detail. A combined grid/target-area reference box was to be included in the margin, in black.

The use of a 200-unit sub-square resulted in a relatively simple standard system and one which, though less precise than the normal 100-unit breakdown of a map grid reference, was probably quite precise enough for the naval bombardment purpose for which it was introduced.

I am grateful to Mok Ly Yng, formerly of the Singapore Mapping Unit, for providing copies of the references upon which this note is based.

<sup>&</sup>lt;sup>1</sup> Naval ordnance and gunnery, volume 2 Fire Control, 1958 edition, Bureau of Naval Personnel, NavPers 10798A.

<sup>&</sup>lt;sup>2</sup> Advanced map and aerial photograph reading, War Department field manual FM 21-26, December 1944.

<sup>&</sup>lt;sup>3</sup> Grids and magnetic declinations, Army Map Service memorandum 425, fourth edition, appendix II, February 1945.

<sup>&</sup>lt;sup>4</sup> Grids and magnetic declinations, Army Map Service memorandum 425, fourth edition, amendment 1, August 1945.

<sup>&</sup>lt;sup>5</sup> Grids and grid references, Army Map Service technical manual 36, AMS 1, January 1950.

Advanced map and aerial photograph reading, War Department field manual FM 21-26, Change 1, 30 November 1950.
 Maps, grids and coordinates, SM 27, NAVMC-7055, 1952.

<sup>&</sup>lt;sup>8</sup> Map reading, Department of the Army technical manual FM 21-26, March 1956.

# The early years of the National Grid fifty-inch map (continued) John Cole

At the commencement of work in 1943 guidance was available for detail (chain) surveyors in the form of *Notes on field survey* issued during 1939-45<sup>1</sup> and for examination (map completion), *Provisional instructions for field examination*, dated late 1943 or early 1944. These comprised only fifteen pages and a diagram but were purely to cover the differences between 1:1250 and 1:2500. Otherwise the 1932 *Instructions* still applied. The pages were reissued in 1945, with some amendments, but in spite of metrication (except for boundaries and levelling information) the link was still in use for widths etc.

In 1948, for detail survey, the 'Biscuit Book' appeared. It ran to some 43 pages and eight appendices. Sections were as follows:

- A Introductory note (survey by triangles)
- B Detail survey of urban areas at scale of 1/1250 general description
- C Preliminary preparation for detail survey field content book
- D Actions involved in detail survey
- E Special methods
- F Amount and type of detail to be surveyed
- G Density of framework and survey
- H Re-chaining. Causes of errors
- J Recording of progress

Amongst the appendices was a specimen field content book. The book was re-issued in 1956 with the notable inclusion of tachy survey.

Also in 1948, for field and office examination and revision at 1:1250, the 'Green Book' appeared,<sup>2</sup> 117 pages, four appendices and fourteen plates. Sections were as follows:

- A Introduction and explanation of examination
- B General rules for field examiners
- C Representation of detail
- D Antiquities
- E Collection and authorisation of names
- F Superintendence

- G Duties of office examiners
- H Utilisation of Old Series 1:500 or 1:528 survey (and 1:1056 in London only)
- J Survey of administrative boundaries
- K Supplying of special types of detail
- L Penning in on field plates
- M Use and care of instruments

A year later a similar book (this time in stiff covers with screws for securing pages) was issued for 1:2500 and known as the 'Red Book'. There was little justification for this and three years later another Red Book combined the large scales, with dimensions for 1:2500 work appearing in brackets alongside the 1:1250. In this form, with twenty or so amendments and the addition of a section dealing with work for HM Land Registry (resulting in extensions to the screws being necessary), it lasted until re-issue in 1963.

Air survey experiments started in 1946, involving possibly four maps at Bournemouth and six at Kingston upon Hull (which were also surveyed by chain for comparison). These eventually resulted in the 'Brown Book', *Instructions for graphical plotting from vertical air photographs*, being issued in 1950 for office use. It is not known if instructions for field completion of 1:1250 maps where the air graphic method applied were ever issued. Certainly they were not for the later and more straightforward air machine, even though (in the author's experience) a degree of perplexity seemed to affect surveyors more comfortable with the extremely accurate tachy method.

<sup>&</sup>lt;sup>1</sup> The previous *Instructions for surveyors* is thought to be that of 1908.

Not to be confused with that for small scales – see *Sheetlines 52*.

Possibly, accuracy tests on all methods carried out between 1956 and 1960 revealed very little to worry about. In fact whilst results were in line with what was theoretically expected, there is reason to suppose that Ordnance Survey management were quite delighted with the condition of the 1:1250 map.

Initially it was intended that four chain survey and two air machine locations be tested but the good agreement of London (Croydon) and an unspecified area of Manchester nullified any requirement to test a further two chain surveyed areas. Unexpectedly, a problem with one of the air machine towns, Maidstone, whilst not particularly serious, led to the result being discounted and another test being carried out at Wrexham. Here a Thompson-Watts plotting machine was used, as opposed to the Wild A5 for Maidstone and the other town, Oxford. This time, as in the case of chain survey, results were virtually identical.

Samples of both the skeleton survey and detail later added or completed were taken in all cases of testing, except for Oxford (and later Northampton) where only the skeleton was so treated. One of the Maidstone tests indicated the added or completed detail to be a shade more accurate than the skeleton from which it had been supplied – an impossible situation! The reason was traced to far more detail than could have been positively identified from the photograph being inked in by the plotter. A thorough investigation found the A5 machine to have been slightly out of adjustment at the time of plotting as well.

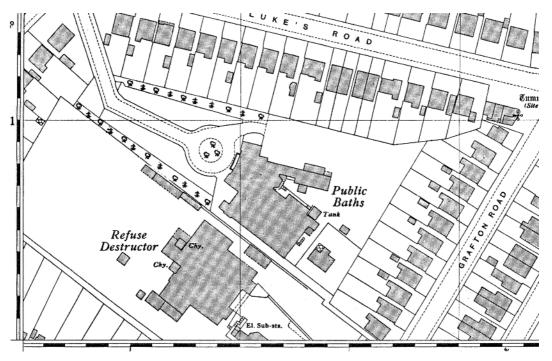
For Northampton the control was supplied by air triangulation, showing a slight decrease in accuracy (about 0.03 metres) compared with Oxford and Wrexham. It was not possible to pin down the reason nor was it considered significant. Testing at a further air machine town (Ashford, Kent) was cancelled.

For air graphic survey, Bradford and London (possibly the Islington area) were tested and as had been predicted the accuracy was little different from chain survey – Bradford slightly better; London slightly worse. The reason for that discrepancy was down to poor photography taken about five years earlier in London than Bradford. It was ruled that such photography would not have been acceptable at the later date.

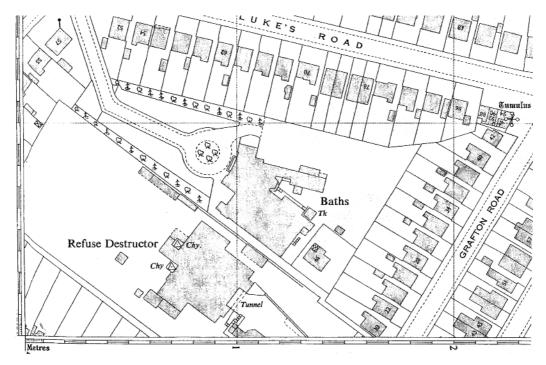
Tacheometer surveys were tested at Colwyn Bay, where the traverses were less than 400 metres in length, and Tonbridge / Tunbridge Wells where they were up to 1500 metres. No differences were apparent and tachy proved to be the most accurate method. Roughly, the order was tachy, air machine, air graphic and chain, with both of the last two falling off slightly in hilly areas. It was considered to be unwise to 'mix' two methods of survey but in the author's experience tachy and air machine integrated without difficulty, and indeed chain survey revision points agreed exactly in one town. Tachy and chain did not enjoy quite so happy a relationship.

It was further mentioned in *Sheetlines 67* that some of the central London air graphic maps bore no revision points. The reason appears to have been the convenience of flat roof control points (many of which already existed) doing away with awkward and expensive traversing. The Director General did not consider the inability to subsequently establish revision points (for future revision or other surveys) a valid objection to the method. The rough limits of the air graphic area were north grid 186, south 179, west 518 and east 533, (24/02/48). Revision points have been noted around the fifty or so central London maps.

With twenty or so locations needing tidal survey in hand before 1950 – either river or coast – investigations took place into the accuracy of ground and air survey of the low water mark. Again, Bournemouth was the location chosen and here it was decided that an accurate survey was impracticable either by ground or air methods. Conclusions reached in October



A section of a pilot publication (above) of 40(SZ)0993SW (thought to be the very first National Grid 1:1250 map) and (below) the edition which eventually was published, probably in 1947, price 2/-. Survey and publication of the pilot sheet was given as 1944 but the sale copy quotes the actual survey date as October 1943. Lettering, vegetation symbols and heighting figures on the pilot are that of the county series maps; revision points and house numbers are absent. There are other minor changes to detail and annotation though it is fairly certain that the map was not subjected to any further ground examination before going on sale. (Both extracts about 50% of actual size.)



1947 were that (a) true position of Low Water Mark Medium Tides (or Mean Low Water in modern parlance) cannot be determined, (b) air photography gives an adequate position and (c) inherent inaccuracy allowed use of photos and plotting at 1:10,000 and 1:10,560 with enlarging to 1:1250 or 1:2500. Difficulties to be overcome were plotting from the photograph

if too much of the area was in fact sea, the problem of computing the height of LWMMT, and daily tides when they would be within one foot of the acceptable level.

It was concluded, that if tides were regular there would be no error exceeding this one foot but actual tides were likely to be erratic. Suitable conditions for photos were considered to be fairly standard and errors unlikely to be very large from climatic conditions. Further experiments regarding plotting methods took place at Exmouth and Poole.

It was mentioned in *Sheetlines 67* that difficult railway and industrial complexes were surveyed by air graphic methods in chain survey areas. This also applied to difficult coastline, examples being: Torquay, harbour to Babbacombe, and Swansea, Oystermouth to Langlands Bay.

#### List of survey methods; approximate start dates and locations 1943-65

There are some corrections and additions to the lists in *Sheetlines 67* and *68* as a result of further information and maps obtained this year. Approximate start of survey dates were obtained from a provisional list appearing in *Sheetlines 24*. Where these conflict with dates given in the *Concise guide*,<sup>3</sup> the latter should be taken as correct, although the complications of the subject e.g. an Ordnance Survey tendency for lumping certain locations together, mean that further amendment can never be ruled out.

This applies equally to survey methods, a further list of amendments to hand appearing below. Where a location in the *Guide* does not appear in the pre-1965 methods list it can sometimes be deduced from the date and nearest place to be listed, e.g. Bebington 1954-5 (Birkenhead) and Billingham 1950-1 (Stockton-on-Tees) are both thus chain survey.

Mention should be made however of the most significant alteration, the survey of Banstead (1952) which should be classed (in spite of the tachy experiments) as chain survey. A view of these experiments and the initially incorrect conclusions is to be found in the 1980 Ordnance Survey history. In fact the first town to be tachy surveyed was Colwyn Bay in 1956, closely followed by Chester (which had started as chain survey). Ilkeston and Kilmarnock are wrongly dated, 1958 is correct. The list of tachy surveyed towns for 1957 is broadly correct. By now several chain survey locations were switching to tachy, a notable example being the southern part of Wolverhampton, survey still incomplete in spite of a mid-1940s start. The detailed amendments are as follows:

1951 *chain survey* Substitute Stourbridge for Dudley. 1952 *chain survey* Delete West Bromwich; add Banstead.

tachy

1956 chain survey

Delete Banstead.

Delete Rhondda.

tachy Delete Ilkeston and Kilmarnock.

1957 *chain survey* Add Rhondda Fawr and Taff Vale.

1958 chain survey Add West Bromwich and Pontypridd; delete Taff Vale.

tachy Add Ilkeston and Kilmarnock; delete Wrexham.

air machine Add Wrexham.

1959 *air machine* Delete Lytham & St Annes.

1963 *tachy* Add Dudley.

*air machine* Add Lytham & St Annes on the Sea.

The following locations all commenced post 1965 and should be deleted: Ashton-in-Makerfield, Cheshunt, Chippenham, Hereford, Hoddesdon, Leighton Buzzard, Milford Haven, Port Glasgow and Redruth.

<sup>4</sup> W A Seymour (editor), A history of the Ordnance Survey, Folkestone: Dawson, 1980, 302-3.

<sup>&</sup>lt;sup>3</sup> Richard Oliver, Ordnance Survey maps, a concise guide for historians, second edition, Charles Close Society, 2005.

# Roman England on the map

Col. Sir Charles Close, KBE, CB, CMG, ScD, FRS Sometime Director-General of the Ordnance Survey

THERE are those in this country to whom anything to do with the Roman domination of England is not only uninteresting but even actually distasteful. This may be due to the familiarity of the name of Rome and the absence of mystery connected with things Roman; or it may be due to early troubles connected with the Latin language, and with Roman history; or it may be due to a feeling that the Roman period was rather commonplace, and too like our modern times in many aspects of life, very different from the colourful pageant of the Middle Ages. But this half-instinctive repugnance to the Roman period may be much more deeply seated. There may be in our Saxon consciousness the remains of a racial and cultural dislike, which our ancestors took no pains to conceal, which, it may be remarked, is sometimes shown also in the mental attitude of northern races towards those of the south. Most of us feel more genuine interest in the investigation of a Saxon church than in the excavation of a Roman villa; and we would rather walk along a Saxon hrycgweg, or herepath, than along Watling Street or the Port Way.

This is the first paragraph of Chapter VII of Close's 1932 book, The map of England (London: Peter Davies). Elsewhere the book is a model of clear thinking and generosity, so what has led to this unlikely revulsion? Are Close's views a result of the rise in fascism in Italy, or is there something more personal here?

# Crewe Borough Council

Pat McCarthy provides these (slightly abridged) extracts from the minutes of the Crewe Borough Council General Purposes Committee:

9.8.1906

Letter dated 18th ult. From OS office stating that a further revision of the 1:2500 scale plans of the county would shortly be commenced, that the revision would not include the revision at public cost of any plans on a scale larger than that of 1:2500 or 25.344 inches to a mile and therefore enquiring whether the council required the existing plans of the town on the 1:500 scale revised at the cost of the town and stating the difference of the cost of the surveys ... might be taken to amount on an average to be about 15/- per acre, while if new large scale surveys outside the area of the existing plans were likely to be required the additional cost might be estimated at about 20/- an acre and that the cost of publication would be about 4/- an acre additional to the above.

Surveyor to report.

13.9.1906 Surveyor reported. Cost would be £2421.0.6 if published, £1983.18.6 if not published.

Pat comments that he assumes that this was a more or less standard enquiry. No further minutes have been found on the subject but apparently no work for the 1:500 plans was undertaken on behalf of the council.

# The Keyworth files

In *Sheetlines 74* we mined the cuttings library of the British Geological Survey at Keyworth to bring you a report from an 1891 parliamentary debate on the Ordnance Survey. This debate led to a further article in *The Times* of 1 June 1891, extracts from which are reprinted below. Again thanks to everyone involved for making these cuttings available.

R. ROBY was able to show good cause for his complaint in the ■ House of Commons on Friday of the rate at which the Ordnance Survey advances. It is not nearly complete yet; and, such as it is, the work upon it has been so long in progress that, in a great measure, the results are instructive chiefly to antiquarians. Three series of maps are in course of publication, one on a scale of twenty-five inches to the mile, a second six inches, and a third one inch. The survey for the first commenced in 1862, and not even all England has been finished. The two of Yorkshire important counties Lancashire remain to be added. Part only of Scotland has been done, and very little of Ireland. Though the maps on the less elaborate scales have been completed, they are already superannuated. The six-inch set was begun about fifty years ago, and the oneinch ninety. So obviously out of date has long been the one-inch group that the Treasury was compelled to recognize in 1882 the necessity of a revision, which it promised should be perfected in fifteen years. Now the DIRECTOR-GENERAL reckons that the survey will not be ready till 1925. Revision, it is admitted by him, in many places means a new survey. For practical purposes the existing maps have notoriously ceased to be trustworthy. From the length of time during which they have been in use the plates themselves have become worn and indistinct. According to MR. ROBY'S taunt, the hills have been levelled and the rivers have run dry. In other respects beside delay the published fruits of the survey are alleged to be unsatisfactory. Several members on Friday condemned the preference of the authorities for outline instead of hill-shaded maps.

Another accusation is that the maps are behind those of Austria, Switzerland, Italy, and the United States from the omission to survey and give the soundings of sheets of water. Within the British Empire SIR GEORGE CAMPBELL declares that there are examples of the mode in which a national survey should be executed of a kind to put the Ordnance maps to shame. He points to the Indian surveys as incomparably ahead, in shading and other particulars, of the British, which he compendiously denounces as "barbarous, out of date, military." Other members on Friday enlarged upon the last point. They are disposed to think that though officers of the Royal Engineers may be professionally competent, the departmental limitation of their period of service in general to five years is connected with the alleged procrastination. But MR. ROBY, it will have been noticed, brought no charges either against the staff or the character of its performance of its duties. It may be doubted whether any can justly be brought. The point of delay alone need seriously be considered; and for that it will be disgraceful if, after the debate of Friday, a remedy be not found.

Provided something effectual be done, no hour could have been more beneficially spent than that which the discussion of the Ordnance Survey vote occupied. If the matter be suffered to rest in its actual condition, the Treasury and the Office of Agriculture will henceforth have to share between them the reproach either of incompetence or of contempt for the public convenience. On the main question which was raised on Friday no difference of opinion manifested itself. It may not be clear whether soldiers or civilians would render the better and more continuous service. The liking of purchasers for shaded

or for unshaded maps may be contested. No variance exists on the claim of the country to prompt surveys, down to date, and to a speedy supply of published maps on several scales in due conformity with them. There is no possibility of dispute that it is not at present accorded its rights, and that, in default of a radical change in the system, it never will be. Private members and official and ex-official members are agreed that the survey drags on with lamentable slowness, and that the maps are half obsolete by the period they are ready for sale. MR. CHAPLIN, as representative of the Board to which the superintendence of the Ordnance Survey has recently been intrusted, attempted no defence on Friday. He acknowledged the force of the case made by the member for the Eccles Division. He avowed with all desirable frankness that the dates of survey and publication are not, and that they should be, printed on every map. He promised to assign a room in the rearranged offices of his Department in which it will be possible for the public to examine maps. He accepted cordially the doctrine that the rest of the halting work ought to be carried out forthwith, and that no survey should be left for more than fifteen vears without revision. All that remains is to discover that the rate of progress is being perceptibly accelerated; though any details to indicate at once how the Office of Agriculture intends to quieten it would be welcome. MR. CHAPLIN expressed a cheerful hope on Friday that the House would think his explanations of past shortcomings, and pledges of future amendment, satisfactory. They will only be so if they be followed by speedy action. Of their and his sincerity there can be no question. A Minister of Agriculture has constantly forced upon him a sense of the necessity of a thorough and available survey, such as has been repeatedly promised. It is absurd to suppose that the matter presents any tremendous difficulties. That which has been done for Austria, France, India, and other regions must be a much simpler undertaking for the

British Isles, with their enormous command of concentrated resources of every sort, and their scantiness of surface. If it have not yet been effected, some authority is responsible for the default. So long as the business is incomplete the Board of Agriculture and the Treasury, both which join in asserting the blamelessness of the Surveying Staff itself, will jointly and severally have to bear the odium.

The patience, approaching apathy, with which Englishmen have permitted their rulers and representatives to loiter over the scientific survey of the kingdom is a remarkable illustration of the contrast, not rarely discernible, between their habit of dealing with private and with public affairs. The completeness or incompleteness of the Ordnance Survey affects them intimately in a crowd of transactions about the soil. Because the execution has to be committed to the State they consent to be subjected to an amount of indolence and lethargy which in the conduct of business in general they would resent as criminal. It is almost impossible to meddle with land without consulting the Ordnance Survey and being embarrassed by the defects on which the debate of last week dwelt. Where its authority ought to be absolute, there perpetually is an uncertainty, not from the errors of the original surveyors, but from the contingency of changes through mere lapse of time. For the purposes of future reforms of the whole structure of real property law, such as every successive Administration is accustomed to offer, a completion of the Ordnance Survey in a practical modern form is indispensable. Meanwhile, it is wanted, and the gaps are vexatiously felt in the innumerable instances in which the property, in land changes hands. It is somewhat surprising that it should have been left for the manufacturing representative of a manufacturing constituency to urge upon Conservative Ministers the obligation of grappling vigorously with a task which no class is so directly interested as their own special supporters in seeing once for all and fully accomplished.

# The shadow of the land-surveyor

#### Rob Wheeler

The nineteenth century surveying profession shades gently into a whole range of other activities. At one end of the spectrum, there were surveyors who were competent civil engineers, able to design and superintend the construction of a modest bridge. At the other end were those who also served as land agents, managing agricultural estates for their owners. For the latter task, an estate map was an essential tool, showing each field with its area. The value of a plot could be determined by multiplying its area by the generally accepted value per acre for land of that quality, and adjusting for aspects like state of fences, provision of appropriate buildings (where appropriate), and convenience of access.

In 1851, Harmston's rateable value (which in those days kept closely in step with annual rents) was £2,892. Of this sum, only about 5% represented the value of buildings. Of course, it was scarcely possible to value buildings separately: a farm was of little value without a farmhouse and vice-versa, but from the instances where figures are available this seems a fair approximation. Harmston Hall with its park was given a rateable value of some £50. Since the agricultural value of the park was about £30, this only leaves £20 for the house: it was seen as elegant but distinctly lacking in modern conveniences. This is not to imply that the occupants were actually *spending* more on the park than on the house: the open parkland could be used (or sublet) as permanent pasture; the plantations produced wood and pheasants; the kitchen garden a copious supply of vegetables. But to a large extent values were determined by agricultural potential.

To appreciate just how useful such a map was for estate management, one need only read a letter from before one was available: a tenant complains that his land used to be reckoned, with two other pieces now in separate hands, as a virgate of 43 acres; these other parts have been reckoned as  $10\frac{1}{2}$  acres, leaving him with  $32\frac{1}{2}$ , but if he looks at the individual pieces that make it up, they do not come to as much as that .... All these calculations are expressed in round numbers and the price agreed per acre (10s) is so round a figure as to suggest that the whole business of fixing a fair rent was a desperate stab in the dark.

Understanding the function of the early nineteenth-century estate map is important because the large-scale Ordnance Survey plan superseded it and indeed was intended to supersede it. That is why so much effort went into calculating the area of every parcel outside a built-up area. It may be objected that the Ordnance Survey has never purported to show land ownership. But, for estate maps, ownership was a minor point anyway. Land was leased far more frequently than it was sold and, even when it was not being leased, its annual value needed to be determined for assessing parish rates. A 'parcel' was generally the smallest element of land that could be leased separately.

So the Ordnance Surveyor, if working on the large-scale plans (as most were) took on the mantle of the old land-surveyor. Academic geographers too liked to don it. The first Land Utilisation Survey is a good example with its traffic-light colours of green for pasture, yellow for heath, and red for 'land agriculturally unproductive' – not just close-set buildings and abandoned works but also marshland too swampy for grazing. Significantly, purple was used not just for orchards and nurseries but also for new suburbs: 'land occupied by houses with

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<sup>&</sup>lt;sup>1</sup> LAO 2 Thor Har 2/4/2.

gardens sufficiently large to be productive of fruit, vegetables, flowers, etc'. This is decidedly not a modern environmentalist's view of the world.

Wartime service may have reminded surveyors and academics alike that there was another way of viewing land, from its military potential, but both views were rigorously objective in the sense that they were divorced from any consideration of ownership. Meanwhile, another, popular, view has been growing up, in which land is viewed as industrial, or commercial, or houses-and-gardens, or farmers' fields (a horrid but significant term), or public open space. (Granted, there are examples that do not fit happily into these categories, but they are perhaps no more numerous than the examples that do not fit into the Land Utilisation Survey's categories.) This popular scheme is essentially driven by the question 'who uses it?' The two approaches sometimes clash, and I want to describe one such instance, on Bagshot Heath.

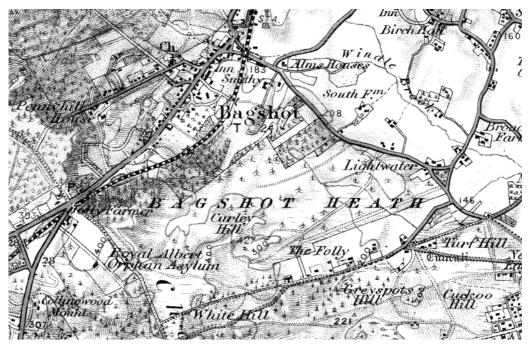


Figure 1: One inch Third Edition (Large Sheet Series) sheet 115, 8.11 printing (enlarged to about 1:50,000)

Figure 1 shows the area as it was at the start of the twentieth century: empty heath but with residential development starting to take place adjoining the metalled road along the southern boundary. We shall focus on the track that leads SE between the 'H' and 'E' of 'HEATH' and splits either side of the 300ft contour, especially its northern arm. By the time of the County Series revision of 1913, that arm had a name, Highview Road, and the purchase and division into plots for residences of the area between that road and the fence shown adjacent to the 't' of 'Bagshot' on Figure 2, had either occurred or was imminent. Figure 2 shows the six-inch based on that revision, with the addition of houses to 1938. These additions were undertaken as part of ARP revision so were fairly sketchy, but show that the developer had been somewhat optimistic about prospective sales. Bagshot station might be just a mile and a half away as the crow flies, but having to negotiate a mile of

<sup>&</sup>lt;sup>2</sup> L Dudley Stamp and E C Willatts, *The Land Utilisation Survey of Britain, an outline descriptions of the first twelve one-inch maps*, London, 1935, 7.

<sup>&</sup>lt;sup>3</sup> The Valuation Office assigned a value to the individual plots in March 1915.

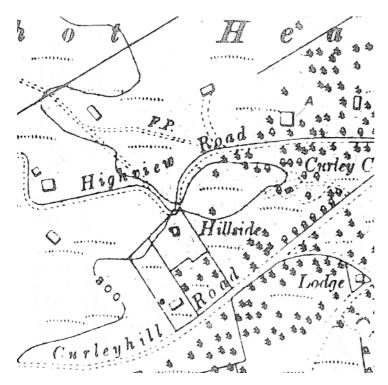


Figure 2: Six-inch County Series sheet revised to 1938 (slightly reduced)

unmade road to get anywhere made the spot just a little too remote – though not for some: the man who had the house west of that at 'A' built was suffering acute nervous problems from his service in the Great War and wanted somewhere very quiet.

Resurvey of areas like this was not a priority for the OS and the first properly revised plan since 1913, the National Grid 1:2500, only came out in 1971 (Figure 3). The area was clearly no longer seen remote, and secondary development had already occurred on some of the larger plots. One can fault the resurvey on one point: the fence at BC has been copied from the County Series but, I am assured, was no longer there. One can see how it might have happened: it was

not easily visible from a road and the surveyor perhaps saw something through the trees (either viewing an air photograph or checking on the ground) that he persuaded himself was a wire fence at just the right spot. So far, no real harm had been done.

By 1983 (the date of Figure 4) further revision had occurred: nothing major, but the fence CD has now been deleted.<sup>4</sup> Worse was to come: by 1990, *all* the subdividing fences stretching back to that rear property boundary had been deleted. Indeed, the new area of woodland so created was large enough to become a parcel (No. 6278) whose area could be calculated. Undoubtedly, Figure 5 looks much more plausible than Figure 4. Probably one cannot tell the difference on an air photograph. However, it is misleading.

A householder then complained. Unfortunately, not being a Victorian land-surveyor, or an academic geographer, he took the popular approach to land utilisation and complained that the OS was showing his garden as woodland. The OS response was that what they were showing as woodland was indeed woodland; and of course they were right ... in a sense. The problem is that people now use OS maps for purposes other than leasing woodland or deciding how many tanks can be hidden there.

The first of these new uses was for designating a Site of Special Scientific Interest (SSSI). I am told that Bagshot Heath is Scientifically Interesting. Our poor householder's garden appeared to me to be distinctly uninteresting secondary woodland, and I suspect that parcel 6278 was designated as part of the SSSI because it looked logical on the map rather than from inspection of the garden. Fortunately, an appeal led to a detailed inspection and the SSSI boundary was re-drawn.

<sup>&</sup>lt;sup>4</sup> The wire fence that previously marked the boundary may have collapsed by this date. The alignment was marked by bushes sufficient in number to satisfy the householders on each side but not sufficient to meet the Ordnance Survey definition of a hedge.

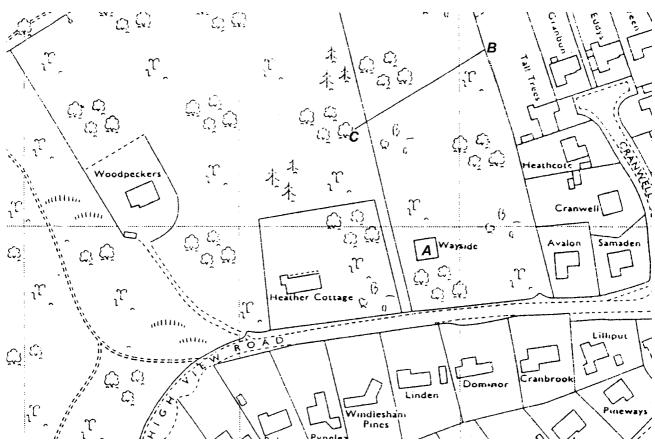


Figure 3: 1:2,500 National Grid Series plan SU9161 of 1971

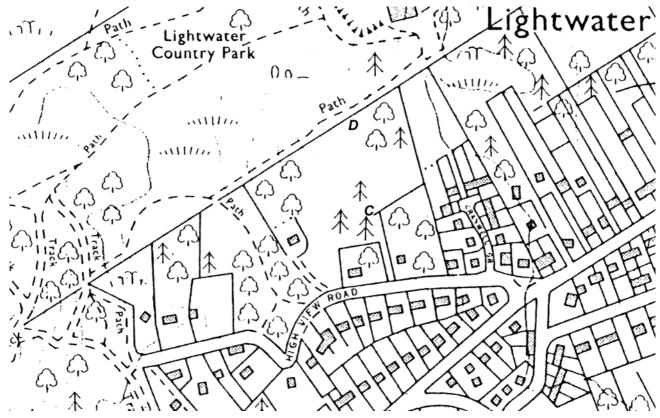


Figure 4: 1:10,000 sheet SU 96 SW of 1983 (enlarged to about 1:6,500) Both extracts © Crown Copyright NC/00/1340

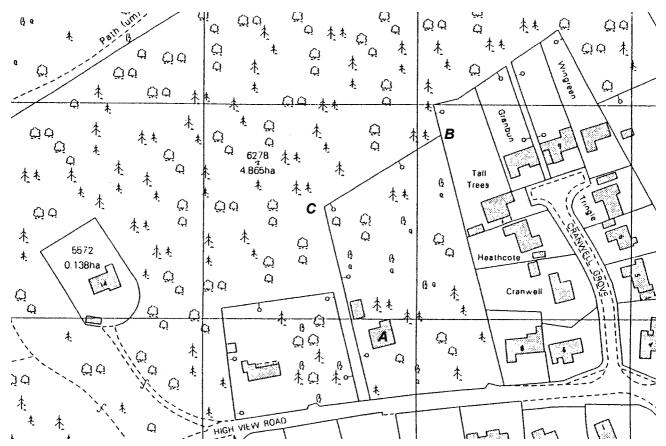


Figure 5: 1:2,500 National Grid Series plan SU9161 of 1990. © Crown Copyright NC/00/1340

Being told one mustn't dig up one's trees and plant potatoes instead might have been no great hardship on such poor land, but worse was to come. Under the Countryside and Rights of Way Act, many of these woodland gardens backing onto the Country Park were declared Access Land. So some of the residents now find that ramblers have every right to wander round what they have always regarded as parts of their gardens.

Now my purpose in relating this tale is not to lambast the Ordnance Survey. Everyone can make mistakes, and I understand their database now has the missing fence at CD restored. Nor is it to criticise Victorian land-surveyors: readers of *Sheetlines* are well aware of my admiration for J S Padley – and are probably thoroughly sick of reading about someone whose association with the OS was so brief and so unofficial. It is rather to observe that we may need to recognise what I have termed the *popular approach* to land categories – even if we refuse point-blank to talk about "farmers' fields".

**Postscript.** Since this was written, I have learned that the OS regards BC as representing an old bank. When I visited a few years back I did indeed observe a shallow linear feature such as often survives when a hedge across pasture land has been removed, but it did not appear to be something that even an archaeologist would regard as a functioning boundary.

DEFRA designates 'nitrate vulnerable zones' in which, to safeguard water quality, farmers must limit the animal manure applied to their land. We hear of a case in Devon where the zone boundary follows a no longer existent fence on the large-scale OS map. Hence the farmer is required to control the amount of sheep droppings in one of part of his field but not in the other. His latest idea is to erect a notice informing his sheep in which area they should perform their natural functions. — CJH

# Ordnance Survey pre-war map cover design: a study in political incorrectness

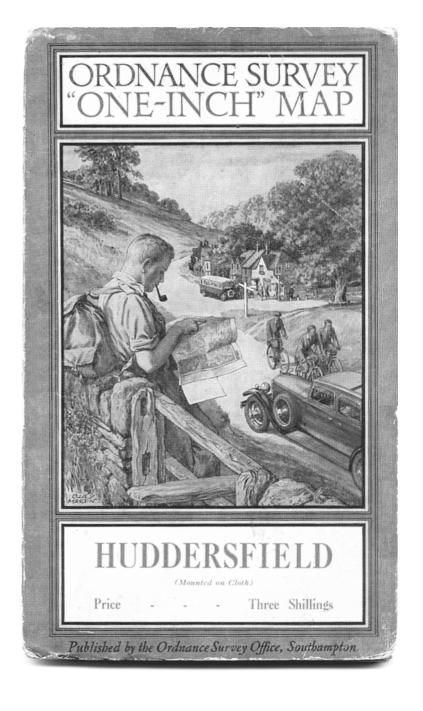
#### Roly Hann

Whilst learned members of the Charles Close Society have undertaken much worthy research in recent years on a variety of cartographical topics there would appear to be a conspiratorial pact to avoid any reference to the gender bias championed by the Ordnance Survey on many of their pre-1940 map covers. Recently I have had brought to my notice some research papers dating back to the 1980s from departments at two of our newer universities.

A casual glance at some of the Ordnance Survey map covers from the 1920s and the 1930s will confirm that most of the figures used are male. Not only that; they all seem such

'awfully nice chaps.' The following extracts are from a research paper, coincidentally called, 'Awfully nice chaps on the front of maps' by Professor Alpha Guy Greystoke, Studies Department, John Wayne Building, University Musselburgh.

> a further example promoting the sale of maps by using an awfully nice chap is to be seen on the Ellis Martin hiker cover of the 1930s. A typical Saturday and our hero had allowed his wife and children to stay home for the day. You may think that this is a rather selfish behaviour. Not at all. He realises that taking himself away for the day he allows his wife free run of the house to do the washing, ironing, housework, shopping, play skipping games with the children in the garden, cook their tea and put them to bed just in time for our hero to return and give his children a goodnight kiss while his wife cooks his dinner. A paragon of virtue no less. On the same cover are three male cyclists



well dressed in correct cycling gear, also a car almost certainly driven by an awfully nice chap. Closer inspection will reveal two women near the bus. The perspective used by the artist means that they are so tiny to the naked eye that you cannot clearly see their shopping bags. Closer inspection will also reveal that our hero will need to have a sharp word with his wife when he returns home as she obviously had not made a satisfactory job of ironing his shirt collar.

There are several other examples of awfully nice chaps studying maps while walking, cycling or motoring. are healthy, They shaven, mostly pipe smokers with liberal, progressive lifestyles trying to provide the best for wife and family. Why are women never shown with maps? Allowing a woman to plan or check a route on a map is a high-risk strategy, as the story behind the 1932 Chilterns Tourist map cover will prove.

# ORDNANCE SURVEY "ONE-INCH" MAP OF THE CHILTERNS



Price Three Shillings Net
Published by the Ordnance Survey Office,
SOUTHAMPTON

Our awfully nice chap had invited his sister along for the day's hike. Rather thoughtlessly he gave her the map to check their route while he disappeared for a call of nature. Being keen on embroidery she spent the time studying the cloth on the back of the map and when her brother returned she attempted to cover up her feminine lapse and somewhat hastily chose the wrong path. Hence in the picture you see them striding out trying to make up for lost time. Their conversation is monosyllabic because he is angry and she is embarrassed. Luckily he was an awfully nice chap and so did not strike his sister.

The above is a brief extract from Professor Greystoke's research paper. Perhaps in a future article I will be able to include his amusing and plausible explanation as to why the two men on the front cover of the 1926 ten-mile Road Map are obviously ignoring the rather

distraught woman at the front of the car and the story behind the snappily dressed chap taking centre stage on the front of the Ordnance Survey 1920 town maps.

In the interests of gender equality I had hoped to include some extracts from the research paper published by Dr Lesley van Dyck, Department of Female Supremacy, University of Greenham Common, Barking, Middlesex. Her paper is entitled, 'Men on maps – disgusting chaps.' Disappointingly she is at present refusing further communication with me following our first meeting when I doffed my Panama hat and opened the door for her and said "After you, my dear". She called me "A patronising male dinosaur." I might have missed out a few adjectives.

Finally, perhaps a member of our society with ornithological knowledge could confirm that the birds on Harry Titcombe's cover designs for the Outdoor Leisure maps are all the male of the species.

# Miles Kington

A few years ago, David Archer came across one of Miles Kington's 'Franglais' pieces from *Punch*, '*L'usage correct d'une carte d'Ordnance Survey*', and suggested that we reprint it. I wrote to Miles to seek his permission and, shamefacedly, pointed out that *Sheetlines* does not pay its contributors. I was amazed to get this very generous personal letter in reply:

As something of a map addict, I was delighted to hear about the existence of the Charles Close Society and I would be honoured if you reproduced my piece (better than you did the photocopy!) in your journal. I wouldn't dream of asking for a fee. In theory, you might be beholden to Punch and the proprietors thereof for reproduction, but you would be very foolish to ask them for permission, as it would give them ideas of compensation. In fact, ownership of Punch has changed a lot since then, and it now belongs to Mohammed al Fayed, who I know for a fact never looks at learned journals to check if old Punch material is being used. The only people left at Punch who have any kind of honourable interest are the librarians, and they don't go around asking people for money.

Put it this way – whenever people have written in the past for permission to reprint, I have always said yes, and have always warned people not to ask Punch directly, and never to my knowledge has this led to any difficulty. But as far as I am concerned, I waive a fee and grant you all necessary copyright.

... One day I must dig out a piece I once wrote on the impossibility of finding Warwick University on any map (Except OS, of course). After I had written it, Collins snootily sent me a complimentary road atlas to help me out. I was very happy to discover that Warwick University wasn't even marked on their atlas either.

The Franglais duly appears in *Sheetlines 59*. Sadly, Miles Kington died on 30 January 2008. *Quel homme!* 

#### Book reviews

William Roy, The Great Map, the military survey of Scotland, Edinburgh: Birlinn Ltd,  $^1$  2007. 400pp comprising introductory essays and 342 pages of colour mapping,  $450 \times 290$  mm, limited numbered edition, casebound with slip case. £200 (post free within the UK).

Ashley and Miles Baynton-Williams, Maps of War, London: Quercus Publishing plc, 2007. Price varies (see below).

Mike Buckley, David Harrison and Alan Petford (editors), Mapping of Saddleworth: volume 1, printed maps of the parish 1771-1894, Uppermill: Saddleworth Historical Society, 2007. ISBN 978 0 904 982 11 4. £20 (free delivery within Saddleworth).

If you were fortunate enough to visit the British Library exhibition 'Lie of the Land: The Secret Life of Maps' in 2001 you would have seen a reduced version of William Roy's circa 1755 map of Scotland. The original is too big for public display and the framed reduced version hanging on the wall of the exhibition is not a patch on the 'fair copy'. I remember the exhibition not only for the Roy map but also for Yolande Hodson's *Popular maps*, published by the Society in 1999, which I bought on the same day in the British Library shop. I thought than any society capable of producing a book of this quality is worth belonging to and promptly made the decision to join.

I had wanted to see the Roy map from the time that I ran a local history society at Collieston, fifteen miles north of Aberdeen, in the 1980s. Then you could telephone the National Library of Scotland in Edinburgh and they would send you an A4 photocopy of the area you were interested in.

I finally got to see the great map in November 2005 when we celebrated the 25th anniversary of the Society at the British Library. Sections of the 'fair copy' of the original map covering Loch Tay, The Tay Estuary and the Isle of Bute together with the reduced version only previously displayed in public at the Tower of London in 1991 were on display in the Map Room for Society members to examine in detail. A rare privilege, and I was able to see sections of the Aberdeenshire coast only previously seen as black and white copies. At this time the map had never been published although its importance in the history of British cartography cannot be underestimated.

At last, after 250 years, the Edinburgh publisher Birlinn have published, what in their flier they quite rightly call, a 'sumptuous' edition of *The Great Map*. Even at £200 and after all these years of waiting, I couldn't resist. Mine is number 1012 of 1200 so do not hang about if you want to buy a copy. The introductory history is by Yolande Hodson, with essays on the military context of the project by Chris Tabraham and on mapping in the age of enlightenment by Professor Charles Withers.

It is easy to overlook that Roy was only 21 when he, as a civilian, started on his survey of Scotland and still only 29 when he completed it; although of course not single-handed. Roy then joined the army and within a month was commissioned as a lieutenant into the 51st Regiment. According to Yolande Hodson, Roy reached the zenith of his cartographic output with his mapping of the campaigns with the Allied Army in Germany between 1758 and 1760. In 1759 he drew a plan of the Battle of Minden using the relatively new technique of

<sup>&</sup>lt;sup>1</sup> Order from Birlinn Ltd, West Newington House, 10 Newington Road, Edinburgh EH9 1QS, www.birlinn.co.uk, 0131 667 7799.

<sup>&</sup>lt;sup>2</sup> www.saddleworth-historical society.org.uk

showing the different positions of the army in time using a series of overlapping flaps which were pasted on the underlying master map (these were to be referred to as *papillons* by the French).

This brings me to my second large,  $435 \times 365$  mm, book purchase this Christmas. On New Year's Eve with my mother's gift of Book Tokens burning a hole in my pocket, I visited my local branch of 'The Works' and was surprised to find *Maps of War* by Ashley and Miles Baynton-Williams, published in 2007 and reduced from £50 to £20.<sup>3</sup> The volume includes 130 full colour maps from the battle of Pinkie Cleugh between England and Scotland in 1547 to the Boer War, 1899-1902. Of particular interest to members of the Society are pages 140 to 143 where William Roy's battle of Minden maps including the papillons, published by Pieter de Hondt in The Hague in 1760, are reproduced.

This was a excellent cartographic end to the year. Our hero William Roy coming together, albeit 250 years later, with our No. 1 member in a fine example of the cartographer's and printer's art and with an unexpected remaindered bonus volume.

My New Year book buying expeditions started with a visit to the York Book Fair at the Knavesmire Racecourse on the first Saturday in January. It is not a fair for the serious map buyer but I usually come away with a few gaps filled. It wasn't an old book that caught my eye but a newly published atlas, *Mapping Saddleworth*, from the Saddleworth Historical Society. It is a cloth bound volume of 225 A4 size pages with around 200 of them full colour maps. The sub-title of the atlas is *Volume 1 printed maps of the parish 1771-1894*. The planned Volume 2 is several years away and will cover field maps of the parish.

Until 1869 Saddleworth was a parochial chapelry in the parish of Rochdale, achieving parish status in the same year. Throughout the period covered by the maps in this volume Saddleworth was a township in the wapentake of Agbrigg in the West Riding of Yorkshire. Historically the township was divided in to four meres or divisions; Friarmere, Lordsmere, Shawmere and Quickmere. Until the creation of Mossley Local Board in 1864, a considerable portion part of Upper Mossley was also included in Saddleworth. Within the township various administrative bodies operated at different times. For example, the Guardians of the Poor for Saddleworth Union, Uppermill Local Board, the Huddersfield Canal Company and the trustees of several turnpike trusts. They all find their place on one or other of the maps.

Included in the atlas are extracts from Thomas Jeffrey's *Map of Yorkshire*, 1771-2; Christopher Greenwood's *Map of Yorkshire*, 1818; Henry Teesdale's *Map of Yorkshire*, 1828; and the *Saddleworth Enclosure Map*, 1840. The main part of the book is devoted to the Saddleworth elements from the first edition six-inch Ordnance Survey map, 1854 and the first edition twenty-five inch Ordnance Survey map, 1892-4. Each chapter is opened by a scholarly introduction with references including to Richard Oliver's *Concise Guide*. The introductory essays are supported by location plates and there is a detailed index to the enclosure map.

This is a beautifully produced volume which any publisher could be proud of. It was printed using digital technology by The Amadeus Press in Cleckheaton and at a cover price of £20 should be on every collector's bookshelf.

Ken Hollamby

<sup>&</sup>lt;sup>3</sup> Currently also available from *amazon.co.uk* at varying prices -CJH.

Andrew Emmerson and Peter Bancroft, A, B, C and M: road numbers revealed, Harrow: Capital History, 2007. Paperback, 94 pages, £7.95. ISBN 978 185414 307 5

The Ordnance Survey has published several map series primarily concerned with official road numbering, notably at the half-inch scale (1923-36) and the ten-mile and 1:625,000 scales (1932 onwards). These are reasonably well known, at any rate by repute: all have been concerned exclusively with numbers issued by the Ministry of Transport and its successors. Maps of C and lesser roads, numbered by local authorities, are more elusive. It is perhaps a sign of the relative paucity of published information on highway classification that the bibliography of eleven hard-copy items in *A*, *B*, *C* and *M* includes a brief article which I wrote for *Sheetlines* in 2000 when the question of C-road numbers was under discussion, and two more published under the auspices of the Railway and Canal Historical Society. (It is a sign of the times, as much as of any obscurity of the subject, that the bibliography also lists sixteen websites.)

The work was begun by Peter Bancroft and completed after his premature death by Andrew Emmerson. There are eight chapters: 'Early times' (mostly road names); 'The turnpike era' (still no numbers); 'The twentieth century' (this occupies a third of the book and contains much of the 'meat'); 'The Motorway era' (where you will learn about the M16: and no, it didn't run through Lincolnshire); 'Capital highways' (London and its oddities); 'Numbers that don't add up' (including 'ghost' motorway junctions and spurs); 'Britain's other numbered roads' (including Euroroutes: I wonder how many people want to go from Hull to Ennis); and 'Islands and Ireland' (and yes, the reclassification from T and L to N and R is discussed). There are several references to OS and other mapping, though they are not complete: for example, there is no reference to the quarter-inch map produced by the Ordnance Survey of Northern Ireland from 1926 onwards, which performed the same function as the half-inch in Britain in much more compact form. (Was there ever an equivalent in Eire?) Indeed, though this is an extremely useful foray into a relatively uncultivated field, one is left wishing for more. In particular, I hope that it might inspire someone to seek out the shadowy maps produced for internal purposes by local authorities, which, as I pointed out in my article, are often not to be found in county record offices, and to explore further the C, D, E, F, G and U numbers, and the probably inevitable changes of system with local government reorganisations.

I learnt of this book by way of a review by David Archer in the Milestone Society's newsletter: his main criticism, with which I agree, is the lack of precise references to sources. I'm afraid that you will find more references to the all-important files in The National Archives (Public Record Office) in my little article than in this book: a double pity, for Peter Bancroft was the author of *London Transport records at the Public Record Office* and there is plenty of evidence that at least some of the files have been read, and there are two blank pages at the end which could be used. Against this, the book is very nicely produced, and more than adequately illustrated. I hope that one day we shall have a book of twice the length that penetrates more deeply into the local authority classifications: meanwhile, those who like to have handbooks to supplement maps should not hesitate to purchase.

Richard Oliver

<sup>&</sup>lt;sup>4</sup> J C Mann, *British road numbering*, Railway & Canal Historical Society (Road Transport Group), Occasional Paper, Second Series, no.21 (March 1993); Graham Bird, *British road numbering: some further thoughts*, Railway & Canal Historical Society (Road Transport Group), Occasional Paper, Second Series, no. 45 (September 1994); Richard Oliver, 'C-roads on signposts and maps', *Sheetlines* 59 (2000), 40-43.

# Kerry musings David Archer

Until recently, I told people that I used to collect maps before I started selling them, and that my map collection formed the basis of my opening stock. I now realise that this was true only in part. I did not own a map collection. What I had was an accumulation of maps, not a collection of maps, and not a map collection. Three very different things, which it has taken me years to see the significance of.

I know a lot of people who, although they are not members of our society, are very knowledgeable about Ordnance Survey maps. All have a super collection of maps, but not a map collection. Most, if asked, would say that they do not collect OS maps. If they do not collect OS maps, how do they come to have a so many of the things? Because the maps have been bought to help pursue a hobby or other activity. Transport history, industrial archaeology and local history are probably the main fields of interest. For any serious study of these subjects, one needs OS maps, and so maps are bought with very definite aims in mind, to support the subject, so they do not usually collect sets, just those that show the lines of a particular railway company or canal system. A local history library will have a collection of maps for the area, all scales, all series and all dates, similar to a geological section, but through the whole of the OS output. Seldom is anything for the neighbouring area held, no sets of OS one-inch maps and nothing on the history of the Ordnance Survey. Individuals with collections of maps are very focused, acquiring only those suitable for their particular purpose. But these people really study each item bought, noting differences between series, and states of each sheet within series, so that if you want to know about the strengths or failings of a given series, ask a transport historian rather than a map collector. To know about the accuracy of minor points of railway depiction, ask a railway historian, not an OS enthusiast. Of course, frequently it happens that these people become so fascinated by the maps that they become map collectors. And most then join our society.

A map collector collects maps which form a map collection. They will buy a second copy because it is slightly different from one already held. The two maps are different. A transport enthusiast will buy a second copy of the same map because the information shown is different. True, the map collector might buy the transport enthusiast's map because of the same difference, but it would be referred to as having different detail, not different information. As a very rough generalisation, the information shown on maps is of minimal importance to a map collector. Map collectors will buy a map for itself, not for the information shown, and the joy of the collection is that the maps are all different in some way. No more justification is needed. The collection is seen as a living and expanding entity. That the maps are different is the important thing. That the difference is in the information shown, such as a new railway junction, is of minimal importance. A map collection, I would argue, is something that has been put together with clear objectives in mind. Maps are selected for purchase in order to build the collection. A map collector needs to know what is held and what is needed, seeking out specific wants and different, unknown states, aided by a wants list. A collector will know about their maps and where they fit within the OS story, otherwise it just becomes a ticking exercise.

In the 1970s, when I first became really interested in Ordnance Survey maps, I would buy every one that I came across. Despite having very little money, this was easy as one came across so few maps, and prices were low. My sole objective in buying was to get as

many maps as possible, in the hope of making sense of those I already owned. Not that I ever thought it through, even to that extent, I just bought maps and put them into a cardboard box, occasionally spreading them on the floor to look at, gloat over or admire them.

I bought one from this series and a couple from that series as they were found. Some Scottish, but mostly England and Wales. All very bitty, and they just accumulated. No particular series attracted me above any other, and I could usually remember which sheets I owned. Not once did I come across a quantity so large that I could not take all of them. Even a pile of Fifth Edition maps lurking on a shelf in one of the pricier Charing Cross Road antiquarian shops were so cheap that I could buy them all. (These were the days of bookshops with the 25p folded map. Any map.)

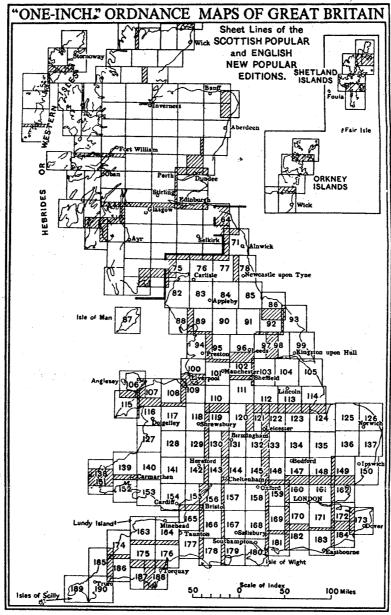
Why do I now call these an accumulation? There was no method in buying, other than finding them. They were not part of a planned acquisition policy, say to collect a set of something. Neither were they required to support a specific project or hobby. I simply found and bought, and was pleased with anything that came my way. The maps just built up. Which is very different from saying that I built them up into something. I was not actively looking for any particular map, just any map that I did not have. An analysis of the maps would show that they reflected the frequency with which the various series appeared for sale in used condition. Indeed, these maps formed the basis of my first catalogue, and the split between Seventh Series, New Populars, Pops and Thirds has remained fairly consistent over the years.

Just as one can have a basic or a super map collection, so there are variations in accumulations of maps, and applying the term should not reflect on the maps or the owner. My accumulation had some goodies, but consisted mostly of very common easily found maps. The lower end of the scale to be sure. At the other end of the scale, are the accumulations owned by some of our more knowledgeable and enquiring members. Very active in the society but without the collecting gene (everything is in the genes these days). A map attracts their attention and they buy it, study it and buy a few more to follow up lines of research into the original purchase. An article in *Sheetlines* might result. Later, the same thing happens and over the years they build up a sizeable group of maps. The maps accumulate, and are not sets of maps, nor do they support any particular activity other than an interest in maps. A very different accumulation from mine. Something quite superior, with each section within it being of note.

As with most things, the reality is never clear cut, and the three 'categories' are seldom pure. Most owners of map collections get tempted and have a small selection of purely local maps, interesting maps they could not resist, or maps given to them and which they are not allowed to dispose of. One might say that a local history library has a collection of maps, yet frequently one finds they contain a set of one-inch maps given as a donation. Each copyright library most definitely has a map collection, plus numerous donations they would prefer to be without, whilst a secondhand bookshop has an accumulation, sometimes adulterated by receiving a collection into stock.

My style of mapselling is just an extension of buying for an accumulation: if it comes along at the right price, I buy it. I do not have a balanced stock (whatever that might be), nor concentrate on maps of a particular period or scale. I often wonder what my own maps would consist of had I stuck to a proper job. A vast accumulation almost certainly. I have never really been one to collect sets, and prefer to look for those things which are not yet fully documented, so that one can discover the previously unknown. All my personal interests change so quickly, and the nicest maps are always those in my hand, which does not help enforce a disciplined purchasing policy.

# Letters Missing red plate – a gripping mystery



The open figures in RED represent the 100 km. squares of the National Grid Published by Authority of the Ministry of Agriculture and Fisheries

The illustration is from the rear of a post-war edition of Scottish Popular map 25, *Raasay and Applecross*, which I recently acquired. Was omission of the red plate a regular occurrence? If this was a postage stamp or a banknote it would be worth a lot of money.

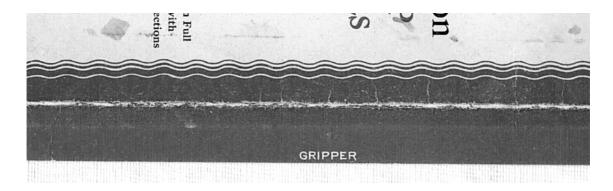
Tim Bleasdale

#### Keith Andrews comments:

The post-war Scottish Popular map cover reported by Tim Bleasdale is certainly unusual and it probably came about by accident, as speculated below. The sheet is edition 2225 (issued

January 1948) in dissected form, and the cover has 'Popular Edition' in the large size of lettering and 'SHEET 25' in capitals. It is therefore similar in style to New Popular cover type KA3. This dates it before 1949. The Scottish Populars were not being phased out until 1955-61 so there can be no likelihood that this index diagram was not intended to publicise them.

Scottish Populars have two-part covers like dissected New Populars; in fact the backs, having wholly generic information, may well come from a common source, though most of them are hinged on the opposite side. New Popular covers were printed with generic data in multiples on large sheets, the red before the black, as is shown in the illustration below of a scarce feature, the edge to be fed into the machine for the black plate print run being marked 'GRIPPER' by the red plate for the benefit of the operator.



The gripper mechanism takes the top sheet from a pile and feeds it into the press, it is passed through by rollers and then put on a pile of printed sheets. Very occasionally, the gripper may take two sheets instead of one and so a blank sheet will be hidden in the pile, to be subsequently transferred to the black plate printer to complete its printing. Thus a pile of red and black back covers will contain one that is just black. The rogue cover would be easily spotted if it were a paper or cloth New Popular cover, since the front would be obviously incomplete. An all-black back would be easy to ignore on a covered map – until it reached an observant CCS member wishing it were a postage stamp or banknote.

The post-war Scottish Popular covers are currently being researched and it is intended to report their classification in due course.

#### Bartholomew 1:100,000 maps

I know that OS maps are the chief interest of members of the CCS but I wonder if one of the 1:100,000 enthusiasts (of whom I am one) could give me information about the last of the Bart's 1:100,000 (or thereabouts) series – i.e. the series in yellow covers? I have nineteen of them but assume there are more and I would like to achieve completeness.

None of them show an index or sheet number and I believe that, whatever the original intention, the 61 sheets of the red and black cover series were not achieved.

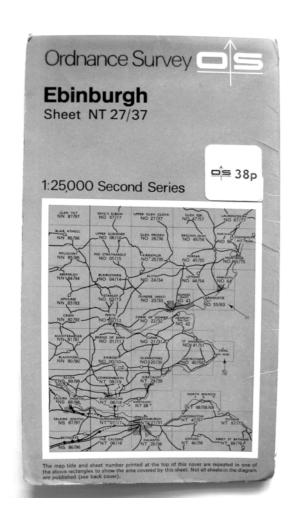
Can anyone help me with a complete list?

Peter Walthall 113A Windsor Road, Oldham, OL8 1RQ, 0161 284 7638

For New Popular cover classes see *Sheetlines 76*, 14-28.

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<sup>&</sup>lt;sup>1</sup> Tim Bleasdale, personal communication.



#### Whoops again!

I was just writing a cheque for this year's CCS subscription and I remembered the photo of the map by John 'Batholomew' & Son Ltd which was published in last August's *Sheetlines*. The OS is not immune to this kind of thing!

Kenneth MacKenzie

© Crown Copyright NC/00/1340

#### A mound's a mound for a' that!

The New Popular Edition one-inch map sheet 162, 1945, at TL 838072 indicates a tumulus sitting on the ridge just a bit lower than the adjacent 128ft spot height by the road junction.

Should you chance to examine more recent maps, you might perhaps wonder why the site is now drawn in as simply a mound. Therein lies an odd little tale for which my version of events runs thus: the archaeologists, sometime in the 1950s were debating as to whether it really was a burial mound or, given its situation, perhaps a mill mound. To settle the argument it was decided to conduct an excavation and what was actually exposed was a very tightly compacted animal dung heap. It would seem that a substantial building once housing the animals had disappeared but the residual contents were left *in situ*.

Time passes, so it is that with successive seasonal ploughing, the mound is gradually getting lower but Ordnance Survey are on top of the job and the increasing spread of the remaining soil is continually monitored and accurately depicted on our current maps.

Kevin Ascott

Although a Mound on current mapping, the site is still marked as a Tunulus on the 1:50,000 First Series sheet 168, A/\* edition, of 1974 which was revised in 1967-68. The National Monuments Record describes it as 'Bronze Age barrow (remains) – probable mill mound' and the reclassification may follow an excavation by I G Robertson in 1966 – CJH.

### New maps

#### Jon Risby

This list covers small-scale maps published between 7 November 2007 and 6 March 2008. 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 (by series and in order of their proposed publication).

After the list of OS maps is a résumé of maps published by Alan Godfrey between November 2007 and March 2008.

#### OSGB maps

Revision notes are referenced in column five or six as follows:

- <sup>1</sup> 'Reprinted with minor change'
- 4 'Revised for significant change'
- <sup>2</sup> 'Revised for selected change'
- <sup>5</sup> 'Revised with significant change'
- <sup>3</sup> 'Revised with selected change'
- <sup>6</sup> 'Major roads revised'

Where details are shown in *italics* I have not been able to confirm the details by seeing the map itself, and therefore information is based on Ordnance Survey's list of new publications. I hope that I shall be able to confirm information in the next edition of *Sheetlines*.

#### <u>Landranger – new editions</u>

23	North Skye, Dunvegan & Portree	C2	2007	1997	$2007^{2}$	19/11/07
29	Banff, Huntly, Portsoy & Turriff	B2	2007	1999	$2007^{2}$	11/02/08
32	South Skye & Cuillin Hills	C2	2007	1997	$2007^{2}$	26/11/07
33	Loch Alsh, Glen Shiel & Loch Hourn	C2	2007	1997	$2007^{2}$	26/11/07
34	Fort Augustus, Glen Albyn & Glen Roy	B2	2008	1997-98	$2007^{2}$	28/01/08
36	Grantown, Aviemore & Cairngorm Mountains	B2	2007	1999	$2007^{2}$	05/12/07
37	Strathdon & Alford	B1	2007	2001	$2007^{2}$	03/12/07
39	Rum, Eigg & Muck	B2	2007	1996-97	$2007^{2}$	26/11/07
41	Ben Nevis, Fort William & Glen Coe	D1	2007	2001	$2007^{2}$	03/12/07
44	Ballater, Glen Cova	C2	2007	2000	$2007^{2}$	12/11/07
58	Perth to Alloa	B2	2007	1997	$2007^{2}$	26/11/07
88	Newcastle upon Tyne, Durham & Sunderland	D4	2007	1999	$2007^{2}$	12/11/07
107	Kingston upon Hull, Beverley & Driffield	<u>C2</u>	2008	1998-99	2008 <sup>1</sup>	08/02/08
123	Lleyn Peninsula	B2	2007	1998	$2007^{2}$	29/10/07
140	Leicester, Coventry & Rugby	<u>C2</u>	2008	1999-2000	2007 <sup>1</sup>	30/11/07
145	Cardigan & Mynydd Preseli	C2	2007	1999	$2007^{2}$	21/01/08
157	St David's & Haverfordwest	B2	2008	1998	$2007^{2}$	04/02/08
180	Barnstaple, Ilfracombe, Lynton & Bideford	D1	2008	2003-4	$2007^{2}$	14/01/08
195	Bournemouth, Purbeck, Wimborne & Ringwood	<u>D2</u>	2008	2000-01	2008 <sup>1</sup>	22/02/08
200	Newquay, Bodmin, Camelford & St Austell	D1	2008	2001	$2007^{2}$	11/02/08

#### <u>Landranger Active – new publications</u>

The following *Landranger* maps were published in Active format on 26/11/2007: Sheet numbers 23, 32, 41,49, 50, 56, 57, 89, 90, 96, 97, 98, 110, 114, 115, 119, 124, 160, 161, 200, 201, 202, 203, 204. Sheet 36 was added 10/12/07, and a new edition of sheet 200 (D1) on 11/02/08. Edition details correspond with the relevant *Landranger* sheet.

# Explorer and Explorer Active – new editions

<u> Daipier</u>	er una Emprerer rieure neu eurons					
OL4	The English Lakes – North Western area	A2	2008	2002	2008 <sup>2</sup>	25/02/08
OL5	The English Lakes – North Eastern area	A2	2008	2002	2008 <sup>2</sup>	25/02/08
OL6	The English Lakes – South Western area	A2	2008	2002	2008 <sup>2</sup>	25/02/08
OL7	The English Lakes – South Eastern area	A2	2008	2002	2008 <sup>2</sup>	25/02/08
OL12	Brecon Beacons– Western & Central areas	<u>A1</u>	2007	2001	2007 <sup>1</sup>	12/11/07
OL15	Purbeck & South Dorset	B2	2007	2003	2007 <sup>1</sup>	21/11/07
OL22	New Forest	<u>B2</u>	2007	2004	2007 <sup>1</sup>	16/11/07
OL13	Brecon Beacons – Eastern area	<u>A2</u>	2007	2001 <sup>4</sup> / 05 <sup>2</sup>	2007 <sup>1</sup>	15/01/08
146	Dorking, Box Hill & Reigate	<u>B2</u>	2007	2003	2007 <sup>2</sup>	21/01/08
165	Swansea	<u>A1</u>	2007	2005 <sup>2</sup>	2007 <sup>1</sup>	21/01/08
192	Buckingham & Milton Keynes	<u>A1</u>	2007	1998	2007 <sup>1</sup>	09/01/08
208	Bedford & St Neots, Sandy & Biggleswade	<u>A1</u>	2008	1999	2008 <sup>1</sup>	27/02/08
209	Cambridge, Royston, Duxford & Linton	<u>A1</u>	2008	1999	2008 <sup>1</sup>	04/02/08
237	Norwich, Wymondham, Attleborough & Watton	A1	2008	1998	2008 <sup>1</sup>	05/02/08
239	Lake Vyrnwy & Llanfyllin	<u>A1</u>	2008	1998	2008 <sup>1</sup>	15/02/08
259	Derby, Uttoxeter, Ashbourne & Cheadle	<u>A1</u>	2008	1999	2008 <sup>1</sup>	27/02/08
263	Anglesey East		2007	1999	2007 <sup>2</sup>	14/11/07
288	•	<u>A1</u>	2007	1999	2007 <sup>2</sup>	30/11/07
303	Bradford & Huddersfield, East Calderdale	<u>A2</u> A2	2007	2000	2007 2007 <sup>2</sup>	25/02/08
356	Whitehaven & Workington Kintyre South		2008	2000	2007 2008 <sup>1</sup>	29/02/08
442	•	<u>A1</u> A1	2008	2007	2008 2007 <sup>2</sup>	17/12/07
	Assynt & Lochinver				2007 <sup>2</sup>	
443	Ben Kilbreck & Ben Armine	A1	2007	2002	2007 2007 <sup>2</sup>	17/12/07
444	Helmsdale & Strath of Kildonan	A1	2007	2002		17/12/07
445	Foinavon, Arkle, Kylesku & Scourie	A1	2007	2002	$2007^{2}$	17/12/07
446	Durness & Cape Wrath	A1	2007	2002	2007 <sup>2</sup>	17/12/07
447	Ben Hope, Ben Loyal & Kyle of Tongue	A1	2007	2002	2007 <sup>2</sup>	17/12/07
448	Strath Naver & Loch Loyal	A1	2007	2002	2007 <sup>2</sup>	17/12/07
449	Strath Halladale & Strathy Point	A1	2007	2002	$2007^{2}$	17/12/07
450	Wick & The Flow Country	A1	2007	2002	2007 <sup>2</sup>	17/12/07
451	Thurso & John O'Groats	A1	2007	2002	2007 <sup>2</sup>	17/12/07
452	Barra & Vatersay	A1	2007	2002	2007 <sup>2</sup>	17/12/07
453	Benbecula & South Uist	A1	2007	2002	2007 <sup>2</sup>	17/12/07
454	North Uist & Berneray	A1	2007	2002	2007 <sup>2</sup>	17/12/07
455	South Harris	A1	2007	2003	2007 <sup>2</sup>	27/11/07
456	North Harris & Loch Seaforth	A1	2007	2003	2007 <sup>2</sup>	17/12/07
457	South East Lewis	A1	2007	2002	2007 <sup>2</sup>	17/12/07
458	West Lewis	A1	2007	2002	2007 <sup>2</sup>	17/12/07
459	Central Lewis & Stornoway	A1	2007	2002	2007 <sup>2</sup>	17/12/07
460	North Lewis	A1	2007	2002	$2007^{2}$	17/12/07
461	Orkney – East Mainland	A1	2007	2002	$2007^{2}$	17/12/07
462	Orkney – Hoy, South Walls & Flotta	A1	2007	2002	$2007^{2}$	28/11/07
463	Orkney – West Mainland	A1	2007	2002	$2007^{2}$	17/12/07
464	Orkney – Westray, Papa Westray, Rousay,	A1	2007	2002	$2007^{2}$	17/12/07
	Egilsay & Wyre				2	
465	Orkney – Sanday, Eday, North Ronaldsay &	A1	2007	2002	2007 <sup>2</sup>	17/12/07
	Stronsay					
466	Shetland – Mainland South	A1	2007	2003	2007 <sup>2</sup>	17/12/07
467	Shetland – Mainland Central	A1	2007	2003	2007 <sup>2</sup>	17/12/07
468	Shetland – Mainland North East	A1	2007	2003	2007 <sup>2</sup>	17/12/07
469	Shetland – Mainland North West	A1	2007	2003	2007 <sup>2</sup>	17/12/07
470	Shetland – Unst, Yell & Fetlar	A1	2007	2003	$2007^{2}$	17/12/07

All Explorer maps are now in new style Explorer covers.

# <u>Travel Maps</u>, <u>Tour series</u> – new editions

4	Peak District & Derbyshire	С	2007	-	2007 <sup>5</sup>	03/12/07
8	The Cotswolds & Gloucestershire	С	2007	-	$2007^{5}$	17/12/07
21	Suffolk	С	2007	_	2007 <sup>5</sup>	17/12/07

#### Irish maps

# Discover maps

8 Ballymoney D 12/11/07

# Discovery maps

44	Galway	Third edition	03/12/07
50	Dublin, Kildare, Meath & Wicklow	Fifth edition	28/01/08
83	Kerry	Third edition	25/02/08

## 1:25,000 Irish maps

Glens of Antrim (Water resistant) 14/01/08

## Forthcoming OSGB maps

The following maps have been announced for publication.

## <u>Landranger – new editions</u>

136	Newton & Llanidloes	B2	11/03/08
25	Glen Carron & Glen Affric	B2	24/03/08
26	Inverness & Loch Ness, Strathglass	C2	24/03/08
28	Elgin, Dufftown, Buckie & Keith	B2	24/03/08
189	Ashford, Romney Marsh, Rye & Folkestone	D2	24/03/08
197	Chichester & The South Downs	D1	24/03/08
19	Gairloch & Ullapool, Loch Maree	C1	14/04/08
20	Beinn Dearg, Loch Broom & Ben Wyvis	B2	14/04/08
21	Dornoch, Alness, Invergordon & Tain	C1	14/04/08
16	Lairg, Loch Shin & Loch Naver	B2	28/04/08
24	Raasay, Applecross, Loch Torridon & Plockton	B2	28/04/08
27	Nairn & Forres, River Findhorn	C1	19/05/08
35	Kingussie & Monadliath Mountains	B2	19/05/08
100	Malton, Pickering, Helmsley & Easingwold	C3	19/05/08
43	Braemar & Blair Atholl	C2	23/06/08
42	Glen Garry & Loch Rannoch	B2	21/07/08
91	Appleby-in-Westmorland	C2	21/07/08
38	Aberdeen, Inverurie and Pitmedden	C1	21/07/08
53	Blairgowrie & Forest of Alyth	B2	28/07/08
9	Cape Wrath, Durness & Scourie	C1	18/08/08
13	West Lewis & North Harris	C2	18/08/08
14	Tarbert & North Harris	C2	18/08/08
15	Loch Assynt, Lochinver & Kylesku	B2	18/08/08
18	Sound of Harris, North Uist, Taransay & St Kilda	B2	18/08/08
55	Lochgilphead & Loch Awe	C1	25/08/08
143	Ely, Wisbech & Downham Market	D1	15/09/08
156	Saxmundham, Aldeburgh & Southwold	B2	15/09/08

#### Explorer and Explorer Active – new editions OL29 Isle of Wight B2 17/03/08 141 Cheddar Gorge & Mendip Hills West B2 28/04/08 308 Durham & Sunderland A2 28/04/08 OL9 Exmoor B2 12/05/08 OL17 Snowdon A2 12/05/08 OL18 Harlech, Porthmadog & Bala A2 12/05/08 OL19 Howgill Fells & Upper Eden Valley A2 12/05/08 OL21 South Pennines A2 12/05/08 OL23 Cadair Idris & Llyn Tegid A2 12/05/08 OL28 Dartmoor B2 12/05/08 106 Newquay & Padstow B2 12/05/08 107 St Austell & Liskeard B2 12/05/08 139 Bideford, Ilfracombe & Barnstaple B2 12/05/08 104 Redruth & St Agnes B2 21/07/08 140 Quantock Hills & Bridgwater B2 21/07/08 219 Wolverhampton & Dudley, Stourbridge & Kidderminster A2 21/07/08 A2 Birmingham, Walsall, Solihull & Redditch 220 21/07/08 245 The National Forest А3 21/07/08 250 Norfolk Coast West А3 21/07/08 251 Norfolk Coast Central **A3** 21/07/08 252 Norfolk Coast East **A3** 21/07/08 OL31 North Pennines – Teesdale & Weardale A2 18/08/08 128 Taunton & the Blackdown Hills A2 18/08/08 166 Rhondda & Merthyr Tydfil A2 18/08/08 270 Sherwood Forest A3 18/08/08 179 Gloucester, Cheltenham & Stroud A2 15/09/08 188 Builth Wells A2 15/09/08 15/09/08 260 Nottingham, Vale of Belvoir A2 Travel Maps – Tour Series, new editions 12 Scotland Α 10/03/08 5 Devon & Somerset West Α 28/04/08 Irish Discoverer maps D 4 Coleraine 17/03/08 14 Lough Neagh D 17/03/08 18 Enniskillen D 17/03/08 27 Upper Lough Erne D 17/03/08 Other Irish maps **Newry Street Map** 2008 17/03/08 **Belfast Street Map** 2008 17/03/08 Lough Erne – Activity Map (water resistant paper) 2008 07/04/08

2008

14/04/08

Ireland Holiday Map North

#### Cassini Historical Maps

#### Past and Present Series

The following areas have been added since the list given in *Sheetlines 80*:

Blackburn Nottingham Bolton Preston

Bradford Salisbury & Stonehenge Cardiff & Caerphilly Sheffield & Rotherham Chester & Ellesmere Port St Helens & Wigan

Derby Stratford-upon-Avon & Warwick

Doncaster Swindon
Hereford The Wirral

Keighley & Haworth Torbay & Newton Abbot

Leeds Warrington, Widnes & Runcorn

Leicester Wnchester & Eastleigh

Liverpool York

#### **Revised New Series**

This is another new addition to the Cassini range. These maps are taken from Ordnance Survey Revised New Series (in colour) maps which were first published between 1896 and 1904. They have all been carefully scanned, digitally re-projected and enlarged to match the present-day Ordnance Survey *Landranger* series. Each Cassini map uses the same sheet number and grid references, so enabling the past and the present to be compared with ease and accuracy. All the Revised New Series maps of England & Wales (122 in all) have now been published.

A selection of New Popular Edition maps and maps of Scotland from various periods will be launched in 2008. More details are available from <a href="http://www.cassinimaps.co.uk">http://www.cassinimaps.co.uk</a>, where the maps can also be purchased. They can also be found in bookshops. Cassini have repeated their offer of a 10% discount to CCS members buying on line from their website. To obtain the discount enter the code CCS2008 when checking out.

#### 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, tel. 01207 583388, fax 01207 583399, or from their website at http://www.alangodfreymaps.co.uk/. Maps may be ordered directly from the website.

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

Ayrshire	3.12	Largs	1895	02/08
Buckinghamshire	2.15	Olney	1899	12/07
Cumberland	20.11	Silloth & Port Carlisle	1923	11/07
Denbighshire	28.07	New Broughton & Stansty Hall	1909	12/07
Denbighshire	28.08	Wrexham (North)	1909	01/08
Edinburghshire	8.07	Dalkeith (East)	1905	01/08
Essex (New Series)	54.15	Chelmsford	1919	01/08
Essex (New Series)	78.02	Woodford	1915	01/08

Essex (New Series)	86.07	East Ham & Barking (South)	1915	12/07
Glamorgan	16.09	Neath	1935	01/08
Glamorgan	43.11	Cardiff (North)	1915	11/07
Gloucestershire	56.15	Wotton-under-Edge	1902	11/07
Gloucestershire	71.01	Avonmouth	1901	11/07
Hampshire	65.10	Southampton (West)	1908	11/07
Kent	13.06	Sheerness	1931	02/08
Lanarkshire	11.01	Carmyle	1934	02/08
Lanarkshire	13.06	Shotts (West)	1939	02/08
Lancashire	30.05b	Morecambe	1931	12/07
Lancashire	88.08	Rochdale & Sudden	1908	12/07
Lancashire	95.05	Plodder Lane	1908	12/07
Liverpool Large Scale	20	Liverpool (Shaw Street)	1848	02/08
London	36	Willesden Green & Brondesbury	1935	01/08
London	47	Kensal Green	1935	02/08
London	56	Ealing	1934	01/08
London	57	Ealing Common & West Acton	1934	12/07
London	70	South Ealing	1934	01/08
London	71	South Acton & Gunnersbury Park	1935	01/08
London	85	Chiswick	1935	01/08
Perthshire	118.02	Auchterarder	1900	11/07
Staffordshire	12.06	Milton (North)	1898	02/08
Surrey	15.03	Camberley	1895	02/08
Sussex	66.09	Brighton	1909	12/07
Yorkshire	203.13b	Headingley	1934	02/08
Yorkshire	247.05	Mirfield (SW)	1930	02/08
Yorkshire: Town Plans	11	Hull (Railway Dock & Paragon Station)	1853	01/08

#### England and Wales one-inch

The italicised place name in brackets after the title is covered on a large-scale map on the reverse.

159	Wisbech & District (Crimplesham)	1907	11/07
251	Malmesbury & the Southern Cotswolds (Wickwar)	1896	11/07
184	Warwick & Rugby [Coloured edition] (Southam)	1897	12/07
37/47	Ravenglass & Sellafield (Gosforth)	1875	01/08
203	Bedford & Milton Keynes [Coloured edition] (Milton Keynes)	1895	12/07
52	Ripon, Thirsk & District (Topcliffe)	1891	02/08

#### Trench map reprints

According to Seymour, Ordnance Survey supplied over thirty-two million maps to the armed forces during the 1914-18 War. Specimens of the 1:100,000 series of Belgium and France do still come on to the market and change hands at reasonable prices, but larger scale trench maps are scarce and, when they appear, usually sell at high prices to collectors of militaria.

A Yorkshire firm of printers, G H Smith & Son, have now produced over thirty reprints of 1:20,000 and 1:10,000 trench maps. These retail at £3.50 each and are available from their website at *www.ghsmith.com* or at Stanfords' London shop. Each map is printed in colour and reduced to 70% of actual size to fit on a folded sheet of paper slightly larger than A2.