



Sheetlines

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

This edition of *Sheetlines* was published
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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

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Forthcoming events

Here is the programme for the first half of 2008. For further information or to book your place, email visits@charlesclosesociety.org.uk or call John Davies on 020 8504 1766.

Tuesday 15 January, 2 pm, Quickmap, Luton

Our venue is the former Luton Hat Factory, now an arts centre comprising studios and workshops. This is home to Quickmap (www.quickmap.com), who have devised ingenious methods to portray complex bus and rail networks on paper and as 'map movies' for on-screen displays.

Thursday 14 February, 10 am for 10.30, Royal School of Military Survey, Hermitage near Newbury

The school is divided into five wings specialising in geodesy and navigation, imagery, geospatial information management, geospatial information exploitation, and map design and production. In 2006, RSMS transferred from the Geographic Engineer Group to come under command of the Defence College of Intelligence, part of the Defence Intelligence Security Centre.

By kind permission of the Principal, Mr John Knight. As we shall be dining in the Officers Mess, dress code of jacket and tie or ladies' equivalent applies. There will be a small charge for lunch.

Tuesday 4 March, 2 pm, Aeronautical Charts and Data Section, Civil Aviation Authority, London

The Aeronautical Charts and Data Section formulates policy for aeronautical charts and aeronautical co-ordinates, and controls the scheduled production of maps and charts for both the Visual Flight Rules series and the Aeronautical Information Publication.

Friday 18 April, Douglas, Isle of Man

We will visit the Isle of Man Survey (www.gov.im/dlge/planning/cartography.xml) responsible for the large scale mapping of the island and will look at Manx historic mapping in the National Library and Archives.

Some members will no doubt wish to stay for the weekend to travel on the steam railway, the horse and electric tramways and Snaefell mountain railway.

Saturday 17 May, Annual General Meeting, Kingston

This year's AGM will be held at Tiffin School, Kingston upon Thames. Formal business will commence at noon and will be preceded by a talk and followed by the members' map market. Full details will be mailed to members with the April issue of *Sheetlines*.

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 also look at recent productions including a historical atlas based on 1830 OS mapping.

We are hoping to arrange an overseas trip again this summer. Details will appear in the April issue of *Sheetlines*.

The Oxford Seminars in Cartography

Thursday 31 January

The 'Book of Curiosities' revisited: the seventeen eleventh-century maps and diagrams after five years of study.

Emilie Savage-Smith (Professor of the History of Islamic Science, University of Oxford)

Thursday 22 May

From A-uo to Zyryan: mapping the world's languages

Giles Darkes (Cartographic Consultant)

All seminars run from 5.00pm to 6.30pm at the University of Oxford Centre for the Environment, South Parks Road, Oxford.

Thursday 7 February

TOSCA Field Trip: Hilary Turner speaking on the Bodleian Library's recently-acquired Sheldon Tapestry map of Gloucestershire (Space limited – for further details, please contact: nick.millea@ouls.ox.ac.uk or 01865 287119)

Cambridge Seminars in the History of Cartography

Tuesday 11 March

Mapping the Soviet: cartography and the construction of Stalinist space, 1928–1953

Nicholas Baron (Lecturer in History, University of Nottingham)

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)

All are welcome to these seminars, which take place at 5.30pm in Harrods Room, Emmanuel College, St Andrew's Street, Cambridge. Refreshments will be available after each seminar. Enquiries to Sarah Bendall, sarah.bendall@emma.cam.ac.uk, 01223 330476.

Other news

Charles Close Society map reprint in progress

Following very positive support from members for the idea first floated by David Archer,¹ we are now making good progress with what is intended to be a continuing series of reprints of historic and out of the ordinary Ordnance Survey maps.

David has provided a *London Passenger Transport Map* of 1934 for reproduction as our first example. This uses a one-inch Popular Edition base map (sheet 106) to which are added coloured roads and LPTB information. Mike Horne and Richard Oliver have kindly provided accompanying essays to set the map in its historical and cartographic context and James Anderson, of Cassini Maps, has generously offered to undertake pre-production work. Subject to final agreement, the map will be printed at its original scale by Ordnance Survey and folded into 'Landranger style' card covers.

Publication is expected fairly early in the New Year. We are investigating whether it will be possible to distribute this first map with *Sheetlines* to all members who renew their subscription for 2008/9, or whether a small charge will have to be made in order to avoid imperilling the tax refunds we receive on subscriptions paid under the Gift Aid scheme.

Maps of the Witham Fens 13th – 19th Centuries

Since the successful publication by The Lincoln Record Society of his previous atlas, our Secretary, Rob Wheeler, has not been resting on his laurels. He has been working hard editing an atlas of maps illustrating the history of the drainage of the Witham Fens.

This low-lying part of Lincolnshire is covered by an array of maps of intermediate scope, covering a greater area than a single parish but less than the whole county. Typically produced in connection with drainage or water transport, they go back as far as the medieval period and continue to the late nineteenth century. Many provide a comparable product to the maps of the Ordnance Survey, but from an earlier date.

This volume includes little known maps of the lands drained by the River Witham, together with those drained by the Steeping River but excluding those drained by the Black Sluice – essentially, the Witham Valley, the East, West and Wildmore Fens and the upper parts of those rivers. All of the most important of these maps will be reproduced in the atlas. There will also be a detailed listing which includes the less useful ones, so that researchers know what there is and where they can be found.

The history of the drainage of the area is unusually dramatic: by 1750 the Witham was a failed river: the winter floods were worse than they had been for centuries and navigation from Boston to Lincoln had ceased. Over the following sixty years, local interests, aided by some able engineers, brought both navigation and drainage to a state of perfection that made Lincolnshire prosperous and fed the industrial north. It is not intended to recount that history in detail, but the maps are an essential tool for understanding it and the introductory essay will help to illuminate certain episodes that have previously been opaque.

The volume will be in the same format as *Town Plans of Lincoln* and will contain an introductory essay of about thirty pages and around 130 pages of maps, many in colour,

¹ *Sheetlines* 73, 56.

ranging from a map of the West and Wildmore Fens from the thirteenth century Kirkstead Psalter to the Witham Fourth District drainage map of 1879. The maps included in this volume are not readily available and it would take an enthusiastic and assiduous researcher to locate them in libraries as far spread as the Lincolnshire Archives, the Bodleian Library and the British Library.

The atlas will be sold in shops at £30.00. Lincoln Record Society members will receive copies in return for their annual subscriptions. The publishers are making a pre-publication offer at £22.50 plus postage. This offer is open to members of the Charles Close Society. A descriptive leaflet containing an application form can be obtained from society member Ken Hollamby, 2 Queensway, Lincoln, LN2 4AH. Please send an SAE (preferably 240 × 110 mm, size DL). Ken can also be contacted on 01522-526731, or by email – ken@abbeyside.co.uk. The offer will close on 30 April, 2008.

London Cycle Guides

Transport for London has recently published a new set of cycle maps of the capital consisting of fourteen sheets, based on mapping by Geographers A-Z Map Co. The base map is black and white with recommended routes in colour. The Central London sheet is at approx. 1:7000, the others at approx. 1:20,000. These are updated versions of the series published in 2004 and are splendid pocket size maps for all purposes. They can be obtained free from TfL website at www.tfl.gov.uk – follow the link to the ‘Cycling’ section.

‘Concise guide’ at a bargain price

The remaining few copies of the paperback, 1993, edition of Richard Oliver’s essential handbook, *Ordnance Survey Maps – a concise guide for historians* are now being sold off to Society members at only £2.50 each. This offer will remain open until the day of the 2008 AGM unless, as is likely, stocks are exhausted earlier than this.

While the information in this edition is still valuable, anyone with a professional interest in studying large-scale and other historic Ordnance Survey maps is advised to buy the revised and expanded second, 2005, edition. This 256 page hardback is available to members for £13.50, a useful reduction on the £17.50 price to the general public.

These prices include UK postage and packing. Orders should be sent to the Publications Manager, The Charles Close Society, 11 Riverdale, Wetherby, Yorkshire, LS22 6RP, together with a sterling cheque payable to ‘The Charles Close Society’. Please allow 28 days for delivery.

Other Christmas bargains

For details of a discount offer that Cassini Maps are kindly making to Society members, and for information on their newly published box set of historical maps of London, see page 75.

Peter Barber’s splendidly illustrated hardback, *The map book*, was good value when originally published in 2005 at £25. The Book People currently have the book on offer at www.thebookpeople.co.uk for only £9.99. Not to be missed!

The makers of the blueback charts

Visit to Imray, Laurie, Norie & Wilson Ltd

John Davies

Imagine a mapping company older than Ordnance Survey. Imagine a company that published nautical charts before the Admiralty. Imagine a company still family-owned after many generations. And imagine navigational charts being produced in the heart of land-locked Cambridgeshire.

Imray (as the firm now styles itself) is all of these. Willie Wilson, the current proprietor, kindly hosted a recent visit by the Society, explained the history and showed us how things are done today. The origins of the firm go back to 1781 when John Hamilton Moore set up as chartmaker in Minories, by London's docks. It was not until 1795 that the Hydrographic Office of the Admiralty was established (whose first chart appeared in 1800). However, the business of the independent chartmakers thrived as the Admiralty struggled to supply the ever-growing needs of the Royal Navy throughout the nineteenth century. The charts produced by the private publishers were printed with blue paper backing and became known as 'bluebacks' to distinguish them from the official Admiralty charts.

In due course, Hamilton's became Imray's and in time, as demand slowed, merged with Laurie's of Fleet Street and Norie's of Leadenhall Street (by then owned by the Wilson family) to form, in 1904, Imray, Laurie, Norie and Wilson, at 156 Minories. In 1939 with the threat of war, the firm moved from London to rural St Ives, into the mill in which the charts were already being printed.

The early charts were hand-drawn from reports submitted by mariners (the firm has never had its own surveyors) and several such manuscripts exist in the archives with corrections and additions from later voyages. Later charts were produced, as they are today, from data derived from Admiralty charts.

Today Imray, located in a handsome 1820s former hotel in St Ives main street, has a total staff of 24 and has its own two-colour printing press. The firm produces charts, pilot books and guides for coastal waters and inland waterways, on paper and DVD, of the British Isles, Europe, the Mediterranean, the Adriatic and the Caribbean, under the Imray and Stanfords brands. Latest updated information, in the form of 'correction notices' is distributed via the website.

On arrival, Gerry Zierler who had set up the visit, introduced us as the gastronomic wing of CCS, and so Willie Wilson joined us for lunch in the local pub, the Oliver Cromwell (named after the local soldier). Thanks to Willie and his staff for their warmth and patience in showing us round.

For more information about the history of Imray and nautical charts, see *The Makers of the Blueback Charts* by Susannah Fisher, published by Imray, 2001, or go to <http://www.imray.com/> for their current catalogue.

Why the Ordnance Survey needs its history

Richard Oliver

Harley and Winterbotham: a statement of principle

The title of this paper may be recognised by some as adapted from a ‘keynote address’, ‘Why cartography needs its history’, by the late J Brian Harley to the British Cartographic Society symposium in Exeter in 1983. Unfortunately the address was never published, and in drawing on it for the present paper I have had to use no doubt incomplete notes made at the time.¹

There are two interpretations of J B Harley’s writings on map history. One is that up to the late 1970s he produced ‘empirical’ work with no obvious ‘theoretical’ basis, but then made a sharp change of direction and produced a series of theoretically-inspired papers.² These introduced a number of concepts new to the study of cartography, one of the more potent being ‘silences’: ‘things maps don’t tell us’. The other, which has been cogently argued by Matthew Edney, is that Harley was throughout concerned with *understanding* maps. Though he unquestionably had an interest in theory, there was no one ‘Harley line’: his theoretical basis shifted from paper to paper.³ In a much earlier comment on Harley’s writings, Edney observed that Harley could only provide broad guidelines.⁴

Thus it might be concluded that a ‘Harleian basis’ is not really practicable: for is there a starting point? Another angle is to suggest that his theoretical interests were not so exclusive in his last decade as to exclude other approaches, and that ‘Why cartography needs its history’ is one such.

Given that theoretical approaches tend to be concerned with ‘deconstructing’ the subject, one might ‘deconstruct’ the 1983 address, on the basis that its audience was largely composed of practising cartographers, rather than academics, or historians. It might also be suggested that Harley’s theoretical interests were intensified by his move to Milwaukee in 1986, and by certain Anglo-American differences, which might make the United States a more fertile ground for cultivating a theoretical approach to history generally and the history of cartography in particular. After all, the United States has a written constitution, and a certain attitude towards the written word, neither of which find their counterpart in Britain, where a much less well-defined climate of precedent and opinion holds sway. One might also ‘deconstruct’, or analyse, by pointing to Harley’s left-wing background. And this, I think, is the key to one of Harley’s motivations: the map as a social artefact. (No doubt such an ‘empirical’ approach is very ‘British’, and very ‘conservative’.) The wider context of his BCS paper was the scheme for a large-scale history of cartography, at first in four volumes, and since grown to at least six, which he planned with David Woodward. Only one volume appeared before Harley’s death in 1991: three more have appeared since.

¹ The present paper derives from one with the same title which was given at the Charles Close Society’s annual general meeting, held at Ordnance Survey, Southampton, on 19 May 2007.

² R R O, ‘Brian Harley, 1932-1991: historian of the Ordnance Survey – and much else’, *Sheetlines* 33 (1992), 1-8.

³ Matthew Edney, ‘The origins and development of J.B. Harley’s cartographic theories’, *Cartographica* 40, Monograph 54, Toronto: University of Toronto Press, 2005.

⁴ Matthew Edney, comment on p.93 of Edward H Dahl (ed), ‘Responses to J.B. Harley’s article, “Deconstructing the map”...’, *Cartographica* 26, nos 3 & 4 (1989), 89-121.

In ‘Why cartography needs its history’, Harley criticised the ‘after-dinner diversion’ attitude to the history of cartography, and castigated certain views on Ordnance Survey matters recently expressed in the *Daily Telegraph* and *Geographical Magazine* as ‘historically illiterate’.⁵ As now, in the early 1980s the OS and its pricing and publication policies were a contentious area. Harley’s point was that cartographic history had to be taken seriously: past experience could provide guidance for future decisions. One of the points that he made was that there was nothing new in digital mapping; it was anticipated in Ptolemaic co-ordinates.

This approach was not a novel one, had anyone cared to delve, though it is fair to say that Harley was arguing and inventing, rather than borrowing, what might be termed the use of history to explain the present predicament. Nearly half a century earlier Brigadier H S L Winterbotham had expressed rather similar views as a basis for what one might term his ‘history project’. The best-known part of this incomplete scheme is *The national plans*, published in 1934. The first section makes it clear that the audience for that book was primarily serving OS officers:

It is time to take stock of where we are going, and to put the stocktaking in a form available for the officer in whose hands revision rests. A library at Southampton is of small use to him... . These few notes, then, are meant to act as a stop-gap in the hopes that the historian may be provided.⁶

In his unpublished ‘Sidelights’ – handover notes to his successor, written on the heels of *The national plans* – Winterbotham observed of history: ‘It is curious how important it is here. So many questions come which refer to the date at which so and so happened, or the reason and authority for such and such.’ An OS officer’s ‘first duties do not postulate a knowledge of history and if he learns it at all it is later.’ Writing history would make permanent personal experience and knowledge. ‘Otherwise we shall go on chasing our own tails and committing the same old mistakes. For one of us Ordnance Survey history is as essential as military history.’ He went on to describe earlier histories of the OS as ‘outlines for the people’:

They are no use at all if you want practical reasons for the facts and methods of yesterday and today... . We shall, perhaps, cease those frequent irrational changes of minor policy (I have seen so very many of them) which are dictated by ignorance of why existing method has been found desirable... . Such a record would not be cartographic criticism but cartographic history and would be extraordinarily useful to us all.⁷

That last point, I think, is extremely important.

This straight talking (and selective quotation) from a senior military officer, driven half mad by frustration at ministerial apathy and chronic under-resourcing of his department, may seem to be a world as well as nearly half a century away from the concept of cartographic history which Brian Harley outlined in his address in September 1983. ‘Sidelights’ is subtitled ‘Notes on Ordnance Survey matters: some dictated in the cold reason of the office; some scribbled in the greater licence of an after dinner chair...’, and not just here does one almost see the wave of the cigar in one hand and the brandy in the other as the Brigadier holds forth. Harley criticised the attitude of ‘History as an after-dinner diversion’, but later in

⁵ The present writer must admit to not having investigated these.

⁶ H S L Winterbotham, *The national plans*, London: HMSO, 1934, 5.

⁷ H S L Winterbotham, ‘Sidelights’ (unpublished MS in OS library, Southampton), pp 14, 18.

his paper he observed that understanding the past helps guide future actions, including practical steps at work. It is this, I think, that draws together these two otherwise very different men – the one a conventional, if energetic, thinking and flamboyant, military figure, the other a reluctant National Serviceman who probably moved to the Left at least partly as a result of the experience, and who indeed was briefly a member of the Communist Party.⁸ One needs to distinguish show and substance: though he probably didn't know it, Winterbotham had a 'theoretical base'.

I therefore suggest that a very sound reason why OS needs its history – as do other surveying and mapping organisations – is so that the past can be understood, and provide guidance for the future. I venture further to suggest that this statement of principle provides quite as firm a 'theoretical basis' as anything derived from the writings of those who have sought to construct or deduce formal theoretical structures, which in turn may be influenced by the histories of the cultures in which they originate. Some examples follow of how history can shed light on various OS predicaments and practices.⁹

Finance

A fundamental problem for OS is whether it should be financed by the taxpayer or by the consumers of its products, or by a mix of the two. A critic might suggest that, very recently, this long-standing difficulty has been conclusively resolved: OS has achieved Full Cost Recovery, is self-funding, and indeed now makes a small but respectable surplus for the national exchequer. As a statement of how things stand in the autumn of 2007 this is beyond dispute: but one does not need to go far back into history – eighteen months into the spring of 2006 will do – to find that this was not always so, and that in the past there has been an element of support from the taxpayer. Indeed, up to the mid 1960s the financing of the OS was on the basis that the purchaser of OS mapping (digital data and direct input by surveyors had not yet come to confuse things) paid only for the cost of printing or otherwise producing the copy: the costs of survey and maintenance were borne by the national exchequer.

To explain how this came to be we need to know OS history in the middle third of the nineteenth century, and the transition from its being in 1820 a marginal organisation producing little more than a one-inch map, to one which by 1870 had the survey of 1:2500 mapping as its main occupation and justification, with a correspondingly considerable increase in manpower and resources. It would consume disproportionate space even to summarise the process: suffice it to say that the 1:2500 and its associated greater expense was adopted on the basis that there were indications that the extra cost to the exchequer would be more than offset by savings to individual taxpayers who would not need to commission *ad hoc* surveys, but could use the OS 1:2500 instead.

It would also consume disproportionate space to explain how this unravelled, starting with the proceedings of the Select Committee on Estimates of 1962-3, which investigated OS in detail, by way of the Ordnance Survey Review Committee ('Serpell Committee') of 1978-79, and of first the creation in 1999, and then the abandoning at the end of 2006, of the National Interest Mapping Service Agreement (NIMSA). By the end of 2006 the last remnants of exchequer funding for the OS had gone. Suffice it to say that, as the long-

⁸ I have not determined exactly when this was, though it would seem to have been around the early to middle 1960s, i.e. just at the time when Harley was apparently at his most 'empirical' in writing about later eighteenth century and earlier nineteenth century mapmakers.

⁹ And theoretically-minded readers can have fun 'deconstructing' it and looking for the 'silences'.

awaited and (by some) desired objective of full cost recovery came yet nearer, and as the supply of OS data metamorphosed from being predominantly on paper to being predominantly in digital, electronic form, so also did criticism of the necessary associated pricing structures: prohibitively expensive for many potential users of OS data. What had been periodical complaints found a champion: the Guardian *Free our data* campaign. This is discussed further in the Appendix, but we may note that both attackers and defenders of the full cost recovery position might have profited from a careful study of history. Those seeking ‘free’ OS data need to take account both of the principles established in the 1850s and of the developments set in train by the Select Committee of 1962-3; apologists for the OS position need to recognise that the present financially felicitous state of things rests on a solid foundation of payments from the taxpayer stretching back into the mid nineteenth century, for which some understanding of OS technical history is necessary.

The 1:100,000 map question

A long-felt want of some of us has been for good 1:100,000 or 1:125,000 mapping suitable for cycling and also motoring on side-roads: such mapping would include good relief information – contours at 20 to 30 metres interval – and roads down to bridleway status. The OS abandoned its 1:126,720 Second Series in 1961, mainly because of a shortage of drawing staff, and to date there is no sign of a replacement, although there is certainly a market for such mapping. In recent years the only commercial maps published that are an adequate substitute have been three by Mike Harrison covering Herefordshire, Devon and Cornwall. Two national road atlases, from Philip and the AA, cover most of Britain at 1:100,000, but lack meaningful relief information, and are unsatisfactory in some other respects.¹⁰ Some may find this surprising: something suitable for longer-distance cycling or restrained motoring, characterised by adequate relief information, ought to be in line with a move towards ‘green thinking’, and also ought to complement the rise of the 1:25,000 *Explorer* series.

I have explained at length the case for such mapping in two articles, one published in *Sheetlines* in 1998 and the other in the *Cartographic Journal* four years later.¹¹ The latter was commissioned by David Forrest, who enabled me to illustrate it with two versions of a 1:125,000 specimen (layered and non-layered), which was intended to make the point subtly that such a map need not differ in style much from what map users on four wheels instead of two are used to.

However, as well as setting forth what was desirable it was necessary to say why suitable mapping had been produced in the past but was no longer available. So as a preliminary I wrote ‘The rivals’, published in *Sheetlines* in December 1996, which endeavoured to provide short histories of the various intermediate-scale commercial topographic map series which had come and mostly gone between the 1860s and the 1990s, together with possible reasons for their failure.¹² Here, cartographic history provides the answer to why there is a present want. It has to be said that so far these scribblings have not borne fruit.

¹⁰ For reviews of Mike Harrison’s maps see *Sheetlines* 54 (1999), 5-6 and *Sheetlines* 74 (2005), 45; for review by Richard Oliver of *Philips Navigator Britain* and *AA Close-up Britain road atlas* see *Sheetlines* 78 (2007), 61-2; for review of the AA atlas by I Bryne see *Cartographic Journal* 44 (2007), 94-5.

¹¹ Richard Oliver, ‘Ordnance Survey maps for the cycle tourist’, *Sheetlines* 51 (1998), 14-31; Richard Oliver, ‘Mapping for cycle-touring in Britain: past, present, and a possible future’, *Cartographic Journal* 38 (2001), 48-60: the latter includes a comprehensive listing of relevant references.

¹² Richard Oliver, ‘The rivals: notes on some intermediate scale commercial topographic map series of Britain and Ireland since 1868’, *Sheetlines* 47 (1996), 8-36.

History as an explanation of map-colouring

A knowledge of historical circumstance can also be used to explore the depiction of features on maps. That said, it is sometimes difficult, if not impossible, to discover why certain things are as they are. Some features seem obvious enough: roads on all OS maps, field boundaries on the 1:25,000 and larger scales. It might be thought that the ability to depict field boundaries meaningfully was a substantial part of the justification for the 1:25,000, but in 1955 the OS briefly flirted with their removal, in order to save 20 per cent of drawing costs.¹³ Had they gone ahead they would probably have been lucky to salvage 20 per cent of the series' already poor sales. Something similar was to be seen some 46 years later, when some specimens were displayed at the Charles Close Society annual general meeting in Manchester of experimental versions of 1:50,000 *Landranger* mapping with public rights of way omitted. The object was apparently to reduce 'clutter', but it is difficult to believe that this particular measure was seriously intended, for surely 20 per cent of sales would have been lost.

The choice of colours on OS mapping is worthy of some study, as they can be interpreted as showing either comfortable continuity, or else fossilising circumstances which have long since passed. This is apparent on the 1:50,000 *Landranger* and the 1:25,000 *Explorer* series. Until the appearance of the modified colouring of the *Landranger* in March 2002 and the adding of Access Land to the *Explorers* in 2004-6 there was a good deal of design common to the two, and that was particularly marked in the road infills. The basics of this can be traced back to the redesign of one-inch mapping by Sir Charles Close in 1913-14: red and yellow were later supplemented by brown or orangey-brown, which has a certain hierarchical logic, but then later came blue for motorways, which to my eyes looks less hierarchical. Purple would surely be better, as stronger than red, but no doubt blue was chosen for two reasons: because it corresponded with motorway signing, and because it avoided another colour printing. I suspect that history was unknown when the tinkering with the *Landranger* colours was undertaken in 2001-2, and the green for primary routes, which to my eyes very ill-accords with the red for ordinary A-roads, was chosen because of the use of green for primary route signing. Incidentally, though I have described the red-brown-yellow progression as 'logical', the Gall and Inglis Graded Road Maps of the early twentieth century used a completely inverted four-colour scheme, with yellow for the best roads and blue for the worst, which for those of us who have become accustomed to modern OS practice is distinctly disconcerting.

A long-standing difference between the *Landranger* and the *Explorer* has been the colouring of public rights of way: red on the *Landranger* and its one-inch predecessor, and green on the *Explorer* and its *Pathfinder* predecessor. Both choices of colour can be readily explained by the limitations of printing technology in the past. Up to 1977-78 most OS small-scale maps were printed using 'natural' colours, and as each colour meant a separate pass through the press it was natural to restrict the colour-scheme. For this reason the 1:25,000 Second Series, as designed in the early 1960s, was a four-colour map, and used its green plate to colour woodland in a stipple, and show rights of way solid. The one-inch Seventh Series, redesigned as a quite separate operation, and emerging in its maturity as a six-colour map, used red, although green had been tried.¹⁴ The green used on the Seventh Series was

¹³ See introductory essay by Richard Oliver in Roger Hellyer, *A guide to the Ordnance Survey 1:25,000 First Series*, London: Charles Close Society, 2003, 44.

¹⁴ The experiments with colours for public rights of way on the Seventh Series are in The National Archives (Public Record Office) OS 1/700, and are illustrated in Yolande Hodson, 'Ordnance Survey and the Definitive Map of Public Rights of Way in England and Wales', *Cartographic Journal*, 39 (2002), 101-124, p.115.

much lighter than on the 1:25,000, and the woods were printed solid. Red stood out, and so red was adopted. The advent of the 1:50,000 scale a decade later gave an opportunity for redesign, and one of the changes considered for the enlarged scale was the colouring of the rights of way green. This would be facilitated by using stipple instead of solid for woodland, and the proposed effect can be judged from the 1:50,000 trial sheet produced for market research purposes in 1970, of which a number of copies are in private collections.¹⁵

Though they do not appear especially effective on the experimental sheet, green rights-of-way were nonetheless decided on for the 1:50,000. Printing technology was developing, and it appeared that it might be possible to print the new map series by four-colour process-printing. Six-colour process printing had been in use for a few years for a few non-standard OS maps, notably the *Dartmoor* and *Exmoor* one-inch tourist maps, and it appeared a logical step. The four-colour method was used for an experimental printing of sheet 196, but the synthetic green produced by the combination of yellow and cyan with screening meant that public rights of way running through woodland were almost invisible. Red was hurriedly substituted. Other difficulties then militated against the immediate adoption of four-colour printing, and all the initial printings of the 1:50,000, and the earlier reprintings and republications, were in six colours, with *red* rights-of-way.¹⁶ In 1982 experiments in titivating the *Pathfinder* led to printing the 1:25,000 *Outdoor Leisure* series by four-colour printing: no difficulty was experienced with printing synthetic green public-rights-of-way crossing stippled synthetic green woodland. By then it was presumably too late to do anything about green rights-of-way on the *Landranger*.

So temporary problems with printing in 1972 have left their mark 35 years later, with no sign of a change. Perhaps we may hope that if and when the *Explorer* and *Landranger* start to be produced direct from the OS's large-scale database, that they can be redesigned from first principles, with a common colour scheme and symbology as far as practicable. In that way the 'lesson of history', of former limited printing technology, might be learned, and the burden of history cast off.

Administrative boundaries for leisure purposes?

The 1:25,000 *Explorer* exhibits some further examples of oddities in the map which can be explained by history. Boundaries are a case in point. It is well known that the 1:25,000 Second Series was produced 'on the cheap' by reusing the linework of the then newly-drawn six-inch and 1:10,000 National Grid mapping. This led to a minuteness of building depiction which was perhaps more than was strictly justified at this scale (and which potentially might cause problems in revision later) and in an administrative boundary burden. There were times when the OS would rather have liked to be rid of the 1:25,000, but by the time that the problems attending the scale were apparent, enough had been published to create a public demand which would not be silenced, not least from the Ramblers Association and various educational interests.

¹⁵ It would be useful to know that there was at least one set of the four 1970 market research experimental maps in a 'safe' public collection, which in view of the de-stocking tendencies of many libraries means either The National Archives or else the legal deposit libraries. I do not know of such, but I will be delighted if and when I am proved wrong.

¹⁶ An A4-sized section of the four-colour printing of sheet 196 is preserved, as 'Annex G', in 'Report on the development of the 1:50,000 map series', n.d. [1972]: copy in CCS archive in Cambridge University Library. Again, it would be useful to be able to report the existence of a *complete* copy of sheet 196 in this form.

Both the original 1:25,000 Provisional Edition designed around 1944-5 and the Regular Edition replacement, of which only eleven sheets appeared, in 1956, showed only national, county, and parish boundaries: the same as on the contemporary one-inch. The six-inch and 1:10,000 also showed Parliamentary and later also European constituency boundaries, and so these were automatically imported onto the 1:25,000 as well, notwithstanding that thereby there was an additional revision burden, as these boundaries are subject to frequent review and change. District boundaries of various sorts were also imported. Formerly sequestered squares of the map on draughty hilltops suddenly found themselves overwhelmed by invisible boundary information. The map production process seemed to be stalking across the landscape. How far the boundaries stalked is open to question: boundary stones, posts and other markers are shown on the maps, but often these have disappeared on the ground.¹⁷ What was formerly practically invisible is now nearly wholly invisible, except on the map, thanks to the burden of history. Given that the 1:25,000 is now what OS publicity is wont to call a 'consumer map' ('run away and play, children'), this is all the more incongruous: or perhaps OS should modify its publicity.

In 2002 OS produced an experimental 'regenerated' *Explorer* generated directly from larger-scale digital data, which showed only national, county, unitary authority and district boundaries. One of the objections raised to the new mapping was to the omission of parish boundaries.¹⁸ So we still have the constituency boundaries. There's no escaping politicians...

A collection of cartographic specimens

Several experimental maps which have had a restricted circulation have been mentioned, and this suggests that it would be extremely useful were there a coherent collection of specimens readily available, of both OS and other mapping, both published and experimental. In principle, there is nothing new about this: one CCS member, Bill Batchelor, has produced a folder of specimens of OS mapping for his own district. A website might be the perfect vehicle. Here could be included superseded mapping, which may be troublesome otherwise to locate, and experiments, some of which may only survive in unique copies. Though the Charles Close Society is making digital copies of some extremely rare OS maps, of necessity this excludes the considerable range of standard series. Map designers could then consult the collection and see what had been tried in the past and was best avoided. There might be an index to certain features, for example colour-bands.

Vignetted colour-bands are something which are best approached with extreme care. Some of the unsatisfactory use of them in the past can be explained by the same sort of limitations of printing technology which led to the particular depiction of rights-of-way. Vignetted bands first appeared on the one-inch on the Fifth Edition, to indicate National Trust areas: the combination of dot-dash black with vignetted green made for 'clutter'. This style of depiction was continued on the New Popular Edition, but was evidently unsatisfactory, as hatched red was tried. On the *Lake District* tourist map of 1948 it looked as matter-of-fact as the rest of the map, whereas on the Seventh Edition pilot sheet a year later it was only saved from ruining an otherwise very nice map by the limited extent of National Trust land. In the event single lines were adopted: still in red, so as to avoid the expense of

¹⁷ Boundary markers come within the remit of the Milestone Society, which is constructing a database of mile stones and other markers, for which I have undertaken a little work around Exeter. I hope to publish some remarks on the depiction on current OS mapping of mile and boundary markers in due course.

¹⁸ *The Times*, 9 May 2003, pp 1, 24.

another printing. On the 1:25,000 Second Series green banding was used, from the same plate as supplied the woodland and the public rights of way. Banding reappeared on the one-inch in the mid-1960s, now to show National Parks. As the yellow plate seemed to be under-employed, it was obliged to exert itself by showing the National Park boundaries. It continues at this labour today, a monument to six-colour non-synthetic printing. We need history to explain this sort of thing.

The coming of four-colour printing in the mid 1970s enabled purple to be tried for National Park banding on the experimental 1:250,000 Sixth Series sheet 11/12 of 1976. This was not pursued, but twenty years later purple banding for National Trust and other land accessible to the public (the 'Purple Plague') was introduced to the 1:50,000 *Landranger* and 1:25,000 *Explorer*. Although not everyone admires the purple, it does at least show a willingness to exploit the possibilities of additional colours offered by four-colour process printing, and the same applies to the orangey effect for access land on the *Explorers*, with its interesting two-tone effects in woodland.

Perusal of specimens and the experience which they embody might also inspire changes to design and solutions to current problems. I referred to the four-colour scheme of the 1:25,000 Second Series or *Pathfinder*. The extensive files on this in the Public Record Office show that the final design was arrived at by a prolonged and painful process. Nonetheless, there is a clear resemblance to the 'utility' four-colour design familiar from the Second War Revision of GSGS 3907. That particular solution was probably worked out gradually within the OS: its immediate ancestor seems to be the amalgamating of two road colours on the original New Popular Edition into one on GSGS 3907, and other series, but it is by no means an idea unique to Ordnance Survey, as examples of various dates from New Zealand, France and the Soviet Union affirm.¹⁹ This suggests a starting-point for an improved version of the 'OS Select' service, to produce a cartography which is 'historically situated', that is, one which takes account of present technology and the problems of producing satisfactorily synthetic colours for customised mapping. Generating small-scale OS mapping direct from the large-scale database ought to give the opportunity to introduce this. Past mapping ought to give an idea of how to set about it. History has its uses.

And reasons why

As well as specimens of map design we need a statement of reasons why particular features are shown. Again, the depiction of roads seems obvious enough (at any rate to British residents), but what about, say, woods? The distinction between coniferous and non-coniferous woodland was abandoned when the 1:50,000 was introduced, but had to be restored a few years later following public protest. One wonders to what extent this was due to the then very-outdated and inconveniently-formatted depiction on the 1:25,000 Provisional Edition or First Series, which still covered much of the country in the later 1970s, and which therefore disposed most people to patronise the 1:50,000 instead. The reasons for dropping the distinction were presumably the convenience of not maintaining the tree-symbols. Do the reasons that brought about their reinstatement still apply?

A like point applies to the style of text used: the sans-serif Univers on the *Landrangers* and *Explorers* was adopted for ease of maintenance in analogue map production, conditions

¹⁹ These were all displayed when the original version of this paper was delivered. The New Zealand specimen was from a one-inch of the 1940s, the French from a relatively recent 1:25,000 and the Soviet example from 1:100,000 mapping of Lincolnshire.

which have not obtained at OS since the mid-1990s. Indeed, the conversion of the *Pathfinder* to the *Explorers* was rendered practicable not least because of the adoption of digital techniques. However, one should not condemn Univers or some similar sans-serif face on grounds of superseded technology: sans-serif usually occupies less space than serified, an important consideration in cartography where most text has to be squeezed in, rather than expanded to pad out spaces, and a mix of upright and italic, which is highly desirable for sake of superficial appearance, can bring with it considerable problems of hierarchy. What appears in upright, what in italic?

Antiquities

‘Antiquities’ or ‘Archaeological and historical information’ are usually indicated on OS mapping by distinctive lettering. ‘Gothic’ lettering for this is something of an OS speciality, and is less often encountered on non-OS mapping. Even Bartholomew on their half-inch map, the black plate detail of which mimicked OS practice in so many ways, used Hairline Roman for all antiquities, including Roman ones. Ordnance Survey of Ireland, on their admirable 1:50,000 series, use reddish-brown lettering, which produces a very good mixed effect of both integration and separateness. (It should be noted, incidentally, that in Ireland there are no Roman antiquities to complicate matters.)

The cut-off date for defining ‘historical’ has gradually been brought forward. The use of gothic lettering was systematised in the early days of large-scale survey in Britain, in the 1840s, and was used for buildings and other features dating from before 1688: up to the late 1950s subtly different styles were used for pre- and post-Roman features. Roman features were indicated in Egyptian lettering, presumably to indicate clear-cut classical civilisation in contrast to the barbarities of the Britons and of the earlier Middle Ages. This basic style is still used, though it might perhaps have been a good idea to substitute Times Roman when Univers was adopted for OS small-scale mapping in the early 1970s. The cut-off date for antiquities was advanced in the twentieth century to 1714, and more recently it seems to have been advanced to at least the third quarter of the nineteenth century. Some of the forts around Portsmouth, the planning of which was the occasion for some early OS 1:2500 mapping around 1860, are now shown in ‘antiquity’ lettering.

Whilst the use of ‘antiquity’ lettering thus seems to approach uncomfortably close to the present, its use is not wholly logical, except possibly in a historic sense. Some of us were brought up on the line that ‘the church’ is often the oldest building in a settlement, by which of course is meant the Anglican parish church. For those of us who lived in ‘parish’ England in our formative years, this is indeed the case: venturing into ‘township’ England it very often is not, and the Victorian churches in many northern English villages are often a couple of centuries later than many of the houses. As they are roughly contemporary with those forts around Portsmouth, they might, in a strictly logical sense, be classified as ‘antiquities’.

Perhaps a ‘logical’ solution would be to adopt a rigorously ‘physical’ approach, and use a distinctive style of lettering purely for ruinous or relict structures.

Churches

Churches, though often ‘antiquities’ in age, are treated as a class apart. Here again, one needs to understand the history. The OS started off by recording all places of worship on its large-scale maps, and Anglican churches and chapels on its small-scale ones: in this it closely reflected the practice of commercial mapmakers. In 1892 one-inch map-content came under

the scrutiny of a War Office committee, and two witnesses before the committee, Major Verner and Major Talbot, specifically asked for the depiction of churches as landmarks. It may be noted that neither specifically suggested the distinction of those with towers and spires, but nonetheless the committee recommended this, and the distinction has duly been made ever since.²⁰ Churches, like windmills, were asked for as *landmarks*: their treatment on the two-and-a-half-inch mapping of eastern England, produced in 1911-14 (later designated GSGS 3036), suggest that the possibilities of using steeples as military observation posts was a later development. Or perhaps it was the revival of an old principle, as King Charles I watched the Battle of Edgehill from a windmill.

But it wasn't quite as straightforward as that, and the process whereby the range of places of worship recorded on the one-inch maps was gradually extended is described by Yo Hodson in *Popular maps*, though the reasons remain obscure.²¹ The request to the 1892 committee seems to be the only statement of principle on the point. There are two possible explanations as to what happened over the next 25 years or so. One is that, as one-inch revision progressed, it was found that there were a good many non-Anglican churches which were landmarks and that it would be much more straightforward to include the lot. The other is a more subtle argument advanced in *Popular maps*, of social inclusiveness. At any rate, the churches continued to be shown, though around 1991 there was a change of practice and they were redesignated 'Places of Worship': a phrase one may not care for, but which turns out to have a respectable ancestry, going back to the late seventeenth century in the *Oxford English Dictionary*, and to at least the late eighteenth century on maps.²² Consequently some of the 'church' symbols on current 1:25,000 and 1:50,000 actually apply to mosques or synagogues. An interesting exception is the mosque at Woking, which was the first to be built in this country, in 1889.²³ Until 1980 it was, on the one-inch and 1:50,000 anyway, a 'cartographic silence', but then it duly appeared, as 'Mosque' on the newly revised 1:50,000 Second Series. This is the only instance I know of, of explicit identification: later mosques have not been identified by text.

The depiction of churches is complicated by there not being a complete correlation between appearance and function. A particularly odd example is the windmill at Reigate Heath, which has been used as a chapel since 1880.²⁴ The OS has continued to opt to show it as a windmill. Some denominations, notably but not only the Quakers, have 'meeting houses', and whilst some of these, as at Exeter, are ecclesiastical-looking, others, such as that at Grimsby, are former private houses wherein Quakers happen to meet. On current mapping (including the street atlases published by Philip) the Exeter meeting house is shown distinctively, but the Grimsby one is not.²⁵ Interpretation as a 'house' may have conditioned the treatment of the former parish church at Orleton in Worcestershire, now converted domestically, which retains its tower, but is shown on recent 1:50,000 and 1:25,000 mapping as an ordinary building.²⁶ A further complication is that of the 'secular steeple', of which

²⁰ *Report of Committee on a Military Map of the United Kingdom*, London: War Office, 1892, pp 7, 21, 25.

²¹ Yolande Hodson, *Popular maps*, London: Charles Close Society, 1999, 153-4.

²² The earliest example that I know of is on John Tuke's map of the parish of Leeds, published in 1782. It may be germane that Tuke was one of a notable Quaker family.

²³ The Woking mosque is at TQ 01505915: it is conspicuous from the railway.

²⁴ Ian Nairn and Nikolaus Pevsner, *Surrey* [The Buildings of England series], second edition, revised Bridget Cherry, Harmondsworth: Penguin, 1971, 431.

²⁵ The Grimsby Quaker meeting house is at 15 Manor Avenue, TA 26710891.

²⁶ Orleton church is at SO 699660.

there are something like a hundred examples in Scotland, and also a few in northern England; they look ‘ecclesiastical’, but are not, even though they are sometimes, as at Falkirk, more eye-catching than the town’s principal church.

Yet another complication affects chapels that are part of larger buildings, such as Oxbridge colleges, and cathedrals. Lichfield cathedral tries hard, with its three spires, but it remains in plan on all OS maps, and the spires are left to St Mary, to the south-east. One of the best-known ‘churches’ must surely be Kings College chapel in Cambridge, but, though the OS seems fond of using it on map covers, it is not shown distinctively on either 1:25,000 or 1:50,000. The principle appears to be that college chapels with steeples are shown, but not those without, for which reason many more college chapels are shown distinctively in Oxford than in Cambridge, depicted spires as much as dreaming spires.

With these complications it might be thought that it was time to return to first principles, and concentrate on landmarks. This OS duly did in 2002 when designing a new version of the 1:25,000 *Explorer*, to show access land, and to be generated direct from the large-scale database. On the experimental sheet, ‘Places of Worship’ disappeared, and in their place were ‘Building with Tower’ and ‘Building with Spire’. One suspects that this was done by replacing the existing church-steeple symbols, rather than by a reconnaissance on the ground, but then a certain latitude is permissible in experimental maps. One version of the map was produced for consultation purposes; another was displayed at the Outdoors Exhibition at the National Exhibition Centre in March 2003, and was no doubt seen by a great many people. Some of them noticed that in place of churches there were now vertical protrusions, and were outraged. That there were certain other maladroit aspects of the new mapping, such as the boxing of road numbers and the muted depiction of buildings, seem to have passed unremarked. (This map would be a very good example to include in a collection of cartographic specimens, as an example of what to avoid.)

The Times struck on 9 May 2003. There was an article on the front page ‘Hundreds of churches to be wiped off the map’, and for survivors of this shock who reached page 24 there was a long piece by Sir Simon Jenkins, ‘A cross marks the spot: wiping churches off Britain’s Ordnance Survey maps would be an act of cultural and topographical vandalism’.²⁷ Sir Simon did note that it was a proposal out for consultation; but by the time he had finished typing his piece, the proposal had effectively been finished off. And so crosses continue to mark churches and chapels of little interest save to their congregations; and numerous secular steeples rise heavenwards unremarked by Ordnance Survey. So much for ‘landmarks’.

Sir Simon’s piece did however draw attention to a complication unrecognised by Majors Verner and Talbot: as well as there being a disjunction between function and appearance, there is architectural or historical significance. The 1892 Committee was investigating *military* mapping of Britain, and the soldiers wanted a map that was clear and uncluttered. Some of it they did get quite quickly; some of it they have never got. Producing a completely separate military series, with radically different content, was not a practicable proposition, and so the British one-inch and its successors have been a compromise between civil and military inclinations.²⁸ It is a curious compromise: after all, no reasonable person suggests

²⁷ *The Times*, 9 May 2003, pp 1, 24.

²⁸ For a brief military view of the 1:50,000 *Landranger* see report of 1:50,000 study day at Derby in *Sheetlines* 52 (1998), 4. At a discussion on OS matters at the British Cartographic Society symposium in Liverpool on 15 September 2001, at which the writer was present, it seemed to be implied at one point by an OS representative that the military effectively had a veto on changes to the *Landranger*, at which point an audience member asked why the subject of

that troops on active service drive around in family saloons or that families have days out in armoured cars. The demands of clear mapping suggest a concentration on steeples: the demands of some users of the maps imply the showing of functioning churches or recognisable former churches which qualify as ‘antiquities’.

Conclusion

There are two points to be made. First, we need to know the *reasons* why current depiction of features on OS maps are as they are. A start might be to go through the legends of the 1:50,000 *Landranger* and 1:25,000 *Explorer* and list the known justifications for anything that does not appear immediately obvious. This information ought to appear on the OS website. Otherwise mapping is in danger of degeneration towards the meaningless. Second, we need a comprehensive collection of specimens, of both experimental and production OS mapping, supplemented by some examples of comparable commercial cartography, to serve as examples both to the merely curious and to those with responsibility for cartographic design. The Charles Close Society is in a good position to do something about both these ideas.

Appendix: The ‘Free our data’ campaign

The *Guardian*’s ‘Free our data’ (FOD) campaign has been running since early in 2006, and aims to open up access by citizens to data collected by the Government at taxpayers’ expense which at present is only available for a charge: Ordnance Survey and the United Kingdom Hydrographic Office are considered to be particular cases in point.²⁹ The argument for making OS data freely available is that many potential users are debarred by the charges which are levied in order that OS can be self-funding: therefore these charges should be waived. It must be understood that the campaign is concerned with *data* in digital form rather than with *maps* in displayed form, whether as paper products or as on-screen displays, both of which involve processing and manipulation of the basic data. The FOD campaign contends that the extra cost to the taxpayer would be more than offset by the increased economic benefits. Tom Steinberg and Ed Mayo have recently written a review for the Government, ‘Power of Information’, in which they argue the case for greater accessibility, and in a letter to the *Guardian* on 9 October 2007 succinctly summarise it: ‘The key issue about charging is whether the UK would benefit more in net terms from the more vibrant information market that more open information would bring than it would lose through having to find an additional £60m per year.’³⁰

The basic principle – increased cost to exchequer is offset by greater savings elsewhere – is of course that which determined the adoption of the 1:2500 as the standard scale of survey in the 1850s, but which has now been replaced by ‘commercial’ charging so as to be self-funding. The central premise of the FOD campaign is that the data has been collected at taxpayers’ expense; the OS case, put by Scott Sinclair, OS’s head of corporate communications, in the *Guardian* on 4 October 2007, is that OS is self-funding.³¹ This last is a point which the FOD campaign does not properly address. Neither side discusses the

Landranger design was being discussed at all. Somebody else suggested that modern technology ought to solve the problem of differences between civil and military needs. *Ought!*

²⁹ See <http://freeourdata.org.uk/blog/>

³⁰ Letter, ‘A case for free maps’, *Guardian*, 9 October 2007, 35.

³¹ ‘Response’, *Guardian*, 4 October 2007, 35.

problem of the Ordnance Survey Act of 1841: this gives OS powers to enter lands which are comparable with the decennial census, and confers a potential advantage enjoyed by no commercial surveyor, though the development of air survey has somewhat reduced the need to exercise these powers.³² It is understood that the problem of statutory access to land has been a long-standing impediment to OS privatisation.

The difficulty is that both sides are right and both are wrong. The increased cost-recovery policies pursued since the mid 1960s mean that a proportion of OS data has, in effect, been paid for ‘commercially’, and the current self-funding arrangements mean that as the database is maintained and updated, so every day the proportion which has been paid for by the taxpayer diminishes. Precisely *what* that proportion is would probably be very difficult and labour-intensive to calculate. One method would be to take each kilometre square of the National Grid, calculate the average age of the data within it – which for developing areas would be particularly complicated – calculate the cost to the exchequer in terms of the cost-recovery percentage for the year in which the data was collected (*i.e.* survey or revision, and bearing in mind that much rural mapping is based on ‘overhaul’ of fundamentally pre-1914 County Series mapping, and has been revised recently by air methods on a ‘cyclic’ basis), and adjust for inflation to 2007 prices. It follows from this that the extent to which ‘the taxpayer’ has paid for OS data would vary from one kilometre square to another: there must be very few which are wholly ‘self-funded’, and probably a great many in which the taxpayer has contributed more than fifty per cent of the cost. Another method, which would be a great deal more straightforward, would be to calculate the ‘replacement cost’ of the data in the OS database in the way that the rebuilding cost of a house is calculated for insurance purposes, taking into account present levels of technology and productivity which would no doubt reduce the cost considerably as compared with what has actually been expended, were the ‘historic cost’ to be converted into current prices. On the second, ‘current replacement cost’ basis, the value of the OS database might perhaps be £500m.

The advantages and disadvantages of full exchequer funding *versus* full cost recovery may be summarised as follows. Full exchequer funding is independent of annual sales income but may be vulnerable to wider Government spending reductions unless a special arrangement is in place guaranteeing steady funding, subject of course to periodical reviews to ensure value for money. Against this, it is ‘inclusive’ in that access to basic data is not barred by perceived excessive cost to potential users. Full cost recovery has the advantage of being independent of Government spending policies, but has the financial disadvantage of depending on a certain level of national economic activity, and the social disadvantage that not all potential users can pay for the data.

If the argument is accepted that supplying OS data ‘free’ would be more than offset by benefits elsewhere to the economy, the question remains how much this would cost the exchequer each year. The present cost of OS is about £110m per annum, which includes several activities irrelevant to FOD, such as the publication of ‘consumer’ paper maps, which account for about 7-8 per cent of OS activity, and such costs as computer software: for example, the ‘cartography’ of the OS *MasterMap* displays is supplied by Dotted Eyes Ltd.³³

³² There are comparable powers of entry under the Parochial Assessment Act of 1836, the Tithe Commutation Act of 1836 and the Geological Survey Act of 1845, but in all these instances the information is effectively being gathered for the purposes of the state, even though for the first two the work was almost wholly contracted to private individuals.

³³ Figures for OS turnover have been derived from recent annual reports, which are available on the OS website; for Dotted Eyes see their report of recent activity in *Cartographic Journal*, 44 (2007), 158-9.

The cost to the exchequer would be that of revision and maintenance, including such things as periodical renewals of equipment as well as a proportion of OS senior management costs. A report of 1981 estimated that by 1982-3 revision and maintenance would account for some 65 per cent of OS resources: I know of no more recent reliable figure.³⁴ Steinberg and Mayo quote a figure of £60m per annum. This is plausible, given total OS turnover and that national and local government consume a substantial proportion of OS data, and that if they did not get it from OS they would have to procure it from somewhere else: in either case, the taxpayer pays. The figures given by OS are more variable. In his defence of the *status quo*, Scott Sinclair quotes £110m, which Steinberg and Mayo dismiss as ‘wilfully misleading’.³⁵ An enquiry to OS, sent before Mr Sinclair’s piece appeared, elicited the remarkable answer ‘The 2006/07 cost of Topographic data capture... was 6% of OS operating costs of £109,659K for that year’, though this excludes software and hardware costs.³⁶ In the light of both the early 1980s figure and that of Messrs Steinberg and Mayo, the 6 per cent is a little difficult to believe. Assuming the £60m to be the most nearly correct, and on the assumption that the ‘wider benefits’ would include generating at least as much Corporation Tax for the Treasury, and assuming that tax to be at 20 per cent, it would be necessary for companies paying UK Corporation Tax at the full rate to generate at least £300m of extra business.

‘Free data’ would enable a restructuring of OS, dividing it into two or three parts. One, ‘survey’, part would be concerned with the maintenance of the database, and would cost perhaps £60m per annum, assuming that the Steinberg and Mayo figure is approximately correct. A second, ‘cartographic’, part would be concerned with processing the data: this might itself be divided, with one part supplying digital data to professional users, and the other supplying paper mapping and electronic navigation data for the mass market. The ‘survey’ division would necessarily remain in the public domain, though it might be that collection would largely or wholly be undertaken by contractors; the ‘cartographic’ division might be privatised, and indeed the problems of possibly unfair competition which dogged OS’s forays into ‘commercial’ publishing and ‘co-publishing’ in the 1980s and 1990s would be solved.³⁷ (The argument that OS supplies military mapping, and for that reason ought not to be privatised, seems to be a weak one when so many defence suppliers are already in the private sector.) The ‘OS’ brand name might well be worth keeping for both data collection, and for data and map publication, but the example of the various Virgin companies suggests that that ought not to be a bar to divided ownership. The prospect of such a restructuring and privatisation could greatly help the argument for supplying ‘free’ data.

A possible complication might be that at present the 1:25,000 and 1:50,000 ‘data’ and ‘cartography’ are inextricably entangled as raster data, and this might prompt either the creation of separate vector databases for these scales, or else another attempt at direct derivation from larger-scale data, which was the intention in 2002 but seems to have been subsequently abandoned.³⁸

³⁴ ‘Summary report of the study of revision’, August 1981: OS information paper OS81/11: copy in writer’s collection.

³⁵ A charitable view might be that Mr Sinclair would not appear to be an economist; and confusing *data* and *maps* does not seem a particularly good qualification for working in a national mapping agency.

³⁶ E-mails from Customer Services to Richard Oliver, 23 October and 6 November 2007.

³⁷ The writer wishes to make it clear that he is attempting to be realistic rather than idealistic: he has not shifted in his personal anti-privatisation stance.

³⁸ I have been unable to obtain an authoritative statement from OS on this point: anecdotal information suggests that any attempt at direct derivation has been abandoned.

GEOREF

Oh no, not another position-referencing system

Mike Nolan

Surprisingly, recent correspondence in *Sheetlines* reveals that there is still some confusion in the Society regarding grid-referencing. I refer of course to the question of rounding up or rounding down grid references. Since a grid reference always denotes the south-west corner of a quadrangle the case does not arise. However, in the context of position-referencing it is hoped that a note on the history of GEOREF, yet another position referencing system, may not be amiss.

In June 1949 the possibility of a common system of map referencing, applicable to all three Services, which would be suitable for giving location reports and for the direction of artillery and similar fire was proposed and an inter-services working party was set up comprising members from the Directorate of Military Survey, the Hydrographic Department, the War Office, the Air Ministry and Combined Operations.

By September 1949, two meetings had been held by which time it had been concluded, not surprisingly, that the original objective could not be fulfilled. The working party recommended that the terms of reference should be modified to make it possible to achieve as large a measure of common use as possible.

The Committee is to advise on the production and adoption of a system of reference primarily for the Air Defence of Great Britain which will be suitable for the whole area over which reporting is required but which will facilitate the integration of all air defence forces of Western Union countries.

The military survey representative, Brigadier J C T Willis, the Director of Military Survey, also suggested that the classification of the subject be downgraded from Top Secret and this also was accepted.

At the 145th Meeting of the Chiefs of Staff, revised terms of reference were agreed. Broadly these were:

The working party was to examine the various existing methods with a view to simplifying existing practices and securing as much uniformity between the three Services as possible. Any recommendations should achieve the greatest practical facility for common inter-Service use in navigational procedures, in giving location reports and for the direction of artillery and similar fire. The broad implications of cost, labour and time involved to put any recommendations into effect were to be considered. Finally the working party was to advise on the production and adoption of a system of referencing which would also facilitate the integration of all Western Union air defence forces, but with priority to be given to the air defence of the U.K.

In considering the problem the working party agreed:

That any recommendations must give fullest possible weight to the views of the U.S. and of NATO and that lack of uniformity in referencing systems between the allies should be avoided.

That it was essential for artillery to continue to use the grid system for surface artillery fire.

That the R.N. and R.A.F. could not accept the grid system as a world-wide referencing or position-reporting system.

That no satisfactory alternative to the use of the graticule and latitude and longitude existed.

That an R.A.F. system known as G.R.S. was satisfactory for air defence and had been trialled by Fighter Command.

In May 1950 the Inter-Service Working Party concluded that it was impossible to introduce a single referencing system to meet the needs of all three Services, that uniformity with the present and future practice of the U.S. and North Atlantic Pact was important, that grid systems must continue to be used by ground forces and by R.N. and R.A.F. when co-operating with them, that a new system called GEOREF already adopted by the U.S.A.F. and R.C.A.F. and by the U.S.N. for air defence would be acceptable for both air and seaward defence and this was already acceptable by the R.N. and R.A.F. for position reporting.

It recommended that GEOREF be adopted for Air and Seaward Defence and Inter-service and Inter-allied position referencing. It further recommended that the fullest possible use be made of this system in the R.N. and R.A.F. and that the only permitted alternative should be latitude and longitude referencing. It considered it probable that NATO powers would follow the lead given by the U.S.A. and U.K.

It also concluded that GEOREF was not applicable to land operations and artillery plotting which required accurate linear measurement and the use of rectangular coordinates and that the army must continue to use the grid system, however, since GEOREF was based on arc distances it was applicable to the whole of the earth's surface without discontinuity.

Since all NATO countries could use latitude and longitude graticule for position referencing, GEOREF could be adopted with minimum inconvenience. It was noted that, for security reasons, the R.A.F. had for many years used lettering of the graticule for position referencing, the letters being changed periodically in accordance with a pre-arranged schedule. Although the GEOREF lettering was fixed, the letters could easily be coded if necessary so this fixed lettering was not considered a disadvantage.

The adoption of GEOREF lettering would only require the necessary permanent lettering to be printed in the margins of existing maps and charts and this amendment need only be carried out as sheets were revised. Any risks to security could be obviated by an additional coding system.

The working party's report was supported by a graphic designated O.R. 1954, (Office Reference 1954), which comprised three figures explaining the system, Fig. 1, a world graphic showing the 15 degree quadrangle MK, Fig. 2, a graphic showing the sub-division of a 15 degree quadrangle into lettered one degree quadrangles, and Fig. 3, showing how a minute quadrangle's numerical values are derived within a lettered one degree quadrangle.

In May 1950, the C.O.S. Committee approved the report of the inter-service working party and recommended:

That GEOREF should be adopted for air defence, seaward defence and Inter-Service and Inter-Allied position reporting.

That the Services issue the necessary instructions for the adoption of GEOREF.

That the U.S. and Canada be informed that the U.K. services were adopting GEOREF.

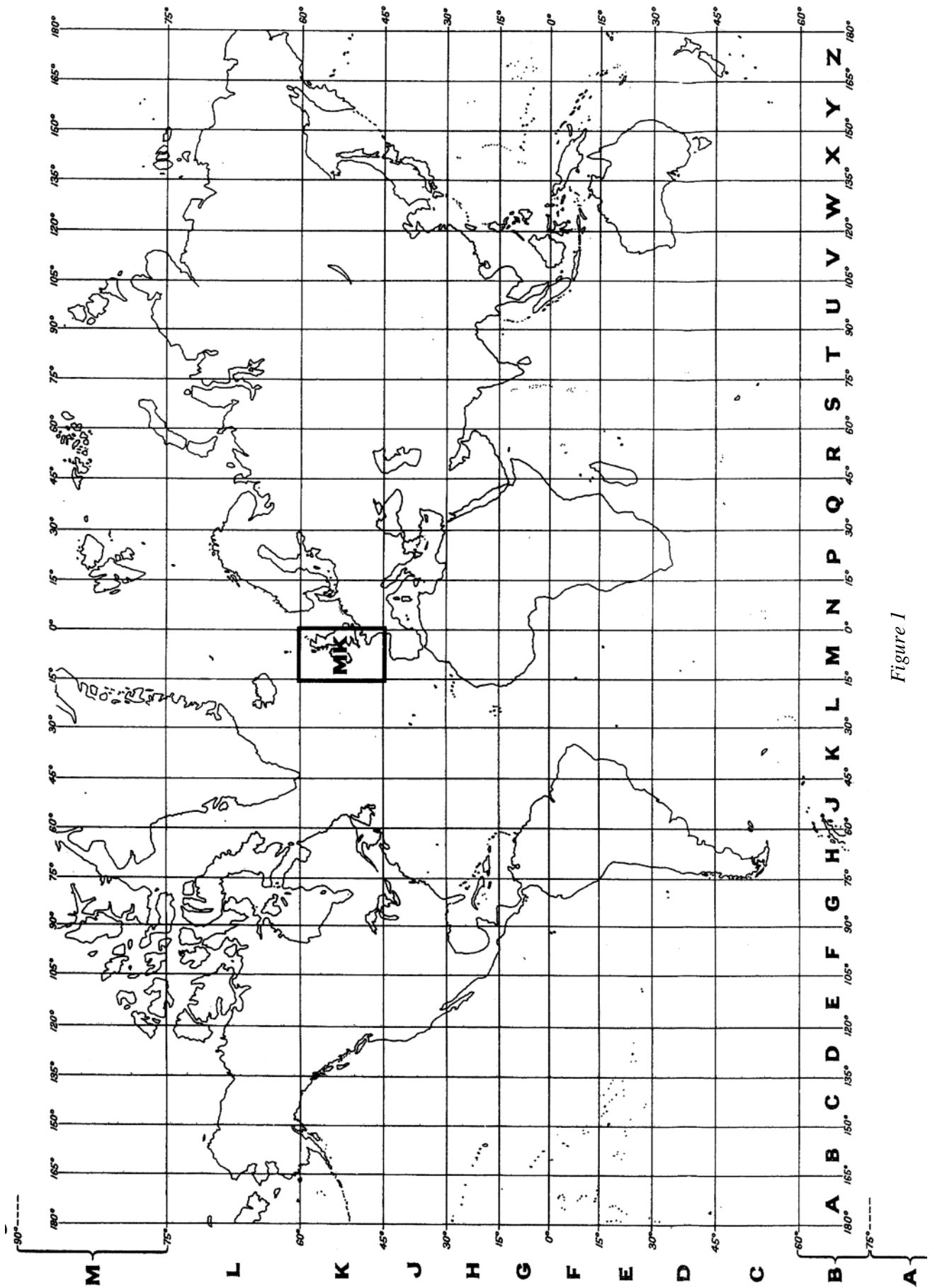


Figure 1

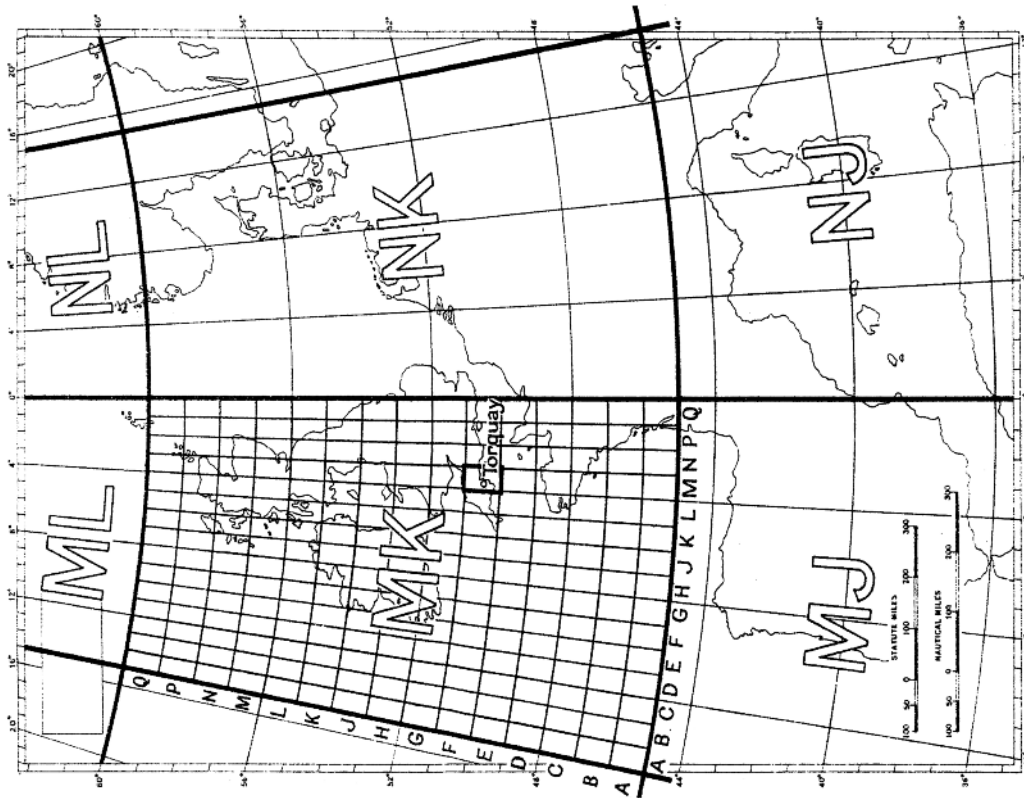


Figure 2

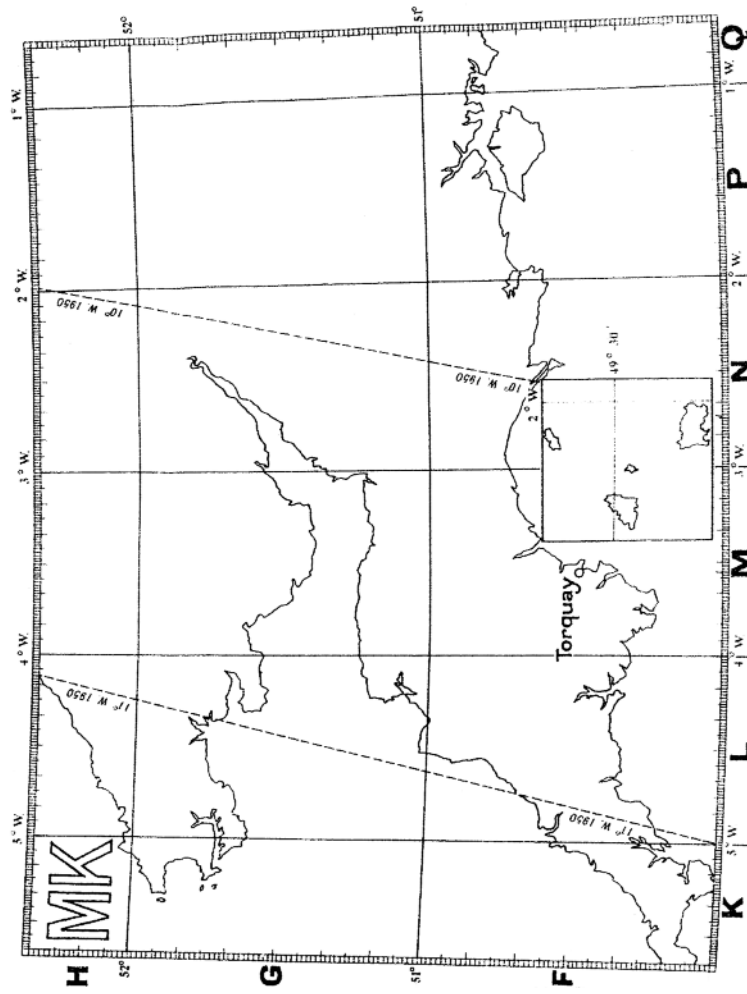


Figure 3

Figures 1 to 3 are taken from the early graphic illustrating the system, designated O.R. 1954, with a sample point at Torquay, MKMF 2728.

By June 1951 the introduction of GEOREF had also been accepted by India, Pakistan, New Zealand, Australia, Southern Rhodesia and South Africa.¹

In 1951 'The World Geographic Reference System' was the title of a paper presented to the Conference of Commonwealth Survey Officers by Colonel P C Schauer the Commanding Officer of the U.S.A.F. Aeronautical Chart and Information Service. Colonel Schauer explained the need for a simple unambiguous world-wide reference system to designate the location of any point on the earth's surface uniquely, which could be applied to any map or chart that showed a graticule of meridians and parallels, regardless of the projection used. The potentially ambiguous use of east and west for longitudes, and north and south for latitudes, was to be obviated by the proposed system. In this system, the earth is divided into twenty-four longitudinal fifteen-degree zones lettered eastwards from A to Z, omitting I and O, and twelve fifteen-degree latitudinal bands lettered A to M, omitting I, from a point of origin at the South Pole and 180 degrees east of Greenwich thus resulting in 288 quadrangles each 15 × 15 degrees in extent. Each fifteen degree quadrangle is divided into fifteen lettered one degree units eastwards and fifteen lettered one-degree units northwards, omitting the letters I and O. Each one-degree quadrangle is divided eastwards and northwards into 60 numbered one-minute units. Thus, four letters and four figures uniquely identify a one-minute quadrangle anywhere on the earth's surface, that is a one-nautical-mile quadrangle at the equator, but smaller as one approaches the poles.

For even greater precision in referencing, each one-minute quadrangle can be further sub-divided into decimal parts eastward and northward. Thus four letters and six figures define a quadrangle one-tenth of a minute in dimensions and four letters and eight figures define a quadrangle one-hundredth of a minute in dimensions.

GEOREF can also be used to define quadrangles of other dimensions by adding to the GEOREF of the south-west corner of the area, S, to denote 'side' followed by the east-west and north-south extent of the area in nautical miles separated by 'x'. For instance, WDHL 5307S10x10.

Circular areas can be defined by adding R, to denote 'radius', to the GEOREF of the circle's centre, followed by the radius in nautical miles. For instance, WDHL 5307R12.

Irregular areas are defined by the GEOREFs of each corner.

The addition of H, to denote height, and a numerical value enables height references to be designated. Two digits indicate thousands of feet. Three digits indicate hundreds of feet. Four digits indicate tens of feet. Five digits indicate units of feet. For instance, WDHL 5307H15.

In all cases GEOREFs and their elements are read 'right' and 'up'.

Colonel Schauer went on to emphasise that the U.S.A.F. was fully aware of the need for rectangular co-ordinates for the artillery but that GEOREF was primarily for global air operations.

The fifteen-degree quadrant lettered designators were to be shown in large letters in the south-west corner of each fifteen-degree quadrangle of small scale charts. On larger scale charts the designators were to be shown in the border. In the event of the southwest corner of a quadrangle falling on a sheet the designators were to be included in that corner of the quadrangle. The one-degree designators were to be shown in the southwest corner of each one-degree quadrangle.

¹ The full story, on which most of the above notes are based may be found at The National Archives, Kew at AIR 40/2610.

Doubtless there was further staffing of the system within NATO and presumably the Directorate of Military Survey included this item in a Technical Instruction on map marginalia.

By the 1950s, after the introduction of the Universal Transverse Mercator system, the use of latitude and longitude was again given as an option for reporting as an alternative to GEOREF in a British authority, *The Survey Staff Manual 1956*, page 74:

The Geographical Reference System (GEOREF).

4. This system which is based on geographical co-ordinates (i.e. values of latitude and longitude) is now normally used only for air defence purposes. For land/air operations (other than those connected with air defence) the military grid reference system is normally used. For strategic position reporting over long distances and for similar purposes positions may be given in terms of latitude and longitude if this is more convenient.

By 1962, in the United States, GEOREF was described as providing a method of expressing latitude and longitude in a form suitable for rapid reporting and plotting applicable to any map or chart graduated in latitude and longitude regardless of projection for inter-Service and inter-Allied position-reporting for air defence and most other large-area air operations.²

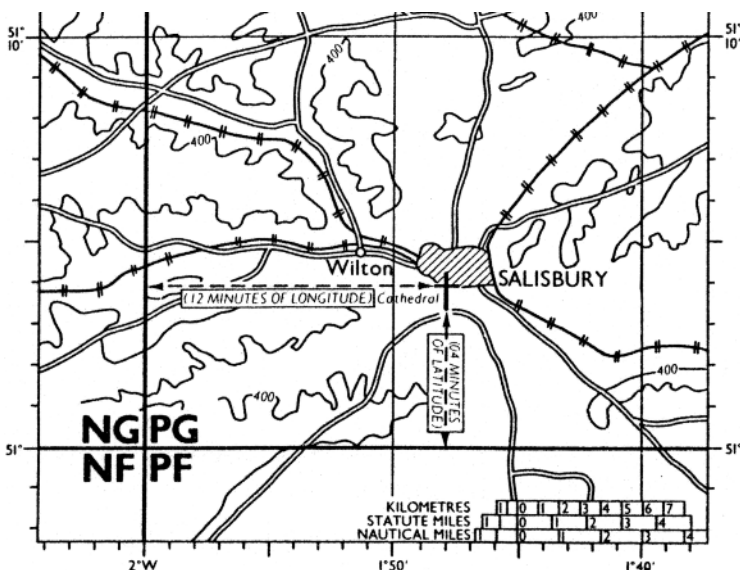


Figure 3: Salisbury Cathedral
MKPG 1204

A detailed description of the system with graphic examples based on a sample point of Salisbury Cathedral was subsequently included in *Military Engineering* Volume XIII, Part XII, *Cartography*, 1971, and this additionally included instructions on the abbreviation of references by omitting the fifteen-degree quadrangle letter elements when operations are unlikely to extend beyond a fifteen-degree quadrangle.

I do not know what happened to the intention to include the necessary lettering in map margins, what G.R.S. was, nor how GEOREF was actually used or applied for seaward defence. It is believed that there is no mention of GEOREF on Admiralty charts.

However, so it is that a World Geographic Reference System box is now found in the margin of many allied military medium and small scale aeronautical charts.

² Department of Army Technical Manual, *Grids and grid references*, TM 5-241-1, September 1962, 35.

The one-inch Old Series: more discoveries – yet more questions

Richard Oliver and Roger Hellyer

The introduction of sheet numbering

Old Series sheet numbering has been briefly touched on in *Sheetlines* recently, when it was suggested that, in the Essex group as originally published, what is familiar now as sheet 47 was originally sheet ‘III’.¹ Two copies duly numbered thus has now been found in The National Archives, confirming what was already implicit in known copies of sheet 48 numbered as ‘IV’.² It is possible that other surviving copies were numbered ‘III’ and ‘IV’ but that the numbers have been lost in mounting these sheets as parts of county composites.

Although it has for some time been evident that the group of Essex sheets issued as Part I of the Ordnance Survey in 1805 antedated the national numbering system, it is still unclear exactly when the decision to number nationally was taken. There is now some evidence that this was certainly no earlier, and possibly a year or two later, than the completion of the eight Devon sheets, designated Part II, in 1809. If the dates on the sheets are a reliable indicator, the next sheet to be completed, in April 1810, was a single sheet covering southern Hampshire (later sheet 11), followed by another single sheet covering the Isle of Wight (later sheet 10) dated June 1810, a group of four including part of Dorset (later sheets 15-18) dated 1811, a group of five completing Cornwall (sheets 29-33) in 1813, two sheets covering Sussex (5 and 9) also dated 1813, and sheets of south-east Kent and Surrey (4 and 8) in 1816. It is to be noted that these dates are at odds with publication by ‘Parts’: sheets 4, 5, 9, 10 and 11 constituted Part V, sheets 15-18 constituted Part IV, and sheets 29-33 constituted Part III. Sheet 8 was included in Part VI. It is well known that the sale of the maps to the public was banned between 1811 and 1816, and it is evident that the contents Parts III, IV and V were only decided on in 1816, in a neat left-to-right arrangement.

At least three copies are known of the Isle of Wight sheet in ‘unnumbered’ state, and this raises the question of whether sheet 11 might also exist in such a state. A recent discovery in The National Archives has been of copies of two of the ‘Part IV’ sheets of 1811, familiar today as sheets 16 and 17, numbered as ‘XVIII’ [18] and ‘XIX’ [19].³ Both exist in two states, one without publication notes, and are otherwise not quite complete: both copies of sheet 17 have a small area in the north-west corner which has not been engraved, and what is evidently the earlier of the copies of sheet 16 had its eastern sheet line engraved to the *west* of that on the finally published version. (Unfortunately it is not easy to illustrate this.) It is possible that two processes are at work here: first, a decision to change the ‘Part IV’ group from a ‘county’ group to a sub-group within a national scheme, making the moving of the sheet line eastwards necessary; second, the decision to number nationally. What we cannot explain as yet is how the numbers 18 and 19 were arrived at. One ‘answer’ could be that in the original scheme the four Essex sheets were sheets 1-4, the eight Devon sheets were 5-12, and the five Cornish sheets were 13-17, so that the four ‘Part IV’ sheets were 18-21, but this

¹ Richard Oliver, ‘The sheet sizes and Delamere sheet lines of the one-inch Old Series’, *Sheetlines* 77 (2006), 27-51, esp. p.39.

² The National Archives (Public Record Office) [TNA PRO] MPH 1/299, MPH 1/330.

³ TNA PRO MPH 1/761.

runs up against the difficulty that the Cornish sheets are *later* than the 'Part IV' sheets. An alternative explanation is that a couple of sheets were projected to the south of what we know as sheets 5 and 9, to accommodate Beachy Head and Selsey Bill, and that it was later decided to show these as extrusions. We have to say that we do not find either suggestion especially convincing.

New states – an update

More than four hundred new states have now been recorded over and above those listed in the cartobibliographies appearing in the Harry Margary volumes,⁴ and it is becoming ever more certain that many more have yet to be discovered. It is thus much too soon to offer revised cartobibliographies, though we thought it might be of interest to note the sheets for which earlier 'state 1' issues have been recorded. A copy of sheet 17, still carrying the sheet number 19 recorded on the pre-publication issues mentioned above,⁵ appears bound into an atlas of Old Series sheets in the Brotherton Library, University of Leeds.⁶ There are copies of sheets 59NE and 59SE in the collection at St John's College, Cambridge, which carry imprints earlier than those recorded so far. These are in the form:

Published at the Ordnance Map Office Tower of London 14th. February 1837.
by Colonel Colby Royal Engineers. / Engraved by Benj. Baker & Assistants.
The Writing by J.A. Harrison. The Hills by J. Caplin (59NE), R. Tovey (59SE).

A copy of sheet 68SE in a private collection is another sheet recorded with an earlier imprint date, 1 January 1838 instead of 1 May 1838. Sheet 67NW is recorded, also in a private collection, in a state preceding the engraving of the alignment of the Eastern Counties Railway (see pages 32-33); also missing are most of the rectories and vicarages that are present on known copies. A copy of sheet 44 carrying all the particulars of the known state 1, except that it lacks the usual price statement, is recorded in the map library in the University of Aberdeen. Copies of sheets 42NW and 42SW are in the India Office Records atlas (see pages 30-31), also 46NW and 46NE in St John's Cambridge, all with imprints in incomplete form. But at least our knowledge of the first states of the eight Lincolnshire sheets (64, 65, 69, 70, 83, 84, 85, 86), all apparently published at the same time in 1825, seemed secure. All were unpriced, all carried both the Gardner and Ramshaw imprints. But not so. Copies of sheets 69 and 83 without the Ramshaw imprint have recently been discovered in St John's College, Cambridge, with a second copy of 69 in the National Library of Scotland.⁷

Sheet 37

Reference was made in the Harry Margary Old Series facsimile volume VI, covering Wales, to the engraving of sheets 36, 37 and 41 of the Old Series being known to be in hand in 1820-21, although these sheets were only actually published in 1830-33.⁸ As the published versions of these sheets exemplify a relatively 'fine' style of engraving, it was evident that whatever work had been done in 1820-21 had subsequently been cleaned off the plates and

⁴ Harry Margary, *The Old Series Ordnance Survey maps of England and Wales*, with introductory essays and cartobibliographies by J B Harley and others, 8 volumes, Lympe: Harry Margary, 1975-92.

⁵ TNA PRO MPH 1/761.

⁶ University of Leeds, Brotherton Library, Whitaker 373.

⁷ National Library of Scotland, Signet s.137.

⁸ Harry Margary, *The Old Series Ordnance Survey*, volume VI (with introductory essay by J B Harley and Richard Oliver), Lympe: Harry Margary, 1992, viii, xiv, xv.



An extract from Sheet 37 as originally engraved, circa 1819-20. Grid lines added in red in manuscript. (Private collection.)

re-engraved. Indeed, the section of Glamorganshire coast on sheet 20 was added in about 1820 in the original 'bold' style, and then re-engraved in the 'fine' style at about the time that the adjoining sheet 36 was published in 1833. Sheet 13 was also being engraved in 1820-1 though it, too, would later be re-engraved in the 'fine' style prior to publication in 1830.⁹ It is now well-known that shortly after Thomas Colby was appointed Superintendent of the OS in the summer of 1820 various defects in earlier OS mapping became apparent, including the mis-mapping of Lundy. This led to a virtual suspension of fresh field survey between the early 1820s and mid-1830s, in favour of thoroughly revising all the unpublished material, of which there was a considerable backlog, and this included the area of sheets 13, 36, 37 and 41. Whatever had been engraved of those sheets in the early 1820s was removed from the plates, and all four were wholly re-engraved: the style of engraving as compared with, say, the group of eight Lincolnshire sheets (dated 1824, published 1825) leads no doubt on the point.

So much was known when the introductory essay for volume 6 of 'Margary' was written in 1991-92. Given the survival pattern of OS materials, and the apparent thoroughness with which likely sources had been searched, it seemed that the only evidence of the original form of sheets 13, 36, 37 and 41 was the documentary evidence of the letter-book and the stylistic evidence of the earlier and later depictions of the Glamorganshire coast on sheet 20.

Thus the recent discovery in a private collection of a copy of sheet 37 in its original engraved form is of great importance, and it was a prime candidate for scanning for the Charles Close Society's archive of 'unusual' maps. What was formerly merely implicit is now explicit. The map seems absolutely complete in every respect, save the publication date, which is '182_': it is clear that this version of sheet 37 in the 'bold' style, and unrevised, came very close to being placed on sale. It has not yet been examined in minute detail for landscape changes, but even a superficial comparison of this original version with the published version of 1830 shows that there are differences in the depiction of relief, for example.

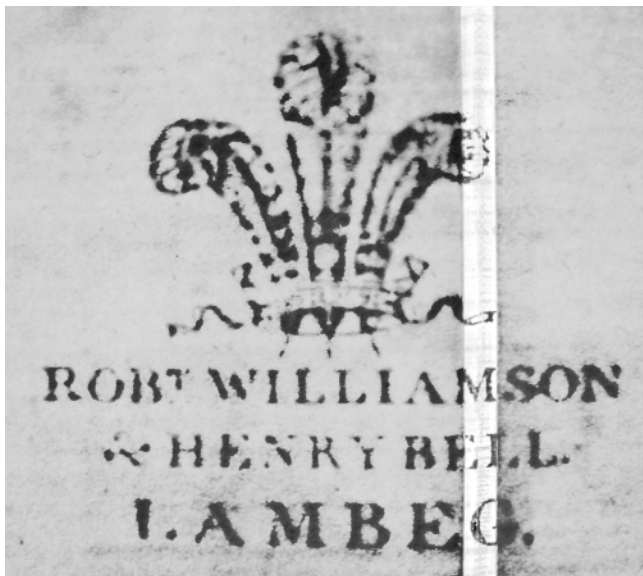
The history of the map prior to 2004 is unknown. The most likely explanation is that it was one of the pre-publication proofs of sheets 36 and 37 that were sent out to country gentlemen for comments and corrections, particularly to the orthography. The map has had a grid at about three-inch interval added in red ink; it is unclear why. If it is indeed a copy sent out for comment which was not returned, it gives hope that one day similar copies of sheets 13, 36 and 41 might come to light.

Not a watermark, but.....

While examining on a light table a mounted and dissected copy of sheet 32, in the hope of identifying a watermark, we were intrigued to discover something rather different. What we saw were two marques in a red dye within the linen backing, their existence perhaps being a

⁹ The documentary source for the original engraving is in the Ordnance Survey letterbook, *circa* 1817-22 now in TNA PRO OS 3/260: this document is discussed briefly in *Sheetlines* 77, p.47, and *Sheetlines* 48, p.10, n.5. Pertinent references to the original versions of sheets 13, 36, 37 and 41 are found on pp 68, 69, 88, 100, 101, 106, 107, 111, 160, 328, 379, 412. References to proofs being printed: sheet 13: 19 July, 14 and 30 August, 6 October and 15 November 1820; sheet 36: 24 July and 7 and 15 August 1820; sheet 37: 14 July, 15 August, 14 September 1820. Other references: 4 August 1820: one proof each of 36 and 37 sent to 'Mr Dillwyn'; 19 August 1820: further proofs of 36 and 37 sent out for corrections; 9 December 1821: reference to orthography of the 'Glamorganshire' sheet, *i.e.* presumably 36. The only reference to sheet 41 seems to be on p.379, apparently of September 1821, to the remainder of Carmarthenshire being engraved, which can only mean sheet 41.

sign that the cloth used for this particular sheet was cut from the very end of a roll. The marques were those of a company founded by John Williamson at Lambeg, situated on the River Lagan between Lisburn and Belfast, and later presumably passed to his son Robert Williamson and his relative Henry Bell. All three were sometime residents in Lambeg House. One marque is inscribed “R. Williamson & H. Bell Lambeg.”, the words encircling an Irish harp, with a crown above, the other “Rob^t. Williamson & Henry Bell. Lambeg.”, beneath the Prince of Wales feathers. This copy of sheet 32, in a private collection, is in Margary state 3, the first state generally available, presumably dating from about 1816 when the sale Ordnance Survey maps to the public was again permitted after the war. We would be most interested to learn if members have seen other such marques within the cloth on any Ordnance Survey maps, and especially Old Series. It should be noted that linen retaining makers’ marques was often used for tithe maps of *circa* 1836-50: there are several examples in TNA PRO class IR 30, but no study has been made of them.



*Linen marques on the backing of
a dissected copy of sheet 32*

The India Office Records Old Series atlas

We are indebted to Ian Mumford for drawing to our attention a little-known entry in the 1878 India Office Records catalogue, still extant in the collection as X/3482, an atlas containing 81 one-inch Old Series sheets. We would like to thank Andrew Cook, Map Archivist, India Office Records, for setting in place special arrangements for us to inspect the atlas which, with its boards detached, is too fragile at present for public consultation.

Other than sheet 59NE, of which more anon, the sheets comprising the atlas were clearly acquired at a very specific time, between 1831 and 1834. No other sheet present was published later than January 1834. Some earlier ones (e.g. 10, 11, 23, the four quarters of 54) are lacking, and it is not possible at this distance in time to ascertain whether or not they were received by the East India Company in the first place. Sheets which were published from

1831 are mostly in first states, many of them carrying the embossed ‘Presentation Copy’ stamp of the Ordnance Survey. Sheets published earlier were all printed from plates showing signs of revision – this is true even for the five sheets (13, 34, 35, 37, 44) published between 1828 and 1830. All the sheets published earlier were printed on paper made in 1827 or soon after, insofar as this was identifiable. But the assembly of these sheets into atlas form appears to have occurred some forty years later. The end papers of the atlas and the binding are consonant with a date sometime in the 1870s, suggested by the apparently contemporary Stanford index mounted at the front, which shows the 1873 railway branch to Skegness, but not the Settle and Carlisle line of 1876. Its appearance in the India Office Records catalogue provides a positive *terminus ante quem* of 1878.

The quarter sheets contained in the atlas are all individually mounted, with full borders extending beyond the plate line. Until the 1880s or so, it was common practice for OS agents to fulfil the undoubted wishes of the publisher, and combine the quarters into full sheets and sell them in that form, with, of course, the consequent loss of the lower marginalia on northern sheets, and upper marginalia on the southern ones. The loss was most profound for the NW quarter, where any arabic sheet number in the NE corner would usually be trimmed off as well. Thus quarter sheets which survive with full margins are until the latter years of the nineteenth century unhappily quite rare, and large collections palpably of the same vintage much more so. The value of such collections to the cartobibliographer in being able to set out positive rather than hypothetical statements about the current state of not just one plate, but many, at distinct moments in history is immense. For instance, in Margary volume 7, Richard Oliver was able to record from copies in collections in Nottingham and Carlisle that the earliest known issues of the southern quarters of sheet 61 lacked printed publication dates, these dates being added by hand. Evidently, there were initially different dates engraved on the plates (probably 1 June 1832) which required alteration to reflect more accurately the date of publication, but the process at the time of publication was incomplete. Quite possibly the northern quarters to which these sheets were attached were in the same form, but with the information trimmed, Richard was unable to ascertain whether or not this were true. Thanks to the India Office Records atlas, we can now be certain that the northern quarters of sheet 61 also lacked printed publication dates on first issue, which were filled by hand.

In *Sheetlines* 55, and a follow up article in *Sheetlines* 56,¹⁰ Roger Hellyer wrote about the very first Old Series sheets to be issued in quarter sheet form, 43, 54, 55, which the Ordnance Survey published in 1831. Thanks to unmounted complete copies in St John’s College, Cambridge, supported by a few examples in private collections, we were able to prove that these twelve sheets had been first issued with keyboard borders only around the outer two edges. All the marginalia was arranged in the expectation that the four quarters would be mounted together as a full sheet. Some sheets, though not others, carried the previously unrecorded Old Series quarter sheet price of Three Shillings and Sixpence. The copies of sheets 43 and 55 (unfortunately 54 is not present) in the India Office Records atlas are similarly in complete quarter sheet form with keyboard borders only around the two outer edges, so it came as a considerable surprise to discover that seven of the eight sheets were in a different state to the St John’s copies. Sheets with a price in St John’s did not have one in the India Office, and vice versa. This discovery leads to the proposition that eleven of the

¹⁰ Roger Hellyer, ‘The Old Series at St John’s’, *Sheetlines* 55 (1999), 19-30, ‘The Old Series – pre-St John’s’, *Sheetlines* 56 (1999), 12-13.

twelve quarters were printed in (at least) two states before the internal borders were added on the third. All except 55SE were issued with the Gardner imprint. It would seem that those same eleven sheets were first issued with a price of Three Shillings and Sixpence (only for 54SW and 54SE has this still to be confirmed); they were then reissued with the price deleted. For whatever reason it would seem that neither the Gardner imprint nor the price were applied to sheet 55SE. The price was then altered again, to one of Twelve Shillings and Sixpence for the four quarters, this appearing, as was to become standard practice on quarter sheets generally until about 1862, only in the NE corner of the NE quarter sheet. In the case of sheet 55, this addition was made before the internal borders were added, with 43 and 54, afterwards.

Two of the more interesting items in the volume are two versions of sheet 59NE, one the familiar engraved version, and the other a copy of the experimental lithographed version produced in 1838 by Messrs Standidge, of which hitherto only two other copies have been recorded.¹¹ The other two copies are in the deposited plans of the Bala and Dolgelly Railway of 1861 in the House of Lords Record Office, and in the Todhunter-Allen collection in the Bodleian Library in Oxford.¹² All three have in the top margin and in the right-hand margin 'A' with an arrow, pointing at a location about one mile south-west of Dolgelly: the purpose of this is unknown, but we know of no reason to connect it with the lithographing process.

824 copies of the experimental map were printed, and as the Todhunter-Allen set was made up *circa* 1860, it has been inferred that the stock was put into store for twenty years, and then issued for sale for a while around 1859-61 in preference to issuing newly-printed engraved stock. We still believe that this was what happened to the majority of the copies, but the recently-discovered copy in IOR X/3482, together with a copy of the standard engraved version, suggests that these two were one of several such pairs sent out for consultation and comment in 1838. To date, no other evidence of this 'consultation exercise' has come to light.

Alignments of unopened railways

The practice of showing on Old Series maps the alignment of as yet unopened railways, usually by means of lightly engraved parallel pecked lines, is probably best known with respect to the Eastern Counties Railway, incorporated in 1836 to run from London to Yarmouth via Colchester and Norwich. The full alignment was shown thus across sheets 1, 47, 48NW, 48SW, 50NW, 50NE, 50SW, 50SE, 66NE, 66SE and 67NW, all sheets in print by the end of 1838.¹³ In the event the railway was only opened as planned as far as Colchester, between 1839 and 1843. The continuation to Norwich fell to the Eastern Union and Ipswich & Bury St Edmunds Railways in acts of 1844, 1845 and 1846. The line was opened between Colchester and Haughley in 1846 and on to Norwich in 1849. The final section, between Norwich and Yarmouth, was opened earlier by the Yarmouth & Norwich Railway (incorporated 1842) in 1844. These were along totally new alignments. On most

¹¹ The only contemporary documentary references are Ordnance minutes of 1 June 1838 (TNA PRO WO 47/1791, pp 6601-2) and 11 June 1838 (TNA (PRO) WO 47/1792, pp 7007-9). The episode is discussed in Harry Margary, *The Old Series Ordnance Survey*, volume VI, xx-xxi.

¹² Bodleian Library, Oxford, THA 387.

¹³ The alignment was not shown on the first states of the four quarters of sheet 50 (published December 1837), but did appear immediately afterwards.

sheets the Eastern Counties alignment was deleted as the actual line was engraved, but in some cases it remained in place much longer.

This would appear to have been a shortlived OS policy. The lines of companies incorporated earlier¹⁴ were not shown at all until opened (so far as we know at present – it is always possible that newly discovered states of the maps concerned will show unopened alignments and prove us wrong), and by the time of the opening of the Bristol & Gloucester Railway (incorporated 1839, opened 1844), it was already a thing of the past. Even while current, the policy was implemented inconsistently, perhaps never more so than in the case of the Great Western Railway, from London to Bristol, (incorporated 1835, opened 1838-41), which was not shown until open between London and Bath on sheets 7, 13, 14 (wholly in Box Tunnel), 19 and 34, while the Bath to Bristol section first appeared as an unopened alignment on sheets 19 and 35. Similarly the projected alignment of the Wilts, Somerset & Weymouth Railway (incorporated 1845, opened to Westbury in 1848) was shown on sheets 14 and 34, but only as far as Trowbridge. Perhaps most telling is the case of the Cheltenham & Great Western Union Railway (incorporated 1836). The section from Swindon to Kemble and Cirencester opened in 1841 was shown on sheet 34 only as in use; whereas the continuation from Kemble to Gloucester and Cheltenham (not opened until 1845) first appeared on sheets 34, 35, 43SE and 44 only as an alignment.

The following is the full list of other alignments that have been recorded:

Commercial Railway, incorporated 1836, renamed London and Blackwall Railway in 1839 with the extension to Fenchurch Street; opened 1840-1

Fenchurch Street to Blackwall, on sheet 1

Northern and Eastern Railway, incorporated 1836, from Islington to Cambridge; diversion from Stratford approved in 1839; opened from Stratford to Bishops Stortford, 1840-2, to Cambridge, 1845

Islington to Cambridge, on sheets 1, 47, 51SW

Diversion from Stratford, on sheet 1

Bristol and Exeter Railway, incorporated 1836, opened 1841-4

Bristol to Exeter, on sheets 19, 20, 21, 22, 35

Weston super Mare branch, on sheet 20

South Eastern [and Dover] Railway, incorporated 1836, from Croydon to Dover. Opened 1842-4 from Redhill (diversion approved in 1839, but not recorded as an alignment on sheets 6 and 8).

Croydon to Dover, on sheets 3, 6, 8

London and Brighton Railway, incorporated 1837, opened 1840-1

Croydon to Brighton, on sheets 8, 9

Brighton to Shoreham, on sheet 9

Sheffield, Ashton-under-Lyne & Manchester Railway, incorporated 1837, opened 1841-5

Manchester to Sheffield, shown as open to Godley, then as an alignment across sheets 81NW, 88SW, 88SE. Not recorded on sheets 82NW, 87SW

Midland Counties Railway, incorporated 1836, opened 1839-40

Derby to Nottingham (with a short section north and south at Derby), on sheets 71SW, 71SE. Not recorded on sheet 71NE

¹⁴ London & Birmingham Railway (incorporated 1833, opened 1837-1838), Grand Junction Railway (1833 / 1837), London & Greenwich Railway (1833 / 1836), London & Croydon Railway (1835 / 1839), London & Southampton Railway (1834 / 1838-1840), Birmingham & Gloucester Railway (1836 / 1840).

Trent to Rugby, on sheets 63NE, 63SW, 63SE, 71SW, 71SE. Not recorded on sheets 53NW, 53NE

Manchester and Birmingham Railway, incorporated 1837, opened 1842
Crewe to Manchester, recorded only on sheet 73NE

Similar in kind are shorter alignments, such as between Milverton and Leamington Spa on sheet 53NW, at Ruthin on sheet 79SE, at Leeds (Hunslet) on sheet 87NW, at Castleford on sheet 87NW, at Manchester (Ardwick) on sheet 88SW, and from Guildford to Farnham, Ash towards Reading on sheet 8.

The Isle of Wight

The discovery of the original version of sheet 37 is complemented by another re-engraving episode, this time introducing an alternative version of sheet 10, covering the Isle of Wight. This was one of the earliest Old Series sheets to appear, nominally at least in 1810: only the four sheets of Essex (1805), the eight of Devon (1809), and sheet 11, by just a few weeks, precede it. As published, sheet 10 was based on a six-inch (1:10,560) survey of the island dateable to *circa* 1793-4: this belongs to the earliest period of Ordnance topographic survey, when it was confined to areas of particular military interest, and before the decision was taken to make it a national survey. The earliest version of the sheet lacks a sheet number, and this may be a relic of the original intention to publish what we know as the Old Series in county rather than national sheet lines.¹⁵ The sheet title, inset in the border, is the earliest use of the phrase ‘Ordnance Survey’ in print, though how far it should be interpreted as a proper name is called into question by a note above it.¹⁶ Later states of the sheet, exemplified by that used for the issue by David & Charles in 1969, are distinguished by the comprehensive re-engraving of the area around East Cowes and the Osborne estate, which derives from a 1:2640 survey of 1853-4 made at the behest of Prince Albert, and by the addition of a relatively dense net of spot heights, derived from the levelling associated with the re-survey of the island at 1:2500 in *circa* 1861-2. This seems to be the only instance of post-1850 large-scale survey being used to revise an Old Series sheet, and though spot heights were added to Old Series sheets from the early 1860s onwards, these were usually confined to those along lines of the primary levelling, the results of which had been published in text form in 1861.¹⁷

Brief reference has recently been made to an unpublished re-engraving of sheet 10, dateable to the 1850s.¹⁸ A photocopy of one of the three known copies was produced at the Charles Close Society study-meeting on the one-inch New Series held in Brighton in 1985, but no mention of it was made in a subsequent *Sheetlines* article which derived from that meeting.¹⁹ Recent work on the New Series and the related one-inches of Scotland and Ireland

¹⁵ This is discussed further in Richard Oliver, ‘The sheet sizes and Delamere sheet lines of the one-inch Old Series’, *Sheetlines* 77 (2006), 27-51, esp. pp 39-40.

¹⁶ The main title is ‘Ordnance Survey of the Isle of Wight and part of Hampshire’; above is ‘*The Coast of Hampshire in this Map is given in a Skeleton state only with a view to shew the connection of it with the Isle of Wight; for a perfect representation of the Coast of Hampshire, see the finished Sheets of that County.*’: note the capitalisation of ‘coast’, ‘map’, ‘skeleton’ and ‘sheets’. Conventions of capitalisation also affect ‘the National Grid’ and ‘the National Survey Grid’ in the 1930s: a point to discuss further on another occasion.

¹⁷ *Abstract of principal lines of spirit levelling...* (1861). Students of the use of theory in the history of cartography will please to note the use of the word ‘text’ here, and may care to reflect on the relative poverty of terminology.

¹⁸ *Sheetlines* 78 (2006), p.30, and n.99.

¹⁹ Richard Oliver, ‘New light on the New Series’, *Sheetlines* 12 (1985), n.p. [7-11].

has prompted further investigation of this unfinished Isle of Wight sheet: for no sheet number is engraved.

Comparison of the familiar published version of sheet 10, either in early form as represented in Volume III of the Harry Margary facsimiles or as subsequently modified and exemplified by the David & Charles issue, with the ‘unfinished’ re-engraving indicate radical differences between the two in content. There is no doubt that the re-engraved version was the result of a complete re-survey, rather than a revision on the basis of the 1793-4 six-inch survey. The ‘unfinished’ version is ‘complete’ in respect of roads, buildings, the outlines of woodland and other vegetation, low water mark of sandy (but not rocky) foreshore, parish boundaries and names; the border has the outlines of dicing for latitude and longitude, but no figures, and no ‘piano keys’; there is a scale-bar and undated engraving and publication note. There is no ‘ornament’ for land or foreshore cover, no water-lining, and no indications of height. The high and low water marks of the coast of Hampshire are shown, following the unrevised forms on sheet 10, but no details are shown other than a few names, including Hurst Castle: the style employed is reminiscent of that used to complete estuaries on cross-border sheets of the period straddling England and Scotland.

The map cannot be later than 1859, as the earliest known copy accompanies, and is annotated to act as an index to, some six-inch mapping (probably deriving from the 1793-4 survey) showing fortification schemes, dating from the summer of 1859.²⁰ On the other hand, it cannot be much earlier than the mid 1850s, as there is enough of the border to indicate that it was in the modified style, first seen in public on Old Series 95SE, published in July 1856, designed to leave a space between the latitude and longitude dicing and the ‘keyboard’ decoration. The publication note is very similar in style to that on early one-inch sheets of Scotland, with publication at ‘Ordnance Map Office’ (a pre-1859 indicator): that James rather than Hall is named as Superintendent may not be very meaningful, as this could be a relatively late addition. A date for the inception of fieldwork is provided by an Ordnance minute of 1 September 1852, which authorised the revision of the Isle of Wight at a cost of £200: this was in response to an application from Sir Henry De la Beche, the Director of the Geological Survey. In the event, the geological version of sheet 10 was published in 1856 using an electrotpe duplicate of the contemporary published version of sheet 10. No further documentary reference to the revision or to the unfinished map has been traced.

There are two possible explanations as to why the island appears to have been resurveyed *de novo*, presumably at the two-inch (1:31,680) scale. One is that it was originally intended to revise on the basis of dry proofs of the existing published map, but that it was found that the planimetry was too distorted to allow this, and so it was less troublesome to begin again and re-survey.²¹ The other is that the planimetry was known to be suspect – prompting De la Beche’s request – and that ‘revision’ was a euphemism for re-survey. It is possible that the survey of the Osborne estate at 1:2640 suggested that the best way was to remap the whole island, though in practice the Osborne work was fitted into the old plate, and so this is perhaps not the complete explanation. Whatever the motive, the island was resurveyed rather than revised.

The cartography, so far as it can be studied given the admittedly incomplete form of the map, is interesting, as it is contemporary with the design work on both the one-inch mapping

²⁰ Any embossed printing date in the top margin has been lost.

²¹ ‘Dry proofs’ were impressions taken from the copper plate on undamped (‘dry’) paper: this minimised distortion, but gave a weak image-quality, which would be excellent for revision, but unacceptable for sales purposes.

of northern England and that on the one-inches of Scotland and Ireland. The Isle of Wight sheet differs from the others in that it was presumably derived from *ad hoc* survey, rather than by reduction from the six-inch or larger scales, but there are a number of points of similarity which argue as much for an ‘indoor’, planimetric, view rather than an ‘outdoor’, topographic, one.²² It is the sort of map which might be expected to result from work by surveyors trained originally for large-scale work, who had been diverted to small-scale work, rather than by those trained to a more three-dimensional attitude from the beginning. Apart from small crosses for churches, there is a notable lack of symbolism for potential landmarks: lighthouses are shown by description, but windmills – of which there were several on the island – are ignored.²³ This is in line with contemporary one-inch mapping derived from the six-inch, where features were recorded by their ‘footprint’ on the ground, rather than for their prominence in the landscape. This is a very different concept of topographic mapping compared with early Old Series sheets, with their numerous minutely-engraved pictograms for such landmarks as windmills, obelisks, cairns and gibbets.²⁴ There are rather fewer minor names than on either the original published map, or on the one-inch New Series sheets, derived from the 1:2500 resurvey and published in outline in 1876. Where the unpublished sheet differs from contemporary one-inch mapping of northern Britain and Ireland is in its treatment of coastal names: most bays and headlands are named in italic capitals, as on the original published sheet, whereas elsewhere at this time there was much more use of lower-case, as is demonstrated by the New Series mapping of the 1870s. However, in the west of the island a few names are in lower-case Roman. This, like certain inconsistencies noted on some roughly contemporary one-inch sheets in Yorkshire – e.g. the naming of lanes on part only of Old Series 93SW [New Series sheet 70] – suggests a change of instructions when the mapping was at compilation or engraving stage.

The depiction of parishes suggests a desire to assimilate the content as much as possible to the contemporary one-inch of large-scale derivation, on which this information was standard. Comparison of the unpublished sheet with the ‘Index to Tithe Survey’ version of the Old Series on the one hand and the New Series mapping on the other indicates that the boundaries were surveyed anew, rather than taken from the Index to Tithe Survey.

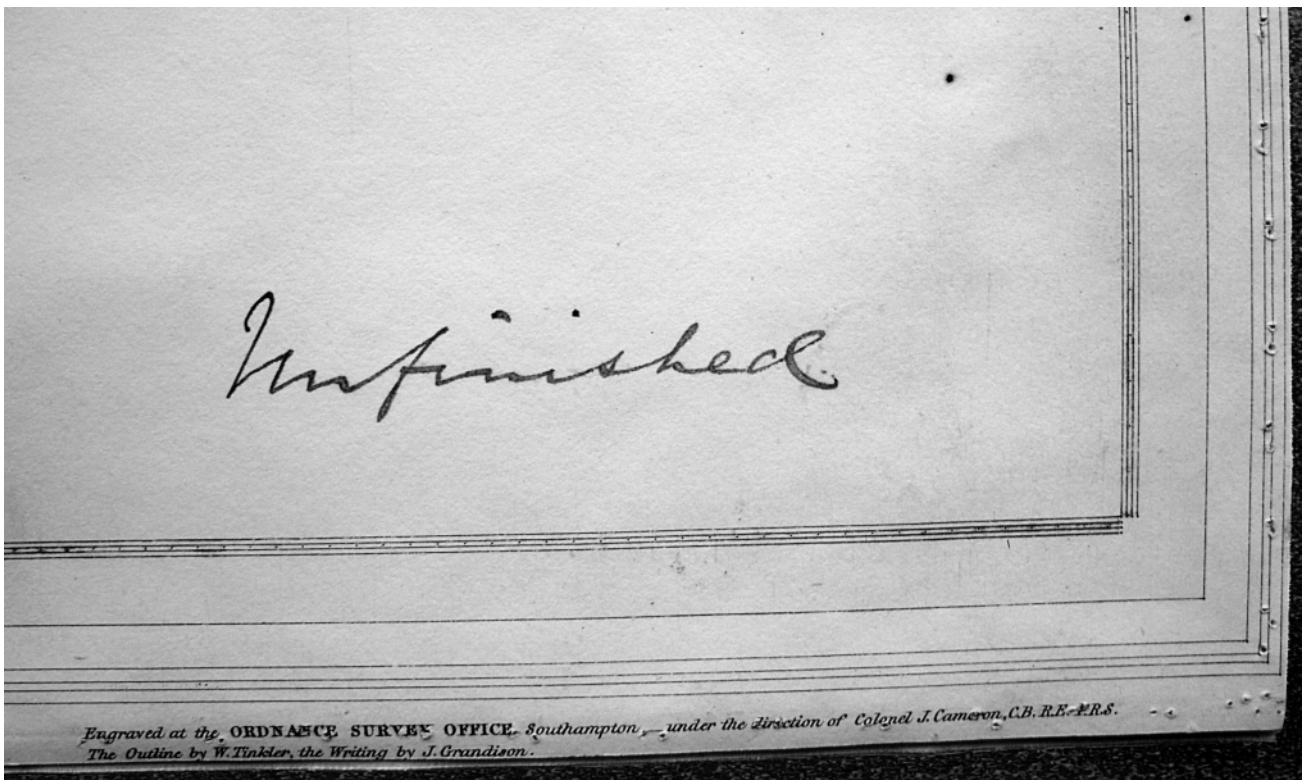
It remains to be considered why this mapping remained unfinished and unpublished, at any rate as a sheet-map. One possibility is that it was a casualty of the change of Superintendent in August 1854, when Lt-Col L A Hall was succeeded by Major (soon to be Lt-Col) Henry James. James may have had the work curtailed at a convenient point, when the outline and names were fairly complete, but before any vegetation or relief had been engraved. Another possibility may be that James was in principle not ill-disposed, but that pressure on engravers, particularly for the one-inch of northern Britain, meant that it went to the back of the queue and eventually fell by the wayside. A third possibility is that it was a victim of, first, the slow rate of engraving, and then of the resurvey of the Isle of Wight at 1:2500 after 1859, which meant that it represented an obsolescent landscape. This last possibility needs further reconsideration in the light of wider Old Series development at this time, including the combining of the quarters of sheets 43 and 55 into full sheets, and the refurbishing of worn hachures.

²² This useful distinction is taken from J H Andrews, *A paper landscape: the Ordnance Survey in nineteenth-century Ireland*, Oxford University Press, 1975, p.237.

²³ The one-inch Third Edition mapping of the Ireland, revised in 1901, shows three windmills.

²⁴ See e.g. Harry Margary, *The Old Series Ordnance Survey*, Vol III (1975), pp xviii-xx.

The unfinished Isle of Wight map is known in three copies. That of 1859 or a little earlier is in the Public Record Office. Two more copies, both printed in 1909 (at a time when a larger number of 'record copies of Old Series sheets were being printed), are in Cambridge University Library and the OS Record Map Library.²⁵ The 1909 copies are in a different state, in that fortifications have been deleted, including those at Hurst Castle, Fort Victoria and Sandown: this may have been undertaken *circa* 1880. Though these are the only three 'complete' copies of the map known at present, zincographed extracts were used as bases for index maps for some 1:2500 parish area books.²⁶



The bottom right-hand corner of an 'unfinished' state of the Isle of Man sheet. (Private collection.)

The Isle of Man

At the first members' meeting of the Charles Close Society the late Guy Messenger asked if anyone had been able to find a copy of the Old Series sheet of the Isle of Man carrying the number 100, which according to numerous published indexes it should have done.²⁷ We have to report that, to date, no state of the Isle of Man map numbered solely as either 'C' or '100' has come to light. By the time that it was published – in outline nominally

²⁵ TNA PRO MR 1/1311; Cambridge University Library Maps.aa.G.014.1. The latter was the original of the photocopy exhibited at the CCS meeting in 1985.

²⁶ For example, in the British Library Map Library copies of the area books for Mottistone, Newchurch, Northwood, Shalfleet and Shorwell parishes. As instances are known of earlier 'sketch map' indexes in parish area books being replaced by later ones using New Series material (e.g. that for West Tilbury in the Essex Record Office), it may be that the same happened for the Isle of Wight.

²⁷ *Sheetlines* 2 (1981), n.p. [p.5].

in December 1873 and with hills nominally in February 1874 – the New Series had been authorised to replace Old Series sheets 1-90, and renumbering of Old Series 91-110 had been decided on. Actually there were two renumbering schemes. The earlier of the two was for what may be termed a ‘full sheet series’, of nominally about 104 sheets, in practice divided into quarters, and cutting lines and indications of ‘*Sheet 14*’ and ‘*Sheet 20*’ duly appeared on earlier states of the Isle of Man sheet. The later was for the familiar ‘small sheet series’, nominally of 360 sheets, and cutting lines and sheet numbers (36, 45, 46, 56, 57) were duly indicated on the outline version of the Isle of Man sheet; the hills version was later amended similarly. Confusingly, both the outline *and* the hills versions of the sheet *both* carried a diagram in the bottom margin which gave the sheet lines and numbers for the 360-sheet scheme. Although the 360-sheet scheme was decided on by late 1873, the mainland northern English sheets continued to carry only the Old Series numbers until the winter of 1881-2, when the new numbers were substituted on the plates. The Isle of Man sheet belatedly received numbering in the top margin at the same time and in the ‘mainland’ style: (*formerly sheet 100*) SHEETS 36, 45, 46, 56, 57.

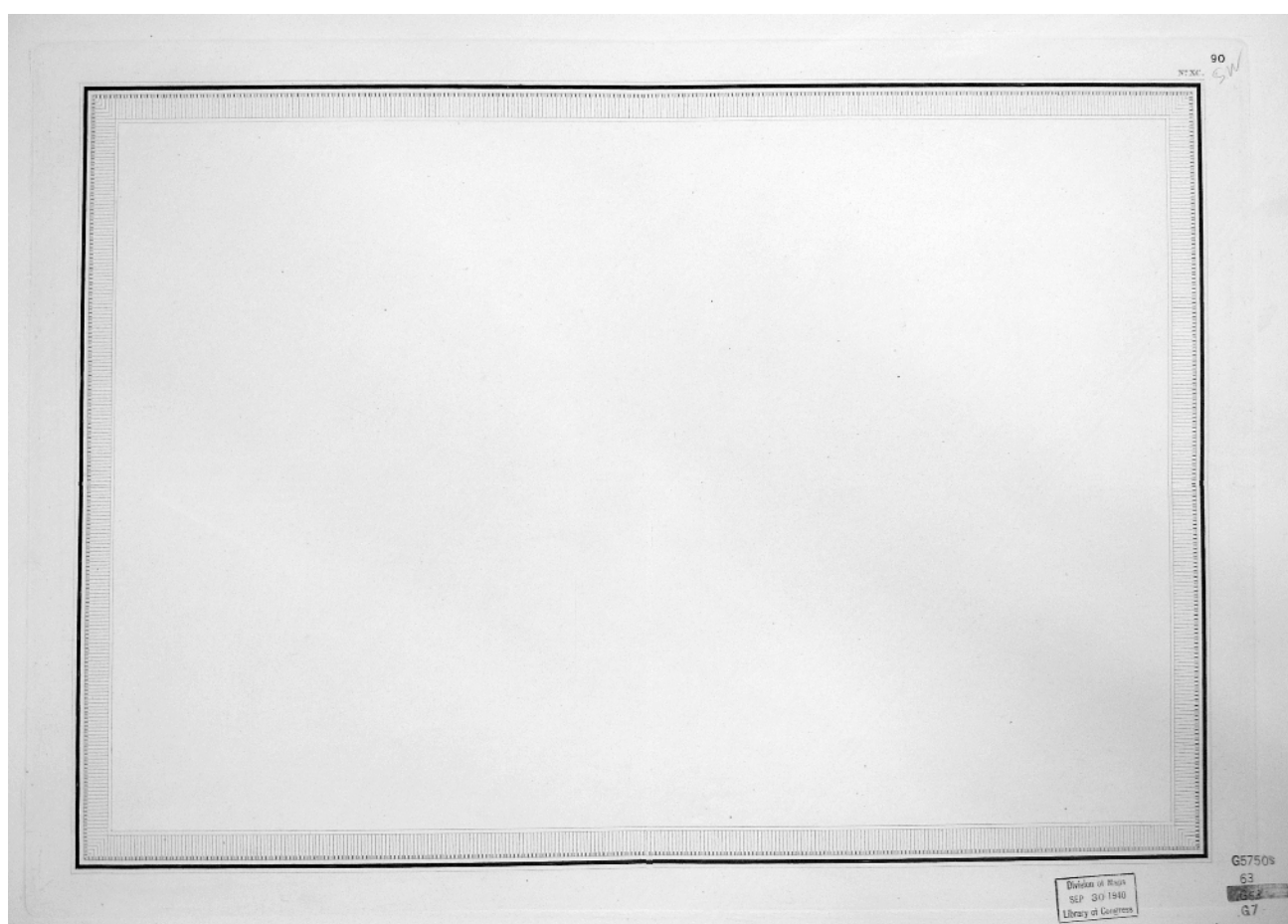
Thus no published, ‘complete’ version of the Isle of Man sheet is known numbered just as ‘100’ or ‘C’ and, given the timing of its publication, it is extremely unlikely than one will be found. However, recently a pre-publication version of the Isle of Man sheet has been found in a private collection. (It is to be scanned for the Society’s archive.) Given the date of survey for the island – nominally 1866-9 – it can presumably be dated to *circa* 1870. It would be nice to report that it solves the ‘Sheet 100’ problem one way or the other, but it has been cropped and mounted, so that all detail more than about 23 millimetres above the neat line has been lost, including any embossed printing date. However, the standard position for the sheet number top right on both later northern English Old Series sheets and on New Series sheets (exemplified by the first southern New Series sheet, 285, to be published, nominally in January 1874, i.e. exactly contemporary with the Isle of Man sheet) was for the bottom of the lettering to be 19 millimetres above the neat line: thus if this practice had been followed for the Isle of Man sheet, any sheet number should have been at least partly visible.

The newly discovered sheet is in a broadly comparable state to the unfinished Isle of Wight sheet discussed above: buildings, roads, the outlines of woodland and other land-cover, text and parish boundaries seem to be complete, but there are no spot-heights, and the main roads lack south-and-east-side ‘shading’. (Also, there are no railways: these postdate the large-scale survey, and were added in a separate operation.) The border is in a similar state of incompleteness to the Isle of Wight map, without figures, dicing or ‘piano-keys’. There is no scale bar, and the only marginalia is the note bottom right referring to engraving: there is no ‘third line’ referring to publication. The only ‘ornament’ is sand-stipple in the area of six-inch sheets 1 and 3. Bottom right, in the sea area, ‘Unfinished’ has been added by hand.

And finally....

The Society’s esteemed treasurer is on record as enjoying a collection of maps in which the less the detail shown, the better. A good example is Old Series sheet 28, a full sheet depicting only Lundy Isle. Owning a copy of the western quarter of Old Series sheet 90 surely has to be his ultimate ambition – a map with absolutely nothing on it at all, inside the

neatline.²⁸ Since the sheet was apparently published and offered in pairs merely to satisfy the needs of customers who wished to convert their eastern quarters of sheet 90 into composite full sheet format, unmutilated copies of the western sheet are likely to be very rare indeed. In his Margary volume 7 cartobibliography, Richard Oliver recorded one such pair of perfect specimens, in the ZOS 9 volume 10 atlas in The National Archives. Those copies carry neither printing dates nor visible watermarks. Now another pair of complete copies has been recorded, in the Library of Congress, Washington DC.²⁹ They are also without visible watermarks, but do carry the embossed printing date 19 February 1853. They are the only copies so far recorded for which a date of printing can be assigned with certainty, and this adds significantly to our knowledge of the sheet's history.



Sheet 90W. Reproduced by courtesy of the Library of Congress.

²⁸ Somewhat comparable are the western quarters of sheet 59, but at least they carry fathom lines, some rocks and a few name labels.

²⁹ Library of Congress, Geography and Maps Division, G5750s.63.G7.

A co-ordinated approach: the County Series, the National Grid and other co-ordinate transformation stories

Ed Fielden

Anyone who has studied the maps of Ordnance Survey's County Series will know how difficult it can be to reference positions on the maps accurately in modern-day terms. The variety of projection origins used mean that the County Series sheet lines never marry with either the National Grid or even the sheet lines of any small-scale national map series.

Study of a County Series index diagram such as the quarter-inch effort produced c.1906 by Ordnance Survey allows users to have a vague idea of the area each sheet covers. Brian Adams's work on compiling a detailed list of the projection origins of the County Series, along with his brief table of county series sheet co-ordinates,¹ also then allows manual calculation of County Series sheet co-ordinates in terms of feet north/south and east/west of the origin.

Now, however, an updated piece of free software allows these calculations to be made instantly, and transformed into a variety of other co-ordinate formats at the same time.

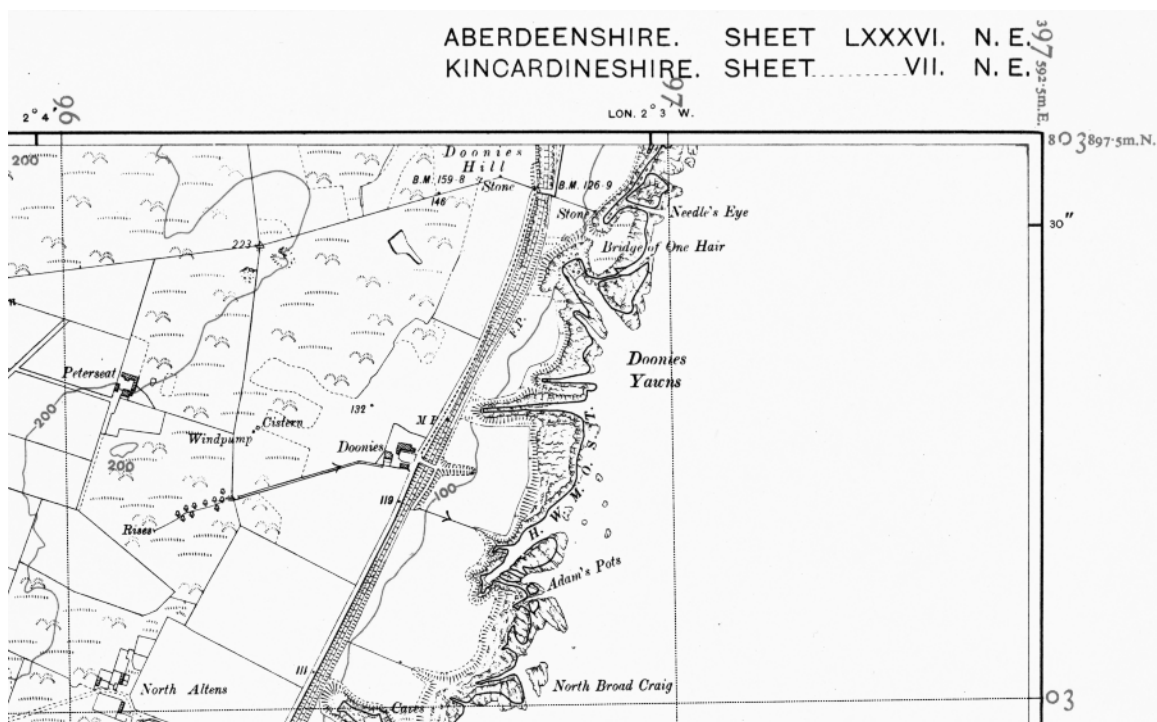


Figure 1: Extract from County Series Aberdeenshire sheet LXXXVI N.E. / Kincardineshire sheet VII N.E., post-war 'Provisional Edition' A, overprinted with National Grid. [Note how the grid lines are at an angle to the sheet lines, and the sheet corners do not fall at round National Grid values.]

The germ of an idea

I have no shame in admitting to being a child of the 1980s.² Even from an early age I was interested in cartography and used to study my parents' *Landranger* maps for hours at a time.

¹ *Projections and Origins – collected writings of Brian Adams*, Charles Close Society, 2006, 62-65 / 71-78.

² How many other members of the Charles Close Society can claim this dubious honour?

The clean lines and seeming intrinsic accuracy of the contemporary Ordnance Survey maps appealed to my technical and mathematical mind.³

The 2°W line of longitude passes exactly one mile to the west of where I have lived since age eight and I was always intrigued as to why this was the only line of longitude that appeared **exactly** vertical on all the maps I knew! I wasn't to discover why, however, until later.

Having tried to keep up-to-date editions of my local *Landranger* sheet (163, *Cheltenham & Cirencester*), I decided in November 2003 to take map collecting more seriously and began to search for sheets of my area in various other series. At this stage I still knew next to nothing about map projections, and had not even heard the word 'Cassini'.

It was not long, though, before I encountered my local sheet (104, *Swindon & Cirencester*) in GSGS 3907, the one-inch military series based on Popular Edition sheet lines. This 'discovery' intrigued me enormously. Here was a map whose sheet lines seemed to bear no relation to the National Grid, and upon which was printed a kilometre-based grid which bore no relation to either the National Grid or even the sheet lines!

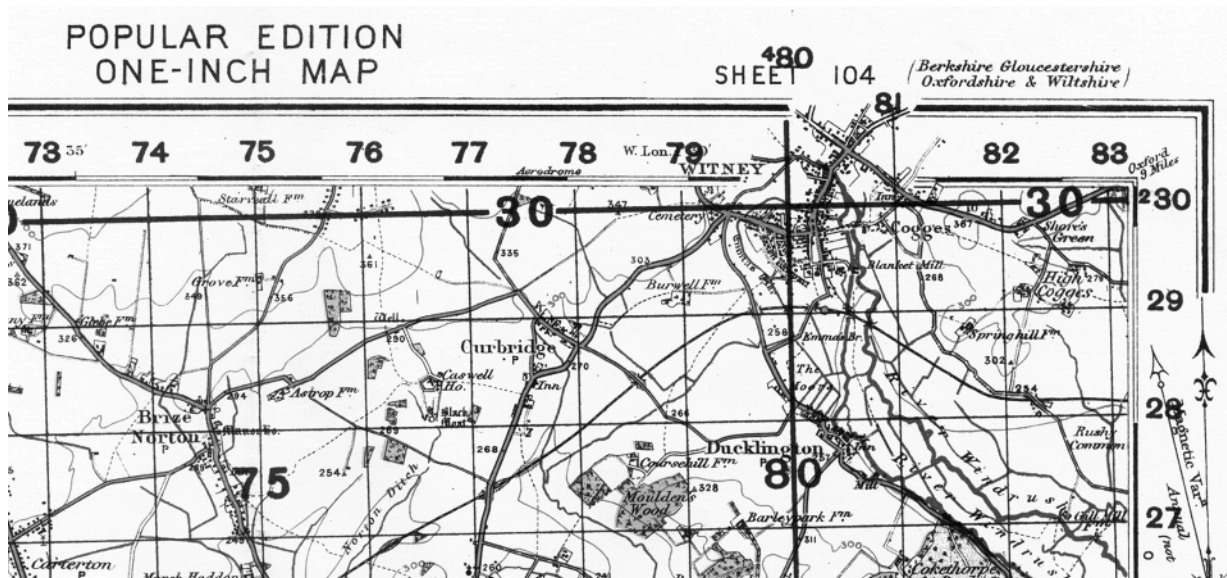


Figure 2: Extract from GSGS 3907 sheet 104 (*Swindon & Cirencester*), print code 'W.O. 600/38. 15,500/39. C.' [1939]. The overprinted grid is the War Office Cassini Grid.

This puzzled me enough to give me the impetus to set about learning all I could about the projections, sheet lines and the history of Ordnance Survey maps of Great Britain. I joined the Charles Close Society in June 2004 and bought some of its publications – all immensely helpful in furthering my understanding.

The next logical step (in my mind, at least) was to work out how to convert between these differing projection formats, so as to be able to reference positions on old maps in terms of National Grid co-ordinates and vice versa. Through searches on the Internet and in official OS publications⁴ I found some algorithms (which are perhaps too technical and

³ The author is now a Broadcast Technician at ITV West in Bristol.

⁴ http://www.posc.org/Epicentre.2_2/DataModel/ExamplesofUsage/eu_cs34.html
http://remotesensing.org/geotiff/proj_list/

Ordnance Survey, *Projection tables for the Transverse Mercator Projection of Great Britain*, London: HMSO, 1950 (reprinted 1967).

complex to reproduce here!) for conversion between latitude/longitude and both the Transverse Mercator and Cassini projections. Using these algorithms I decided to use my computer programming skills to make a piece of co-ordinate conversion software for my own private use. My initial aim was that I would be able to enter a set of co-ordinates in the form of one of latitude/longitude, the National Grid, or the Cassini projection on the origin of Delamere,⁵ and the software would convert to the other two co-ordinate systems.

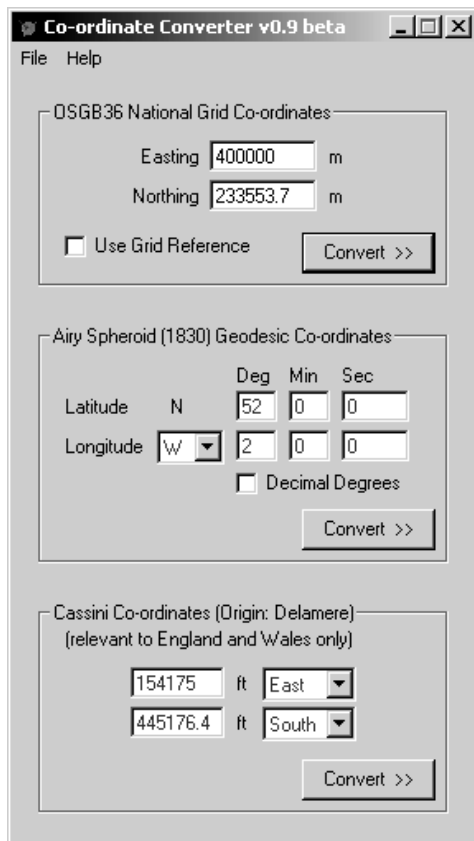


Figure 3: The 'Provisional Edition' - Co-ordinate Converter version 0.9 beta.

By early July 2004 I had completed this first aim, and 'Co-ordinate Converter' was brought into being. Feeling that others may find the converter useful, I decided to publish the software on my website as 'freeware'. In the true spirit of Ordnance Survey tradition, however, this was just a 'provisional' edition (version 0.9 beta) – it was something I wanted to improve upon later.

Over the following few months I updated the software, improving the accuracy of the transformations, adding conversions for Scottish Bonne projection co-ordinates⁶ and the War Office Cassini Grid, and also adding a small section for conversions between the Irish National Grid and latitude/longitude. Version 1.0 was released in September 2004. (The 'Regular Edition' if you will!)

Layers of complexity

As my map collection grew and I acquired examples from more and more series, I saw another opportunity for co-ordinate conversion – the County Series. On reading up about these maps their fragmentary history seemed rather daunting.

For those not familiar with the history of the County Series maps, allow me to paraphrase from Brian Adams's articles on the subject:⁷

Because of the nature of the Cassini projection – the best available at the time Ordnance Survey began large-scale mapping – the further away the mapping is from the central meridian (longitude) of the projection, the more distorted it becomes. At small scales (such as one inch to a mile) this is not too much of a problem and one projection origin (i.e. Delamere) served perfectly well for the whole of Great Britain. With large scales such as the six-inch to a mile and 1:2500 maps of the County Series, however, the distortion caused by having a single origin would have been much more noticeable and bothersome.

The solution arrived at was to create a whole array of projection origins for different counties, limiting the east-west extent of mapping on any single origin.

⁵ Used for OS small-scale maps of England and Wales from 1850s-1940s and of Scotland from 1924-1950s.

⁶ Used for OS small-scale maps of Scotland from 1850s to 1920s.

⁷ *Sheetlines* 25, 3-7; *Sheetlines* 26, 15-20; *Sheetlines* 27, 3-9. Alternatively *Projections and Origins*, 53-70.

Some origins served more than one county – for instance Dunnose, on the Isle of Wight, served as the projection origin for fifteen counties: Berkshire, Buckingham, Derby, Gloucester, Hampshire/IoW, Leicester, Lincoln, Northampton, Nottingham, Oxford, Rutland, Stafford, Warwick, Wiltshire and Worcester. A contiguous sheet line system linked all these counties. Other origins served only the county in which they were situated – for instance Leith Hill Tower, near Dorking, which served as the projection origin for Surrey alone.

This obviously meant that, at the boundaries between counties mapped on differing projection origins, there was a discontinuity in the mapping. On early editions, areas of neighbouring counties on different origins were often left blank.

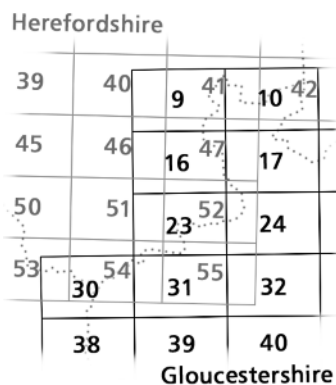


Figure 4a: Diagram of County Series sheet lines at boundary between Gloucestershire and Herefordshire.

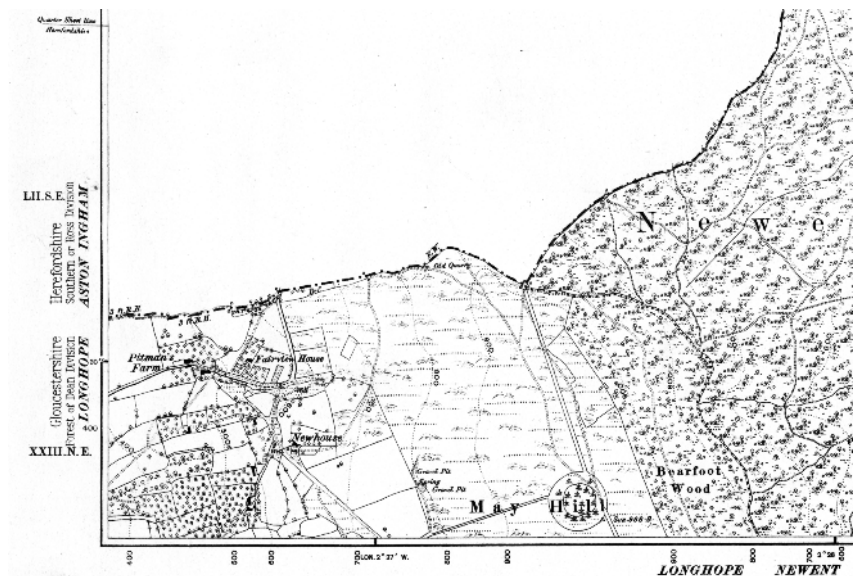


Figure 4b: Extract from Gloucestershire sheet XXIV N.W., 1887 edition. The Herefordshire portion is left blank.

After a while it was decided that the inconvenience of the discontinuity between some counties meant that a few did not merit having projection origins of their own, and some time after their initial survey these counties were re-plotted or re-aligned on projection origins of neighbouring counties. From a historical perspective, this would seem to serve only to complicate matters still further!

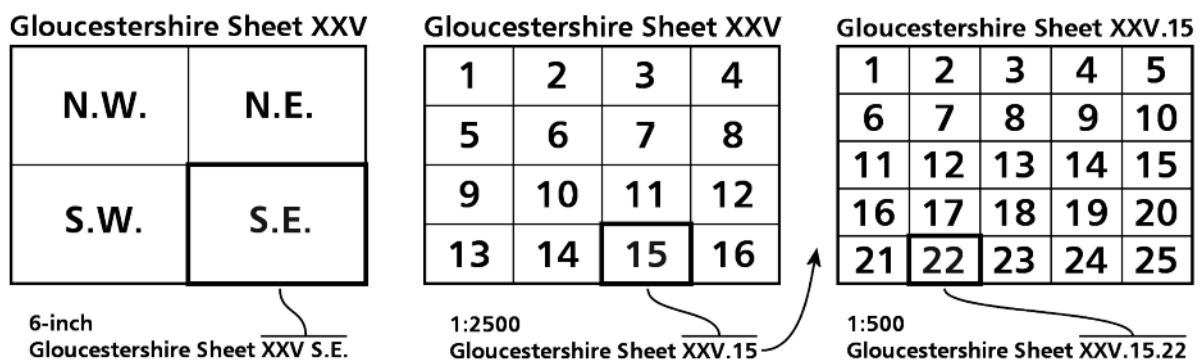


Figure 5: Diagram of County Series sheet derivatives

At this point it is worth considering the format of the County Series sheets. Each set associated with one projection origin is based on a grid of six-mile \times four-mile ‘full’ sheets. Only some editions of some six-inch sheets were issued in the full-sheet format. Within each of the ‘full’ sheets are derivative sheets such as the six-inch ‘quarter’ sheets (e.g. Gloucestershire sheet XXV S.E.) and the 1:2500 sheets (e.g. Gloucestershire sheet XXV.15). The County Series sheet lines were almost invariably used as the base for the large scale 1:500 town plans (e.g. Gloucestershire sheet XXV.15.22)

The County Series Project: Part I

Despite the inexorable complexities I wanted somehow to incorporate the County Series into the Co-ordinate Converter software.

Obviously there are a vast number of individual County Series sheets covering the country (almost certainly well in excess of 50,000 – I haven’t counted!). So when I embarked on the ‘County Series Project’ in summer 2006 I felt that it would be best to ease in gently by first incorporating a simple reference system for the County Series in Great Britain – in terms of feet east/west and north/south of the projection origin. Thus any point in Great Britain could be referenced in these terms **but** some manual calculation on the part of the user – along with consultation of a sheet index and Brian Adams’s tables ¹ – would be needed to determine the relevant foot co-ordinates of the sheet one is studying.

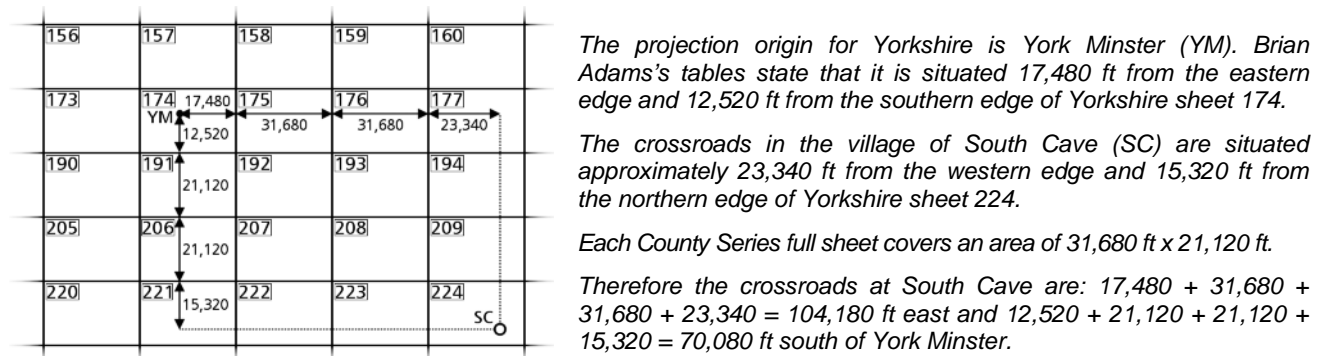


Figure 6: Example calculation of County Series foot co-ordinates for a point in Yorkshire.

For each county block it was necessary to find the precise projection origin. My starting point was the well-timed publication of Brian Adams’s detailed notes on the County Series origins ¹ and Richard Oliver’s notes on county mapping. ⁸ In conjunction with their data I used other sources on the Internet ⁹ to find the most precise possible positions of each county origin. For each origin I took all the available data and selected the best match, in order that the positions converted would match modern-day mapping as closely as possible. Some origins have been lost on modern-day mapping, which made placing them accurately somewhat difficult. In some cases I had to settle for a rather approximate position.

I gave each origin an accuracy figure, a figure of 90% certainty referring to the accuracy of the point of origin only. Some origins I believe to have fixed to within a quarter inch, some others to within one foot, or in other cases to within ten feet or more.

In September 2006 Co-ordinate Converter version 1.1 was released, incorporating the County Series co-ordinate transformations for Great Britain. As already mentioned, however,

⁸ Richard Oliver, *Ordnance Survey maps – A concise guide for historians*, second edition, Charles Close Society 2005.

⁹ <http://www.asprs.org/resources/grids/10-2003-unitedkingdom.pdf>, <http://www.magic.gov.uk>; <http://www.gps.gov.uk>.

the referencing system for the County Series required a series of manual calculations. While this may have been satisfactory for a time, the calculations needed to deduce foot co-ordinates are rather prone to human error!¹⁰

The County Series Project: Part II

So it was, nearly a year later in September 2007, that I decided to take the plunge and hard-code into Co-ordinate Converter the co-ordinates of each County Series full-sheet in Great Britain and the Isle of Man, thus eliminating the need for manual calculation of sheet line foot co-ordinates. Armed with Brian Adams's tables and copies of the OS County Series indexes,¹¹ I set to work.

With a little help from a custom-made Excel spreadsheet to add/subtract six-mile and four-mile distances in feet, I computed and typed the foot co-ordinates of the south-west corners of some 6,712 full sheets (plus 250 individually-numbered 1:2500 sheets in London). Of course I then had to put the software through a fairly rigorous testing procedure to ensure that the results matched up with the sheet indexes. In addition I used some original County Series maps, and also some reprints from Alan Godfrey's series, to ensure that the results matched at large scale too.

Any point in Great Britain and the Isle of Man can be referenced in terms of scale feet east and north of the sheet edge of any six-inch or 1:2500 County Series sheet, and this point can be transformed to all other co-ordinate systems supported by Co-ordinate Converter.

I must add the caveat that the software has its limitations – it's still fairly dumb. For instance:

- A user must first select the desired county from the list before performing any transformations. In other words, the software cannot select the appropriate county by itself when presented with other co-ordinates. Several counties have more than one entry in the list, mostly encompassing differing editions of the maps themselves.
- Users should enter County Series sheet numbers in Arabic numerals. Where a prefix exists (e.g. on Essex and Northumberland 'New Series' sheets) this should be omitted. Where a suffix exists (e.g. 179A) this should be entered immediately after the sheet number, without any spaces.
- No account is taken of whether all derivative sheets exist inside a full six-mile × four-mile sheet. Therefore it is still necessary to consult an index diagram to determine whether the sheet referred to in the result of a transformation does indeed exist.
- I have used indexes to derive the full sheets' positions which may not show all sheets in all editions (this is mainly true of England and Wales), although this should be limited only to areas around county boundaries.
- I have not, at present, incorporated direct sheet references for 1:500 scale maps into the software for fear of over-complicating matters. I have, however, included a diagram of how to work out the foot co-ordinates of derivative sheets such as the 1:500 scale maps.

¹⁰ With apologies and thanks to Lez Watson!

¹¹ *Indexes to the 1/2500 and 6-inch Scale Maps – England & Wales* (reprint), Kerry: David Archer, 2002.
Indexes to the 1/2500 and 6-inch Scale Maps – Scotland (reprint), Kerry: David Archer, 1993.

Co-ordinate Converter - Version 1.2

File Help

Great Britain Ireland

Geodetic Co-ordinates (Airy 1830)

Lat. N 53 46 8.7554
 Lon. W 0 35 55.8766
☐ Dec. Degrees **Convert >**

Great Britain National Grid

e.g. "NY 360 677"
 SE 92340 31241
☒ Grid Ref. **Convert >**

Cassini (Delamere) Co-ordinates

451044.38 ft East
 206569.45 ft North
Convert >

War Office Cassini ("WOFO") Grid

Easting 539452.777 m
 Northing 450794.096 m
☐ Grid Ref. **Convert >**

National Yard Grid Co-ordinates

Easting 1100984.172 yds
 Northing 1580970.171 yds
Convert >

Bonne Co-ordinates (Scotland)

- ft East
 - ft South
Convert >

County Series Co-ordinates

Yorkshire Projection Origin: York Minster Accuracy ± 0.05 ft

Full Co-ordinates

104180 ft East
 70080 ft South
Convert >>

Sheet Co-ordinates

	scale ft from W neatline	scale ft from S neatline	
6-inch Full Sht. 224	23340	5800	Convert >
6-inch ¼ Sht. 224 SE	7500	5800	Convert >
1:2500 Sht. 224 11	7500	520	Convert >

[Sheet derivatives diagram](#) Derivative sheets are not guaranteed to exist

Figure 7: Co-ordinate Converter version 1.2

Co-ordinate Converter version 1.2 was released on 6 November 2007, is free for non-commercial use, and can be found online at <http://www.fieldenmaps.info/>

Of course I would welcome any comments, error reports, general observations or ideas for improvement on Co-ordinate Converter. I will make every effort to correct mistakes notified to me and update the software accordingly.

Anyone without access to the Internet can request copies of Co-ordinate Converter on CD from me, in writing, and in return for a small donation (minimum £1) to cover the costs of the disc and postage. If you request a copy in this way, do not forget to include your return postal address, and please let me know whether (and by what method) you would like to be kept informed of future updates to the software. My postal address is: Ed Fielden, 5 Chesterton Lane, Cirencester, Gloucestershire, GL7 1XG.

Thumbnail sketches on one-inch map covers from 1945

Part 3. Sketch maps on Seventh Series covers

K S Andrews

The previous parts of this article dealt with the cover sketches of the New Popular Edition.¹ The Seventh Series in covers replaced the New Popular progressively over a period of ten years, 1952-1961. This concluding piece considers to what extent the same sketches were carried forward and how they were subsequently updated.

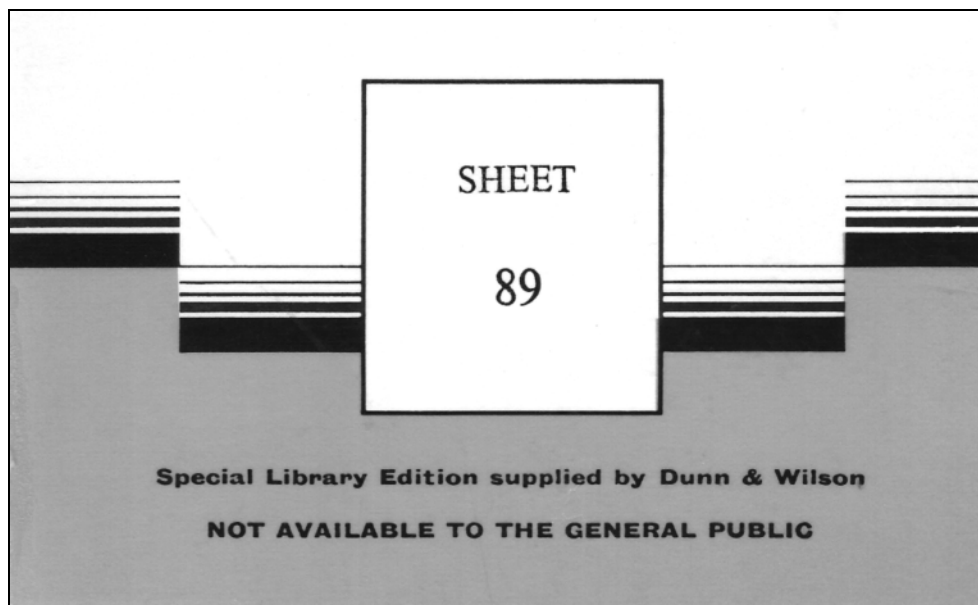


Figure 1: The outer box of the generic component of H99.1 with Dunn & Wilson over-printing

Continuity by design

The H99.1 Seventh Series cover has provision for sketch maps of the same dimensions as the superseded H96.1 New Popular cover and this was presumably a deliberate design requirement on the grounds of convenience. Like the New Popular cover, the design has generic and sheet-specific components printed separately. The outer of the two boxes of the sketch frame was integral to the Seventh generic design, see Figure 1.² The sketch map blocks made for the New Populars had a two-box frame, so they could be used for printing Seventh Series covers once the outer box was ground off with a reamer, leaving the sketch, the inner box and the sheet number line. Alternatively, the frame could have been changed and the drawings re-photographed for new blocks.

¹ Part 1, *Sheetlines* 78, 38-42. Part 2, *Sheetlines* 79, 10-16.

² This aspect of the design made it easy for the printer to tell at a glance from a centrally-positioned sketch that the sheet-specific data was added with accurate registration. With the New Popular design, accuracy of registration of the specific on the generic was apparent only when the spine information appeared correctly spaced above the red wavy border and therefore neatly between the folds on the finished cover.

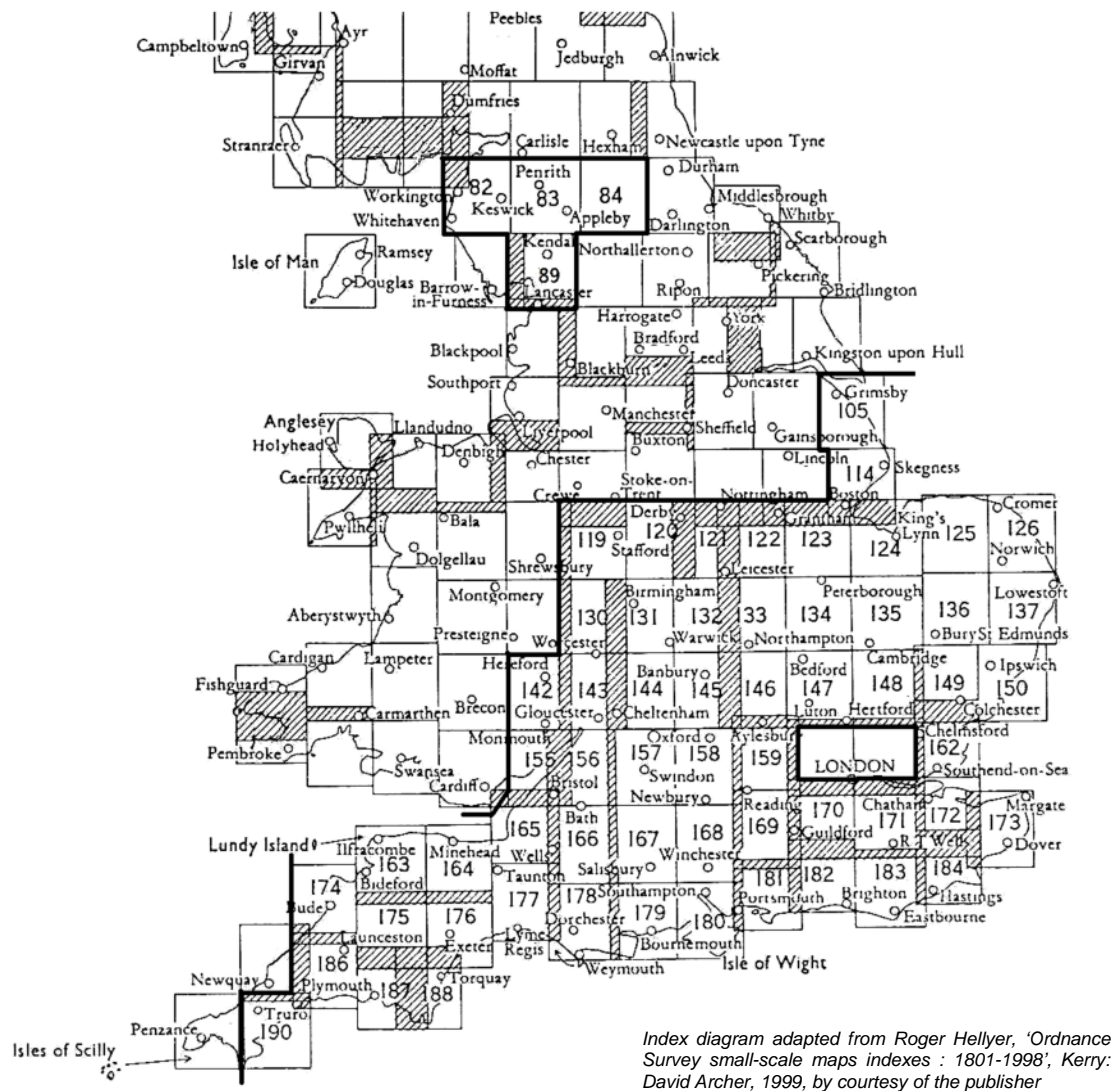


Figure 2: Part of the Seventh Series index showing the retained New Popular sketches. Only New Popular sketch blocks made from 1949 with integral sheet number lines were used on Seventh covers. The sketches for unnumbered sheets were made from new drawings.

Theorising

It was shown in parts 1 and 2 of this article how the design of the sketches on New Popular covers matured, with the latest versions having place-names in Times lettering and the sheet number line above the sketch made integral to the printing block. Blocks like this for sheets east and south of a zigzag line from Cardiff to Hull were therefore best suited for use on Seventh Series covers and these are the ones expected to be carried across to the Sevenths as they were issued. New Popular sketch blocks for Wales and the rest of England did not have the sheet number on them and those for south Wales even still had Caslon place-name lettering, so it could be anticipated that Seventh covers for all this area would have either new blocks made from old drawings with the sheet number line added and the outer frame removed, or fresh sketches. As noted in part 2, a few New Popular covers in the north-west of England, *viz.* 76, 82 to 84 and 88 to 90 had been given revised sketches but only 76, 82 to 84 and 89 were revised late enough to have integral sheet number lines, making them best

suited for Seventh covers. To anticipate further the possible results of this study, the new Seventh Series sheet lines for London and Cornwall would make New Popular sketches unsuitable for the covers of sheets 160, 161, 185 and 189.

Reality

The first practical step in this study was to compare the sketches on the latest available New Popular cover with the cover on the first edition of the corresponding Seventh Series map. The result is shown in Figure 2, revealing the significant fact that the only New Popular sketches to be carried forward to Seventh covers were those made with integral sheet number lines from 1949 onwards, and all the other sketches were new. As expected, the London sheets 160 and 161, and the Cornwall sheets 185 and 189, having new sheet lines, were also found to have new sketches. It would appear from the use of new sketches for the northern half of England and Wales that the drawings made in 1946-7 had not been kept, for otherwise a sheet number line could surely have been added to save making new drawings. It was apparent that the New Popular makeshift of adding the sheet number line with point size 12 moveable type was no longer acceptable – it had become *de rigueur* to have the sheet number on the sketch block.

Sketch map revision

The first Seventh sketch for each of the 190 covers was then compared with later short H99.1 covers and the long cover counterparts through to the introduction of the H132.1 cover in 1969, in order to record sketch map changes. In total, over 550 H99.1 sketches were scrutinised. It is likely that some revisions evaded this process.

Nearly all the Seventh sketch maps were homogeneous in style. With a few exceptions, all have Times place-name lettering and all the sheet number lines use the same font as on New Populars, 3.0 mm high, which, as argued in part 2 of this article, indicates that they were integral to the sketch map printing block. *Vide infra* for descriptions of exceptional place-name lettering and sheet number lines.

It became apparent that, when considering sketch revision, a distinction must be made between new sketches and altered sketches. Some sketch changes made during the currency of the Seventh Series were radical and a new drawing had clearly been made. Other changes were slight, such as the removal or addition of hyphens or the alteration of one or two names; since only the necessary alterations are different, all other detail remaining unchanged, it is clear that the original drawing must have been retained for such an eventuality. Sketches for sheet 171, *London S.E.*, are reproduced in Figures 3, 4 and 5 to show these two modes of revision.

The modification of archived sketch map drawings for making new blocks and, in some cases, the possible alternative of grinding a detail off an existing block, not seen on New Populars, are Seventh Series phenomena but the policy of retaining sketch drawings must have begun earlier because some of the alterations were to drawings originally made for the New Popular edition from 1949 onwards (see Figure 3, a retained New Popular sketch and its later revision, Figure 4). It is speculated that the easy option of the removal of detail with a reamer was used to take Tweedsmuir and Craigmalloch off sketches 69 and 73 respectively (because they were actually on adjoining sheets).

In summary, some revisions were prompted by urban development and others were to align the spellings of sketch and sheet, though some differences remained.

Sheet 171

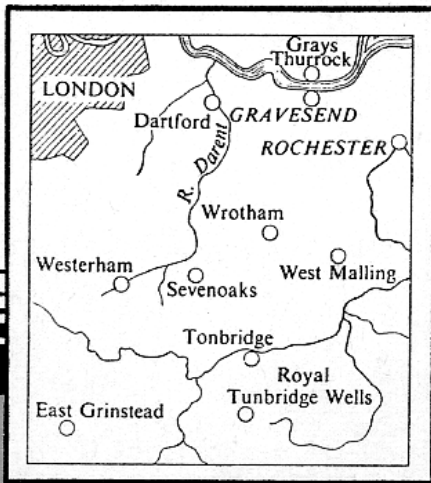


Figure 3: The later New Popular sketch for sheet 171, London S.E., retained on the Seventh Series cover

Sheet 171

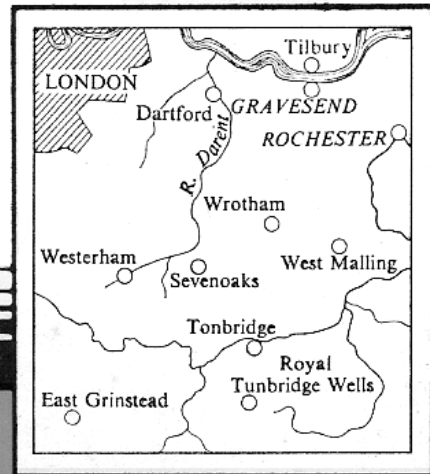


Figure 4: The drawing for the New Popular sketch was altered in the mid-1960s for a revised sheet 171 sketch ('Grays Thurrock' becomes 'Tilbury')

Sheet 171

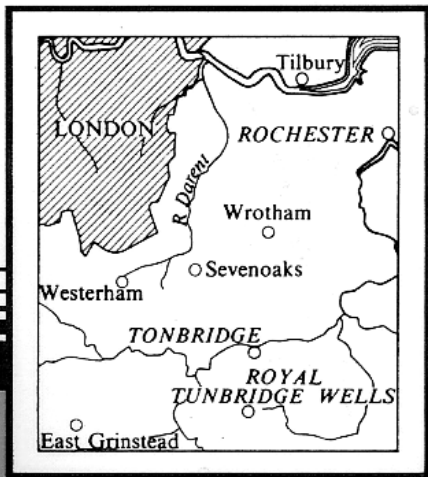


Figure 5: A new drawing was made for a heavily revised sketch 171 used in the late 1960s. Sheet number line in Times font

Sheet 138/151

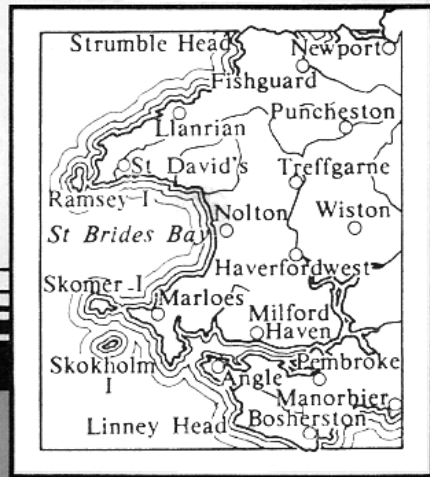


Figure 6: The sketch for sheet 138/151 showing both exceptional place-name lettering and sheet number line font. This sketch is remarkably cluttered

South and East of England

As mentioned above, where sheet lines were unchanged, the late New Popular sketch blocks were used for this area, including sketch 114 with the lettering of *Boston Deeps* abandoned unfinished as *Boston Dee*. In due course, there were on-drawing revisions to sketches 126,

150, 156 (the relocation of Chipping Sodbury), 162, 170, 171 and 189 (to correct the Scilly Isles inset). There were newly drawn sketches for sheets 144, 160, 161 (twice), 165, 166, 168, 170 and 171, the latter two to update the previous revisions. Sketch 142, *Hereford*, like the adjacent 141, *Brecon*, has water-lining on the dry land between the River Usk and the Monmouthshire and Brecon Canal.

North-west of England

For most of England north and west of the zigzag line, new sketches were made but a small cluster of late New Popular sketch blocks in the north-west had integral sheet number lines and so were suitable for the Seventh covers. These were sketches 76, 82-84 and 89. Sketches 82-84 and 89 were indeed used but 76, *Carlisle*, was not, for the boundary of the city was delineated with hatching and new settlements chosen on a new drawing. At a later date, the drawings were revised for sketches 64, 84, 85, 88, 91, 98, 101 (enlargement of the Manchester boundary) and 110 (the hyphenation of Stoke on Trent). There were newly drawn sketches for sheets 82, 112, 113 and 129 (where the ancient town of Ludlow was honoured with capital letters).

Wales

The sketch map blocks for Wales used for the New Popular covers did not have integral sheet number lines, and those for the south still had Caslon lettering instead of Times. This area being in the vanguard of the Seventh Series roll-out, the sketches were presumably amongst the first to be redrawn for it, and the same place-names with the same spellings were used as on New Popular covers. The New Popular sketch for sheet 151 had a location ring with no place-name alongside; on the Seventh sketch, this secret location was revealed as St David's. The sketch made for sheet 106, *Anglesey*, does not show the new inset and the improved sheet lines were not followed. The drawings for sketches 107, 141 and 154 were later revised with improved spelling (and the loss of the long-submerged Dol-y-gaer from sketch 141). Sketches 115-117, 128, 140 and 153 had new drawings on revision. The sketch for the combined sheet 138/151 is of particular interest since it bears both the exceptional features detailed below (see Figure 6).

Scotland and the Isle of Man

Areas not covered by the New Popular edition had new sketches due to the new sheet lines for the Seventh Series. On Scotland sketches, inland lochs do not have water-lining, some smaller insets are omitted (sheets 12 and 17), two of those that are shown give one inset instead of two (sheets 6 and 8) and the Foula inset on sketch 2 is actually on sheet 4. The Foula inset situation was later corrected by altering the original sketch drawings, with 'Sumburgh Head' on sketch 4 mysteriously re-lettered with a rogue sanserif font.³ Other changes on sketches were also via alterations to the drawings, for sheets 19, 20, 32, 38, 56, 63, 69 and 73, though, as postulated above, sketches 69 and 73 may have been corrected simply by grinding names from the blocks. Sketch 45, *Sound of Mull*, was exceptionally heavily revised, including the correction of Achosntch to Achosnich, with the place-names all in larger lettering on, apparently, the original coastlines. The only Scottish sketch to be

³ See *Sheetlines* 50, 33-35 for a well-illustrated article by Roger Hellyer on the Foula inset; also K S Andrews and R C Wheeler, *Sheetlines* 70, 12-13.

completely redrawn was for sheet 31, *Peterhead*, though the extent of its changes do not seem to warrant a re-draw (Newbyth was corrected to New Byth, Port Erroll was changed to Cruden Bay and the River Ugie was named).

Exceptional place-name lettering

As mentioned above, not all sketch maps were absolutely consistent in style. Some new or replacement sketches had their toponyms in larger lettering or with the letters more widely spaced (see Figure 6). These were for sheets 45, 52, 53, 63, 69, 138/151, 166 and 168. ‘Sumburgh Head’ on the revised sketch 4 is alone in having a rogue typeface as distinct from font size or spacing.

Exceptional sheet number lines

All new sketch maps needed for the first covers of Seventh Series sheets were made with sheet number lines in the same font that was used for New Populars, with a very characteristic ‘e’. Richard Oliver reports that, from *OS Alphabets* (1934) and *Specimens of type held in the Letterpress Section of the Ordnance Survey* (1947), this seems to have been referred to in OS as ‘Old Style Roman’.⁴ Some of the new drawings for sketch blocks made after the Seventh Series was complete, however, had Times font instead for the sheet number line (see Figure 6). Those found with Times are for sheets 31, 138/151, 153, 160, 161, 170 and 171, with the earliest seen being for sheet 31, *Peterhead*, on a cover coded 8.64. New drawings made from that date used Times, as if the stock of Old Style Roman lettering for ‘Sheet XX’ had been exhausted. Amended drawings were, of course, not affected.

The red covers and beyond

The austere factual H132.1 covers bear sketch maps but their generous size hardly qualifies them to be studied for an article devoted to thumbnails. They are markedly different from H99.1 sketches, showing only coastlines and toponyms in black on red within a white frame. The coastlines are shown without water-lining. City boundaries and inland waters – rivers, lakes and canals – are omitted with the exception of a selection of Scottish lochs. Lettering is sanserif to match the rest of the cover. A larger number of place-names is chosen compared with the H99.1 sketch.

When the 1:50,000 series was issued, its new sheet lines necessitated another round of new sketches, which were subsequently, in a smaller, leaner form, banished to the back. Colour photographs now graced the front to tempt the public to buy and so the wheel turned full circle in a welcome change of style reminiscent of 1919, when the charm of art began to cover the science of geography, leading to the heyday of Martin and Palmer.

Acknowledgements

Thanks are due to Richard Oliver for suggesting improvements to the text. The later illustrations are © Crown Copyright and reproduced with kind permission of Ordnance Survey NC/00/1340.

⁴ Richard Oliver, personal communication.

Ordnance Survey catalogues – a proposal for a union list

Roger Hellyer

The Ordnance Survey began issuing printed catalogues listing ‘maps and plans and other publications’ in the early 1860s. There were three separate series, distinguishing between publications relevant to England and Wales (issued in red paper covers), to Scotland (in heather), and to Ireland (in green). The earliest known, and probably the first, catalogue for each of the three countries is dated 31 December 1862,¹ and for nearly sixty years there was first an irregular, then a largely regular pattern of new issues, until, in 1920, publication ceased. Other than a single new issue in 1924, there were no further catalogues in Great Britain until the modern sequence began in 1967, and only very occasional issues in Ireland or Northern Ireland.

In parallel with the catalogues themselves, the Ordnance Survey issued regular, usually monthly, supplements to the catalogues.² These have traditionally offered the bedrock evidence for dating the publication of any new Ordnance Survey product. Until 1904 they were simply entitled *Ordnance Survey of [Country] Publications issued from [month]*. In June 1904 their title changed to *Supplement to Catalogue of [Country]. Publications issued, [month]*. While these have all for convenience often been abbreviated OSPR (for *Ordnance Survey Publication Report*), in lists and footnotes, that form of the title has not in fact been recorded earlier than 1933. Publication of the reports continued throughout the period there were no catalogues.

So much we know. Now for what we would like to learn. In the early years the catalogues were printed in small quantities, in some cases as few as fifty copies only, if print codes are to be believed. The supplements were often no more than a single octavo sheet of paper. Such is the rarity of the surviving copies of either resource, it is clear that in many cases they were treated (much as are their present day equivalents) as ephemeral items, to be disposed of when the new updated issue became available. Thus, before about 1890 when a fairly regular pattern of annual publication of the catalogues emerged, it is safe to say that no-one now has any idea how many issues of the catalogues there were; further, that the evidence of the irregularity of issues that are recorded (sometimes two a year, sometimes a gap of five years or more) suggest that there are many more still to be discovered.

What I am presenting here is a list of the catalogues that have been recorded, identified at present solely by their date of issue. What I am hoping for is that other researchers will have identified further issues, and will report both their date, and the location of copies. What I am proposing for the future is the creation of a union list of these catalogues, including the supplements, perhaps to be posted on the CCS website, offering full bibliographical details and the location of copies of each.

Until 1901 the maps and plans of each country, both small- and large-scale, were listed in the three separate sequences for England and Wales, Scotland, and Ireland. In 1902 and

¹ One earlier method of notifying new publications, in use since about 1834, had been via index sheets, carrying titles such as *Index to the Ordnance Survey of England and Wales. Published in sheets on a scale of one inch to a mile shewing the progress to [date]*. There were several variant titles, some of them including the names of dealers such as Gardner or Letts. A particularly fine sequence from 1837 onwards is in the British Library at Maps 207.f.

² The contents of the supplements to England and Wales were summarised (not always in the identical month) in the *Journal of the Royal Geographical Society* from 1878 to 1892, then in the *Geographical Journal* from 1893 to 1914. Those for Scotland appeared in the *Scottish Geographical Magazine* from 1885 to 1939.

CATALOGUE
OF THE
MAPS AND PLANS AND OTHER
PUBLICATIONS

OF THE
ORDNANCE SURVEY OF IRELAND,

To 31st December 1862.

COL. SIR HENRY JAMES, R.E., F.R.S., DIRECTOR.

SOUTHAMPTON,



LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
FOR HER MAJESTY'S STATIONERY OFFICE.

1862.

Price Sixpence.

*The title page of the earliest known Ordnance Survey catalogue.
Reproduced by kind permission of Ian Mumford.*

1903 small-scale maps were separated from the large, and combined into a fourth volume listing just the small-scale publications for all three countries. Large-scale maps continued to be listed in three separate catalogues. This small-scale catalogue was discontinued after only two years, and from 1904 the general small scales section was added into each of the three forms of the large-scale catalogue.

List of catalogues

<i>England and</i>	1.1.1898	1.11.1886	2.12.1884
<i>Wales</i>	1.1.1899	1.11.1890*	23.10.1885*
31.12.1862	1.1.1900	1.6.1892	1.3.1887*
1.3.1863	1.1.1901	1.6.1894	31.12.1887*
1.11.1863	1.1.1902	1.1.1896	1.1.1890
31.8.1864	1.1.1903	1.1.1897	1.1.1892
1.5.1865	1.1.1904	1.1.1898	1.1.1893
17.4.1867	1.1.1905	1.1.1899	1.5.1894
1.8.1869	1.1.1906	1.1.1900	1.1.1896
16.3.1870	1.1.1907	1.1.1901	1.1.1897
28.10.1871*	1.1.1908	1.1.1902	1.1.1898
?.?.1872	1.1.1909	1.1.1903	1.1.1899
14.2.1873	1.1.1910	1.1.1904	1.1.1900
1.7.1877*	1.1.1911	1.1.1905	1.1.1901
1.12.1877	1.4.1912	1.1.1906	1.1.1902
1.6.1878	1.4.1913	1.1.1907	1.1.1903
1.10.1878*	1.4.1914	1.1.1908	1.1.1904
1.10.1880*	1.4.1915	1.1.1909	1.1.1905
1.1.1881	1.1.1917	1.1.1910	1.1.1906
31.12.1881	1.7.1918	1.1.1911	1.1.1907
1.4.1882*	1.4.1920	1.4.1912	1.1.1908
1.11.1882		1.4.1913	1.1.1909
7.4.1883*	<i>Scotland</i>	1.4.1914	1.1.1910
1.2.1884	31.12.1862	1.4.1915	1.1.1911
1.8.1884*	1.3.1863	1.4.1917	1.4.1912
1.9.1885	31.8.1864	1.7.1918	1.4.1913
1.7.1886	1.5.1869*	1.4.1920	1.4.1914
1.1.1888	20.10.1871*		1.4.1915
1.1.1889	14.2.1873	<i>Ireland</i>	1.1.1918
1.1.1890	1.6.1877*	31.12.1862	1.4.1920
1.1.1891	1.1.1878	1.3.1863	
1.1.1892	13.5.1878*	1.8.1869*	<i>Small scales</i>
1.1.1893	1.10.1880*	31.8.1871*	1.1.1902
1.1.1894	1.9.1881	14.2.1873	1.1.1903
1.1.1895	1.1.1883*	1.8.1876	
1.1.1896	1.2.1884	1.6.1881	
1.1.1897	1.6.1885	18.9.1882	

N.B. Copies of catalogues³ marked with an asterisk * have not been located; there are references to them in the supplements.

³ I am grateful to Ian Mumford for bringing to my attention details of the unlocated 1869 and 1871 catalogues, which are noted in Dr A Petermann, *Mittheilungen aus Justus Perthes' geographischer Anstalt über wichtige neue Erforschungen auf dem gesamtgebiete der Geographie*, Gotha: Justus Perthes, 1870, p.63 and 1872, p.264 respectively.

ORDNANCE SURVEY OF ENGLAND.

PUBLICATIONS ISSUED

FROM

1st TO 31st MAY, 1867.

PARISH MAPS 2500 SCALE.

COUNTY.	PARISH.	No. of		Price of			
		Detail Sheets.	Area Books.	Set of Detail Sheets.	Area Books.	£	s. d.
CORNWALL -	St. Germans - - - -	18	1			2	5 0
HAMPSHIRE -	Bursledon - - - -	4	1	0	10 0	1	0
	Hound - - - -	10	1	1	5 0	1	0
KENT - -	Milton (Hundred of Milton)	7	1	0	17 6	1	0
	Teynham - - - -	7	1	0	17 6	1	0
	Tunbridge - - - -	28	1	3	16 6	4	0
	Wouldham - - - -	5	1	0	12 6	1	0
PEMBROKE -	Monkton - - - -	10	1	1	5 0	1	6

SIX-INCH MAP.

CUMBERLAND—Sheets 63, 65, 69, 73, 75, 78, 79, 82, 83, 85, at 2s. 6d. each.
Sheets 77, 80, at 2s. each.



The monthly supplement for England and Wales, May 1867.
Reproduced by kind permission of the Bibliotheque nationale de France.

If the surviving copies of pre-1880 catalogues are rare, the supplements to them are virtually non-existent. One obvious reason for our limited knowledge of catalogues issued in the 1860s and 1870s is that the supplements, which included among their listings the current version of the catalogue and advised of new editions, are themselves not recorded. A regular sequence of monthly supplements to these catalogues can be confirmed only from the early 1880s onwards, thanks mostly to the very fine surviving run of them beginning at the turn of 1881-2 in the Bodleian Library, Oxford.

LIST OF AGENTS THROUGH WHOM THE MAPS, PLANS, AND BOOKS MAY BE ORDERED.		
IRELAND.		
<p> DUBLIN Messrs. Hodges & Smith, Grafton Street. Messrs. Brasington & Gale, 4, Bachelor's Walk. Messrs. Thom & Son, 87 & 88, Abbey Street. Mr. John McWatters. ARMAUGH Mr. James Macgill. BELFAST Mr. Thomas Edwards. CARLOW Mr. John Fogarty. CAVAN Mr. James O'Neill. CLONMEL </p>	<p> COKE Mr. Francis Guy. ENNISKILLEN Mr. William Trimble. GALWAY Mr. Thomas Croker. KILKENNY Mr. William Nicholson. LONDONDERY Mr. Hempton. MALLOW Mr. Joseph Johns. MULLINGAR Mr. Sampson Wallis. NEWRY Mr. Robert Greer. OMAGH Mr. G. W. McCutcheon. WATERFORD Mr. Thomas S. Harvey. WEXFORD Mr. F. S. Davis. </p>	
ENGLAND.		
<p> ALNWICK Mr. Henry Allnutt, 200, Fleet Street, E.C. APPELEY Mr. E. Bumpus, 6, Holborn Bars, E.C. BARNARD CASTLE Mr. J. Arrowsmith, 35, Hereford Square, South Kensington. BATH Messrs. Lettis, Son, & Co., 8, Royal Exchange, E.C. BEVERLEY Messrs. Longman & Co., 14, Ludgate Hill, E.C. BIRMINGHAM Mr. E. Stanford, 6, Charing Cross, S.W. BISHOP AVICKLAND Messrs. Vacher & Son, 29, Parliament Street, S.W. BOLTON Messrs. Smith & Son, 172, Strand. BRIGHTON Messrs. G. Philip & Son, 32, Fleet Street, E.C.; and Liverpool. BRISTOL Mr. J. W. 427, Strand, W. BRISTOL Mr. B. Quaritch, 15, Piccadilly. BROMLEY Mr. M. Smith. BURNLEY Mr. J. Whitehead. BURY Messrs. J. & R. W. Atkinson. BURY Messrs. Sims & Son. BURY Mr. John Kemp. BURY Mr. H. Wright (late Napper and Wright). BURY Mr. M. Braithwaite. BURY Mr. H. Bradbury. BURY Mr. Henry Gaskarth, Westgate. BURY Mr. T. Page. BURY Mr. John Lavers. BURY Mr. Evans, 65, W. half Street. CAMBRIDGE Messrs. Macmillan & Co. CAMBRIDGE Mr. Hugh Bird. CAMBRIDGE Messrs. Thurman & Sons. CAMBRIDGE Mr. Thomas B. Arthy. CAMBRIDGE Mr. George Dixon. CAMBRIDGE Mrs. M. Bailey. CAMBRIDGE Mr. H. Penney. CAMBRIDGE Mr. H. Bull. CAMBRIDGE Mr. S. W. Heale. CAMBRIDGE Mr. M. C. and F. Batcheller. CAMBRIDGE Mr. George Andrews. CAMBRIDGE Mr. W. Clifford. CAMBRIDGE Mr. George Sutton. CAMBRIDGE Messrs. G. J. Wait & Co. CAMBRIDGE Mr. G. Dixon. CAMBRIDGE Messrs. Pearson & Co. CAMBRIDGE Mr. A. L. Peace. CAMBRIDGE Mr. J. W. Leng. CAMBRIDGE Mr. T. Atkinson. </p>	<p> KESWICK Mr. James Mayo. KIRKBY LONSDALE Mr. R. Morphet. LIVERPOOL Messrs. Philip, Son, & Nephew, 40, 51, South Castle Street. LIVERPOOL Messrs. Webb & Hunt, 2, Castle Street. LEEDS Mr. J. Smith. LONGFORD, Stafford Mr. F. S. Wright. LONGTON Mr. H. Smithson. MALTON Mr. E. Slater. MANCHESTER Mr. W. T. Hansbrow, 111, Bay New Road. MARYPORT Mr. John Adair. NEWCASTLE Mr. R. Turner. NEWPORT, I. of Wight Mr. Gubbins. NORTH SHIELDS Mr. J. Phillips. NORWICH Mr. H. Fyfe. NOTTINGHAM Mr. R. Sutton. OLDHAM Mr. John Hirst. OXFORD Messrs. Spicers & Son. PENRITH Mr. B. T. Sweeten. PLYMOUTH Mr. J. Land. PORTSMOUTH Mr. W. H. Charpentier. PORTSEA Mr. J. Griffin. PRESTON Mr. R. Veevers. READING Mr. G. Lovejoy. RICHMOND, Yorkshire Mr. J. Bell. RIPON Messrs. Johnston & Co. ROCHESTER Mr. E. Wrigley. RYDE, Isle of Wight Mr. Briddon. SCARBOROUGH Mr. S. W. Theakstone. SETTLE Mr. J. Williams. SHEFFIELD Mr. H. Pawson. SKIPTON Messrs. Forbes & Bennet. SOUTHAMPTON Mr. W. Sharland. STOCKTON-ON-TESSES Messrs. Jennett & Co. SUNDERLAND Mr. W. H. Hills. SWANSEA Mr. E. Pearce. THIRSK Mr. W. Bransby. TORQUAY Mr. W. T. Fisher. WAKEFIELD Messrs. Hicks & Allen. WARE Mr. R. J. Major, 15, St. Mary's Street. WHITEHAVEN Messrs. Callender & Dixon. WIGAN Mr. S. G. Bucknall. WINDERMERE Mr. J. Garnett. WOLINGHAM Mr. J. Chapman, Postmaster, &c. WORCESTER Mr. J. R. Minter. YORK Mr. J. Gladby. YORK Mr. J. Sampson. </p>	
SCOTLAND.		
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The list of OS agents appearing on the inside back cover of 'Catalogue of the maps and plans and other publications of the Ordnance Survey of England and Wales, and the Isle of Man, to 1st January 1881'.

By courtesy of the Library of Congress.

It has long been a matter of speculation as to when the supplements were first issued, so few are recorded pre-1882 copies. Short runs of late 1870s issues for all three countries are held by the Royal Geographical Society,⁴ and supplements for February and March 1873 have recently been recorded, added at the back of 1873 issues of the catalogues in the Bodleian Library, Oxford. Petermann noted the supplements for December 1871.⁵ Now a single, much earlier, issue has come to light in the Bibliotheque nationale de France in Paris,

⁴ England and Wales, November 1877 to June 1878 and March 1879; Scotland, January 1878 to May 1878 and March 1879; Ireland, August 1876 to March 1878, with gaps.

⁵ Dr A Petermann, *Mittheilungen aus Justus Perthes' geographischer Anstalt über wichtige neue Erforschungen auf dem gesamtgebiete der Geographie*, Gotha: Justus Perthes, 1872, p.264.

which lends considerable weight to the possibility that the supplements were being issued as long as the catalogues themselves. The single page, listing *Ordnance Survey of England. Publications issued from 1st to 31st May, 1867* was discovered tipped into the back of a copy of the *Catalogue of maps and plans and other publications of the Ordnance Survey of England and Wales, to 17th April 1867*. The layout of the page is unchanged between 1873, indeed the 1880s, and 1867, which suggests a certain continuity in publication in the intervening years. But the possibility that the supplements were being issued from the very beginning turns to near certainty with a re-evaluation of the final page of copies in the Bodleian Library, Oxford, of catalogues both for England and Wales, and Scotland, dated 1 March 1863. A single page, headed in each case with another form of title, *Publications issued during the month of March, 1863*, appears to be an extra page added into the binding, and not part of the original. Any lingering doubt is eliminated by the fact that this additional leaf is present in one of the Bodleian's two copies of the March 1863 catalogue for England and Wales (both in library bindings), but not the other.

If anyone has knowledge either of further editions of the catalogues, or of any other copies of pre-1882 issues of the supplements, we would be most grateful if they would get in touch. This may be done either directly to the author (address in the *Almanack*, or via email to roger.hellyer@btinternet.com) or via the editor of *Sheetlines*. Researchers examining early copies of these catalogues are strongly urged to check the end pages, in case any additional leaves may have been inserted.

The early years of the National Grid twenty-five inch map (continued)

John Cole

This article corrects or adds to that in Sheetlines 64, mainly as a result of information and maps obtained this year.

Whilst the appearance of 40(SZ)0598 indicated use of the method known as RP (revision point) compilation, this was not in fact the case. A report dated May 1946 indicates that it was the subject of what was titled the Hampreston experiment. Using the seven control points described in the previous article a careful chain survey was carried out followed by an equally careful completion and rigorous check. The result carried out on an enamel coated zinc plate was deemed 'virtually correct'. Next, the seven original control points, plus a further nine from the new survey, were plotted on a blank gridded enamel; a trace of the county series 1:2500 map placed over, and detail equated to the sixteen points in the best manner possible. A transparency was then made of the new survey to compare with the rectified old 1:2500.

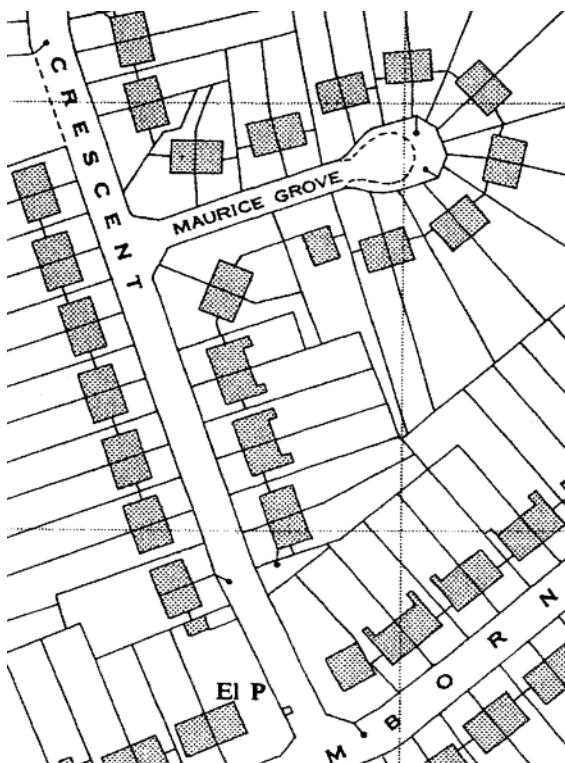
The comparison showed fair agreement in the more open parts though curved hedges differed by three metres or more. But in the hamlet of Hampreston more serious errors were perceived. The number of errors suggested that some of the points chosen as control were themselves in error in relation to the nearby detail and that by forcing them into

correspondence with the plotted positions, the adjoining detail – not so much in error on the old map – had been forced out of position.

A conclusion reached was that the old 1:2500 could not be accepted as a reliable method of obtaining control for air photos, nor could it be pulled into shape reliably even with the help of a very dense system of control. This second conclusion became one of the deciding factors in favour of overhaul (Cotswold method) in that a minimum of points, usually trigs, could be used to get the county series detail reasonably tied into the National Grid. Objections to obtaining control for air photos from the old 1:2500 were overcome by experiments in the late 1950s (in Flint and Cheshire) whereby careful and sensible graphic plotting from air photos using the old 1:2500 proved better than expected, besides being cost effective.

At the same time as the Hampreston experiment, similar tests of the old detail in the vicinity of the Hampshire/Dorset and Gloucester/Somerset boundaries indicated differences of around three metres (in a north-south direction) in the former area, and around eight metres east-west at the second location, when modern control was applied. Errors appeared random rather than systematic in that problems with the Cassini projection used for the County Series 1:2500 theoretically and practically were small. The Bournemouth area experiments involved 40(SZ)0495 and 0793 though parts (or all) of both may have been published at 1:1250 scale. Those at Bristol may have included ST6470, 6370 and 6371 where RPs close to the boundary appear on the 1:2500 map.

A further experiment in the Avonmouth district of Bristol (not resulting in any published mapping at the time) investigated making photographic co-ordinate measurements in what was known as a stereocomparator and computing the aerial triangulation from this data. From this, a year or so later, arose the Chelmsford method of air survey.



Sheet SJ9300, (left) A edition and (right) B edition

It was stated in *Sheetlines* 77 that the 1:1250 maps reduced and redrawn at 1:2500 scale lacked only pavement pecks in narrow streets, house numbers and all except major house names. It has since been possible to compare the A (or first) edition of SJ9300 at Wolverhampton, all quadrants surveyed January 1947, with the B edition revised late 1951 and early 1952, the latter map being a photographic reduction. It was clear that at this location substantially more detail was excluded from the redraw of the 1947 map.

Whilst some garden sheds and greenhouses would have been erected in the intervening years, over eighty were absent from the redraw in one block five hectares in area: under ten square metres of building apparently being the cut off point. A large number of short drives in private gardens were missing from the redraw, survivors being at least twenty metres in length. On houses and bungalows, bay windows, porches, juts and recesses were not redrawn, whilst rear outhouse detail attached to main building was mainly generalised. Such vegetation as there was had been retained.

A paper of March 1953 describing the Cotswold method of overhaul stated that although it was mainly applicable to rural areas, it was also possible to use it for small towns when the amount of new development was not great and provided the old 1:2500 survey was generally reliable. The latter not always being apparent until the revision got under way!

A list was given in *Sheetlines* 64 of a number of towns where revision point surveys were employed to improve the accuracy, as well as National Grid position, of the county series detail. It was suspected that more might come to light but only Bo'ness, Linlithgow, Broxburn (all in Scotland) and Braintree (Essex) have done so.

A further twenty or so large¹ towns, revised by the end of the 1950s, may or may not have utilised slightly less accurate (and unpublished) detail points. At one town, Penzance, they were established but not used for the survey, as the town became one of the first to be graphically revised from air photographs. Subsequently the detail points were usable for an accuracy test of the completed maps (with a very encouraging result). Such fixed but unused DPs for survey purposes figured in accuracy tests of the overhaul in Ayrshire, Northumberland and near Sheffield.

Between 1958 and 1960 accuracy tests of the overhaul took place in several other counties – Devon, Dorset, Derby, Essex, Kent, Nottinghamshire and Shropshire. Map numbers ranged from two in Shropshire to 39 in Dorset, and testing methods ranged from minor control traversing check points (Leicester, Kent, Salop, Notts and Derby); tellurometer and theodolite traversing (Devon); air triangulation points not previously used (Dorset and Essex, where it is thought some of the Chelmsford method air survey was included) and specially flown photography providing points co-ordinated by air trig. (Notts, Derby and another Sheffield block). Results were remarkably consistent with just one exception – occurring not in a replotted county, but in one of the early Devonshire locations. In this case a large area, of county series detail containing a trigonometrical point used to re-compile the map, was out of sympathy with surrounding county series detail. This caused an error in the relationship of the superimposed National Grid to the Cassini detail and this worrying aspect of the overhaul led to more severe gridding tests in later years. The trig. control spacing was up to eight kilometres in Devon and the test result indicated that it should not exceed three (which for economic reasons was not always possible.)

¹ Over three square kilometres.

OS explore

OS explore (the lower case e is intentional), found at <http://explore.ordnancesurvey.co.uk/>, is a new facility allowing you to create, share and browse routes. The current implementation is designated ‘beta version’, indicating provisional and to be enhanced in due course. There does indeed seem to be plenty of scope for improvement!

Here is how the site describes itself :

explore is more than just maps – it’s a whole new way of exploring and sharing your favourite parts of the country. Search for a location and then view the routes that people are sharing for that area. This will include details and points of interest – even photos, so you will be well prepared for a satisfying walk. When you’ve done the route for real, why not add comments and enhance the experience for future users? Have you got a route you really love to walk (or ride / drive / sail / run ...)? You can now plot your route directly onto Ordnance Survey 1:50,000 scale mapping, not only that but you can add points of interest and photos and share all this with the world.

This is a great idea, which has previously been exploited by others using Google maps and Google Earth. Can the OS do it better? Well, possibly, but not so far on the evidence of what we see here.

The biggest disappointment is the maps themselves. This should be the OS trump card, the content being so much richer than topography-free vector mapping such as Google. But what is offered is a small window displaying a map section at one of five scales. The scales are not specified and distances are thus impossible to judge. The largest scale viewable is stated to be 1:50,000, the others can be guessed to be 1:250,000, 1:625,000 and two much smaller scales. This is far less useful than OS *Get-a-map*, which has a similar window but specifies both map scale and screen scale. But more crucially, the available scales are inappropriate for walking and cycling routes, where the 1:25,000 *Explorer* map is essential and very small scales irrelevant. The map display cannot be expanded to full screen, nor zoomed to enlarge the image, nor printed out. These restrictions are presumably deliberate, the clue being in the caption to the window, ‘To buy a paper or digital map visit our Mapshop’. This suggests that the venture is more a marketing exercise than a genuine attempt to offer a useful service. It is ironic that *explore* doesn’t include *Explorer* and so is not really much use to walkers.

Other difficulties seem to be the result of good ideas spoilt by careless interface design. For example, there is the opportunity to create a ‘group’ whereby like-minded users can get together. But the search facility to find a group requires you to enter the first four letters of the name. Without already knowing the group names, how does one discover what groups exist?

Another potential useful feature is the ‘keyword tag’. These allow the creator of a route to specify any number of relevant words which would help others to find it, such as ‘beach’ or ‘forest’ or ‘pub’. But the ‘Find a Route’ section requires you to enter a place name and has no mention of keyword tags. There is a separate search box inviting you to ‘Enter keyword(s)’ but this does not recognise keyword tags. The *explore* home page does offer a partial list of keyword tags, but only up to letter ‘C’. So the thirsty walker has no way of locating those walks tagged ‘pub’. And once you have navigated away from the *explore* home page there’s no quick way of getting back to it.

There are other errors that suggest careless compilation, such as the warning message just before you save a newly-created route that it cannot later be edited, which is not true. And it would be useful to be able to browse the complete list of routes (and groups and keyword tags) and to find routes by map search, not just place name search.

In summary *explore* is a promising project not yet well enough executed. We can hope for future versions to be much better.

John Davies

CD-ROM Review

The Goad Maps – fire insurance plans of Manchester, edited by Terry Wyke. CD-ROM produced by the Digital Archives Association, 2007, £20.¹

The Digital Archives Association has already made available a range of historic mapping, mostly six-inch and twenty-five-inch Ordnance Survey maps covering the north west, available on CD, and more recently on DVD, which are of great value to historians and archaeologists (their full catalogue can be found on-line at www.digitalarchives.co.uk). While not as convenient as the original paper copies, scaling off is a particular problem, this method makes readily available a vast range of mapping which it would be impossible for an individual to own. This latest addition to the Digital Archives Association catalogue moves into a new area of cartography by making available Goad's fire insurance plans for Manchester. While not Ordnance Survey material, this CD is likely to be of interest to many Charles Close Society members, particularly those for whom maps are a resource for historic research. The party who visited Landmark Information Group's Exeter offices in March were told that they had scanned Goad plans,² however their services are only available to commercial customers at commercial prices, by contrast this CD is within reach of all but the most impecunious, provided you have a computer of course!

Although the existence of Goad's fire insurance plans has been known, as Terry Wyke points out in the introductory essay to this CD, they have been relatively little used by historians and industrial archaeologists. One reason for this may be that they have been less readily accessible than other mapping sources. While some provincial libraries hold copies, the most complete holdings are at the British Library in London. But now historians in Manchester have no excuse, because this CD makes widely available in digital form images of plans from the collection in the Local Studies and Archives Unit of Manchester Central Library. The plans included are from the oldest held by the Unit and date from the late 1880s up to the 1940s.

The Goad plans, at a scale of 40 feet to the inch, were produced for the purpose of assessing fire risk and in doing so convey far more information than the large-scale Ordnance Survey plans. In particular the Goad plans show the height of buildings and their usage. Building materials and type of construction are indicated, together with details of fenestration, loading doors, hoists, skylights, steam engines and boilers. Details of roof construction are noted, the existence of, for example, Belfast trusses being noted. Internal

¹ Available from Digital Archives Association, 3 Cedarways, Appleton, Warrington, WA4 5EW (postage £1.50 extra).

² *Sheetlines* 79, 3-4.

walls are shown in symbols which indicate their likely effectiveness in stopping fire. Not surprisingly, particular attention is paid to fire fighting apparatus, whether sprinkler systems are fitted, the position of fire hydrants and the size of the water mains supplying them. Colour is used to convey some of this information, making these plans very colourful.

The original plans are bound in several volumes, with index plans, and this is how they are arranged on the CD. The area covered is central Manchester and Salford, going out to Ancoats and Holt Town, the area immediately south of the River Medlock in Chorlton-on-Medlock and the area between the River Irwell and the railway in Salford. The outer areas are of much later data, 1920s and 1940s, than the inner area, some of which are as early as 1888, suggesting that Goads were increasing their coverage as time went on. Thus the packing warehouses in the city centre are covered, including Watts warehouse on Portland Street, but the sheets reproduced here pre-date the Edwardian era warehouses in the Whitworth Street area. Some important textile mill sites in Ancoats, Chorlton-on-Medlock, and the Arkwright Mill in Miller Street are found here. Other sites of interest include a group of obnoxious-sounding chemical works alongside the Rochdale Canal in the Miles Platting area: Hardman & Holden's sulphuric acid concentrating works, the Lancashire Tar Distillers and the Manchester Oxide Company.

But the railway warehouses, including Liverpool Road station and the canal warehouses, such as those around the Castleford canal basin, appear in a distinct volume devoted to carriers' warehouses. In addition to those in the city itself, this volume covers such warehouses in a radius of up to 30 miles from the city centre. This takes in an area covering Preston, Blackburn, Clitheroe, Burnley, Todmorden, Saddleworth, New Mills, Macclesfield, Runcorn, Warrington, and Chorley. Manchester Docks is also included in this volume. There are some curiosities about the geographical distribution, there must have been carriers' warehouses in Glossop and Hadfield but none appear here, but Hebden Bridge and Sowerby Bridge are included, as is a single warehouse, but surely not the only one, in St. Helen's. A cross-section is provided for all carriers' warehouses showing the type of goods stored on each floor. Sometimes elevations are included and the New Warehouse at Castlefield is honoured with three-dimensional, isometric, view. In addition there is a superb isometric view of the Trafford Wharf Road grain elevator, complete with flag flying from the roof, on the front cover of the CD. Some notable warehouses to be found here include the Park Road warehouse in Oldham, the Portland Basin at Ashton-under-Lyne and the London & North Western Railway's Heaton Norris warehouse in Stockport. The Victoria Warehouse, Bridgman Street, Bolton, of the London & North Western Railway is noted as having been a cotton mill, altered in 1900, so the practice of converting cotton mills to warehouses goes back a long time. Many warehouses shown here are marked as holding 'cotton', but this is somewhat ambiguous, does it mean raw cotton, yarn or cloth? The existence of a 'cloth shed' in Blackburn suggests either of the former, raw cotton being most likely.

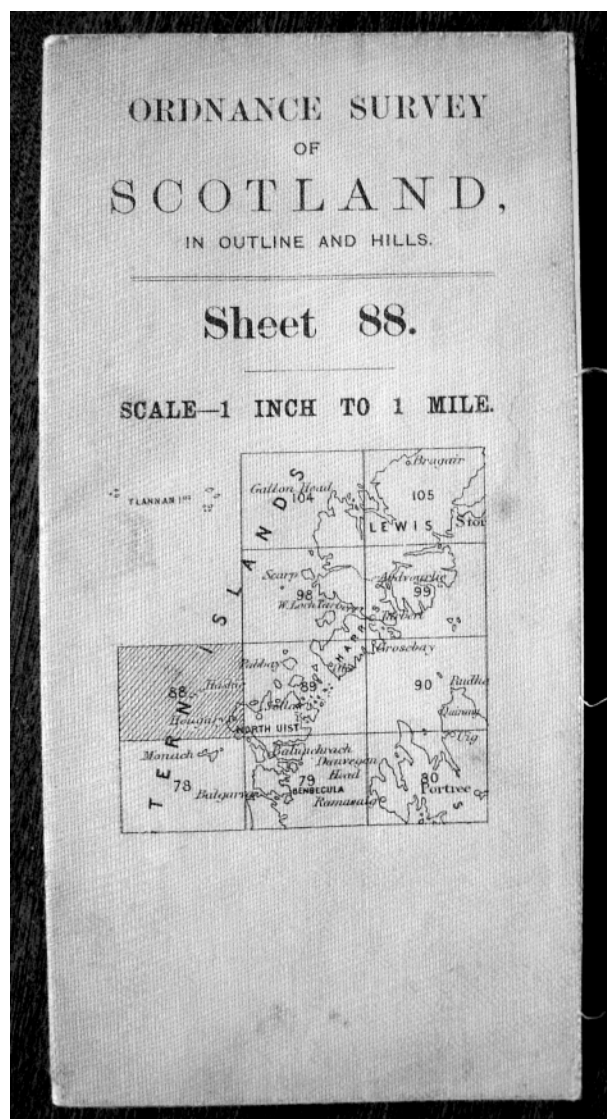
Terry Wyke, of the Manchester Metropolitan University, in his introductory essay suggests that the Goad plans represent one of the high-water marks of nineteenth-century urban cartography. The essay discusses the historical background to the plans and the method of publication and revision of the plans, knowledge of which is necessary to their historical interpretation. In particular the method of revision, by printing small amendments slips to be pasted over the original, makes it difficult to supply an exact date to the information given on the plans. Eventually a new sheet would be drawn, and the process started again. This continual revision was of course in contrast to the infrequent revision of the Ordnance Survey

plans and, in principle, the Goad plans provide a much more detailed picture of urban change and development. However the digital images here are only a snapshot of this process, in some cases the existence of amendment slips can be seen, and to exploit this potential of the plans would require going to the originals.

The plans and introductory essay are in PDF format for viewing with the Adobe Acrobat Reader. One practical point is that for faster viewing it is better to copy the file off the CD onto your hard disc drive. It is possible to print off portions of the sheets, but whole sheets printed at A4 size are too small to be of much use. However, the reference sheet to signs and symbols is perfectly legible when printed A4 and it is a good idea to print this for handy reference when viewing plans on the screen. Be warned, you could spend (waste?) many hours studying these plans!

Roger N Holden

This is a slightly revised version of a review originally submitted to *Industrial Archaeology Review*.



Can anyone help?

One of the more recondite by-products of the one-inch engraved map of Scotland is an outline with brown hills version of the Third Edition, printed by lithography. Only two such sheets have been recorded, sheets 88 and 89. They are both in the same format, printed on paper mounted on cloth, the cover information directly printed on the reverse (as illustrated), perhaps suggestive of issue during the First World War. The significant wording is 'in Outline and Hills'. As to the map itself, there is nothing obviously different between this form and the engraved version with hills.

It is intended to include reference to these sheets in our forthcoming publication dealing with the one-inch engraved maps of England and Wales, Scotland and Ireland; it would be much appreciated if any members who know of further sheets published in this lithographed 'outline and hills' (please, not the engraved) form would notify us. Our addresses are in the *Almanack*, or to roger.hellyer@btinternet.com via email.

Roger Hellyer and Richard Oliver

Kerry musings

David Archer

Railwayana (engine lamps, station signs, whistles), Breweryana (ashtrays advertising beer, pub signs, hand pumps), Banana (CND badges, posters, literature. *Sorry*). Almost every group that one can think of appears to collect peripheral items associated with their subject. Artefacts that originated from the adored. Anything associated with railway companies, breweries, the army, the Preston Guild, even schools is collected. It therefore follows that map enthusiasts would be expected to seek out choice pieces of Ordnance Surveyana. But do they? Of course. Not such a thriving industry as with railway enthusiasts, who have a vast amount of relics at their disposal, but one can still find a little something tucked away in most OS collections. And let me say at this point, that nothing in this piece implies that I have any of this sort of thing, given the sometimes grey legal area in which a lot of ana items exist. Most of the following examples come from a conversation I overheard in a pub. A long time ago. Somewhere. (Probably the Bricklayers Arms, during lunch at the 1989 AGM. Yes, that was it).

The most valued relics are those which either have the name of the parent body integral to the item or are so obviously from the parent body. Just having a name stamped on a standard mass produced item is very low on the list of desirables. Thus a cast iron notice or brass uniform buttons bearing the initials SMJR are far better than a wooden ruler merely stamped Ordnance Survey. (I know that I am taking a big risk in naming certain railway companies and not others, but I am insured). Compared to the Ordnance Survey, the railway companies produced a million times as many things to be collected, and a great number had the company name on them. Stations of all sizes, huge locomotives, carriages, miles and miles of permanent way all provide things to be sought after and collected. But beyond the main building in Southampton and a few regional offices, the OS merely visited places and left little trace of themselves, so there are far fewer items out there. We cannot compete with a railway steam engine, unless one were to find the little pink aeroplane that the OS had, or one of the white Land Rovers with a large Ordnance Survey logo on the side. Even if one of us had these, they would only be of interest because they were linked to the OS by the logos painted onto the otherwise standard item. Neither would be considered in the same class as a working signal box gantry at the bottom of the garden.

No, the larger articles are not really what we want. Try something smaller. The railway people are very fond of cast iron plates of all sorts. Plates from engines, plates saying 'Keep Out: by Order of the LB&SCR'. Good heavy solid things. Well, we have Ordnance Survey spiders. Spider being a name a member gave to something he spotted in our hall one day (*only joking*). Concrete triangulation pillars have a brass spider-like piece of equipment embedded in the top surface. Three legs reaching out from a solid circular centre. A perfect example of Ordnance Surveyana and one that would match anything the railway people have. Its merits? Weighty, non-corrosive brass, and as hernia-inducing as any six-figure engine name plate. Well known and satisfying, because few collectors own one. Particularly desirable as they have the magic words 'Ordnance Survey' cast around the centre. Not only that, but 'Triangulation Station' as well, and, oh joy, the middle circular piece is actually threaded and screws out. As does the even smaller circular centre of the whole thing. Too much. Something to play with, despite it being a precision instrument of sorts. I recently

came across another centre piece, minus the legs. It appears to be older, with a different style of lettering, and a grub screw rather than a split pin holding the smaller piece in place. How exciting. Such would obviously be the start of an arachnid collection should anyone own both. Page 91 of Owen and Pilbeam shows an Ordnance Survey workshop with rows of ana sitting waiting to be collected, this time brass flush brackets. Brackets, like station name signs have a certainty about them, in that they are numbered and the location where they were used (and removed from) can be found. Not quite as exotic, but I do admit to owning a red brick with the three legs of a cut bench mark on it, which a local builder brought me from a wall he had knocked down. Gripping stuff this.

For pure beauty, even the railway world cannot compete with an engraved copper plate. As an ana, it has all the requisites in spades. Top quality metal, nice and heavy, smooth, shiny and so obviously from the idolised source. But the engraving is superb, even if the wrong way around/backwards/reversed. Another call for a second pair of eyes, which could make sense of such engraving without having to hold it to a mirror; whilst some lucky owners might also have a copy of the map produced by their plate. I know of one plate that still has its coating of wax, as used in the production process. This could be quite important, as it shows the thickness of wax used, and could yield the formula for the coating if it no longer exists. Just as the railway people had cast metal signs for all manner of things, so the OS used engraved copper plates for a lot of jobs, not only maps. In the mid-nineteenth century facsimile period, the title pages of the *Domesday Books* yielded copper plates, as did the two small illustrations at the end of each Introduction. Again, good classy Ordnance Surveyana, tucked away in collections. I can see the attraction of owning something like this. The fineness of engraving surely reflects the essence of the OS in the nineteenth century: Precision. Precise, painstaking measurements and mathematical calculations, superb engraving and the need for spot on registration of the different printing plates.

Glass plates used in the printing process are said to have poured out of the OS at one time, destined mainly for home-made greenhouses. Apparently most of the black would come off fairly easily, leaving a good pane of thick glass. A student friend worked in a Swiss-roll factory one summer. His boss always took the free daily allowance of two rolls, and maintained that if left in the shed to dry, they made wonderful firelighters. Similarly, litho stones are said to be found in garden paths in the Southampton area, though I am doubtful about this one, as they were not easy to handle before small dumper trucks appeared. Certainly none exist in the Kerry area.

In the 1980s, Galloway's bookshop in Aberystwyth still had a lovely blue and white glass sign advertising Ordnance Survey maps stuck to the glass panel above the main door. Whenever I visited, I always kept an eye on 'my sign' and was horrified when I eventually saw a skip outside the building. The whole shop had been gutted. I asked when the windows were coming out, was told "next week", and I would have to see the boss about the sign. An hour later, the boss grabbed a large claw hammer, jumped onto a saw stool and eased the hammer claw between the sign and ancient glass panel. My instinct was to turn away, but I watched in order to see where every shattered piece went, so as to be able to collect all of the sign and stick it together again. Within a couple of seconds the two pieces of glass had amiably parted company, both intact, and the sign was mine. A fine, easily handled object compared to the ornate staircase from Earls Court Underground station, which one might have asked a contractor for when it was removed.

The obvious question is whether having a bit of this and a part of that serves any purpose, except to make a home look like the set for *Steptoe and Son*? So easily a group of artefacts can resemble a museum of bygone days, with totally unconnected items in a glass case and a one line label in front. A shrunken skull from Africa, a lock of the late King's hair and so on. A brass flush bracket, a surveyor's chain, an engraving implement. Not much better, I would say. No, things should be kept in their original place wherever possible, keeping them in context. If something cannot be kept thus, I suppose that the next best thing is that it is 'saved' and kept within the circle of people who care about it and its history. But with the intention of placing it in a suitable setting when possible. And there could be no better setting than the proposed Ordnance Survey Map Experience. On a thirty acre site, with ample parking and refreshments, the whole family will be able to explore the work of the OS, starting with the thrills of measuring the mini base line, hiking to mountain-top trig points, surveying in all weathers (optional classes on higher calculus), practical engraving, printing and collecting maps. Nothing later than 1967.

Letters

Foulshiels – birthplace of Mungo Park

Paul Swindell asks whether there was a link between Mungo Park and the OS.¹

Park's trips (or the first at least) were paid for by the African Association. Sir Joseph Banks was active in the affairs of this body and, at the time of Park's first trip, was virtually running it. Banks was also a close friend of Roy (being almost continually on hand at the measurement of the Hounslow base). Further details may be found in Carter's massive biography of Banks. Whether this link was still of relevance at the much later date when the one-inch sheet covering Foulshiels was first published is unclear.

Rob Wheeler

Paul Swindell mentions searching OS website for 'birthplace of' and noted the preponderance of Scots in the results. In fact, simplifying the search to 'birthplace' reveals several more results, namely: J M Barrie, William Booth, Thomas Carlyle, Andrew Carnegie, Captain Cook, Edward Elgar, Octavia Hill, James Hogg, Gustav Holst, Samuel Johnson, D H Lawrence, Flora Macdonald, Sir Isaac Newton, Mungo Park, Sir Walter Raleigh, General Roy, Shakespeare and R L Stevenson. I make this ten English to eight Scots. However, of these eighteen, only seven 'birthplaces' are actually named on *Landranger* maps and of these, five are Scots and only two (Shakespeare and Newton) English. This does not, of course, answer the question of how these celebrities were chosen, except the general observation that in most (but not all) cases, a relevantly-named museum or monument exists on the ground.

John Davies

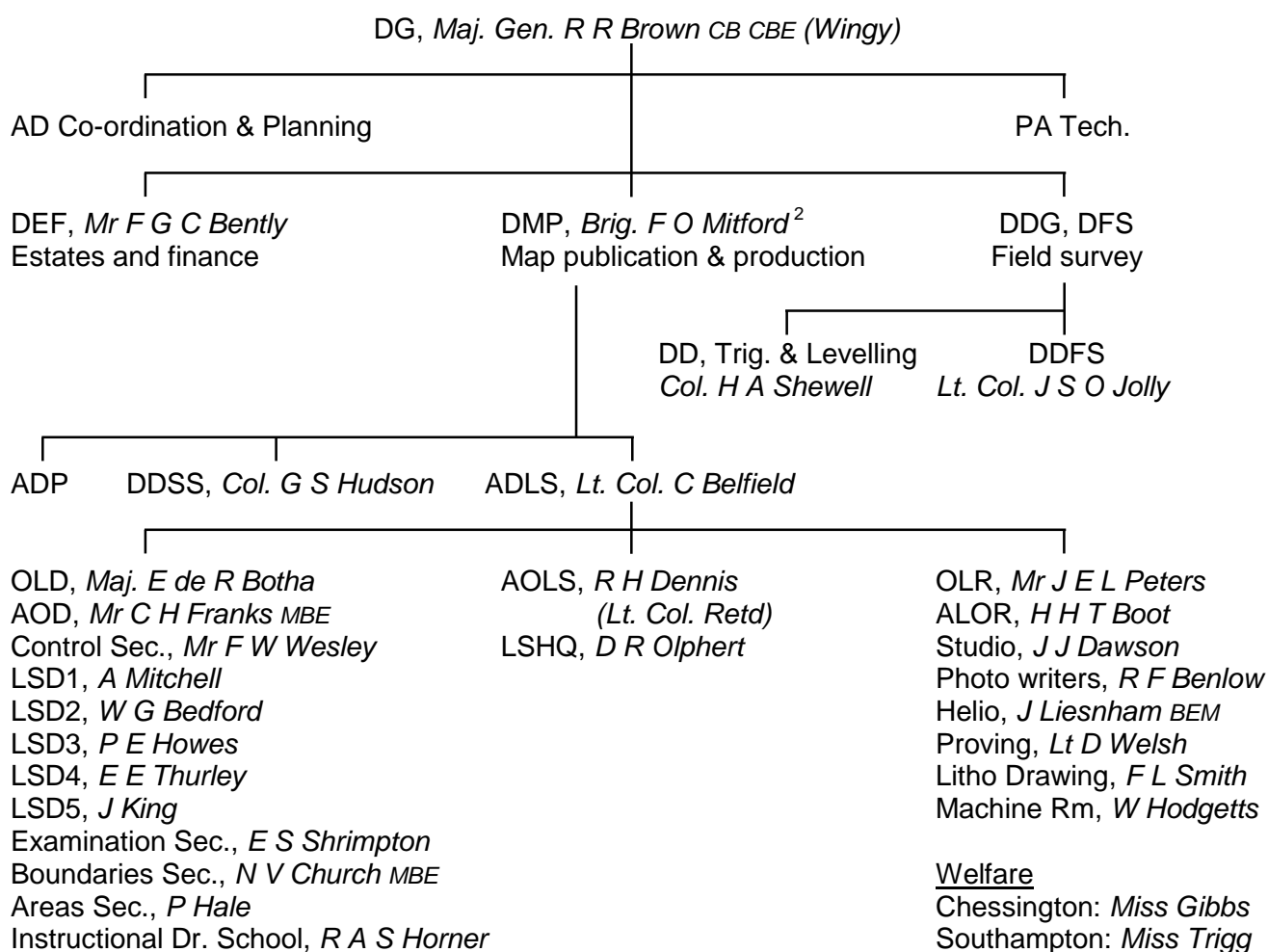
¹ *Sheetlines* 79, 69.

OS family tree - September 1951

I was very interested to read David Archer's piece on John Dennett,¹ whom I never met, but I see that I joined the Survey in the middle of his service. Neither can I name any of those in the photographs. However, on looking through my old note book, the names and positions at that time, September 1951, were given to us just starting in the Large Scale Drawing School.

I enclose a copy as it might fit some of the faces.

Ron Matthews



Six field divisions

DO1 Nottingham
DO2 Bristol, Brig. Wheeler
DO3 Kidderminster

DO4 London
DO5 Edinburgh
DO6 Harrogate

¹ *Sheetlines* 79, 8.

² Also Director of Survey??

On 'Interpreting the 1:2500 County Series'

I am grateful to David Andrews for pointing out the error I had fallen into on the interpretation of building divisions. I had concentrated on the expression 'between parts of a building of different character'¹ to the neglect of its continuation 'for instance, between a dwelling-house and an outbuilding with a separate outside door'. In Lincolnshire villages at that date, changes from two storeys to a single storey were generally associated with such a change in function, and I had leapt to the erroneous conclusion that a change from multiple storeys to a single storey in itself was sufficient. I need have looked no further than Lincoln Minster, where no division is shown between church and cloister.

Incidentally, churches come off badly in this respect. A domestic coal house qualified for a dividing line but a church heating chamber, not being attached to a dwelling-house, failed to qualify. Harmston church provides a good example, having a fairly grand sexton's store, accessible only from an outside door, added between the initial County Series survey and the first revision. The revised map shows the extension to the church footprint but does not divide it in any way from the rest of the church.

Schools may have been treated more favourably. Participants on the surveying weekend failed to remark that the lavatories at the former school in which they were accommodated are given a dividing line on the Second Edition and have an even more complicated arrangement on the First Edition. Unfortunately they appear to have been modified since 1905 and I am not aware of any detailed plan of the earlier arrangements.

Conventions do seem to have changed over the years. Comparison between the First and Second Editions for Harmston suggests that the requirement to show 'well-marked divisions between the different parts of farm-buildings'¹ led to an increase in dividing lines, as well as to the clarity of the map. Thereafter things went downhill: Oliver notes an amendment of after 1932 revoking the dividing line for domestic outbuildings of less than 400 square links. The 1970 National Grid revision for Harmston is, as David's letter would suggest, almost devoid of dividing lines on new groups of farm buildings. Yet, curiously, the church porch (though grievously misproportioned) is now divided from the rest of the structure.

Incidentally, the early rules on domestic outbuildings may perhaps reflect the civil colouring convention whereby dwelling houses were shown red, other buildings, including outbuildings attached to dwelling-houses but having a separate entrance, being coloured grey. Did the OS anticipate that private surveyors might buy uncoloured OS plans and colour the parts of interest to them according to the civil convention? Has anyone encountered OS plans treated in this way?

Rob Wheeler

East German mapping

The extract from the 1:500,000 East German sheet M-30-B (*Sheetlines* 69, 34) derived from the Soviet original raises a question of how this was produced. The Cyrillic place and feature names (all in black or blue) are completely replaced with English names whilst the other black and blue objects and lines appear to be identical. This rather suggests that the names

¹ *Instructions to field examiners*, Ordnance Survey, 1905, unpublished, quoted in Richard Oliver, *Ordnance Survey maps: a concise guide for historians*, second edition, London: Charles Close Society, 2005, 78.

were on separate plates. Another piece of evidence is consistent with this possibility. European road numbers changed in 1983; the Soviet map (1985) shows the old numbers in black whereas the East German version (1989) has the new numbers. However, these are not replaced, as with the names, but are crossed out with new number overprinted alongside in magenta.

Examples can be seen in various places, such as : M1 at Luton was E33, now E13; A1(M) at Stevenage (wrongly labelled M1 on both maps) was E31, now E15; M4 west of Reading was E105, now E30, and A34 at Chipping Norton previously un-numbered, now E05.

John Davies

Theodolite diaphragms

The extract from Close's *Text book* (1913)¹ reminded me of Brevet-Major Martin Hotine's remarks when he received the eight-inch Reflecting Theodolite from Cooke, Troughton and Simms in September 1932. Deep in the Tanganyika bush, observing a key section of the Arc of the Thirtieth Meridian, he lamented certain small defects in the instrument:

Par exemple, a micrometer web arrives broken and there is no spare, although there is a complete spare micrometer eyepiece which we shall probably never use. Doubtless I ought to be able to catch a spider and even make the result readable, though such experience as I have with spider webs in the field does not fill me full of hope about making two of them parallel under a magnification of about 40. Actually I shall leave it alone for the present and do without the advantage of your system of duplicate webs at 4-minute spacing. I shall hope no more get broken ...²

This perhaps exemplifies Hotine's comment in an earlier letter to McCaw (19 May 1932): 'As you know I have next to no patience'.

Richard T Porter

Answer corner: World Heritage sites



In *Sheetlines* 79 we asked what this symbol meant? The editor is convinced that it shows a square peg in a round hole but, in fact, it is based on the World Heritage logo and it will appear on maps in blue. OS has announced that in future it will use the symbol to highlight the 23 World Heritage sites in Great Britain, including Stonehenge, Blaenavon and Hadrian's Wall, on *Explorer*, *Landranger* and other maps.

¹ *Sheetlines* 77, 56.

² Hotine to G T McCaw, 5 October 1932, in G Survey File 2, formerly AD 50 in the Survey Data Library, Directorate of Overseas Surveys (later Ordnance Survey International); now being accessioned by The National Archives. Also reproduced in Richard T Porter and James R Smith, *A special eight-inch reflecting theodolite*, Southampton: Ordnance Survey International Library, 2002, 69. Martin Hotine was in charge of the retriangulation of Great Britain, 1935-39.

New maps

Jon Risby

This list covers small scale maps published between 7 July and 6 November 2007. 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 March and June 2007.

OSGB maps

Revision notes are referenced in column six as follows:

- | | |
|---|---|
| ¹ 'Reprinted with minor change'
² 'Revised for selected change'
³ 'Revised with selected change' | ⁴ 'Revised for significant change'
⁵ 'Revised with significant change'
⁶ '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*.

Landranger – new editions

6	Orkney - Mainland	C	2007	2002	2007 ¹	26/09/07
18	Sound Of Harris, North Uist, Taransay & St Kilda	<u>B1</u>	2007	2000	2007 ¹	02/07/07
46	Coll & Tiree	C2	2007	2000	2007 ²	03/09/07
47	Tobermory & North Mull	C2	2007	2000	2007 ²	15/10/07
48	Iona & West Mull, Ulva	C2	2007	2000	2007 ²	15/10/07
49	Oban & East Mull	B2	2007	1999	2007 ²	03/09/07
50	Glen Orchy & Loch Etive	B2	2007	1999	2007 ²	03/09/07
51	Loch Tay & Glen Dochart	B2	2007	1998	2007 ²	03/09/07
52	Pitlochry & Crief	B2	2007	1999-2000	2007 ²	15/10/07
54	Dundee, Montrose, Forfar & Arbroath	B2	2007	1998-99	2007 ²	03/09/07
56	Loch Lomond & Inveraray	C2	2007	2000	2007 ²	23/07/07
59	St Andrews, Kirkcaldy & Glenrothes	C2	2007	2000	2007 ²	03/09/07
61	Jura & Colonsay	B2	2007	1998	2007 ²	11/05/07
62	North Kintyre & Tarbert	C1	2007	2001	2007 ²	23/07/07
63	Firth Of Clyde, Greenock & Rothesay	B2	2007	1999	2007 ²	19/07/07
65	Falkirk, Linlithgow & Dunfermline	D2	2007	2000	2007 ²	23/07/07
68	South Kintyre & Campbeltown	B2	2007	2000	2007 ²	11/05/07
69	Isle of Arran	C2	2007	2000	2007 ²	14/05/07
71	Lanark & Upper Nithsdale	B2	2007	2000	2007 ²	23/07/07
73	Peebles, Galashiels & Selkirk, Tweed Valley	C2	2007	1998-99	2007 ²	03/07/07
80	The Cheviot Hills & Kielder Water	C2	2007	2000	2007 ²	16/06/07
83	Newton Stewart, Kirkcudbright & Gatehouse of Fleet	C1	2007	2001	2007 ²	23/04/07
93	Middlesbrough, Darlington & Hartlepool	<u>C2</u>	2007	1999	2006 ¹	08/02/07
99	Northallerton, Ripon, Pateley Bridge & Leyburn	<u>C1</u>	2007	1997	2007 ¹	14/09/07
126	Shrewsbury & Oswestry	<u>B2</u>	2007	2000	2007 ¹	23/07/07
129	Nottingham, Loughborough & Melton Mowbray	<u>C3</u>	2007	1999	2007 ²	23/07/07

130	Grantham, Sleaford & Bourne	<u>C2</u>	2007	1998	2007 ¹	08/05/07
141	Kettering & Corby	<u>C3</u>	2007	1999	2007 ²	15/10/07
153	Bedford, Huntingdon, St Neots & Biggleswade	<u>C3</u>	2007	1998	2007 ¹	20/07/07
156	Saxmundham, Aldeburgh & Southwold	<u>B1</u>	2007	1999	2007 ¹	24/07/07
161	The Black Mountains	<u>B3</u>	2007	1997	2007 ²	15/10/07
170	Vale of Glamorgan, Rhondda & Porthcawl	<u>D3</u>	2007	2000	2007 ²	15/10/07

Explorer and Explorer Active – new editions

OL42	Kielder Water	<u>A2</u>	2007	2001	2007 ¹	18/07/07
102	Land's End, Penzance & St Ives	<u>B1</u>	2007	03 ⁴ 05 ²	2007 ¹	21/07/07
120	Chichester, South Harting & Selsey	<u>B1</u>	2007	2004 ⁴	2007 ¹	11/06/07
155	Bristol & Bath	<u>A2</u>	2007	1997	2007 ²	22/10/07
156	Chippenham & Bradford-on-Avon	<u>A2</u>	2007	1999	2007 ²	13/08/07
161	South London	<u>A3</u>	2007	1998	2007 ¹	20/06/07
253	Lleyn Peninsula West	<u>A2</u>	2007	1996	2007 ¹	08/05/07
254	Lleyn Peninsula East	<u>A2</u>	2007	1996	2007 ¹	24/07/07
285	Southport & Chorley	<u>A1</u>	2007	2000	2007 ²	20/07/07
289	Leeds, Harrogate, Wetherby & Pontefract	<u>A1</u>	2007	2000	2007 ¹	18/07/07
339	Kelso, Coldstream & Lower Tweed Valley	<u>A2</u>	2006	2000	2006 ²	22/01/07
385	Rannoch Moor & Ben Alder	<u>A1</u>	2007	2001	2007 ²	28/05/07
395	Glen Esk & Glen Tanar	<u>A1</u>	2007	2001	2007 ²	09/07/07
396	Stonehaven, Inverbervie & Laurencekirk	<u>A1</u>	2007	2002	2007 ²	09/07/07
398	Loch Morar & Mallaig	<u>A1</u>	2007	2002	2007 ²	09/07/07
399	Loch Arkaig	<u>A1</u>	2007	2002	2007 ²	09/07/07
400	Loch Lochy & Glen Roy	<u>A1</u>	2007	2001	2007 ²	09/07/07
401	Loch Laggan & Creag Meagaidh	<u>A1</u>	2007	2002	2007 ²	09/07/07
402	Badenoch & Upper Strathspey	<u>A1</u>	2007	2001	2007 ²	09/07/07
403	Cairn Gorm & Aviemore	<u>A1</u>	2007	2001	2007 ²	09/07/07
404	Braemar, Tomintoul & Glen Avon	<u>A1</u>	2007	2001	2007 ²	09/07/07
405	Aboyne, Alford & Strathdon	<u>A1</u>	2007	2002	2007 ²	09/07/07
406	Aberdeen & Banchory	<u>A1</u>	2007	2002	2007 ²	09/07/07
407	Skye – Dunvegan	<u>A1</u>	2007	2002	2007 ²	24/09/07
408	Skye – Trotternish & The Storr	<u>A1</u>	2007	2002	2007 ²	24/09/07
409	Raasay, Rona & Scalpay	<u>A1</u>	2007	2002	2007 ²	24/09/07
410	Skye – Portree & Bracadale	<u>A1</u>	2007	2002	2007 ²	24/09/07
411	Syke – Cuillen Hills	<u>A1</u>	2007	2001	2007 ²	24/09/07
412	Skye – Sleat	<u>A1</u>	2007	2002	2007 ²	24/09/07
413	Knoydart, Loch Hourn & Loch Duich	<u>A1</u>	2007	2002	2007 ²	24/09/07
414	Glen Shiel & Kintail Forest	<u>A1</u>	2007	2002	2007 ²	09/07/07
415	Glen Affric & Glen Morriston, Cannich	<u>A1</u>	2007	2002	2007 ²	09/07/07
416	Inverness, Loch Ness & Culloden	<u>A1</u>	2007	2002	2007 ²	24/09/07
417	Monadhliath Mountains North & Strathdearn	<u>A1</u>	2007	2002	2007 ²	24/09/07
418	Lochindorb, Grantown-on-Spey & Carrbridge	<u>A1</u>	2007	2002	2007 ²	24/09/07
419	Grantown-on-Spey & Hills of Cromdale	<u>A1</u>	2007	2002	2007 ²	24/09/07
420	Coreen Hills & Glenlivet	<u>A1</u>	2007	2002	2007 ²	24/09/07
421	Ellon & Inverurie	<u>A1</u>	2007	2002	2007 ²	24/09/07
422	Nairn & Cawdor	<u>A1</u>	2007	2002	2007 ²	24/09/07
423	Elgin, Forres & Lossiemouth	<u>A1</u>	2007	2002	2007 ²	24/09/07
424	Buckie & Keith	<u>A1</u>	2007	2002	2007 ²	24/09/07
425	Huntly & Cullen	<u>A1</u>	2007	2002	2007 ²	24/09/07
426	Banff, Macduff & Turiff	<u>A1</u>	2007	2002	2007 ²	24/09/07
427	Peterhead & Fraserburgh	<u>A1</u>	2007	2002	2007 ²	24/09/07
428	Kyle of Lochalsh, Plockton & Applecross	<u>A1</u>	2007	2002	2007 ²	24/09/07
429	Glen Carron & West Monar	<u>A1</u>	2007	2002	2007 ²	24/09/07

430	Loch Monar, Glen Cannich & Glen Strathfarrar	A1	2007	2002	2007 ²	24/09/07
431	Glen Urquart & Strathglass	A1	2007	2002	2007 ²	24/09/07
432	Black Isle	A1	2007	2002	2007 ²	24/09/07
433	Torridon – Beinn Eighe & Liathach	A1	2007	2001	2007 ²	24/09/07
434	Gairloch & Loch Ewe	A1	2007	2002	2007 ²	24/09/07
435	An Teallach & Slioch	A1	2007	2002	2007 ²	24/09/07
436	Beinn Dearg & Loch Fannich	A1	2007	2002	2007 ²	24/09/07
437	Ben Wyvis & Strathpeffer	A1	2007	2002	2007 ²	24/09/07
438	Dornoch & Tain	A1	2007	2002	2007 ²	24/09/07
439	Coigach & Summer Isles	A1	2007	2002	2007 ²	24/09/07
440	Glen Cassley & Glen Oykel	A1	2007	2002	2007 ²	24/09/07
441	Lairg, Nonar Bridge & Golspie	A1	2007	2002	2007 ²	24/09/07

The English and Welsh maps listed above show Access Land and are in new style Explorer covers. The Scottish maps do not show Access Land, but are in the new style Explorer covers.

Travel Maps, Route map – new edition

1	Route Map 2008	2008	2007	-	2007 ⁵	22/10/07
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Travel Maps, Tour series – new editions

3	Lake District & Cumbria	C	2007	-	2007 ⁴	21/06/07
6	Yorkshire Dales	C	2007	-	2007 ⁴	15/10/07
10	North & Mid Wales	C	2007	-	2007 ⁴	21/06/07
11	South & Mid Wales	C	2007	-	2007 ⁴	02/07/07
15	London including the M25	C	2007	-	2007 ¹	20/09/07

Irish maps

Discovery maps

24	Mayo, Sligo	Third edition				15/10/07
55	Kildare, Laois, Offaly, Wicklow	Third edition				31/07/07
89	Cork	Third edition				03/07/07

Forthcoming OSGB maps

The following maps have been announced for publication.

Landranger – new editions

123	Lleyn Peninsula	B2				29/10/07
44	Ballater, Glen Cova	C2				12/11/07
88	Newcastle upon Tyne, Durham & Sunderland	D4				12/11/07
23	North Skye, Dunvegan & Portree	C2				19/11/07
33	Loch Alsh, Glen Shiel & Loch Hourn	C2				26/11/07
58	Perth to Alloa	B2				26/11/07
39	Rum, Eigg & Muck	B2				26/11/07
32	South Skye & Cuillen Hills	C2				26/11/07
41	Ben Nevis, Fort William & Glen Coe	D1				03/12/07
37	Strathdon & Alford	B1				03/12/07
36	Grantown, Aviemore & Cairngorm Mountains	B2				17/12/07
180	Barnstaple, Ilfracombe, Lynton & Bideford	D1				14/01/08
145	Cardigan & Mynydd Preseli	C2				21/01/08

34	Fort Augustus, Glen Albyn & Glen Roy	B2	28/01/08
157	St David's & Haverfordwest	B2	04/02/08
29	Banff, Huntly, Portsoy & Turriff	B2	11/02/08
200	Newquay, Bodmin, Camelford & St Austell	D1	11/02/08
136	Newtown & Llanidloes	B2	11/03/08
189	Ashford, Romney Marsh, Rye & Folkestone	D2	24/03/08
197	Chichester & The South Downs	D1	24/03/08
25	Glen Carron & Glen Affric	B2	24/03/08
26	Inverness & Loch Ness, Strathglass	C2	24/03/08
20	Beinn Dearg, Loch Broom & Ben Wyvis	B2	14/04/08
21	Dornoch, Alness, Invergordon & Tain	C1	14/04/08
19	Gairloch & Ullapool, Loch Maree	C1	14/04/08
16	Lairg & Loch Shin, Loch Naver	B2	28/04/08
24	Raasay, Applecross, Loch Torridon & Plockton	B2	28/04/08

Explorer and Explorer Active – new editions

442	Assynt & Lochinver	A1	17/12/07
443	Ben Kilbreck & Ben Armine	A1	17/12/07
444	Helmsdale & Strath of Kildonan	A1	17/12/07
445	Foinavon, Arkle, Kylesku & Scourie	A1	17/12/07
446	Durness & Cape Wrath	A1	17/12/07
447	Ben Hope, Ben Loyal & Kyle of Tongue	A1	17/12/07
448	Strath Naver & Loch Loyal	A1	17/12/07
449	Strath Halladale & Strathy Point	A1	17/12/07
450	Wick & The Flow Country	A1	17/12/07
451	Thurso & John O'Groats	A1	17/12/07
452	Barra & Vatersay	A1	17/12/07
453	Benbecula & South Uist	A1	17/12/07
454	North Uist & Berneray	A1	17/12/07
455	South Harris	A1	17/12/07
456	North Harris & Loch Seaforth	A1	17/12/07
457	South East Lewis	A1	17/12/07
458	West Lewis	A1	17/12/07
459	Central Lewis & Stornaway	A1	17/12/07
460	North Lewis	A1	17/12/07
461	Orkney – East Mainland	A1	17/12/07
462	Orkney – Hoy, South Walls & Flotta	A1	17/12/07
463	Orkney – West Mainland	A1	17/12/07
464	Orkney – Westray, Papa Westray, Rousay, Egilsay & Wyre	A1	17/12/07
465	Orkney – Sanday, Eday, North Ronaldsay & Stronsay	A1	17/12/07
466	Shetland – Mainland South	A1	17/12/07
467	Shetland – Mainland Central	A1	17/12/07
468	Shetland – Mainland North East	A1	17/12/07
469	Shetland – Mainland North West	A1	17/12/07
470	Shetland – Unst, Yell & Fetlar	A1	17/12/07
146	Dorking, Box Hill & Reigate	B2	21/01/08
OL4	The English Lakes – North Western area	A2	25/02/08
OL5	The English Lakes – North Eastern area	A2	25/02/08
OL6	The English Lakes – South Western area	A2	25/02/08
OL7	The English Lakes – South Eastern area	A2	25/02/08
OL9	Exmoor	B2	17/03/08
OL28	Dartmoor	B2	17/03/08
OL29	Isle of Wight	B2	17/03/08
OL17	Snowdon	A2	31/03/08

OL18	Harlech, Porthmadog & Bala	A2	31/03/08
OL19	Howgill Fells & Upper Eden Valley	A2	31/03/08
OL21	South Pennines	A2	31/03/08
OL23	Cadair Idris & Llyn Tegid	A2	31/03/08
106	Newquay & Padstow	B2	31/03/08
107	St Austell & Liskeard	B2	31/03/08
139	Bideford, Ilfracombe & Barnstaple	B2	31/03/08
141	Cheddar Gorge & Mendip Hills	B2	31/03/08
308	Durham & Sunderland	A2	31/03/08

Travel Maps – Tour Series, new editions

4	Peak District & Derbyshire	C	03/12/07
8	The Cotswolds & Gloucestershire	C	19/12/07
21	Suffolk	C	19/12/07
12	Scotland	C	10/03/08
22	Wiltshire	C	31/03/08
20	Norfolk	C	07/04/08
18	Surrey, West & East Sussex, SW London	D	12/05/08
19	Kent & SE London	D	12/05/08
23	Herefordshire	C	12/05/08

Cassini Historical Maps

Cassini Past and Present Series

The following new areas have been added since the list given in *Sheetlines 78*:

Birmingham	Oxford
Bournemouth & Poole	Reading & Henley-on-Thames
Cambridge	Redditch & Bromsgrove
Cannock & Rugeley	Rugby & Lutterworth
Cheltenham & Gloucester	Solihull
Christchurch, New Milton & Ringwood	Southampton & Totton
Coventry & Kenilworth	Tamworth
Dudley, West Bromwich, Halesowen & Stourbridge	Telford
Kidderminster & Stourport-upon-Severn	Walsall & Sutton Coldfield
Lichfield	Windsor, Slough & Uxbridge
Milton Keynes & Newport Pagnell	Wolverhampton
Nuneaton, Hinckley & Bedworth	Worcester & Great Malvern

Cassini Maps have also just published an attractive box set of historical maps of London. The box holds four composite Old Series, Revised New Series (in colour), Popular and New Popular one-inch sheets, each centred on Charing Cross and enlarged to 1:50,000 in Cassini's usual 'Landranger style' format. Each of the four maps thus covers an identical area, extending from Bushey to Theydon Bois and from Esher to Halstead – roughly the area within today's M25. The set also contains a 1:10,000 street map of Central London from 1891.

The retail price of the set is £34.95, but until 31 December Cassini are offering CCS members 10% off any Cassini Maps bought on-line. Go to <http://www.cassinimaps.com> and enter the code **CCS2007** when prompted at the checkout.

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.

Cheshire	20.10	Disley (North) & High Lane	1907	07/07
Cumberland	34.15	Nenthead	1898	09/07
Glamorgan	50.04	Barry	1936	10/07
Hampshire	65.15	Southampton (Docks)	1908	09/07
Lanarkshire	6.06	Hillhead	1909	07/07
Lanarkshire	6.07	Glasgow (St Rollox)	1933	10/07
Lanarkshire	7.12	Coatbridge	1910	07/07
Lanarkshire	11.03	Tannochside & North Uddingston	1935	09/07
Lanarkshire	12.05	Mossend	1939	08/07
Lanarkshire	12.06	Holytown & New Stevenston	1910	07/07
Lanarkshire	12.10	Carfin & Cleekhimin	1939	07/07
Lancashire	87.14	Bolton East	1908	08/07
Lancashire	88.07	Heywood (North) & Hooley Bridge	1908	10/07
Lancashire	93.07	Wigan (West)	1907	10/07
Lancashire	95.09	Little Hulton	1907	08/07
Lancashire	95.13	Cleworth Hall	1907	10/07
Lancashire	96.16	Moston	1933	08/07
Lancashire	97.13	Failsworth & Hollinwood	1932	08/07
Lancashire	105.01	Failsworth (South) & Woodhouses	1931	10/07
Lancashire	110.09	Partington	1904	07/07
Liverpool Large Scale	18	Liverpool (Great Howard St)	1864	08/07
Liverpool Large Scale	19	Liverpool (Vauxhall)	1864	10/07
London	37.4	Swiss Cottage & South Hampstead	1937	08/07
London	48.4	St John's Wood & Maida Vale	1937	08/07
London	53.1	Bow, Bromley & West Ham	1867	10/07
London	72.4	North Hammersmith & Bedford Park	1935	10/07
Middlesex	10.11	Harrow-on-the-Hill	1935	08/07
Middlesex	16.05	Park Royal & Hanger Hill	1935	09/07
Norfolk	10.08	Sheringham (West)	1926	08/07
Norfolk	11.05	Sheringham (East)	1927	08/07
Norfolk	11.11	Cromer	1927	09/07
Northumberland	89.02	Earsdon, Shiremoor & Backworth	1895	10/07
Shropshire	43.06	Horsehay & Dawley	1901	07/07
Staffordshire	11.16	Wolstanton	1898	08/07
Warwickshire	19.10	Yardley Wood & Shirley	1914	10/07
Worcestershire	9.02	Pedmore	1921	09/07
Yorkshire	185.16	Keighley (North)	1913	08/07
Yorkshire	202.15	Bramley (North) & Rodley	1906	10/07

England and Wales one-inch

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

28	Whitehaven & Workington (<i>St Bees</i>)	1903-1914	07/07
62	Harrogate & District (<i>Burton Leonard</i>)	1911	09/07
221	North Hertfordshire (<i>Willian</i>)	1888	08/07
232	NW Monmouthshire (Coloured Edition)	1901	07/07
341/342	Portland & Weymouth (<i>Lulworth Cove</i>)	1912	09/07