This edition of *Sheetlines* was published in 2006 and the articles may have been superseded by later research. Please check the index at [http://www.charlesclosesociety.org/sheetlinesindex](http://www.charlesclosesociety.org/sheetlinesindex) for the most up-to-date references.

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Published by
THE CHARLES CLOSE SOCIETY
for the Study of Ordnance Survey Maps

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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Forthcoming events and other news

The linking theme for many of next year’s visits is to see how companies are exploiting modern technologies to provide innovative and specialised cartographic products and services.

As many of these companies are in small premises, the number of participants is restricted and early booking is essential. To book, email visits@charlesclosesociety.org.uk or call John Davies on 020 8504 1766. Unless otherwise stated, there will be a charge of £2 to cover administrative expenses.

Saturday, 17 February, 11am  Highlights from Rod Leary’s collection, Ludlow
Rod will show a selection of maps from his collection. The main focus is on OS of Shropshire and Herefordshire but Rod will include other interesting or unusual items and various oddities and curiosities. There will be a charge in the region of £5 to cover hire of the meeting rooms.

Thursday, 22 March, 2pm  Landmark Information Group, Exeter
Landmark is the leading supplier of digital mapping of property and environmental risk information. Among other things, we will see how they captured historical maps, view their collection of Goad fire insurance plans and learn of an exciting new venture based on a data source previously unexploited in UK or elsewhere.

Friday morning-Saturday afternoon, 20-21 April  Stirlingshire and Edinburgh
On Friday we visit two small independent companies producing specialised mapping to the general public, primarily for outdoor activities such as hiking, climbing, cycling and orienteering. Stirling Surveys produces the Footprint series and works with Sustrans to map the National Cycle Network. Harvey Map Services has 25 years experience of making award-winning maps compiled from original aerial surveys.

On Saturday our destination is the Map Collection of the National Library of Scotland.

Friday 18 May, 2pm  Snowflake Software, Southampton
The founders of Snowflake previously worked for Ordnance Survey. They founded the company in 2000 to exploit the opportunities then opening up for innovative GIS applications. Latest developments include eye-catching applications based on 3D city models.

The AGM is the following day and we will have an informal social evening on Friday night.
Tuesday-Thursday, 5-7 June

Ljubljana, Slovenia

Continuing our tradition of a summer trip to investigate overseas national mapping, we will visit the Slovenian Surveying and Mapping Authority and the country’s two leading commercial map publishers. An optional expedition to climb the country’s highest peak and national symbol, Triglav, will follow on Friday and Saturday.

The full programme for the second half of 2007 will appear in Sheetlines 78 but details of our autumn residential week-end, for which booking is now open, are:

Friday evening-Sunday afternoon, 5-7 October

Larpool Hall, Whitby

Larpool Hall, 1½ miles from Whitby town centre, commands splendid views across the Esk Valley and is magnificently set within 14 acres of tranquil gardens and woodland, a quarter of a mile from the North York Moors National Park. We will have sessions based on mapping associated with topics of local importance, such as mineral mines and tramways, Captain Cook, Count Dracula, St Hilda, and the jet and whaling industries. Members are also invited to bring any interesting items from their own collection for a Sunday morning ‘show and tell’ session.

The inclusive cost will be approximately £140 and a deposit of £25 is required on booking.

Charles Close Society annual general meeting 2007

Next year’s AGM has been arranged for Saturday, 19 May, and will be held at Ordnance Survey, Southampton. Formal business will commence at 12:00. As is customary, the formal meeting will be preceded by a talk and followed by the members’ map market. The OS map shop will also be open. Those who have experienced OS hospitality in previous years will need no further encouragement to reserve the date in their 2007 diaries. Full details will be sent out in April.

British Cartographic Society Medal

We are delighted to record our congratulations to Peter Clark, co-founder and first chairman of the Charles Close Society, on the recent award to him of the prestigious British Cartographic Society Medal.

As the citation notes, this formal acknowledgement of his considerable contribution to cartography is appropriate in the year in which he has celebrated his eightieth birthday.

The citation goes on to record that in 1963 he was amongst the first to join the British Cartographic Society. ‘He carries the membership number 14, testament to the fact that he was one of that glorious but diminishing band of people who founded this Society in Leicester in 1963.’

Peter Clark was made an honorary member of the Charles Close Society in May 2005, and a few notes of biography will be found in that year’s Almanack. His CCS membership number is 4.
**The Oxford seminars in cartography**

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

**Thursday 22 February, 2007**

Mapping Persia
Cyrus Ala'i (Researcher and Author)

**Thursday 3 May**

Lieutenant James W. Worsley R.E.: his maps of Corfu and Malta, 1824
Mike Nolan (Defence Surveyors’ Association)

Mapping with a mission: Geo support to the British Commanders in Chief Mission to the Soviet Forces in Germany 1974-1990
Alan Gordon (Defence Surveyors’ Association)

**Thursday 14 June**

‘TOSCA’ Field Trip to Oxfordshire Record Office, Temple Cowley
Space limited; contact Nick Millea as below.

For further details of these events, please contact Nick Millea, Map Librarian, Bodleian Library, Broad Street, Oxford, OX1 3BG, nam@bodley.ox.ac.uk, 01865 287119.

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**Cambridge seminars**

Anne Taylor provides details of two lecture series taking place in Cambridge:

**Sandars lectures**

Conversations with maps: world views in early modern Europe
Sarah Tyacke, CB
The three lectures will be given Monday 5 March, Tuesday 6 March and Thursday 8 March, 2007 at 5 pm in Cambridge University Library, West Road, Cambridge, CB3 9DR. More information can be found at [http://www.lib.cam.ac.uk/maps/sandars.html](http://www.lib.cam.ac.uk/maps/sandars.html) or contact Anne Taylor, Map Department, Cambridge University Library 01223-333041, maps@lib.cam.ac.uk

**Cambridge seminars in the history of cartography**

The following seminars take place on Tuesdays at 5.30 pm in the Gardner Room, Emmanuel College, St Andrew’s Street, Cambridge, CB2 3AP:

20 February 2007
The history of mapping the railway
David Milbank Challis and Andy Rush (Industrialogical Associates, Railway Record of the British Isles)

8 May
On maps and manuscript transmission in sixteenth-century England and Ireland
Christopher Burlinson (Fellow of Emmanuel College)

All are welcome; refreshments will be available after each seminar. For any enquiries, please contact Sarah Bendall at: sarah.bendall@emma.cam.ac.uk or telephone 01223 330476. Additional information at [http://www.lib.cam.ac.uk/deptserv/maps/camsem.html](http://www.lib.cam.ac.uk/deptserv/maps/camsem.html)
Foyle Reading Room

Francis Herbert points out that the CCS Almanack shows incorrect opening hours for the RGS. The Foyle Reading Room is open from 10 am (not 9 am) to 5 pm, Monday to Friday.

Help wanted

Would any member living in the Cambridge area feel able to undertake some routine work in the CCS Archive? In the first instance we are seeking someone prepared to add catalogue numbers to documents and maps within the collection, housed in the Map Department of Cambridge University Library – see http://www.lib.cam.ac.uk/deptserv/maps/.

If you feel you could assist in this task, would you please contact the Map Librarian, Anne Taylor, by telephone (01223 333041) or by email (maps@lib.cam.ac.uk); she will be pleased to provide further information.

Is the print too small?

If you have difficulty in reading print of this size, you may like to know that Sheetlines can be made available on a CD-ROM, suitable for use in a Windows PC or an Apple Macintosh computer. Please contact the Editor.

Subject to the authors’ agreement, some other recent CCS publications can also be provided in alternative formats.

London – a life in maps

Graham Bird

Until 4 March 2007 the British Library at St Pancras is holding an exhibition, London – a life in maps. It is described as ‘a visual history of the capital, from a city within walls to a city with no boundaries’. The exhibition includes maps, views, letters and ephemera from British Library collections, and will allow you to ‘experience how London has developed over nearly 2000 years to become Europe’s largest city’. A book with the same title, written by Peter Whitfield, is being published to accompany the exhibition.

Admission is free. On weekdays the exhibition is open from 9.30 am – 6 pm (8 pm on Tuesdays), on Saturdays from 9.30 am – 5 pm, and on Sundays and public holidays from 11 am – 5 pm. Further information from the Library’s website at www.bl.uk/everyone or by telephone on (020) 7412 7332.
Kaiser Bill thought he knew where you lived

John L Cruickshank

Military mapping of opposing territories has a very long history. Both the Second World War German, and the subsequent Soviet, mapping of Britain have recently been discussed in Sheetlines, but there had been earlier efforts by foreign powers to map these islands. Before and during the First World War Britain and Ireland were mapped by the military survey organisations of what were then the ‘Central Powers’: Germany and Austria-Hungary. For obvious reasons this mapping was derived from familiar Ordnance Survey mapping; for equally obvious reasons it was not well publicised at the time. It has remained little known ever since.

By 1914 the Austrian General Staff had a long history of mapping not only its own territory but also areas outside it. From its foundation in 1758 onwards the peacetime duties of Austrian General Staff officers were principally surveying and mapping. The Josephinische Aufnahme of the late eighteenth century was a systematic series of manuscript maps of the individual territories forming the empire. The mapping included extensive mapping of non-Austrian territory in southern Germany and the Rhineland, because these areas were the link between the Tyrol, several scattered possessions in southern Germany, and what were then the Austrian Netherlands. As in most European countries, the growth of Austrian military mapping was stimulated by the events and experience of the Revolutionary and Napoleonic wars. More modern mapping was developed and the absolute secrecy of the eighteenth century manuscript mapping was recognised to have hampered operations that should have been assisted. Progressively more and more maps were printed, and progressively more and more of the smaller scale maps were made available for sale. Furthermore Austria’s essentially land-locked position led it systematically to compile mapping of all surrounding territories and strategically important areas. In effect, by the late nineteenth century this meant that Austria had mapped almost the whole of Europe. The 1913 public catalogue details much (but not all) of this mapping. Austria-Hungary was however a continental power with few maritime or colonial pretensions. Britain was thus excluded from most Austrian maps, which stopped at the Channel. One series had included some sheets of England. This was the 1:300,000 Generalkarte von Zentraleuropa (fig. 1), which during the nineteenth century had been one of Austria’s flagship publications. Maintenance of the sheets

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4 Preisverzeichnis der Kartenwerke und sonstigen Erzeugnisse der k. u. k. Militärgeographischen Institutes in Wien, Vienna: Verlag des k. u. k. Militärgeographischen Institutes, 1913. This includes sheet diagrams of all the series then publicly available.
however stopped in the 1880s and by 1914 this series was obsolete. The replacement 1:200,000 series did not even cover France, far less Britain.

Figure 1: Extract from Index diagram to Austrian 1:300,000 General-Karte von Zentral-Europa (Central Europe) series

The German empire was only created in 1871 when, following the Franco-Prussian war, the south German kingdoms and principalities joined with Prussia. The Prussian King became Emperor (Kaiser), and many Prussian government bodies acquired imperial functions. As in Austria, the Prussian General Staff had regarded surveying and mapping as central to its role and as its foremost peacetime activity and form of training. It was however small, and most of its effort was focussed on its own territories, which had been much expanded at the Congress of Vienna. Nevertheless Helmuth von Moltke (the elder), who was to be Chief of the General Staff (and thus commander) of the victorious Prussian armies in 1866 and 1870, had himself surveyed and mapped both Constantinople and Rome and had produced a map in eight sheets of Ottoman Asia Minor based on route surveys. After 1871 the Prussian General Staff was transformed into the Great General Staff, still under Moltke, and gained an imperial role in addition to its continuing Prussian functions. Within it the

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5 Hans H F Meyer, ‘Die Bedeutung der Karte’, Mitteilung des Reichsamts für Landesaufnahme 13 (1937), 368-390, esp. 373-4. In 1839 von Moltke was decorated with the ‘Pour le Mérite’ for his Turkish surveys.
Figure 2: Extract from Index diagram to Prussian 1:200,000 Topographischen Spezialkarte von Mittel-Europa series (formerly the Reymann map)
Figure 3: Extract from sheet Calais, 1:300,000 Übersichtskarte von Mitteleuropa
Königliche Preußische Landesaufnahme (Royal Prussian Land Survey) was reorganised and enlarged. It assumed not only a leading and coordinating role for survey and mapping within the empire, but also emulated the Austrian General Staff in developing mapping extending far beyond its boundaries. Although much of this was developed in secrecy, some was publicly revealed.

The map used by Prussia to fight the Franco-Prussian war had been the 1:200,000 Topographische Spezialkarte von Mittel-Europa. Although G D Reymann who originally prepared this map at the beginning of the nineteenth century had been a Prussian engineer officer and official, the map had been his personal property, and by 1870 it had long been owned, published, extended and revised by a private company, C Flemming of Glogau in Silesia. In 1874, as a first step in developing a wider mapping role, the Prussian General Staff bought the entire map, which in its final form extended in 796 sheets from the Loire to the Bug and from the Gulf of Riga to the Drava. Because of its history, the map had a high reputation in Germany, but it was old and already obsolescent when the General Staff bought it. It remained on public sale even after the First World War, but from the 1890s onwards efforts were made to replace it with more up-to-date mapping, and by 1914 it was supposed to have been superseded for military use. The final sheet numbering scheme provided numbers for sheets covering southern England, but these sheets seem never to have been prepared (see fig. 2).

After a complex period of experimentation, what emerged as the work-horse German medium-scale military map was the 1:300,000 Übersichtskarte von Mitteleuropa. This had begun in the early 1890s as a map of the German-Russian border regions. Sheets were first made public in 1906. Although many of the sheets of Belgium and northern France were not publicly advertised before the First World War, the stones had been prepared in 1912-13 and the sheets were included in the twenty-four-sheet mobilisation sets.

A small triangle of England appeared on one of these sheets, that of Calais (fig. 3). It is striking that this new mapping provided a profoundly out-dated image of the small part of Sussex and Kent covered. Although the outline seems closely related to that of the contemporary OS second edition quarter inch map (1909/1912), the OS map shows Hastings, St Leonards and Bexhill all to have spread to much larger areas, with intermediate settlement also denser. It also shows Lydd (military) Camp and its associated batteries, which do not appear on the German map. The name ‘Dungeness’ appears on the German map in its older form ‘Denge Ness’, which it does on the 1903 quarter inch OS map, but the 1903 map still shows the urban spread and the railway branch to Rye harbour which are missing from the German map. The source of the German map seems therefore to have been the Old Series quarter inch map that itself was based on the original early nineteenth century Ordnance

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7 The individual sheets of northern France were last revised in 1874-9. By the First World War most had not been converted to the final numbering system or had even been given the Königliche Preussische Landesaufnahme imprint. Nonetheless in 1914 the Planabteilung Metz reprinted a series of combined sheets of this map covering the area. The Reymann map also eventually provided the outline base for many of the maps in the German official history of the war.
Survey. In Britain this had been condemned as embarrassingly out-of-date as soon as it had been published in 1891.\footnote{J L Cruickshank, ‘The four mile map before the First War’, \textit{Sheetlines} 14 (1985), 2-10.} It was never used for military purposes. Twenty years later the German General Staff thus made a very poor choice of source material for their new map.\footnote{The German map was not derived from the Austrian 1:300,000 sheet of Calais (1876) which gives a quite different image, particularly of Romney Marsh. The Austrian map does however show the railway line to Rye harbour, though not that to Lydd, Dungeness and New Romney.}

II

Despite intense preparation in Berlin for an offensive war of short duration, there had been none for any longer conflict, and there had been no preparation of support services in Berlin or anywhere to sustain prolonged warfare. Indeed there had been little appreciation that they might be necessary.\footnote{See General P L E H A Bronsart von Schellendorff, \textit{The duties of the General Staff}, (translation by W A H Hare of \textit{Der Dienst des Generalstabes}, third edition, revised by K W J Meckel), HMSO, 1895, 277. Bronsart von Schellendorff’s book was the instruction manual for German staff officers. The author had been one of Moltke’s three section chiefs during the Franco-Prussian War, and was Prussian Minister for War 1883-89. His book was subsequently revised and updated by serving General Staff officers (including in 1905 his son). Within over 300 pages of detailed prescription of the duties of the General Staff in war, he covers the duties of the Deputy General Staff in one entirely vague sentence. The sentence remained unchanged in the fourth edition (HMSO, 1905, 287).} In 1914 the entire German military leadership, from the Kaiser down, left Berlin to establish headquarters in the field. All General Staff officers who were fit for active service thus left Berlin. The Trigonometrical and Topographical departments of the \textit{Landesaufnahme} were closed down. Only the technicians and craftsmen of the Cartographical Department (\textit{Kartographische Abteilung}) remained in Berlin to provide a map printing service within what was termed the ‘Deputy General Staff’ (\textit{Stellvertretender Generalstab}). Although it notionally took instructions from the Chief of Staff of the Field Army, there was a substantial tradition of operational secrecy that made staff officers feel it improper to communicate even with fellow staff officers in the field, quite apart from those not in the field.\footnote{Annika Mombauer, \textit{Helmut von Moltke and the origins of the First World War}, Cambridge: CUP, 2001, 39-41 and her chapter ‘The General Staff at War’, \textit{idem}, 227-282.}

Activity at the \textit{Kartographische Abteilung} was however maintained. Since 1907 the head of the department had been \textit{Oberstleutnant} (lieutenant-colonel) Max von Zglinicki (promoted \textit{Oberst} in 1909 and \textit{Generalmajor} in 1913). He had joined the department in 1890 and had been there ever since. He clearly had strong views on the need for his service in wartime, and on what its role should be.\footnote{v. Zglinicki, \textit{op cit.} (1906), 700-705.} On mobilisation he was unfit for active service, but remained head of his department in Berlin until the end of June 1915. He died in Weimar just over three months after that.

Under von Zglinicki the \textit{Kartographische Abteilung} produced and printed a flood of new maps during the later part of 1914 and during 1915. Many of the enlargements of small-scale maps that provided the earliest large-scale maps needed for position warfare were prepared in Berlin, but clearly this work was hampered by poor communication between Berlin and the fronts; the creation and development of \textit{Vermessungsabteilungen} in the field reflected this.\footnote{Biographical details from Oskar Albrecht, \textit{Das Kriegsvermessungswesen während des Weltkrieges 1914-18}, München: Deutsche Geodätische Kommission, 1969, 80.} The department however produced an enormous number of new small and medium-scale maps, especially during 1915. Amongst these were many new 1:300,000 sheets (to several different provisional specifications) that extended the \textit{Übersichtskarte von Mitteleuropa} in all
directions. Eighty sheets of a completely new 1:800,000 map of Europe and the Near East, the ‘Operationskarte’, were produced. The 1:100,000 Karte des westlichen Russlands was extended eastwards and northwards beyond Congress Poland and Lithuania. All sorts of miscellaneous maps were produced, including various reproductions of British and Indian maps of Persia (which was to lose its independence to Britain during the war), plus copies of other middle-eastern maps. How useful some of these maps were can be questioned. Many, particularly those at 1:300,000 and 1:800,000, duplicated coverage that had already been prepared by Germany’s ally Austria. Furthermore German troops, with relatively few exceptions, did not advance beyond the pre-war extent of the Übersichtskarte von Mitteleuropa. One gains the impression that the Kartographische Abteilung spent the first two years of the war producing maps largely to its own agenda, when it might have been better occupied, as its counterpart in Vienna was, in providing troops in the front lines with the maps they wanted.

Be that as it may, during 1914 and 1915 mapping of Britain and Ireland was prepared at both 1:300,000 and at 1:800,000. The 1:300,000 sheets followed the rigid graticule scheme of the Übersichtskarte von Mitteleuropa. This meant that as many as forty-four 1:300,000 sheets were required to cover the British Isles, many of these showing a large area of sea with a little land in a corner. Except for the pre-war Calais sheet, these sheets did not conform to the standard specification of the German series. They were direct reductions of Ordnance Survey quarter inch outline mapping. As with the Calais sheet, the base mapping reproduced was old, but there was some updating and additional material. On the Dover sheet (dated 1914) the towns are smaller than on sheet 20 & 24 of the 1903 coloured OS map (fig. 4). The Sheppey Light Railway does not appear, while it does on the 1903 map. On the other hand the railway line from Headcorn to Tenterden does appear on the German map although it was not added to the OS map until the second edition of 1909. Major roads are given a red infill. These generally correspond to the roads shown in colour on the OS 1903 and 1909/12 maps, although colour was omitted from the Deal to Sandwich road and many fewer roads within towns were coloured. Woods were given an olive green fill. The OS graticule lines were reproduced without change, but longitude values from Ferro are given at the sheet corners. Some of the fine line work of the OS original did not reproduce well after copying, reduction to 1:300,000 and transfer to stone. The water lining in particular became very broken around the North and South Foreland. Minor place names became very small and I can only read them with a magnifying glass. Inland water features are emphasised with blue on top of the already heavy OS black. The effect of this double printing is to create a slightly blurred image and, particularly in estuaries, to obscure detail. Added to the map from some other source are a substantial number of forts and batteries between Gravesend, Shoeburyness, Sheerness and Chatham, plus a lesser number at Dover and one at Hythe. These are shown by bright green symbols with surrounding areas shown screened with the same green. What is

16 German troops were increasingly used to stiffen Austro-Hungarian armies in south-east Europe, but the mapping they used there was Austrian in origin, even when modified by German units in the field. German units participated in Ottoman campaigns at Gallipoli and in Palestine, but Berlin produced no useful tactical mapping of these theatres. Although the one-inch maps of the Palestine Exploration Fund were known in Berlin, they were distrusted, and the Vermessungsabteilung sent to Palestine was unaware of their existence until a set was captured in Haifa. Modern mapping was not prepared of the Ukraine, which was eventually occupied by German units in the Spring of 1918.

17 The convention had been adopted before the war of showing fortified areas with coloured shaded overprints: blue for German, green for those of allied or neutral powers, and red for hostile powers. The choice of colour used for this sheet is thus curious.
Figure 4: Extract from sheet Dover, 1:300,000 Übersichtskarte von Mitteleuropa
completely missing from the map is any indication of relief; neither hill shading nor contours appear, nor are there any spot heights. The Boston sheet (also dated 1914 and covering Derby, Warwick and Cambridge as well as Boston) has a very similar specification; spot heights do however appear (in feet) on the base map but no fortifications are shown.

The Dublin sheet (1915) also reproduces an Ordnance Survey outline map, the quarter inch edition of 1903-04. As on the original, there is no water lining (fig. 5). The overprinting of the water features in blue is more subtly done than on the English sheets. Although there are no contours or hill shading, the OS outline carried many individual spot heights which thus appear (in feet) on the German map and provide some indication of relief. No fortifications appear on the sheet. The road colouring seems to match that of the OS coloured map.

At 1:800,000 Britain and Ireland were covered by seven sheets without overlaps (fig. 6). The London sheet is dated 1914; the others are from 1915. Five of these followed the rigid graticule scheme of the series, giving as a result rather unusual combinations of places. The ‘Dublin’ sheet included about a quarter of Ireland, together with western Wales and Cornwall.

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18 The edition used is made clear by the reproduction of the OS longitude rulings at 20’ intervals.
19 Although I think it probable that coverage of Britain and Ireland was completed, and index diagrams to the entire series appear on the subsequent 1:800,000 sheets, I have been unable to identify any library sets of these maps to confirm this. I would therefore be glad to hear of the locations of any further sheets.
20 The 1:800,000 Calais sheet is dated 1916 and seems to have been prepared at the same time as the sheets of France.
Kent and East Anglia appeared on the ‘Calais’ sheet with much of northern France, Belgium and part of the Netherlands. Two sheets did break from the rigid scheme, including ‘Cork’ which covered the western half of Ireland, and ‘Kirkwall’ covering Lewis, Caithness, the Orkneys, Shetland and all those little northern skerries that are usually shown out of position, if at all. Military and naval sites were unevenly identified, and the symbols used for a fortified area were different on different sheets. On the Calais sheet a large irregular shape surrounding Chatham, Gravesend, Southend and Sheerness was marked as a fortified area using red shading within a red line. Smaller, but still large, fortified areas were indicated at Hythe, Dover, Deal, Ramsgate with the North Foreland, Harwich, Ipswich and Great Yarmouth. Similar red areas of various sizes are marked on the London sheet, including not only port defences but also a line of ten fortifications between Guildford and Sevenoaks. On the Dublin sheet similar irregular areas at Plymouth, Falmouth, and Milford Haven were marked with a green line and green shading. On the Cork sheet three separate batteries in Cork Harbour and two on Bear Island were marked with little green ovals without shading. On the Glasgow sheet seven separate small green circles mark the defences of Lough Swilly, while five more mark defences of the Clyde. Little green circles mark coastal defences between Scarborough and Aberdeen (including Inverkeithing), but there was no indication of naval activity or defences at Rosyth or Scapa Flow. Navigable rivers and canals were differentiated from non-navigable ones, but although many very minor rivers and the Royal Military Canal were marked as navigable, the Caledonian Canal was not. Railways were
prominently shown, but in several places their representation was faulty; for example the line from Runcorn to Liverpool was omitted in favour of a mythical line from Runcorn to St Helens, while part of the West Coast mainline north of Warrington was also missed out. Clearly, Bradshaw had not been consulted.

It seems likely that if these maps had been used for ground based military action they would have been found seriously wanting. The problem of inconvenient standard sheet lines would probably have been solved by printing larger combined sheets; this had been standard German military practice for many years and continued throughout the war.\textsuperscript{21} The out-of-date source material might have proved a greater problem, particularly since British forces would have been using more recently revised mapping. The absence of any graphical representation of relief on the 1:300,000 maps would substantially have limited their value. The faulty representation of railways on the 1:800,000 maps (which were used by the railways section of the Great General Staff) would have caused serious confusion.

It is however more likely that these maps were expected to be used in action above the ground, where their faults might have been less obvious. During the First World War Zeppelin airships were used to mount air raids on Britain. Such airships had the space to carry a chart table and substantial stocks of maps. Within Germany their navigators generally used the contoured 1:200,000 General Staff map, which was also prepared in a special Fliegerkarte edition. Outside Germany they used standard nautical charts plus whatever mapping was available in the range between 1:200,000 and 1:500,000.\textsuperscript{22} It is thus quite probable that the trigger for the production of German maps of Britain and Ireland was the Zeppelin bombing campaign that began in January 1915.

After the end of the First World War the 1:800,000 maps were reissued in a civilian form, but sales were pitiful and after a few years the series was abandoned. The German 1:300,000 maps of Britain were quietly forgotten about. They did not appear on post-war indexes to the series. The stones however remained in existence and in 1939, at the beginning of the Second World War, the Reichsamt für Landesaufnahme (the successor body to the Königliche Preußische Landesaufnahme) printed a new combined sheet of six series sheets of the Übersichtskarte von Mitteleuropa, titled ‘Zusammendruck 1:300 000 Dover – Laon’. This reproduced the First World War mapping of Kent and Essex with a number of cosmetic changes. The ‘Old Series’ image of Hastings and Rye was reproduced from the ‘Calais’ sheet unchanged. The content of the 1914 ‘Dover’ sheet was modified by the removal of the water lining, some reduction in the amount of blue overprinting in estuaries, and the omission of the fortifications overprint. There was still no relief representation, there were no submarine contours, and lightships continued to be identified in English, not German. The road network was not up-dated. All the French component sheets retained their original graticule ruling at intervals of 15’ of latitude and 30’ of longitude, and retained the superseded Ferro longitude values in the margin in larger figures than the (by then current) Greenwich ones. The graticule rulings on the Dover component sheet were re-engraved to match those of the others. The presence of the graticule meant however that there was no grid. The style of the

\textsuperscript{21} The gaps at sheet junctions, arising from the nature of the Prussian polyhedral projection, were simply fudged during the process of transferring the small sheets to a larger stone.

\textsuperscript{22} Marine-Baurat Engberding, ‘Luftfahrt und Karte’, Mitteilungen des Reichsamt für Landesaufnahme 2 (1926/7), 155-170, esp. 160.
marginalia seems to be that of the 1920s or earlier; in particular there was no magnetic deviation note. The sheet was almost certainly not intended for use in England; by 1939-40 the mapping was even more out-moded and out-of-date than it had been in 1914 and (despite the work involved in the cosmetic changes) the English section of the combined sheet must surely have been included simply to fill out the rectangle of a sheet printed for planning the invasion of Belgium and France.

The concept of such a portrait format combined sheet of six 1:300,000 sheets dated from the 1890s. Such sheets had provided the standard mapping of Poland and western Russia before and during the First World War. In Belgium and France, at the beginning of the First World War, a more modern arrangement of combined sheets had been developed that broke with the rigid framework of the individual sheets and provided substantial overlaps. The ‘new’ combined sheet was thus a reversion to the ideas of an older era of mapping. It provides a magnificent example of the out-dated and un-gridded mapping produced for the German forces at the very beginning of the Second World War. The sheet’s failings were rapidly appreciated; it was very shortly superseded by the individual series sheets of the Sonderausgabe 1. 3. 1940 of France, which carry print codes of February 1940. These have the standard specification and marginalia of the late 1930s, including a magnetic variation note, and instead of the graticule they carry the French Lambert grids. These were the maps actually used for the conquest of France that summer. I am not aware that the ‘Dover’ sheet was ever recast in this form.

IV

Both the influence of the German Great General Staff on the outbreak of the First World War, and the disastrous failure of its plans to achieve victory over France in the opening weeks of the war, have recently been the subject of renewed attention. This has followed the reunification of Germany west of the Oder, and the consequent opening of previously closed archives in the former GDR. It is now realised that more survived the bombing of the military archives of the Reich in 1944-5 than had previously been thought.

There was a widespread conviction in German government circles before the First World War that only through a pre-emptive war against the other European powers could Germany’s international standing be secured, and that such a war was also necessary to defuse domestic political tension. Underpinning these views was a belief that such a war would be short and could successfully be fought and won without excessive expense or domestic disruption. This in turn depended on an essentially blind confidence in the General Staff and its highly secret war plans. The Prussian General Staff was commonly

23 J L Cruickshank, ‘German Military Maps of UK & Ireland of World War II’, Sheetlines 69 (2004), 15-19. There are additional complexities to the carto-bibliography of German 1:300,000 mapping of France at around this time, including some sheets photographically derived in 1937 from the French 200,000 map.
24 The role of the Great General Staff in German government in the decade before the First World War is analysed in Anika Mombauer, Helmut von Moltke and the origins of the First World War, Cambridge: CUP, 2001. The following paragraphs rely heavily on her work. Arden Bucholz, Moltke, Schlieffen and Prussian war planning, New York: Berg, 1991, analyses the Great General Staff over a much longer period, but as a result is sometimes frustratingly sketchy about detail.
26 There has been continuing controversy about German war planning. Terence Zuber, Inventing the Schlieffen Plan, Oxford: OUP, 2002, argues that the famous plan was in fact a post-war fiction; the same author’s German war planning 1891-1914; sources and interpretations, Woodbridge: Boydell & Brewer, 2004, catalogues the controversy
said to be one of the five perfect institutions in Europe.\textsuperscript{27} The defeat of the Battle of the Marne and the failure to capture Paris not only led to the subsequent loss of many hundreds of thousands of lives, it also shook confidence in the supposed perfection of the Great General Staff.

Immediately after the Battle of the Marne the then Chief of the General Staff, Helmuth von Moltke (the younger), was scapegoated and removed from field command. He died (of a stroke) in 1916. During the inter-war period former General Staff officers, who controlled the \textit{Reichsarchiv} and its records and so monopolised German historical writing on the war, ensured that all blame was attributed to him. Their aim was to deflect any blame from themselves or from the General Staff as an institution. They had after all been appointed specifically to maintain a nucleus of the Great General Staff despite the formal ban on its continuation imposed by the Treaty of Versailles. It was absolutely not their role to write critically of their own failings. Their control of all official military records ensured that no criticism of the General Staff itself could be sustained by anyone else in Germany or elsewhere. They thus ensured that the myth of the infallibility of the General Staff was repaired and perpetuated. Recent work has however looked more critically at the Great General Staff, its plans, and its failings.

Immediately before the outbreak of war in 1914 the several Departments of the \textit{Landesaufnahme} and the two Departments for Military History together formed one of the five divisions of the Great General Staff, that of \textit{Oberquartiermeister V}, who was \textit{Generalleutnant} Herman von Bertrab. He was the Chief of the \textit{Preußische Landesaufnahme} and as such was the most senior officer under the Chief of the Great General Staff. His division was certainly not peripheral to the activities of the Staff; the study of military history, and training in surveying and military topography, were core subjects of General Staff training both at the War Academy and within the Staff itself. The \textit{Preußische Landesaufnahme}, due to its large number of civilian technical staff, was the largest component unit of the Great General Staff. Mombauer’s list of the departmental divisions of the Great General Staff omits the departments of \textit{Oberquartiermeister V} and she dismisses their functions in a sentence.\textsuperscript{28} This however underrates their importance; these were the departments that provided the General Staff with its own internal frameworks of reference and its external image. To the German officer corps military history was there to provide examples of success and failure in war; successive Chiefs of the General Staff wrote military-historical works to instruct their trainees how to fight future wars. To the public the symbol of a staff officer was quite simply his map. The image of the staff officer was of an omniscient leader standing imper turbably with a map directing and controlling events on the field of battle. Once the First World War had started, photographs were published of the Kaiser with his commanding generals. A consistent prop in these pictures is a large map on a table, generally hanging over the edge of

\textsuperscript{27} The other four being the Roman Curia, the British Parliament, the Russian Ballet, and the French Opera. All have since had their problems.

\textsuperscript{28} Mombauer, op. cit., 36-37. She gives the clearest description of the workings of the organisation, but Arden Bucholz, \textit{Moltke, op. cit}, gives much more emphasis to the importance of the \textit{Landesaufnahme}. His understanding of the technology of surveying, map reproduction and map printing is however limited, as is his knowledge of historical geography (e.g. p 33). Bronsart von Schellen dorff, \textit{op. cit.} (1895), 40-43, gives precise organisational detail of the survey and its growth to that date, but the General Staff was restructured in April 1898 and the 1905 edition (39-42) gives much less detail about the subsequent structure. Oskar Albrecht, \textit{op. cit.}, 64, gives the July 1914 internal structure of the survey with the then names of the departmental heads, without relating this to the overall structure of the General Staff.
the table, around which the Kaiser and his generals are shown. The aim was to suggest to the public that the Kaiser himself was in charge (which was not true). On manoeuvre every officer was accustomed to have his own copy of the General Staff Map tucked in his boot-top. In a real sense the departments under Oberquartiermeistern I-IV existed merely to do the donkey-work to enable the lessons drawn from history and maps to be applied practically.

In its years under Helmut von Moltke (the elder) the Great General Staff appears to have been quite outward-looking; from 1869 to 1883 the then Geographical-Statistical Department published an annual Register, reviewing new geographical, cartographical and statistical knowledge of Europe and its colonies.\textsuperscript{29} Moltke himself had travelled very widely outside Germany. Progressively however the organisation became more secretive and also politically, intellectually and geographically more limited in its outlook. Mombauer attributes much of this change to Alfred von Schlieffen who was Chief of the General Staff between 1891 and 1905. Bucholz however suggests that the trend began in the 1880s under Alfred von Waldersee his predecessor.\textsuperscript{30}

In 1910 the 1:100,000 \textit{Karte des Deutschen Reiches} (Map of the German Empire) was finally completed by the \textit{Preußische Landesaufnahme}. This occasion was not only a source of pride to the organisation (and the other state bodies that cooperated in its production), it was also celebrated as patriotic symbol of the successful union of the individual German states into the \textit{Reich}. A long account of the genesis and execution of the map, written by von Zglinicki in his role as chief of the \textit{Kartographische Abteilung} of the \textit{Preußische Landesaufnahme}, was therefore published in the leading Berlin geographical journal.\textsuperscript{31} The comparisons he made between his German map and other European maps reveal much about his attitudes to map design and about his knowledge of other countries’ maps. The German map was a monochrome hachured map, hand-engraved on copper plates. It had become old-fashioned long before its completion. Yet by comparing it to other old maps he claimed that his map was better than all others. His knowledge of French, Belgian and Dutch maps seems to have been reasonable (though he seemed disapproving of the differences between the badly out-of-date French 1:80,000 \textit{Carte de l’Etat-Major} and the much newer and technologically ground-breaking 1:100,000 \textit{Carte Vicinale}). Comparison of his map to the obsolescent Russian 1:126,000 map was perhaps a smokescreen; over the previous decade his own department had secretly been preparing a contoured 1:100,000 map of western Russia derived from the much more recently (and accurately) surveyed Russian 1:42,000 maps. His statement that no country had been able effectively to update their maps was however incorrect, while his statement that only Belgium and France had a contoured or layer coloured map without hachures was badly wrong; new one inch maps of the United Kingdom, including Ireland, had been prepared in outline form, with contours and no hachures, for over sixty years and the OS was soon to abandon hachures at this scale. In fact his knowledge of British maps seems to have been limited to the hachured Old Series one inch map, about which he was only able to state that since 1872 a ‘reworking’ had been in progress. There was no hint that he was aware of the two subsequent revisions, or the transformation of Ordnance Survey mapping that had been occurring during the two decades,

\begin{footnotes}
\item[29] Registrande der Geographisch-statistischen Abteilung des Grossen Generalstabes (Neues aus der Geographie, Kartographie und Statistik Europas und seiner Kolonien), Berlin, 1869-1883. The first volume was published as a Beilage (supplement) to the (semi-official) journal Militär-Wochenblatt.
\item[30] Mombauer, \textit{op cit.}, 80-86; Bucholz, \textit{op cit.}, 102-3.
\end{footnotes}
1890-1910. A certain amount of national chauvinism is only to be expected on such occasions, but von Zglinicki’s appreciation of cartographic developments outside Germany seems to have been limited. Furthermore his evaluations of maps seem to have been based on artistic grounds rather than any utilitarian ones. As he was the man in charge of providing practical maps for an army that expected sooner or later to carry warfare into other countries, this ought not to have been the case. Equally importantly, he appears to have been profoundly complacent about his own maps and he offered no view of their future development.

There is a comparison to be made here with contemporary British extra-territorial military mapping. The inadequacies, due to complacency, of British military mapping during the Boer War had created a public scandal. In 1904 there was a complete restructuring of the War Office with the creation for the first time of a permanent General Staff. Within it was a new Topographical Section under a young veteran of the South African War, Charles Close. The ten years leading up to the First World War became ones of cartographic change, development and innovation. Germany’s colonial wars in South-West Africa and China had been less costly and embarrassing. Although the surveys and mapping available before expeditionary forces were sent out had been no better than Britain’s pre-war mapping of southern Africa, and although much money was also spent making maps after the fighting was over, no general organisational review or change followed.

German complacency was rapidly dispelled at the opening of the First World War. The mobilisation plans allowed for distribution of sets of maps to each unit, not to each officer. The distribution took place before the unit had been notified which front it was destined for, so included sets for both fronts. Despite map re-supply having been found essential in 1870-71 (as von Zglinicki had himself pointed out in 1906), there was no mechanism for this in 1914. As a result units carried large quantities of maps they did not need, while having only one copy of maps they did need. Loss of or damage to that one map could effectively blind the whole unit. The maps of Belgium issued were monochrome copies at 1:60,000 of the by then superseded Belgian 1:40,000 map. The Germans were shocked, when they captured large quantities of British mapping after the battle of Mons, to discover that the cloth backed multi-coloured British 1:100,000 maps of Belgium were more up-to-date, easier to read, and physically more robust than their own maps. On mobilisation only Set I of the German copies of the 1:80,000 quarter sheets of north-eastern France was issued. Set II covering the rest of northern France including Paris was intended to be issued later. By the time set II was needed the advancing armies were not only beyond their supply lines, they were beyond effective communication with the Oberste Heeresleitung (Supreme Headquarters). The troops found themselves reliant on captured maps and on maps liberated from schools and railway stations. Many units fought the Battle of the Marne without maps; the destruction of at least one unit (the Second Battalion, Königlich Preußische Infanterie-Regiment Prinz Louis Ferdinand von Preußen (2. Magdeburgisches) Nr. 27) was blamed on their having no map. The subsequent retreat to the line of the Chemin des Dames was not only a retreat to defensible ground; it was also a retreat to ground for which the German troops had maps. When fighting returned to Belgium in October and November 1914, there was a failure to

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32 Indeed one is left with the nagging suspicion that his only knowledge of the OS derived from 1872.
33 For further reflections of this complacency see Bucholtz, op. cit., 185.
34 This paragraph is largely based on Hans H F Meyer, ‘Die Bedeutung der Karte für Staat und Wirtschaft’, Mitteilungen des Reichsamts für Landesaufnahme 13, (1937), 368-390. See also Oskar Albrecht, op. cit., esp. 5-8.
35 von Zglinicki, op. cit. (1906), 702.
appreciate the potential for inundation of wide areas of low-lying land there. Fairly or not, this was subsequently blamed on a failure by the Kartographische Abteilung to notify the troops in the field that Belgian maps gave heights above a lower datum (mean low water at spring tides) than that of German maps (which equated to mean sea level in the non-tidal Baltic).

At the end of December 1914 a new Chief of the Deputy General Staff, and hence overall commander of the Kartographische Abteilung, was appointed, but this cannot have improved morale, improved communication, or injected new ideas; the appointee was none other than the disgraced Helmuth von Moltke the younger. Not only was this appointment a calculated insult to the man, it was probably also seen as an insult to the organisation. The message was reinforced when in July 1915 Generalmajor von Zglinicki was replaced as Chief of the Kartographische Abteilung; his successor was only a major.

The production of the 1:300,000 and 1:800,000 maps of Britain and Ireland thus took place at a time when scapegoats were actively being sought and when the Kartographische Abteilung felt open to considerable criticism. The requirement for these maps had not been foreseen and up-to-date base material seems not to have been available. They were rapidly produced and accordingly very rough and ready, but for Zeppelin navigation they were probably adequate. Those within the Kartographische Abteilung who had prepared them were perhaps glad that their work was never tested on the ground, and glad that it attracted no publicity.

The inter-war oblivion of these maps was their proper fate. The eventual reproduction in 1939 of the ‘Dover’ 1:300,000 sheet by the Reichsamt für Landesaufnahme was probably a major political mistake. It simply drew attention to old failings that might better have been forgotten. By then the struggle for primacy between the civilian Reichsamt and the military Kriegskarten und Vermessungswesen was well under way. Production of this antique sheet cannot have given much practical assistance to the conquest of France, but it must have provided ammunition to support the military’s assertion that the Reichsamt had no idea of what was needed for modern warfare.

There were also later consequences of the Kartographische Abteilung’s pre-First-World-War failings. During the inter-war period lessons were drawn from the experience of the First World War, in particular about the importance of collecting up-to-date foreign maps and geodetic data. The Reichsamt für Landesaufnahme thus published a series of studies of foreign mapping organisations in its house journal. Within the re-established General Staff, from 1936 onwards the collection, evaluation, cataloguing and co-ordination of foreign maps and geodetic data, and the production of ‘Planhefte’ containing the results, became a major element of the work of General Hemmerich’s Kriegskarten- und Vermessungswesen. A goal that logically arose from this work, at a time when Hemmerich had control of almost every geodetic office in the continent, was the establishment of a single unified geodetic framework for the whole of continental Europe. This project was still incomplete when Germany was defeated in 1945, but its continuation was to become a core activity of the post-war Institut für Angewandte Geodäsie, which had largely been established using personnel from Hemmerich’s organisation.

Postscript: as Sheetlines was going to press a further example of OS-derived mapping of Britain by the Kartographische Abteilung has been discovered. This is a copy of England & Wales 1:63,360 sheet 6, Alnwick (Holy Island), dated 1914. Full details are not yet available.

A glimpse at the history of social policy seen through the Ordnance Survey one-inch maps

Chris Noble

My own interest in the development of social policy in nineteenth and twentieth century England, and in local history, led to my noticing and then looking more closely at the way in which three great mid-nineteenth century public institutions: asylums, workhouses, and gaols had appeared on the Ordnance Survey one-inch maps. In my working life I had worked in one of the first group and two of the third group, and I had also visited many other gaols.

When the OS Old Series was first published the needs that these institutions would be built to meet had not been nationally recognised in any effective way. Until the middle of the nineteenth century they were covered piece-meal by usually small and often primitive, ad hoc local arrangements. It was as if to say ‘we seem to have a few mad people, destitute people, beggars and prisoners: build a simple building or find some old building to house them as inexpensively as possible’. But from the middle of the nineteenth century the thinking about the way these groups would be housed, held or even treated changed at the national level. A new purpose and philosophy led to the building of many examples of all three types of these institutions across the country. The new purpose-built institutions were designed by architects serving local councils, local boards or the government, and they were, with few exceptions, exclusively Victorian or post Victorian developments. They were often very large sets of buildings but as they were built after the Old Series was complete, with very few exceptions, hardly any of them can be seen. Which led me to look at the way successive editions of the OS one-inch maps dealt with the need to represent these important institutions as they were built throughout the country. And finally: ‘Should they be represented? Would showing them compromise national security or sensitivities?’ It is an interesting way of looking at the cartographic evidence of a slice of the history of one important item of social policy during the first half of the nineteenth century and can lead to the map reader asking more questions.

Looking at my small collection of OS maps, I concentrated on Greater London, the place of my origin, and at my present home territory around Bath and Bristol. When I found a copy of sheet XIX [Bath, Wells, Frome], date of publication possibly 1817, and covering an area of 29 by 23 miles I could only find one Poor Ho., a tiny site a mile east of the village of Queen Charlton, south-west of Keynsham. Remarkably it survives, now a large stone cottage with the carved inscription ‘Queen Charlton 1788’. None of the local workhouses were shown: Brunel’s railway, to open in 1842, is only a dotted line through Bath: ‘Intended line of the Great Western Railway’ and the 1834 Poor Law Amendment Act was still to come, or if passed had not yet led to the building of any new workhouses. By the David and Charles edition, which they date to an 1893 printing, the building at Queen Charlton had become ‘poorhouse’. Most of the 16,000 odd parishes in the country would have had a small parish poorhouse at that time, in every town and most villages. Bath alone had four parish workhouses and Bristol many. None of them were recorded on the Ordnance Survey Old Series map and, although railways were steadily added to the later printings, the many union workhouses which were being built since 1834 were only slowly added. Because my collection is limited any glimpse is of interest and so I saw that Stafford had a Union House, a
Lunatic Asylum and a Prison on an 1871 printing in Sheetlines.\textsuperscript{1} The successive editions of the one-inch OS maps illustrate how these sites were shown and how they were described. As edition followed edition descriptions and plans changed.

Accurate ground plans, even allowing for the small scale, of large buildings were typically represented on new editions after they were built. The OS seems to have been following policies although they were not always being applied consistently. Richard Oliver included these three buildings in his list of public buildings to be identified on large scale maps.\textsuperscript{2}

The OS maps also show how the names and the uses to which the buildings were put have changed and how descriptions that would be unacceptable today were routinely employed in the past. The Third Edition is a mine of information for students of the history of political correctness: sheet 116, Croydon, Gravesend and Sevenoaks, shows there was a female penitentiary, an asylum, a lunatic asylum and an imbecile asylum and schools, all around Dartford. Workhouses were shown at Farnborough, Mottingham and Lewisham.

Looking at examples of the representation of the three institutions in turn:

Asylums

A rare early example seen in London is the former Bethlehem Asylum – Bedlam – built between 1812 and 1840, and now forming part of the Imperial War Museum. Its elaborate ground plan is shown on the Old Series. By the Third Edition the remarkably detailed plans of some the many large asylums that by then ringed London were shown. The largest nineteenth century institutions, the County Lunatic Asylums, were clearly represented on the editions which succeeded the Old Series. They include the Middlesex at Hanwell, Ealing; the Surrey at Tooting; the Hertfordshire at Colney Hatch; the Essex at Brentwood, and for Kent at Canterbury and/or Maidstone. Many other smaller local institutions were shown providing places for lunatics, cripples, and imbeciles.

The 1925 Tourist sheet Country Round London is full of interesting features: London is ringed with the large lunatic asylums in Essex, Hertfordshire, Surrey and Middlesex, their ground plans clearly shown. They are still described as asylums in the New Popular Edition, ground plans accurately represented, but in the Seventh Series they become hospitals, still retaining their solid black plan.

The workhouse

When I examined extracts\textsuperscript{3} of Old Series maps covering Greater London, in an area from St Albans in the north to Reigate in the south and from Windsor in the west to Dartford in the east, I could only find seven small parish poorhouses represented as Poor Ho.: at Colnbrook, Harefield (Workhouse) and Hounslow in Middlesex, two, curiously, at Chipping Barnet in Hertfordshire, and at Carshalton and Reigate in Surrey. All these sites had disappeared or are unmarked on the New Series map, except Reigate, which unusually was enlarged to become a Union Workhouse. On later editions several workhouses are identified, including the big ‘Spike’ at Lewisham, otherwise at Hillingdon and (next to Wormwood Scrubs prison and adjacent to an airship hangar) the one that was to become Hammersmith Hospital.

\textsuperscript{1} Sheetlines 74, December 2005, Richard Dean, ‘Off the rails – again’.
\textsuperscript{2} Richard Oliver, Ordnance Survey maps a concise guide for historians, second edition, Charles Close Society, 2005.
The ground plan of others is shown in the densely built-up areas, but un-named, including Bromley-by-Bow and Wandsworth, but the Hackney Union, later to be Homerton Hospital is just a large block of building.

By now there are some eighteen institutions identified in the greater London area (my general description, not the GLC), but by a variety of titles. They can be either Union Workhouse or Union House, or named, as in Epping Union Workhouse. Even allowing for the small one-inch scale, the building plans of these quite substantial institutions are shown. By the third edition their name has changed again to Workhouse, a title retained in the Popular Edition. Edgware has, adjacent to Union House, Union Schools. Less prominently shown but still identifiable are the workhouses within built-up London, their site plans are often shown but for reasons of space rarely named, except for the large one in Lewisham. One of the consequences of Neville Chamberlain’s Act of 1929, was the re-naming of the workhouses which had been built following the Poor Law (Amendment) Act as Public Assistance Institutions: an attempt at re-branding which has become all too familiar. We remember Consignia.

In the Old Series map covering the Bristol area there is a prison shown on the site of what was subsequently identified on the Popular Edition as workhouse. It might have been a house of correction or Bridewell. By the time the Third Edition was published the ground plan of most of these buildings was faithfully represented.

Moving forward to the Popular Edition one-inch, sheet 112, Bristol, has three workhouses, a lunatic asylum and Inebriates Homes (were you sent or did you volunteer?) around the city. Looking north, south and east including sheets 103, 111 and 112 there are workhouses in Bath, Chippenham, Chipping Sodbury, Stroud, Semington (between Melksham and Trowbridge) Malmsbury and at Hallatrow, north of Radstock-Midsomer Norton. The hexagonal ground plans of the workhouses at Bath and Warminster, both designed by Sampson Kemphorne were accurately shown. A large set of buildings in Bristol, identified as ‘Orphan Homes’ on the Popular Edition were still shown as orphan homes on the New Popular Edition and on the Provisional Edition of the 1:25,000 scale map. They became Bristol City College and are now part of Brunel Technical College.

Travelling east towards London, one can see that the ‘casuals’, the tramps who walked from workhouse to workhouse where they could obtain a night’s shelter for a few hours labour, could follow a route between Bristol and London: the workhouses were spaced at one or two
hard days tramp along what is now the A4. The Popular Edition shows them at Bristol - Keynsham - Bath - Chippenham - Calne - Marlborough - Hungerford - Newbury - Bradfield (a small village seven miles west of Reading) - Hillingdon (near Uxbridge) - Acton, next to Wormwood Scrubs gaol - and then a choice of possible destinations within London.

During the life of the Fifth Edition the description *Poor Law Insitn.* (near New Alresford, sheet 123) changed to *P.A.Instn.* (several on sheet 113) as the OS caught up with the new name and change of status, and *Public Assistance Insln.* on the Fifth Edition style ‘N.E London’ at Epping, and at Edmonton, *P.A.Instn.* Finally, although following the Act of 1948 the Public Assistance Institutions ceased to exist, the Act came just too late for the New Popular Edition of the one-inch map, published just after the war, so every one of those workhouses along the Bath road to London, except Marlborough, became a *P.A.Instn.* This seems to have led to problems as OS tried to keep up with rapid changes. On the New Popular Edition NW London sheet 160 with print code 12,045/Ch there is a *P.A.Instn.* shown at Barnet, Edmonton, Hillingdon and St. Albans and next to the empty space that is Wormwood Scrubs prison. On the sheet with print code 1232, only Barnet and Edmonton remain identified as *P.A.Instn.* The other buildings are shown un-named but the one next to Wormwood Scrubs has achieved its new status, to be shown as *Hosp:* it has become Hammersmith Hospital.

![New Popular Edition, sheet 160, London NW, print code 12,045/Ch (left) and 1232 (right)](image)

In general we now see *P.A.Instn.* everywhere. There is Hillingdon Hospital, Middlesex, where my tonsils were removed during the war. It is a *P.A.Instn.* Orsett Hospital near Grays, Essex, where my eldest son was born in 1966 is another one. The former workhouse of 1842 in Bath, seen on the Popular Edition, has become a *P.A.Instn.* on the New Popular although in 1937 it had become (and still is) St Martins Hospital, and was to take its share of wounded survivors from Dunkirk in 1940. And like many of the old workhouses it carried on as both hospital and public assistance institution until 1948. 90% of that original 1842 workhouse building survives today.
Many of these institutions will have attracted some attention from local history researchers. OS gives us a glimpse of the way these institutions were scattered across the countryside, though they are not usually identified within larger towns and cities. And if you know your area or explore it, you can see how many of these workhouse buildings have survived to have new uses, usually either becoming local hospitals or being used to house homeless families: ‘Part 3 accommodation’. The last phase is their being remodelled as housing developments.

A little further away from Bath, the Andover Workhouse, notorious as the scene of scandalous cruelty in 1846, survives today, ‘1836’ on its handsome red brick main building portico, now private housing and looking good as new.

**Gaols**

To find the first gaol I had to look to London. The David and Charles reprint of the Old Series shows the huge penitentiary at Millbank, more than a quarter of a mile across and with the plan of its six pentagonal blocks clearly distinguished. Completed in 1821 but used only until the 1880s, it stands alone. The inner city prisons cannot be identified, though every cell in the notorious Newgate Gaol can be seen in Alan Godfrey’s reproduction of the 1:1056 edition of 1875. Brixton Prison has arrived on a later David and Charles one-inch reprint, but adjacent to the site of Pentonville gaol is a Pentitentiary which does not have the radial site plan of Pentonville, the first of the five mid-nineteenth century gaols in London which was not to be built until 1842.

By the revisions of the late nineteenth century the ground plans of Holloway (then the City Prison), Wandsworth (House of Correction) are represented and named. The radial plan of Pentonville is correctly drawn, but un-named. Moving on to the Third Edition, sheet 116, Croydon, Gravesend and Sevenoaks, Wandsworth prison is identified, its radial site plan drawn; Brixton, a plan but no name possible on its small built-up site and, if we travel a little further from London to sheet 117 of 1911, there near Chatham is another prison, with its site plan in detail, near the village of Borstal. In 1908 it had taken the village’s name and become the first site of a whole new system of punishment for young offenders.
Wormwood Scrubs prison has its buildings shown in detail and is named, but the site next door, immediately to the east, is blank. On the Fifth Edition style War Revision of 1940, it is *P.A. Instn.* next to *Prison* (no building detail). It will be the future Hammersmith Hospital. Sometimes the Popular Edition supplies details of the gaol sites, sometimes not, and soon it seems that this detail has become coyly blank: blank sites with names but no buildings. Did the Home Office decide that ground plans shown in such primitive detail would aid escape so they became official secrets?

In 1929 the Prime Minister, Stanley Baldwin again, had ordered ‘*No work of defence shall appear on any map on sale to the general public ... but the natural physical features of the country shall continue to appear*’[^4], so maybe gaols were lumped into this order? Yet while Bristol gaol became a blank site from the Popular Edition on, I found with some surprise (going off at a geographical tangent) that on the first series of the 1:25,000 the ground plan of Dartmoor gaol is in complete detail (SX57, 1959), yet Bristol gaol on the same 1:25,000 series is just an empty space. Bristol and Devizes have a *prison* shown on the Popular Edition: named but without any detail of building.

The Godfrey large scale editions for Devizes (1900) and Shepton Mallet (1902) both have blank, but named, prison sites. Godfrey stating that ‘*as usual the OS left the buildings blank for security reasons*’. This is not consistently true. Returning to the ‘Country round London’ (1925), we see that Pentonville and Holloway have their radial plans drawn, no titles, but Wandsworth and Wormwood Scrubs are blank spaces called: ‘*Prison*’. At Feltham the Borstal buildings are shown and named. Now a youth custody centre, its plan was apparently not a national secret in 1925! Perhaps it was thought that the young offenders would not have the map reading skills to escape. Today’s 1:50,000 and 1:25,000 OS maps show no detail of prison buildings.

In summary the Old Series one-inch OS pre-dates almost all of these institutions. As new editions are produced they are mapped and represented. They appear and, sometimes strangely, go. Their representation and descriptions evolve in quite different ways, some more straightforward: poor house - workhouse - public assistance institution - hospital or re-developed. Asylum - mental hospital - hospital. Both these groups are correctly drawn until the Seventh Series. The history of prison representation is more complicated. Until the mid-nineteenth century they are usually drawn and identified: then names by empty sites.

The Seventh Series ends the one-inch story: look at the superb quality of the representation of the surviving buildings on *Greater London*, 1967, which has a go at HM Remand Centre, Staines and Feltham Borstal (but why in grey, not in the black of hospitals and other public buildings?). The 1:50,000 finally ended the attempt to represent any of the buildings other than in the most general fashion, coloured in dreary pink like everything else.

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The sheet sizes and Delamere sheet lines of the one-inch Old Series

Richard Oliver

An Ordnance Survey problem which was of continuing interest to the late Brian Adams and which he was only partly able to elucidate was the geodetic basis of the one-inch (1:63,360) Old Series. His most important published work on the subject, ‘Parallel to the Meridian of Butterton Hill – do I laugh or cry?’, was written in 1993, and provided a plausible ‘solution’ for the earlier sheets to be published, up to 1824-5. However, it certainly did not report all his thoughts and discoveries, and the writing of the present essay is partly prompted by the discovery in his papers of an unpublished note, ‘Delamere update’, dated 31 August 1993. A secondary reason is the desirability of exploring some less-known aspects of Old Series sheet lines in advance of writing about the ‘lost’ survey of south-west Scotland of 1819-28.

A caution must be voiced at the outset. Much of this article is conjecture, and sometimes conjecture built upon conjecture; it is often not as empirically based as was Brian Adams’s work and, whilst it seeks both to explore areas which he did not write about, and to exploit a discovery of his which has not been published explicitly hitherto, readers must not expect work of his thoroughness and quality. I am a historian; I am not mathematician. Indeed, I hope that apparent imperfections and improbabilities will inspire some mathematically-minded reader to take up where Brian Adams left off.

What is known about the construction of the Old Series

In summary: no-one has ever doubted that published Old Series sheets 91-110 were laid out on the origin of Delamere in Cheshire (latitude 53° 13' 17.274 N, longitude 2° 41' 03.562 W), but the origins (no-one has ever suggested that there was just the one) of sheets 1-90 are more problematic. Brian’s findings in his ‘Butterton’ article were that: sheets 1-9, 47-52, 64-70 and 83-86 were constructed on the Greenwich meridian (0°), sheets 20-33 were laid out on the meridian of 3° west, sheet 10 was on that of 1° east, the eastern sheet lines of the vertical column of sheets from 11 to 87 were related to 0°, and the western sheet lines of sheets 17-19 were related to 3° west. The remaining sheets were more complicated, with the possibility of further origins being used, and no ‘answer’ was offered. Whereas the two groups using 0° and 3° west have sheet lines which consistently form right-angles at the corners, this is not always so for some of the other sheets. (The basic layout of the Old Series sheets as first published are shown in Figure 1.)

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1 Brian Adams, ‘Parallel to the Meridian of Butterton Hill – do I laugh or cry?’, Sheetlines 38 (1994), 15-19; reprinted in Brian Adams, Projections and origins London: Charles Close Society, 2006, 48-42. I use the date ‘1824-5’ advisedly as, though ‘Part X’ of the Old Series, the eight sheets covering Lincolnshire, is dated March 1824, the maps were only ready for sale about a year later: see Introductory essay by J B Harley in Harry Margary, The Old Series Ordnance Survey maps of England and Wales, Volume 5, Lympne: Harry Margary, 1987, xxvi-xxvii.
2 ‘B.W.A.’, ‘Delamere update’, unpublished typescript, 31 August 1993, prepared for Yolande Hodson: copy in Charles Close Society archive at Cambridge University Library (330/1/1) [i.e. box 330, piece 1/1]; photocopy in writer’s possession.
3 Mathematics: CSE grade 1 and ‘O’-level grade 5 [the latter with the assistance of the formula for quadratic equations written on my shirt cuff], 1971; History: ‘A’-level grade B, 1973, B.A.Hons. II.i 1981 and D.Phill., 1986, both at University of Sussex.
One-inch Old Series
map of
England and Wales

Figure 1. The sheet lines of the one-inch Old Series as published.

What Brian did not discuss, and of which there seems to be no record of his investigating, was the dimensions of Old Series sheets. Whilst those in the three central columns were obviously somewhat irregular, being squeezed between the ‘0°’ and ‘3°’ groups, those in the two flanking groups might be expected to be of a standard size. But what? The question of sheet sizes turns out to be closely related to the adoption of the meridian of Delamere for the Old Series.
Sheet lines and sheet sizes
A simplistic solution to a complicated problem

I now move to an apparent digression. Thanks to a visit to another Brian, the late J B Harley, in November 1983, I became interested in the episode of the survey at the two-inch (1:31,680) scale of some 930 square miles (about 2400 square kilometres) of south-west Scotland made between 1819 and 1828. The unpublished drawings resulting from the work were destroyed in 1940, and references in print to this episode are few, though it gets half a page in ‘Seymour’. A chance reference to engraving in the surviving correspondence made me wonder what sheet lines might have been used. One possibility was a separate set of sheet lines for Scotland, as indeed happened when work on the published one-inch of Scotland began in the 1850s; another was the extension northwards of the sheet lines for Old Series sheets 1-90. Indeed, it may be significant that an advertisement of 1820 refers to newly published sheets of Pembrokeshire and Kent as part of ‘the General Survey of Great Britain’. The earliest known index showing sheets 91-110 as we know them can be dated to the turn of 1839-40, and it was possible at this time that a ‘new start’ was made for sheet size and meridian, as north of the row of sheets 85-90, the top of which lay on a line passing a little to the north of Preston and Hull, there was no constraint from what had been published already. As will be seen later in this essay, the ‘new start’ was only part of the explanation. If independent sheet lines were contemplated for Scotland then there was no possibility of recovering them, short of discovering a ‘missing’ document, of a sort which any realistic historian knows hardly ever does turn up: none has and, as will be apparent later, it is unlikely that one could. However, if it had been intended to continue the mixed-meridians layout of Old Series sheets 1-90 north of the Preston-Hull line, then it ought to be possible to deduce the sheet line layout approximately by extrapolation, at any rate for the area of interest in south-west Scotland, provided that the sizes of the individual sheets in the group 1-90 could be ascertained.

4 W A Seymour (ed.), A history of the Ordnance Survey, Folkestone: Dawson, 1980, 103: this section was written by E J S Parsons. The reference to the destruction of the drawings in 1940 is in a handwritten annotation to a list of Ordnance Surveyors Drawings dateable to c.1857 in The National Archives [TNA], Public Record Office [PRO] OS 3/28.
5 Hobbs to Colby, 20 February 1821, in OS letter-book, TNA PRO OS 3/260. [I became interested, if not obsessed, with sheet lines after realising in 1977 that the one-inch Fifth Edition had two layouts, the second of which never appeared on a map-cover index (and, indeed, as I found out later, in very few other places).]
7 This is a portrait-shaped index, and earlier states attribute the engraving to J A Harrison. The earliest known copy is in TNA PRO WO 55/961, and accompanies a report from Colby to Inspector-General of Fortifications [IGF] of 28 February 1840. It lacks quarter-sheet lines, which have been added to a copy accompanying Colby to IGF, 18 March 1840, also in WO 55/961. The lack of quarter-sheet lines could be taken as indicating that engraving was only begun during February: it could equally mean that obsolescent stock was being used. Even if the engraving of this particular index was only started early in February 1840, its real significance is in its recording the decision to adopt the familiar layout of sheets 91-110 in northern England, which must have been taken in principle some months earlier, in order to enable the necessary calculations of sheet positions to be made. Two other early copies are in TNA PRO T1/4060, one signed by Colby on 11 July 1840 [in paper 16925], the other accompanying a copy of Colby to IGF, 5 December 1840 [in paper 28200]. The predecessor of this was a landscape-shaded index showing sheets 1-90, with an extrusion covering much of the rest of mainland Lancashire and Yorkshire; the earliest known copies (in TNA PRO MPH 1/43) are dateable to the turn of 1833-4, and originally accompanied Colby’s ‘Precis’ of January 1834 (in TNA PRO WO 44/614). The treatment of the ‘stars’ indicating progress with publication in the flanking lists of sheets suggest that this index was originally prepared early in 1833; one copy (map ‘G’) indicates 56 as still in preparation, and the stars indicating 45 and 73 to be published look like emendations. This index is characterised by showing sheet 68 as still a conventionally-sized ‘0°’ sheet divided into four quarters, and sheet 58 as containing a single, ‘south-east’, quarter-sheet: does this latter indicate an intention that was never realised?
It might be thought that it would be easy to measure the sizes of each of sheets 1 to 90 from paper copies with a ruler: in practice this is fraught with difficulty, not least because the originals were printed on a copper-plate press and have undergone paper shrinkage, which differs on every sheet between the horizontal and the vertical and between each individual impression struck off. In the 1850s and early 1860s nearly all the sheets had latitude and longitude values added in their margins, but my mathematics were not equal to the necessary computations. So I devised a method which depended on obtaining sheet-corner positions on the (Transverse Mercator) National Grid. The method was:

1. Identify a feature – usually a parish church – close to each corner of each sheet (including the quarter-sheets) which appeared on both the Old Series and on modern one-inch mapping with the National Grid, and obtain its reference correct to 100 metres.
2. Measure on the Old Series the horizontal and vertical distance of the feature from the sheet corner, and thus obtain a National Grid reference, correct to 100 metres.
3. Tabulate the National Grid references thus obtained for each sheet corner. (In practice the values obtained were never the same for each of the four corners represented in the meeting-point of four butt-joined sheets, and so a ‘mean’ reference was obtained for each such meeting-point.)
4. Using the National Grid references for sheet corners, and the ‘Pythagoras’ principle, calculate the distance between sheet corners and, by converting from metric to imperial dimensions, sheet sizes.

It will be apparent that, though in theory there are about 360 sheet corners (including the quarter-sheets) for Old Series sheets 1-90, this procedure cannot be used for those sheet corners which fall in the sea.

An alternative method is to trace off detail from the Old Series and fit it to one-inch Seventh Series mapping, but this has two disadvantages: first, it is much slower and second, because of the paper-shrinkage and the ‘shakiness’ of some of the topographic detail of the Old Series, the resulting ‘fit’ is often not very good.

My improvised method produced both an indication of where sheet lines extrapolated from Old Series 1-90 might fall in southern Scotland, and some dimensional information for these maps, a fragment of which found its way into one of the introductory essays for the Harry Margary facsimile. And there things rested for some twenty years.

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It is important to realise that at this time (winter 1983-4) I was unaware of Brian Adams’s interest, and I think that the first dealings which I had with him were in 1987, by which time I had ‘moved on’ from the Old Series sheet lines investigation; it is only his passing that prompts revival of this no doubt ramshackle method to address an important problem.

My thinking was that churches were more likely than other features to have been used as triangulation points, and therefore to have been surveyed in carefully. At that time no field materials relating to the Old Series were known to survive, but recently the British Library has acquired a field-book used by Edmund Crocker in 1812-13 [BLML Maps C.44.B.41], relating to the survey of country to the north of the later A4 between Chippenham and Bath, in which churches are not fixed very precisely in the course of road-traversing, though admittedly the distance of most of the churches from the roads traversed would seem to limit the scope for plottable error. However, this is a point which needs to be investigated further. [The Charles Close Society is indebted to Peter Barber for drawing attention to this most important document.]

Chris Higley, commenting on this procedure, points out (pers. comm.), that apart from any difficulty arising from the church or other selected feature not being mapped in its correct position, the use of six-figure grid references will lead to an error of up to 100 metres, or about 0.06 mile. If (as was my procedure) measurements on the Old Series are made parallel to the sheet lines rather than to the National Grid, a further error is introduced, of up to about 0.04 miles. ‘My summary is that it is reasonable to use your method to estimate a sheet size as, say, 23.3 miles (but not to guarantee the last digit). It would be brave to estimate it as 23.27 miles, and downright foolhardy to quote 23.265 miles!’

North of the Preston-Hull line before 1839
MPHH 1/239: the Ordnance Survey’s most inaccurate ‘map’?

In March 1993 I learned in conversation with Brian Adams of the existence a contemporary manuscript sheet-line layout diagram which extended northwards into southern Scotland the multi-meridian sheet-line layout for Old Series sheets 1-90, characterised by the tapering of the three central columns. The location of this sensational ‘find’ was hardly obscure: the Board of Ordnance records in the Public Record Office, that ‘happy hunting ground’ of both of us. Somehow I had overlooked MPHH 1/239 when searching the catalogues for my doctoral thesis of 1982-5. Its primary function was to indicate the state of progress of Old Series survey and revision to February 1831.12

MPHH 1/239 is not easy to reproduce, and so Figure 2 is a transcript of some features of particular interest for this present essay: the sheet lines, the neat line, and the coasts, including fragments of those of Ireland and France. The original also gives the names of some towns and shows county boundaries up to just north of the Preston-Hull line.13 No sheet numbers are given on the original. Until a late stage in the writing of this essay those of us who knew about MPHH 1/239 assumed that it was unique in its content. However, a chance re-examination of two copies of ‘Plan of the principal triangles in England & Wales and part of Scotland’ (originally Plate I in volume III of the published account of the triangulation, issued in 1811), which originally accompanied Thomas Colby’s ‘Precis relating to the Survey of England and Wales’ [sic] of January 1834, showed that both had had sheet lines engraved on them very faintly, over the whole plate.14 The engraving is so faint that it looks at first like pencil work which has either faded badly or been partially erased, but on closer inspection the lines, and dots at some sheet corners, are found to be common to both copies, and to be the same sheet line scheme as is shown in MPHH 1/239.15 It would seem that at some time after 1811 it was intended to add the sheet lines of the Old Series to the plate, but this did not proceed beyond very lightly scoring the lines in preparation for being fully engraved. The scale of the ‘Plan of the principal triangles…’ is one inch to thirty miles

the Lincolnshire sheets, solemnly announced as 35.286 miles west-east by 23.265 miles, was duly noted; the apparent complete lack of correspondence on the point subsequently received by those of us concerned with the Margary enterprise could be interpreted as awe at the sheer ingenuity, or complete apathy (aided by a disinclination to read footnotes). I prefer the latter explanation.]

12 The conversation was probably at the ‘Maps and society’ seminar at the Warburg Institute in London on 25 March 1993. A letter from Brian to me of 29 March 1993 refers to MPHH 1/239 ‘as it was originally reported to me, I think by Roger [Hellyer] from Yo [Hodson]’. A solitary reference to MPHH 1/239 in Brian Harley’s notes on the survey of south-west Scotland of 1819-28, to which I had access in 1983, suggests that he had at least noted it for investigation but, having been able to handle a considerable number of his working papers on Ordnance Survey matters prior to his moving to the United States in 1986, I know of no indication that he actually saw it. Given his thoroughness in collecting photocopies of OS-related material in TNA PRO classes WO 47 and WO 55 one might have expected him either to have acquired a photocopy or to make a note. The diagram was signed by Captain Richard Mudge on 23 February 1831, and was evidently for the information of the Board of Ordnance rather than internal to the survey organisation at the tower (in which case one would expect it to survive, if at all, in a TNA PRO ‘OS’ class).

13 The resemblance in this regard to the index engraved about 1833 and represented by maps A to I in TNA PRO MPH 1/43 is very marked, though considerably fewer towns are indicated on MPH 1/239.

14 I did examine MPH 1/43 when researching my thesis, but neither then nor on re-examination in early October 2006 did I notice the faintly-engraved sheet lines: they only ‘appeared’ a fortnight later.

15 TNA PRO MPH 1/43, maps ‘K’ and ‘L’. The map in its original state is Plate I in William Mudge and Thomas Colby, An account of the operations… for… a trigonometrical survey of England and Wales… Vol. III, London: Faden, 1811, and is reproduced at a reduced scale in Harry Margary, The Old Series Ordnance Survey, Volume 1, Lympne: Harry Margary, 1975. The engraving of the sheet lines on the two copies in MPH 1/43 is so faint as to present a considerable challenge even to digital photography.
Figure 2. Transcription of the sheet lines for the one-inch Old Series and the coast line shown on an untitled map of 1831 in TNA PRO MPH 1/239. A similar scheme in faintly engraved form can be found on two copies of ‘Plan of the principal triangles in England & Wales and part of Scotland’ in TNA PRO MPH 1/43.
(1:1,908,000) and that of MPH 1/239 is (by comparative measurement) one inch to fifteen miles (1:950,400). Two possibilities for producing MPH 1/239 are either, first, enlarging sheet lines and coast from a copy of the ‘Plan of the principal triangles...’ or, second, that both ‘Plan of the principal triangles...’ and MPH 1/239 derive from a common original, now lost, which showed the coastline, the county boundaries, some towns, the triangulation stations and the sheet lines: I favour the second possibility. As in 1834 a commercial map was used to illustrate the primary triangulation of Scotland in Colby’s ‘Precis’ [sic], it is possible that the ‘lost’ map containing both sheet lines and triangulation was a similarly annotated commercial map of England and Wales, which has yet to be identified.16

Perhaps Brian Adams did not know of MPH 1/239 in 1990, when he wrote about ‘Ordnance Survey’s most inaccurate maps’, as it is a strong contender for the dubious accolade.17 He did refer to it in his introduction to Roger Hellyer’s monograph on the OS ten-mile maps, but did not mention the extent of the sheet lines.18 We have an interesting conjunction of a ‘wildly incorrect’ coastline allied to the depiction of a geodetic operation of unprecedented geometric accuracy. Notable eccentricities include, for example, a large inlet on the Ayrshire coast somewhere around Girvan, the distinctive ‘fingers’ in the south-west of the Isle of Man, the distinctive north-east-to-south-west lie of Lundy, and the depiction of Orfordness as an island.19 As a result the sheet lines do not always fit the detail very well. A notable instance is the division between sheets 85 and 86, which is shown as passing through the tip of Spurn Head, instead of, as it should, some 7 miles (11 kilometres) to the west. (And, on the ‘Principal triangles’ version, the Greenwich meridian (discreetly terminated on the south bank of the Humber) would barely graze Spurn Head).

The sheet lines are also interesting. They are ‘up to date’, in that quarter-sheets, introduced by July 1829, are indicated (as they are not on the two ‘Principal triangles’ prints in MPH 1/43): yet the indication is not complete.20 Sheets 41, 42, 45, 46, 50-57, 59-63, 74, 75, 78 and 79 are duly shown ‘quartered’, but 66, 68 and 82 are each only shown with a vertical division, and no quartering at all is shown for 67, 76, 77, 80, 81 and 87-90, all of which were published in quarters. (It may be noted that in 1831 survey was either incomplete or not started in these areas.) The depiction of sheets 49 and 67 as ‘full’ sheets, extending far into the North Sea, is as on the amended ‘Principal triangles’: in the event, only the western quarters of these two were published. The configuration of the coast means that 68 can be plausibly shown as a conventionally-sized sheet: in the event it was found necessary to extend it eastwards, ‘with the result that sheet 68 is the only known entity to consist of six quarters’.21 These peculiarities are, however, relatively minor as compared with what

16 It was certainly not Cary’s reduction of his large map of England and Wales..., about 1:950,400, first published in 1796 and republished in 1821, which has a distinctly ‘superior’ coast line, though it does cover a very similar area. The map originally accompanying the ‘Precis’, and now in TNA PRO MPH 1/43, is ‘Bowles’ New one-sheet Map of Scotland...


19 These points are mostly not reproduced in Figure 2, partly for reasons of scale, and partly because their significance was only realised after Figure 2 had been prepared, in August 2006.

20 The earliest reference to quarter-sheets is in an Ordnance minute of 13 July 1829 in TNA PRO WO 47/1470, p.7051.

21 Adams, ‘Projections of the Ordnance Survey ten-mile maps’, 179: Projections and origins, 10. [It might perhaps be added, however, that Eton College’s year is divided into three ‘halves’: I leave it to others to decide what effect this might have had on the financial policies of, say, Gladstone (an Etonian).] As noted above, sheet 68 is still shown as divided into four quarters on the early 1830s index in TNA PRO MPH 1/43.
happens along the south and east coasts. Two sheets are effectively omitted: 32 and 39, though there is a west sheet line for 32. Sheet 10 is shown as butt-joined to sheets 11, 15 and 16, instead of overlapping them; and, as if to compensate for the omission of sheets 32 and 39, two non-existent sheets are shown to the south of sheets 5 and 9. Again, all these seem to derive from an original which showed sheet lines over the whole area of the map, and not just the land.

The real interest, though, is in the extension of these sheet lines into northern England and southern Scotland. MPH 1/239 and the two prints of ‘Principal triangles’ in MPH 1/43 would seem to answer in the affirmative one question, that of whether sheets 1-90 once functioned as part of a scheme for the whole of Britain, but poses another: given the omissions and inclusions in the south, can they really be taken seriously as an indication of what might have been? Problems are particularly apparent on the eastern side, and begin at the Humber, even before we have gone north of the Preston-Hull line. The index suggests that the north-east corner of 86 and the north-west corner of 85 lie about 7 miles out in the North Sea, whereas in fact they lie some 2.4 miles (about 4 km) inland: with sheets measuring over 35 miles west-east this is definitely a ‘plottable error’. There is therefore a ‘missing’ sheet needed to the north of the published sheet 85. This, however, can be excused (like the treatment of sheet 68), as the result of fitting sheet lines to a ‘defective’ coastline. Other eccentricities may be due to the draftsmen who transcribed the necessary data for MPH 1/239 from the putative lost common parent of it and ‘Principal triangles’: there is a ‘missing’ sheet somewhere around Whitby, and there is a redundant line in the sea running north from a point some 30 miles east of Blyth in Northumberland. On the west side, Arran fits much more snugly into a single sheet than is suggested here, and the western side of this sheet would include some of the east coast of Kintyre, but no sheet lines are shown over Kintyre or the islands to the west.

Three conclusions suggest themselves:

First, that there was at one time an intention that the sheet lines of Old Series sheets 1-90 were to be extended northwards, certainly into southern Scotland, and possibly over the whole of Britain.

Second, that therefore such sheet lines might have been contemplated, and perhaps worked out to the degree of precision exemplified by MPH 1/239 and the amended version of ‘Principal triangles’, when the survey of south-west Scotland was being made in 1819-28.

Third, that as the sole apparently surviving explicit evidence for this policy, MPH 1/239 and two prints of ‘Principal triangles’ in MPH 1/43 should not be regarded as a wholly reliable guide to the precise incidence of such sheet lines, but they do illustrate a general principle.

Assistance from the (Transverse Mercator, metric) National Grid

I referred above to my work in 1984 in extrapolating the sheet lines of Old Series sheets 1-90 northwards using the National Grid. My investigations then were confined to what was necessary for south-west Scotland – the result was very similar to Figure 2 – and it was only Brian Adams’s passing, and with it the hope that he would eventually provide as near definitive a solution as could reasonably be hoped for, given the conjunction of scanty evidence and scholarly and mathematical rigour, that has led me to revive my own improvisation. No doubt the method is ‘unsound’, and I repeat that I hope that the present essay will provoke someone with greater mathematical abilities than mine into producing
Figure 3. ‘The First Scheme’: a sheet line scheme in the spirit of that shown on TNA PRO MPHH 1/239, but worked out using the National Grid and extending over the whole of Britain.
‘something better’: but meanwhile, in Figure 3, is an extension of the multi-meridian sheet lines of 1-90 over the whole of Great Britain. It should be taken as indicative of a trend rather than an absolutely definite indication of the incidence of sheet lines in any particular area.

In order to do this, it was necessary to determine two things: sheet size, and convergence. Sheet sizes were obtained in two ways:

a) The sizes of individual sheets were determined by taking the National Grid values which I had obtained for the sheet corners, and using ‘Pythagoras’ to calculate the distances between them.

b) The same method was repeated for larger groups of sheets, and an average sheet size thus deduced.

Method (a) is useful for apparently irregular sheets, notably those in the three ‘tapering columns’ (17 up to 89, 16 up to 88, 11 up to 87); method (b) has the advantage of reducing the possibility of error, but the disadvantage of presupposing that there is a standard sheet size to be discovered.

Convergence was obtained in a similar manner, by calculating averages for columns of sheets. The original extrapolation between sheets 17/22 and 89/90 seemed to give a slightly excess value and this has been ‘smoothed’ in Figure 3. The arrangement should be taken as indicative rather than literal, but I think it shows clearly enough that prolongation northwards of sheets 1-90 gives a layout in about 200 sheets: it will be noticed that 68E is treated as a separate sheet, and another sheet has been added for the Isles of Scilly, which were never mapped in the Old Series. However, as we shall see later, this ‘solution’, involving as it does a prolongation of the ‘taper’ so that the sheet in the north of Orkney at the opposite end of the column from sheet 17 is about half the southern sheet’s width, is by no means the only possible one. Let us call it the First Scheme.

The sheet sizes of the earlier Old Series sheets

Whilst it is well known that published sheets 91-110 of the Old Series were laid out to standard dimensions, of 36 × 24 miles (190,800 × 126,720 feet; about 57.94 × 38.62 km) on the ground, it is also well enough known that the basic size for the sheets south of the Preston-Hull line, outside the three central tapering columns, was slightly smaller. At first this seems curious, but only if we allow our thinking to be conditioned by later practice, and the use of the mile as the basic unit for the laying-out of Ordnance Survey map series after about 1839 and before the use of variously the yard and the metre for grid-related sheet lines after 1914. This includes the six-inch (1:10,560) mapping, on which work began in Britain in 1841, which was based on a standard sheet size of 6.00 × 4.00 miles (map area 36 × 24 inches), and which in turn, by a processes of division, determined the sheet sizes of the larger scales which were introduced later.

Though the survey for the six-inch used personnel who had been producing similar mapping in Ireland since 1825, detail procedures differed in some respects in Britain. One of these was sheet size: in Ireland the standard was equal to 32,000 × 21,000 feet (6.06 × 3.98 miles; about 9.75 × 6.40 km) on the ground.22 This suggests that, whatever may have been used later, in the mid to late 1820s the unit was the foot, and indeed this makes sense if we

22 J H Andrews, A paper landscape: the Ordnance Survey in nineteenth century Ireland, Oxford University Press, 1975, 76; Adams, Projections and origins, 80. Andrews’s statement (loc. cit.) that ‘these [were] the round numbers which gave the closest approximation to a sheet size of 3 feet by 2 feet’ may be an example of hindsight.
bear in mind that the results of the various base measurements, from Hounslow Heath in 1784 to Lough Foyle in 1827, and beyond, were given in feet, as were distances between trigonometrical points.\(^{23}\) (As will be apparent below, the size of the Irish six-inch sheets, with a height:width ratio of about 1:1.52 appears to have a bearing on Old Series sheet sizes.) Thus, given that the mile was evidently not the basis for as near as Old Series sheets 1-90 got to a ‘standard sheet size’, it would seem sensible to explore the possibility of a ‘rational’ size based on the foot. This I duly did, using the National Grid values.

However, the results in feet are not convincing, and suggest a ‘standard sheet size’, based on those sheets using the 0° meridian, of about 186,750 feet west-east by about 122,725 feet south-north (35.37 × 23.24 miles; about 56.91 × 37.40 km). This does not have the neatness of 180,000 × 120,000, 192,000 × 126,000 (the one-inch equivalent of 32,000 × 21,000 for the six-inch) or even 186,000 × 124,000 or 187,500 × 125,000.\(^{24}\)

Using the National Grid meant that part of the work had to be undertaken using metric units, and it then occurred to me that I was performing the wrong conversion. It is well known that the metric system was devised in the 1790s on the assumption that the quarter-circumference of the Earth from the equator to a pole was a certain distance. Dividing this assumed distance by 10,000,000 gave what we know as the metre: it was a neat example of the age of reason, whereby a system of measurement would be derived directly from the size of the earth, rather from something so variable as the size of a man’s stride or of his foot. (The value of 10,000,000.0 metres for the quarter-circumference has since been found incorrect, and a value of about 10,002,000 metres is more generally acceptable, but this does not invalidate the original logic.) Since for a long time the quarter-circumference of the Earth had been divided into 90 degrees, each of a little over 69 miles, a possibility was that, by a similar principle to that which created the metre, the sheet size was somehow related to the length of a degree of latitude, given that one-third of a degree of latitude is slightly over 23 miles. (And one minute of latitude is equal to one nautical mile.) It is possible to test this in two ways. One is by using the National Grid values, which produce an average north-south dimension of 122,655 feet or about 23.23 miles between the north-west corner of sheet 85 and the south-west corner of sheet 6. Another is using the latitude and longitude values which were added to most Old Series sheets after 1851. These were presumably calculated with reference to knowledge of the construction of the Old Series which appears no longer to be extant. That for the south-west corner of sheet 6 is about 51° 5′ 25″ north, 0° 4′ 37″ west; that for the north-west corner of sheet 85 is about 53° 47′ 00″ north, 0° 4′ 53″ west. The latitudinal distance of about 2° 41′ 30″ is sufficiently close to 2° 40′ 00″ to suggest that a provisional value was used to determine the ‘standard’ sheet size. Such a provisional or approximate value would be wholly consistent with what is known of the construction of the early Old Series sheets, as remarked on by Brian Adams in his ‘Butterton’ article.\(^{25}\) Having thus determined a height for the

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24 For the completeness of the record: bearing in mind that the London-Paris triangulation of which the Hounslow Heath base operation was a part, was an Anglo-French operation, I also tried converting my foot values into toises (1 toise equals 1.949 metres). This suggested that the toise wasn’t the answer either. (The idea is not completely fanciful, for a scale of toises was provided on plates I and VII (of baselines) in William Mudge and Isaac Dalby, An account of the operations... for... a trigonometrical survey of England and Wales..., Vol. I, London: Faden, 1799: these plates were originally engraved in the 1780s for Roy’s account of the operations).

25 Sheetlines 38, 17; Projections and origins, 50.
sheets, it would be easy enough to determine a width, suitable for double-elephant-size paper, of 1.5 times height.\(^{26}\) That the sheet widths thus deduced vary slightly from 1.5 times the height might, again, be attributed to the use of approximations, giving a general effect rather than rigorous exactness; however, the ‘explanation’ appears to be more subtle.

\textit{Taking to the coast}

At this point we may note that Sir Charles Close, in \textit{The early years of the Ordnance Survey}, described the Essex sheets as \(34.75 \times 23\) inches.\(^{27}\) This gives a height:width ratio of 1:1.51. It is not known how Close obtained this figure: quite possibly it was by measuring a copy with an ordinary ruler, without checking the ruler against a scale-bar printed on the map, never mind any more sophisticated checking. Measurement of sheet 2 as reproduced in Volume I in the Harry Margary facsimile gives dimensions of about \(34.95 \times 23.14\) inches, but the scale-bar measures 4.92 inches for 5 miles. Applying the implied compensation of multiplying the paper measurements by 1.0162 gives dimensions of \(35.516 \times 23.51\) inches/miles.\(^{28}\) This is much closer to the sort of result obtained for ‘0°’ sheets using the National Grid method described above (about \(35.37 \times 23.23\) inches/miles). An interesting result of both Close’s figure and mine is the ratio of height to width. Were both height and width to be based on a value for latitude, a ‘rational’ dimension would be 0.3333 recurring of a degree of latitude in height by 0.50 of a degree of longitude at the Equator (equal to 1 degree of longitude at 60° north: the width of half a degree of longitude at the Equator is about 34.55 miles), so that height and width would be in the ratio of 1:1.50. An alternative would be to adopt a width based on a certain ‘neat’ number of minutes of longitude at a certain latitude. At first this does not fit the likely dimensions of the Old Series Essex sheets very comfortably, unless the width was based on either (a) 50 minutes of latitude at about 52° 15’ north (\textit{i.e.} about 9 miles (14 km) to the north of the top of the Essex maps), using early twentieth century values, or (b) derived from a length of a third of a degree of latitude of about 23.23 miles (instead of about 23.03 miles), which gives a value of about 35.37 miles at around 51° 50’ north, \textit{i.e.} fairly close to the midway point of the Essex group. I think that (b) is the most likely answer, and that the size of the Essex sheets is based on a sheet size of 50 minutes of latitude by 20 minutes of latitude at about 51° 50’ north.\(^{29}\) The height:width ratio of 1:1.52 of the Irish six-inch suggests a translation of the standard Old Series one-inch sheet size into six-inch Irish terms, related now to the foot, or thousands of feet.

\(^{26}\) As part of the preparation for this essay I also investigated the map of Kent published by Faden in 1801, using Ordnance materials. The ‘tracing’ method was used to obtain 100-metre National Grid references for the three sheet corners lying on land: this suggested a size of about 180,500 x 121,600 feet (34.18 x 23.03 miles; 55.01 x 37.06 km). This is quite close to the ‘third of a degree of latitude’ size (121,515.78 feet using a value of 10,000.0 km for the quarter-circumference), and might be worth someone’s further investigation.


\(^{28}\) A possible qualification is that paper is known to distort differently as between the horizontal and the vertical. Indeed, but to make a check it would be necessary to obtain dimensions from a map of known dimensions (a county six-inch engraved sheet of 36.0 x 24.0 inches suggests itself) printed on the same type of paper as that used for the early impressions of the Essex sheets: and as the first county six-inch sheets were only printed from 1846 onwards this does not seem to be practicable. The figures which I quote in Richard Oliver, \textit{Ordnance Survey maps: a concise guide for historians}, second edition, London: Charles Close Society, 2005, n.17 on pp 27-8 suggest a difference of about 0.67 per cent between horizontal and vertical measurements on one-inch quarter sheets printed in the late nineteenth century. This difference does not seem to be to be significant enough to qualify seriously my argument in the text.

But why, it might be asked, use a height:width ratio of about 1:1.52 rather than 1:1.50, and introduce the complication of width based on a certain length of longitude at a certain latitude? I put it forward that the ‘answer’ lies in an aspect of early OS history to which, perhaps, insufficient attention has been paid, though the ‘basic facts’ have been in the public domain since at least the time of the publication of Volume I of the Harry Margary facsimile in 1975. Everyone, I think, accepts that Faden’s Kent was an independent production.\textsuperscript{30} It then seems to be accepted that, having decided to do its own publishing, the Ordnance set out with a national vision: after all, those four Essex sheets were originally published as ‘Part the first of the general survey of England and Wales’. This, however, is another instance of allowing hindsight to cloud our judgement. Whilst the publication of mapping covering Essex was seen as the start of a much larger project, of covering the whole of England and Wales (Scotland evidently came into the picture later), it is a good deal less clear that these four sheets were intended as a first instalment of a national sheet line scheme.

There are three ‘proofs’ of this. The first is a subtle one, and is that the early states of the plates were either unnumbered, or else bore numbers differing from those familiar today: sheet 48 was originally ‘IV’. In that scheme of things, sheet 47 would have been ‘III’; I and II could be, and were, left unchanged when they were used as the starting point for a national numbering scheme.\textsuperscript{31} The second “proof” is more obvious: the border. This is designed so that, if the four sheets are mounted together as one, the composite is surrounded by a ‘keyboard’ border with latitude and longitude values. Most of the surviving early copies are in this form, mounted as four-in-one composites. However, independent sheets only have the border on the ‘outside’, and in this they follow the practice of Faden’s Kent and other such county mapping; on the inside there is no border, and only a relatively short distance – about 0.4 inch or 1.1 cm – between the neat lines and the edge of the plate, which is enough for legally-necessary publication notes which would be lost when the sheets were cropped for mounting as single county maps. The same practice can be seen on multi-sheet county maps, from the later eighteenth century to the Greenwoods in the 1820s.

The third ‘proof’ is perhaps more contentious. On the north, west and south sides the Essex boundary comes to within about one or two miles of the neat line, and by this means it is just possible to fit in the Tower of London (unnamed) at the western extremity of sheet 1, but on the east side the east neat line of what was later known as sheet 48 is about ten inches further east than it need be were the object only to map Essex, the easternmost point of which is at Harwich: the easternmost point on sheet 48 is Orford Ness. This suggests to me that it was decided to take advantage of the possibilities of the large copper plates needed to accommodate a sheet height of about 23.3 inches/miles by extending the cover eastwards to include as much as possible of the coast north-east from Harwich, and south of a line extended east from the north-west corner of the future sheet 47. A sheet width equal to 50 minutes of longitude at the approximate mid-latitude of the four sheets (admittedly on a faulty basis) gives a mathematical neatness to what seems to have started out as something of

\textsuperscript{30} Incidentally, the height:width ratio of this map is about 1:1.48. It might be worth investigating height:width ratios of such ‘county’ mapping further, in case any apparently ‘significant’ or ‘rational’ relationship emerges. After all, some of those behind these projects, such as Faden, ‘aimed high’.

\textsuperscript{31} See Margary, \textit{Old Series}, Volume 1, 1975, xxxviii-xxxix. The apparent lack of any sheet number on early printings can be readily explained by most of the surviving copies being mounted as composite sheets of the whole of Essex, in which case the sheet number, being placed to the right of the prolongation of the right (east) neat line, would be lost in mounting. If the logic of, in effect, ‘reusing’ Essex sheets I and II as sheets I and II of a national system is accepted, then the apparently strange progress of Old Series sheet numbers in snaking columns seems much closer to ‘logical’.
a spatchcock, of mapping extending along the coast from the Tower – the symbol of London’s defence – to the vicinity of Orfordness. The meridian of Greenwich was presumably adopted for construction of the Essex mapping because of relative ease of construction: it is certainly not central.

Although it is quite common on commercial one-inch county maps of the later eighteenth and earlier nineteenth centuries for there to be some mapping of detail outside the county boundary, completion of detail to the neat line is unknown: given the irregular shape of counties such ‘filling up’ would have greatly increased the costs of surveying and engraving. There is, however, a partial exception: Faden’s Kent, which is completed to the neat line on the north only, thereby completing cover, so far as the basic concept of a map of Kent permitted, of the strategically important banks of the Thames. It was a logical step for the Board of Ordnance, who unlike commercial publishers such as Faden were not troubled by considerations of cost recovery, to decide to complete its county one-inch maps to the neat line, but the experience of Essex may have suggested that a great deal of extra engraving would thereby be entailed, and that it would be much better to have a national series, independent of county boundaries as far as possible. The Essex sheets would therefore graduate from being a set of county maps to the starting-point for national sheet lines. This concept was complicated almost immediately by the putting in hand of the engraving of the mapping of Devon, the layout of which is a curious compromise between a county-oriented layout, as witness the neat fitting in of the eastern and western extremities of the county, and a national layout, as witness the north and south sheet lines. The result of joining Essex to Devon was the three central ‘tapering’ columns.

If a national sheet line scheme had really been considered when engraving of the Essex maps was put in hand, around 1802, then one might have expected one that treated London more satisfactorily. The Cassini 1:86,400 Carte de France of 1744-93, ‘a performance highly celebrated’, had its origin at the Paris Observatory (and advertised the fact, including sheet-corner co-ordinates in toises on the published maps), with the result that sheet 1 had Paris pretty much at its centre. We look in vain for any such neatness in the Old Series sheet lines if we try to think of them as nationally conceived from the outset.

I suggest therefore, in default of a more convincing explanation, that the original sheet-size concept for the Old Series was based on a somewhat haphazard definition of the length of a degree of latitude, divided by three.

**Delamere**

So why – and when – Delamere?

By 1820-1, when the engraving of sheets 85 and 86 was in hand, sheet lines on this putatively latitude-related basis determined the broad outline of any arrangement up to the Preston-Hull line. However, there was some scope for detail adjustment.

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32 A complication not to be discussed here (and rarely if ever referred to in print) is that when sheets 49, 50 and 51 were published in 1836-7 they included at their foot a narrow strip of territory previously published on sheets 47 and 48. In 1838 sheet 48 was republished, thoroughly revised, in quarter-sheet form, thus making a neat join with sheet 50 to the north; at about the same time the north and north-east parts of sheet 47 were re-engraved to join neatly to sheet 51, but without re-engraving the original border: as a result, the re-engraved detail in sheet 47 was effectively ‘stretched’.

33 This was a very definite outcome of the agreement between the Ordnance and Faden as to the engraving of the map: see Mudge and Dalby, *An account…*, I, xii-xiii.

34 Mudge and Dalby, *An account…*, I, xiii.
I have said that the earliest known sheet line index showing sheets 91-110 as published can be dated to about the turn of 1839-40. This can be interpreted as suggesting that the decision to make a complete break with the ‘system’, or lack of it, exemplified by sheets 1-90, in favour of a standard sheet size related to the mile and on the meridian of Delamere, had been taken not long before. However, there are two peculiarities about this use of Delamere. One, noted long ago by Winterbotham, is that it is noticeably too far to the west for England and Wales considered as a whole (and, he might have added, even more so for sheets 91-110 considered as a self-contained block), but is ‘just right’ for the whole of Britain; the other is much less commented on, and that is that the Delamere origin lies outside the area of sheets 91-110 for which, it has been largely assumed hitherto, it was originally adopted. The use of Delamere would thus appear to have differed from usual OS practice, which was to use an origin inside the block for sheets referred to it, even if it is not quite central: for example, 0° and 3° for two blocks of the Old Series. Given the state of OS geodetic work by the late 1830s, it is at first difficult to see why Delamere should have been adopted at so late a date: the primary triangulation station on Great Whernside, for example, would have been much more central. However, it is apparent from the work of Brian Adams that Zenith Sector stations, for which precise observations for latitude were made, were favoured: and this would imply the meridian of Burleigh Moor. However, if Delamere is rather far west for Old Series 91-110, Burleigh Moor is definitely very much east.

But once again we may be looking the wrong way down the telescope; we suppose that Delamere was chosen in the late 1830s purely for use with sheets 91-110, and that it was serendipitous that it was convenient for first the remainder of England and Wales and then the whole of Britain, when first Old Series sheets 1-90 and then the original engraved one-inch of Scotland came to be replaced, after 1872 and about 1919 respectively.

There was another reason, and Brian Adams discovered it. That he did not publish it, and that there is only a veiled reference elsewhere, can be set down to his great care, and wish not to publish this aspect of Old Series construction until he had researched further. Given the heavings, twisting and writhings of the sheet lines in the three central tapering columns this is indeed understandable. Nonetheless, in August 1993 he ascertained that ‘the dividing line of Old Series 90/89 can be followed right down to that of 42/43 along a Popular Edition grid (or two-mile square) line, albeit with some slight wavers on either side, thus confirming that the work along that strip was certainly laid down on the Delamere origin’. It is well known that the Popular Edition was constructed on Delamere, and further investigation shows that the dividing lines between Old Series sheets 78/79 and 74/75 and between sheets 56/60 and 57/59 are also parallel to Popular Edition squaring lines.

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36 For a nice example of such an assumption expressed by the present writer see the introductory essay by J B Harley and R R Oliver in Harry Margary, The Old Series Ordnance Survey Maps of England and Wales, Volume 8, Lympne: Harry Margary, 1991, viii.
37 This point is not invalidated by the 1:2500 mapping on at least two origins – Stafford Castle and Otley – having been superseded by new origins – Dunrose and Danbury respectively – before those places had been covered by the 1:2500: it was purely a policy change, to reduce the number of county origins. See Projections and origins, 77-8.
39 Yolande Hodson, Popular maps, London: Charles Close Society, 1999, 66: ‘Delamere was... used as the origin for a great tract of Britain in the north-south direction, extending from Gloucester to Fife’. The quotation follows ‘Delamere update’ closely, and the limitation northwards may have been influenced either by ‘Plan of the principal triangles...’ of 1811 or by TNA PRO MPH 1/239.
40 ‘Delamere update’, CCS Archives 330/1/1.
Figure 4. ‘The Second Scheme’: a sheet line scheme designed, north of the Mersey and the Humber, to cover those parts of Britain to the north with sheet lines on the Delamere meridian which would, as nearly as possible, butt-join to Old Series sheets 85-90.
The tests of paralleling squaring lines on the Popular Edition and also of measuring the angles of sheet corners make it clear that a substantial part of the Old Series mapping of Wales and north-west England is laid out on the Delamere meridian. The sheets in question are 42, 56, 59, 60, 74-79 and 90 plus those parts of the row of sheets from 43 to 89 adjoining the sheets to the west, most of sheets 41 and 57, and the upper parts of sheets 87-89. A telltale sign of a change of meridian, made explicit on the southern sheet of the ten-mile map, is the displacement, by somewhat over a mile, of the west sheet line of sheet 59 (point R in Figure 5), as compared with that dividing sheets 57 and 58 (point S in Figure 5): sheet 58, like sheets 38-40 to the south, apparently used 3° west.

Thus, so far from explaining how it was that Old Series sheets 91-110 were laid out using an origin outside their area, we have to explain why, apparently, it was decided to abandon the sort of layout implied in Figure 3 in favour of the familiar one. I here refer the reader to Figure 4, which I call the Second Scheme, and which, north of the Preston-Hull line, uses the Delamere meridian and two standard sheet sizes: 27 × 24 miles for those three central columns north of the three ‘tapering’ columns, and 36 × 24 miles elsewhere. Unlike the First Scheme in Figure 3, the sheet positions are fairly soundly based, with sheet corners plotted using the National Grid data on post-1945 issues of the one-inch Popular Edition of Scotland; this map was constructed on the meridian of Delamere using standard sheet lines, and alternative sheet line arrangements can readily be calculated, as has been demonstrated by Brian Adams. 41

Sheet 42 reached via Sheet 86

It is important to note that the Second Scheme is designed to illustrate a theory, as to an otherwise ‘lost’ intermediate stage in the evolution of the familiar sheet lines of Old Series sheets 91-110, rather than as a provable fact. If readers are content to accept that the principle was adopted, but was not necessarily worked out in any detail, and certainly not to the extent illustrated in figure 3 (the coast line of the putative ‘lost’ map that is the parent of both the ‘Plan of the principal triangles…’ and MPHH 1/239 would make such a proceeding questionable on the basis of the data available in the 1830s), then I shall be content. Unfortunately, lack of the necessary OS working papers means that the ‘Second Scheme theory’ is unlikely even to be satisfactorily proved or conclusively disproved. 42 In 1829-31 there was still much survey and revision to be undertaken south of the Preston-Hull line, and there would be no operational need to work out the details of the Second Scheme for some years to come.

Careful readers will observe that the Second Scheme appears to depend on the tops of Old Series sheets 87, 88 and 89 each being precisely 142,560 feet, or 27.00 miles (about 43.45 km) across. This is indeed so, and is illustrated in Figure 5 and the subjoined table. Had I chanced upon this using my method of National Grid references I should have put it down to at best a coincidence and more likely to the fundamental unsoundness of my method. Having it discovered by Brian Adams puts a different complexion on the matter: ‘I

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42 The only hope for anything ‘new’ from this period would be something that ‘turned up in a cupboard’ as and when OS moves out of its present premises into new ones in a few years time. As those premises only date from the late 1960s such an expectation would seem somewhat optimistic. I am also pessimistic of cupboards in retired OS employees’ homes producing anything, bearing in mind actuarial considerations. The possibility of something having been overlooked in The National Archives now seems remote.
put it forward, with an absolute minimum of doubt, that the entire sheet line systems of the New, Third and Popular Series of E&W, together with the Popular of Scotland, depend on the north-west corner of Old Series 86… the northern borders of 87-89 were all made exactly 27 inches/miles, and the next row were set out so that 92, 93, 88, 87 all meet at a single point, as do 91 SW, 91 SE, 90, 89.43

The thoughtful will also say that this creates a problem, in that the sheet line dividing sheets 17/20 and so on to the north, which Brian Adams demonstrated were pretty certainly on 3° west, surely dictates that dividing sheets 42/43 to 89/90. This assumes however, that the sheet lines run straight: in practice, there seems to be a subtle bend somewhere in the lower part of the division between sheets 42 and 43 (indicated approximately by point T on Figure 5), marking the transition from a division between sheets related to 3° west to one

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43 ‘Delamere update’, CCS Archives 330/1/1.
### Key for figure 5

<table>
<thead>
<tr>
<th>point</th>
<th>sheet corners</th>
<th>distance from Delamere</th>
<th>distance from 87NE-ne, 86-nw</th>
<th>distance from 91SW-se, etc</th>
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<tr>
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<td>146,250 W</td>
<td>522,720 W</td>
<td>95,040 W</td>
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<tr>
<td>B</td>
<td>90NE-nw</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>C</td>
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<td>427,680 W</td>
<td>0</td>
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<td>0</td>
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<td>51,210 E</td>
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<td>D</td>
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<td>20,070 E</td>
<td>356,400 W</td>
<td>71,280 E</td>
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<td>?</td>
<td>?</td>
</tr>
<tr>
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<td>237,600 E</td>
<td>665,280 E</td>
</tr>
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</table>

In the 'sheet corners' column, upper case indicates quarter-sheets, and lower case indicates sheet corners: thus '91SW-sw' indicates the south-west corner of sheet 91 SW. Distances are given in feet west (W) or east (E) of origin.

Based on 2° 41' 03.562 west, i.e. Delamere.\(^{44}\) It certainly must have been very convenient that what we know as the tops of sheets 87, 88 and 89 could each be made exactly 27 miles or inches wide, and one can only conjecture at how this was arrived at. The following process is suggested:

First, it is apparent that having several meridians is inconvenient, particularly as joining together the 'tapering' sheets in county groups, with the sheet lines not parallel, is likely to prompt comments from customers.\(^{45}\) Also, a sheet size derived from an 'incorrect' assumption of the length of a degree of latitude combined with the mapping of part of the east coast is much less satisfactory than one based on a precisely defined unit such as the foot, yard or mile, the length of which is well known (and the use of which was standardised by an Act of 1824).\(^{46}\)

Second, this suggests the desirability of adopting a new central meridian, given that the two existing meridians (0° and 3° west) are respectively too far east and west.

Third, given the constraint of using zenith sector stations, Delamere suggests itself.

Fourth, calculations are made, extending west from the north-west corner of sheet 86 (point L on figure 5), towards sheet 90 (point B on figure 5), perpendicular to the meridian of

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\(^{44}\) Roger Hellyer points out that the transition can be made out on the ten-mile index (south sheet): it is somewhere about the name 'Ewias', and can be detected with the aid of a straight edge.


\(^{46}\) *An Act for ascertaining and establishing Uniformity of Weights and Measures*, 5 Geo. IV, c.74, especially section 1. There is a useful discussion of the various standards of length affecting nineteenth century OS work in Seymour (ed), *A history*, 141-3.
Delamere.\(^47\) (The north-west corner of sheet 86 is chosen because it is the furthest limit northwards of previously published mapping.\(^48\))

Fifth, the dividing-line between sheets 35 and 36, etc, is extended north using the 3° meridian to meet the new line (L-A on figure 5) related to Delamere. The result is a perpetuation of the objectionable ‘taper’.

Sixth, it is noticed that the distance west from point L on Figure 5 to the meeting point with the 3° west meridian is a little under 81 miles (3 x 27 miles).

Seventh, a new starting point (point C on Figure 5) is adopted, exactly 81.00 miles west of point L, and a dividing line extended downwards until it meets the 3° west line at point T.

Eighth, sheet lines are laid out which up to the line A-L (the Preston-Hull line) are constrained by the old standard, putatively latitude-derived, size, and the necessity of making a neat junction, at any rate on land, with already published sheets, or those in an advanced state of preparation: north of that line they can be laid out using the two new sizes, related to round miles. (Note: they \(\textit{can}\) be laid out using those sizes; it is not proven either way that they \(\textit{were}\) so laid out.)

It might perhaps be argued that, indirectly, such important points in Figure 5 as C, I and L all depend on the position of the Greenwich observatory (point U).

\textit{Thomas Colby and rationality all round}

There naturally arises the question of when the Delamere meridian was adopted for much of Wales and adjoining parts of England. All the constraints on laying out were in place by about 1821-22, when engraving of sheets 36, 37, 41, 85 and 86 was in hand, and so it is unlikely to be earlier than 1822; on the other hand, the engraving of sheet 42 was in hand by April 1830, so presumably the adoption of Delamere is no later than this and, given the necessary lead-time for calculating sheet lines and producing a draft for the engravers, we can narrow the likely date to sometime between 1822 and 1829.\(^49\)

We can now turn to personality, more particularly that of Thomas Colby, who was appointed Superintendent of the Ordnance Survey in July 1820 as a Captain and was shortly afterwards promoted to Major. He succeeded Major-General William Mudge, whose numerous other responsibilities meant that in recent years much of the day-to-day running of the department had devolved on Colby as his subordinate. Whereas daily routine for Colby perhaps did not change much at first, the burden of ultimate responsibility did. It is well known that the early years of his superintendency were characterised by the discovery that much of the existing survey was sub-standard, of which the withdrawal and re-engraving of the already published mapping of Lundy was only the most conspicuous example, and by the

\(^47\) This is fundamentally similar in principle to what I suggested above happened with the mapping of Essex, where the line from the north-west of sheet 47 was carried eastwards until it met the coast at Orfordness.

\(^48\) Roger Hellyer points out that using the north-west corner of sheet 86 as the starting-point minimises the amount of overlap between the sheets north and south of the Preston-Hull line. This is indeed what happened after 1840, but an alternative would be to treat the sheets immediately north of sheets 85 and 86 as having a horizontal taper, so that their south sheet lines would be determined by Greenwich and the north by Delamere, and thereby avoid an overlap.

\(^49\) Dates for some of these are provided by entries in the letter-book in TNA PRO OS 3/260: a proof of sheet 37 was printed on 14 September 1821 (p.379); engraving of sheet 41 was evidently in hand by September 1821 (p.379); a proof of sheet 36 was sent out on 9 December 1821 (p.412); there was a bill for the copper plate for sheet 86 around 3 April 1821 (p.461). The drawing for sheet 43 N.W. was received by the engravers on 15 April 1830: see ‘day book’, 1827-52, TNS PRO OS 3/279, p.58. It could be that the adoption of a new meridian and sheet lines embodied in my putative ‘Second Scheme’ was prompted by the adoption of quarter-sheets and the realisation that the more northerly ones would be very narrow and strange-looking.
imposition of much higher standards.\textsuperscript{50} As a result, for over a decade the emphasis was on the revision of existing survey prior to publication, rather than the making of fresh survey for the one-inch Old Series map. The outcome was greatly increased planimetric accuracy, and a decided step forward in the development of the Ordnance Survey as an organisation producing mapping of a completeness and excellence which was beyond that attainable by commercial means. Another development, which in turn was partly the product of the Ordnance Survey’s growing reputation (not altogether justified if such things as the original Lundy mapping are taken into account), was the decision in 1824 that it should undertake a six-inch survey of Ireland, which was an extension of Colby’s responsibilities. His \textit{Instructions for the Interior Survey of Ireland} are probably relatively well known, not least perhaps because they say practically nothing at all about what detail to survey, beyond the sweeping instruction of everything-attached-to-the-ground-except-for-the-fences, but quite minute detail on how field books, fair plans and other documents were to be arranged and numbered.\textsuperscript{51} What has not been drawn attention to hitherto is an apparently slightly earlier imposition of order on the survey materials for the one-inch Old Series. It is noticeable that whereas the earlier Ordnance Surveyors Drawings (OSDs) are numbered in a geographical order, starting at Lands End and regardless of date, by the early 1820s they are being numbered in roughly chronological order: evidently the numbering system was imposed at this time, just after Colby’s big promotion. The changeover from referring to the OSDs by name to referring to them by number can be seen in the surviving letter-book, which is customarily dated \textit{circa} 1817 to 1822, but which includes transcripts of earlier documents going back to the late 1790s.\textsuperscript{52} It is at least a possibility that the letter-book is another Colby rationalisation, a gathering-together of all the correspondence and memoranda in the Ordnance Map Office which was still of relevance, started at about the time that he took over responsibility from Mudge, and added to as further correspondence was received.

If the clerical side could be rationalised and ordered, why not the mapping? In the adoption of Delamere, which I suggested above took place some time between 1822 and 1829, one can see another Colby rationalisation.

\textbf{Feet, miles and the mapping of Scotland}
\textit{Some answers to possibly awkward questions}

It is now necessary to explain two things: first, why sheet sizes related to the mile were substituted for those based on the foot or upon dividing latitude, given that, at the same time, a foot-related sheet size was being adopted for the six-inch survey of Ireland; and second, why a sheet layout that embraced Scotland was abandoned in favour of one confined to England and Wales.

The explanation of both depends on the necessary changes being made one at a time, rather than as a single operation. The first of these was the decision to rationalise the meridians and sheet shapes and the consequent adoption of Delamere. The second was the discovery that the use of Delamere would permit the introduction of ‘rational’ mile-related


\textsuperscript{51} These \textit{Instructions} have been published twice: in Andrews, \textit{A paper landscape}, 309-21, and in Seymour, \textit{A history}, 367-72.

\textsuperscript{52} The history of this letterbook is obscure: I was once told (who by??) that it was found in private hands and returned to the OS some time in the 1960s. It was certainly in the OS library by the later 1960s, when J B Harley began to make extensive use of it, and was transferred to the PRO (reference OS 3/260) in the mid 1980s.
sheet lines in northern Britain. The third, which was part and parcel of the adjustment of the line between points T and C in Figure 5, was to lay the foundations of a standard sheet size which could be related to the mile, but this could only be exploited for sheets north of the Preston-Hull line. This would lead to the Second Scheme, which was designed to retain a smooth transition into the new Delamere and mile-related sheet lines in northern England and Scotland, at the expense of there still being two standard sheet sizes. The commencement of the engraving of sheet 42 indicates that this decision had been taken by 1829, i.e. some two years before the preparation of the diagram MPH 1/239, which retains the First Scheme. However, this apparent contradiction can be resolved if we assume that MPH 1/239 derives from a lost model originally prepared before the adoption of Delamere, but updated after 1829 to reflect the adoption of quarter-sheets at that time. Its purpose was less to show sheet lines and more to show the state of survey and revision early in 1831: for this purpose some inaccuracy in sheet lines would not matter too much, and it may be that in 1831 there was as yet no successor to the putative lost model from which both MPH 1/239 and ‘Principal triangles’ derive. By the turn of 1833-4 there was a printed index which could be, and was, used to show survey and revision progress.\(^{53}\)

There is the parallel question of feet-versus-miles. My suggested solution lies in the different natures of the six-inch and the one-inch. The six-inch was designed to be used on, or as a substitute for, the ground where, as the graduation of the scale bars hinted, the detail of the map might need to be checked or supplemented by actual distance measurement, in feet, yards or chains; the one-inch was too small a scale to be used in this manner, but would be used for travelling and for a general synopsis of the landscape, where the mile would be the instinctive unit of measurement. There would thus be no basic incompatibility between six-inch maps related to feet, and one-inch maps related to miles, once the latter could be introduced at a suitable juncture. After all, the basic unit for estate and similar surveys in both Britain and Ireland was the chain, various lengths of which continued in use even after the Act of 1824.\(^{54}\) The standard Gunter’s chain of 66 feet was the most commonly used and a commonly used scale was 1 inch to 3 chains (1:2376), or 26.666 inches to 1 mile, which does not bear a very neat relationship to the mile.

The second problem is the apparent contraction of the sheet line scheme and the replacement of two hypothetical standard sheet sizes by one. If my reasoning and conjecture above are accepted, then the Second Scheme layout, or concept, extending over the whole of Britain, with its two standard sizes (widths of 27-inches/miles and 36-inches/mile) was replaced by a single 36-inches/miles-width standard, familiar to us from published sheets 91-110, and confined to northern England. In fact the date of this development – 1838-9 – is significant because of six-inch developments.

In 1834 the British Association, meeting in Edinburgh, was persuaded to take an interest in the mapping of Scotland, which was felt to be wholly inadequate, and to send a memorial to the Treasury requesting faster progress for the Ordnance Survey in order to remedy this. This set in train a process which culminated in the Treasury authorising, in October 1840, the adoption of the six-inch scale for Scotland and northern England. The decision to increase the scale of survey – and, by implication, of publication – was helped along by Colby asking those Scots who were pressing for the principle of an Ordnance Survey of Scotland to consider carefully the practice of the scale at which it was to be made. From the available

\(^{53}\) i.e., that dated to 1833 and represented by examples in TNA PRO MPH 1/43.

\(^{54}\) Notably the Cheshire chain of 32 yards.
evidence it seems that the Scots would have been content with what was already being done in England and Wales – two-inch survey and one-inch publication – but by 1839, assisted by specimens of what was being published in Ireland, the feeling in Scotland was that the country should be mapped at the six-inch scale. At the same time certain scientific societies in Lancashire and Yorkshire also asked for the adoption of the six-inch scale.55

When the six-inch had been adopted for Ireland in 1824 the intention seems to have been that the original survey at that scale would remain in manuscript, with hand-copying as necessary for the townland valuation that was the survey’s whole raison d’être, and publication at one-inch. In the event, the six-inch work was soon being engraved, as this was thought to be more economical than multiple manuscript copying and, although hill-sketching was still in progress, by 1840 little else had been done towards one-inch publication.56 Some of the potential functions of a one-inch were being fulfilled by the county indexes to the published six-inch mapping, which were at scales varying between 1 inch to 1.5 miles (1:95,040) and 1 inch to 3 miles (1:190,080). Indeed, by 1839-40 Colby seems to felt that, were the six-inch scale to be authorised for Scotland, there would be no need to prepare a one-inch of that country; in May 1840 he observed that the one-inch was ‘rather large’ a scale for a ‘travelling map’, and that instead in due course that function might be served for Scotland by a map at the third-inch scale.57 Indeed, something of the sort started to happen, in that by 1851 a quarter-inch (1:253,440) map of Wigtownshire had been produced, intended to be the first of a series of quarter-inch county indexes which could eventually be combined into a single national map. In the event both county indexes to the six-inch and quarter-inch topographic mapping in Great Britain developed along somewhat different lines, and Scotland gained its one-inch.58

Colby’s suggestion that Scotland need not be provided with a one-inch map was accepted by the Duke of Wellington when, in October 1840, he was consulted on the six-inch proposal:59 and in these circumstances it is unsurprising that the index to one-inch sheet lines dateable to circa 1839-40 should confine them to England and Wales.60 Whilst he seems to have been content not to have a one-inch at all in Scotland, Colby felt that it should be completed for England and Wales, partly because those who had been purchasing the maps as they were published had had a reasonable expectation of the venture’s completion, at any rate south of the border. Thus it appears that the significance of the ‘1839-40’ index showing sheets 91-110 is that they mark, not the adoption of a new sheet line system on a new

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55 The originals of these memorials and Colby’s implicitly asking the Scots to consider the scale (in Colby to Byham, 16 May 1837) are in TNA PRO T1/4060. The lobbying for the adoption of the six-inch is admirably told in R C Boud, ‘The highland and agricultural society of Scotland and the Ordnance Survey of Scotland’, Cartographic Journal 23 (1986), 3-26. The reactions of members of the Highland Society to an Irish six-inch sheet (‘a kind of skeleton’) are recorded by Boud, pp 7-8.


57 Colby to IGF, 6 May 1840 in TNA PRO WO 44/702.

58 The only reference to the Wigtownshire 1:253,440 map is that by William Yolland, in Report from the Select Committee on Ordnance Survey (Scotland), British Parliamentary Papers (House of Commons Series), 1851 (519) XX.359, evidence, qq 1359-61, 1639: it does not appear to have been placed on sale. Shortly afterwards 1:253,440 county indexes to the six-inch mapping of Lancashire and Yorkshire were produced, and a connexion suggests itself. On early OS quarter-inch mapping see Richard Oliver, ‘The origins of Ordnance Survey quarter-inch mapping in Great Britain, 1837-72’, Sheetlines 15 (1986), 9-14. To date there is no published lists of the various county six-inch indexes for Ireland of Britain with their scales and dates: a summary would be useful, but a fuller study would probably throw up the intricacies and surprises that we expect of OS history.

59 Wellington to Chancellor of the Exchequer, 5 October 1840, in TNA PRO T1/4060.

60 Colby to IGF, 5 December 1840 and 26 January 1841 in TNA PRO WO 44/702.
meridian, but the abandoning of the principle of a single sheet line scheme for the whole of Britain, and of a policy of consistent one-inch cover. A certain tenuous connection would be retained by a standard basic sheet size for one-inch and six-inch, albeit ‘quartered’ in practice at the smaller scale. Even if the adoption of the six-inch in northern Britain had been delayed beyond 1840, it would have been necessary to have a definite one-inch sheet line layout in place by the beginning of that year, as the practice by the late 1830s was to survey and draw at the two-inch scale by divisions of the one-inch sheet lines: sheets 93 and 94 and small parts of 91, 92 and 95 were surveyed in outline at the two-inch scale during 1840.61

So Winterbotham was right when he noted that Delamere is convenient for a single national meridian and sheet line system; but one may doubt whether he suspected that it was arrived at and put to use in the 1820s.

One final point remains to be discussed: the putative supplanting of two standard sizes, the 27 inch/mile and 36 inch/mile widths, by one, the 36 inch/mile, in the ‘1839-40’ layout, and the adoption of a mile-based rather than foot-based standard sheet size for the British six-inch shortly afterwards. The answer may be standardisation. By this time the one-inch was being produced in quarter-sheets, and it would surely be much more convenient to have one standard size rather than two: it would also reduce somewhat the amount of copper needed, when allowance is made not only for the width of margins, but also for the ‘narrow’, ‘tapering’ quarter-sheets being engraved on the same size of plate as the ‘wide’ ones.62 Given that a long-term policy of sheet sizes based on the mile had already been adopted by 1828-9, there would be some logic in adopting it for the new six-inch mapping of northern Britain, in that, as Brian Adams noted in 1991, calculations might be made in fathoms which, were reduction to one-inch needed, could automatically be reduced to feet.63

Conclusions

First, the use of the Delamere meridian for the one-inch Old Series was much more extensive than has hitherto been supposed. Second, published sheets 91-110 of the Old Series, so far from marking a new departure, appear to be merely the rump, on modified sheet lines, of a formerly much more ambitious scheme.

Acknowledgements

Much of the original work in 1984 on obtaining National Grid sheet corner values for the Old Series was carried out at what was then the Royal Geographical Society, and I am extremely grateful to Peter Clark and Francis Herbert for their help and assistance, then and subsequently. I am also extremely grateful to Roger Hellyer for his promptness in drawing certain unpublished writings in Brian Adams’s papers to my attention: without the discovery of ‘Delamere Update’ it is unlikely that this essay would have been written. Chris Higley has worked his usual magic on Figures 1 and 5, turning some inky sketches into clean-cut

61 For evidence of the final extent of two-inch survey see Colby to IGF, 5 December 1840 and 22 February 1841 in TNA PRO WO 44/702 and diagram in TNA PRO MPR 1/45. The diagram does not indicate the extent of work in sheets 91, 92 and 95, but does show sheets 91 and 92 as being surveyed at the six-inch scale: another mystery for elucidation at another time.
62 Unmounted copies of the quarter sheets in earlier states – before the early 1850s – are not often met with, but there is a good collection of examples in the Royal Geographical Society-Institute of British Geographers collection, at Eng. & Wales Gen.124-6.
thought. Both Roger and Chris have commented on an earlier draft of this essay: I am grateful to both for inspiring further thoughts, but it is needless to say that they are not responsible for any remaining shortcomings. As I said at the beginning, I hope that someone will carry on where Brian Adams left off.

**Russian mapping of Britain – recent discoveries**

*John Davies*

Further investigations into Soviet mapping and the extent to which it is, or is not, derived from OS material\(^1\) have turned up some surprising findings.

The most astonishing discovery is a 1:25,000 town plan of Falmouth, published in 1997. This is five years after the collapse of USSR, whereas previous research seemed to indicate that the global mapping initiative ceased at that point. The Falmouth sheet carries a considerable amount of information not found on OS maps (as do all the Russian maps) and bears the legend ‘Created from material dated 1989’. This therefore tantalisingly leaves unanswered the question of whether the data-gathering exercise ceased with the Soviet Union but map production continued, or whether Russian agents are still to be found trudging British streets diligently measuring bridge heights and collecting details of industrial plants.

Other previously unrecorded town plans which have come to light are Derby (1991) and Dundee (1992), both 1:10,000 (and produced long after the end of the Cold War) and 1:5,000 plan of Milford Haven dated 1950.

Another interesting discovery is a 1:2,500,000 World Map of the 1960s in about 250 sheets, printed in English and Russian. Sheet 35, covering the British Isles, was produced in Berlin in 1965. Other sheets were produced in other Warsaw pact countries to the same standards and specification. Place names are in local language in Roman script so, for example, all Irish places are named solely with their Irish name. Seas are named in the languages of adjoining countries; for example, ‘Irish Sea – Muir Meann’. Initial investigation suggests that British names are derived from pre-first world war Bartholomew maps.

As previously noted, 1:100,000 sheets of Britain and Ireland were produced in 1960s and again in 1980s. The entire set of about 430 sheets of the 1980s series is now to hand and initial examination has revealed many instances of military installations appearing here which are omitted from the contemporary OS 1:50,000 First Series. However this comparison is very much ‘work in progress’ and results will be published in due course.

\(^{1}\) See *Sheetlines* 72, 73, 74.

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**Uncle Joe knew where to bang you up!**

*For comparison with Chris Noble’s article on pages 21-26, here are the finely detailed buildings of Swansea prison, shown in purple and clearly identified as ‘Administrative building 102’ on this Soviet 1:10,000 sheet of 1976. – CIH*
Puzzle corner I: This extract is taken from the doctored 1:2500 plan produced for the recent CCS surveying weekend held in the Cliff Centre, still shown here as the village school. With the aid of information on the back cover of this issue, readers should, even if they do not know the village, be able to spot at least four other errors deliberately introduced by David Andrews.
Surveying like it used to be

The Charles Close Society Harmston weekend

Clutching 4H pencil and protractor we drove to Harmston, just south of Lincoln. Gerry Jarvis had arranged for us to use the Cliff Centre, the old school and, recuperating from a knee operation, had co-opted his long-suffering wife, Shirley, both to drive him down and to help with the cooking. Although we ate very well in the village pub on the Friday evening, no Harmston weekend would be complete without one of Gerry’s famous curries, which duly appeared on Saturday evening. The breakfasts were left to less skilled ‘volunteers’.

The group were in good hands as David Andrews, formerly a production group manager for OS, provided the tuition and most of the instruments, ably aided by Keith Dale, also ex-Ordnance Survey. We tried several techniques, starting with an examination of David Webb’s rather rusty measuring chain. This was followed by a plane table survey of the school and its wall. Graham Steele notes, “For me this was the magical part, surpassed only by the magic applied by me, the inexperienced cook, to produce the Sunday breakfasts!”

Some slightly more modern equipment was also provided. We were introduced to theodolite and tacheometer and also tried a nifty Leica hand held laser distance meter. Just point and press, particularly after putting on the red spectacles, the better to target the laser ‘spot’ in daylight.

For a change of pace, we were given a doctored copy of the latest OS 1:2,500 plan of the village, and given freedom to stroll round looking for changes and mistakes. One lady that Graham and his wife met said, “Harmstone: well that’s a surprise, I always thought it didn’t have an ‘e’, but that’s the Ordnance Survey, so they must be right”. And off she went to give the news to her friends. Our task was to deal with curious folk, grasp our 4H pencils and correct the map. It became apparent that there was little room for the changes. Where to stop? Were we to put in all the house names?

This was a fun exercise, which really made you look at what you were seeing, and also taught us that a lot of the reviser’s job was just looking, rather than measuring. The representation of the Hon. Sec’s house on the plan was found particularly wanting, not all the errors having been deliberately introduced by David for this exercise.

The Hon. Sec., in his guise as the local churchwarden, was in need of an accurate plan of his churchyard, the production of which proved a useful training exercise in the use of the
(left) The Hon. Sec. tries out a Kern DK-RT tacheometer. The trick (above) is to line up the graduation marks in the split image.

Surveying the churchyard: Peter Haigh makes an observation while Richard Oliver looks on sceptically.
tacheometer and David’s other toys. Keith’s reward was to spend several hours with calculator and squared paper working on the results, while the churchwarden himself led the rest of us on an expedition to the top of the church tower.

We learnt not only about the instruments but also gained an insight into some of the tricks of the trade. David demonstrated how to throw a tape measure, weighted by a nail, to save going next door and measuring the width of a path. How did one gain permission to enter back gardens? How did one politely refuse all the offered cups of tea?

Altogether a very successful and enjoyable weekend. Thanks go to everyone involved, but particularly to David, Keith, Gerry, Shirley and Rob.

Words (and breakfasts) by Graham Steele and Chris Higley; pictures by Gerry Jarvis, Graham Steele and Chris Higley. Apologies to everyone else whose pictures there is not the space to use.

Puzzle corner II

Gerry Jarvis’s picture (left) of Mike Cottrell showing us his ball was taken on a recent, and much appreciated, Charles Close Society visit to OS headquarters at Southampton.

The written report of the visit has yet to reach the editor, so he is unable to explain what is going on.

How would Mike use a ball like this? The answer will be provided, we hope, in the next issue.
Re-wiring a theodolite diaphragm

Following discussion of theodolite cross-hairs at Harinston meeting, this extract is reprinted from the Text book of topographical and geographical surveying by Colonel C F Close, CMG, RE, Director-General of the Ordnance Survey, second edition, HMSO, 1913.

Wires are liable to be broken, and to become slack through damp, or uneven with accumulated dust; every observer must therefore be able to replace them when required. The best substances for large instruments are spider lines, and for small ones, the fibres of raw silk. To prepare spider lines some cardboard frames must be made as in fig. 20, and a spider placed on the edge of one of them. The frame is then shaken gently to detach the spider so that it will hang from it. The fibre is then wound up, with the turns wide apart, and the end is secured in a notch.

Fig. 20.

The process is repeated for as many cards as are likely to be required. The cards are then placed between leaves of clean paper, to preserve them from dust.

To fix the wires the diaphragm-ring must be taken out, the old wires removed, and the varnish cleaned from the engraved cuts by the application of spirits of wine and warm water.

A clean, uniform piece of fibre must then be selected from one of the cards with the aid of a magnifying glass, and two little balls of wax attached to the ends, one of the balls being held while the other hangs freely, in order to untwist the fibre. The fibre should then be cleaned and dampened by rubbing it gently with a camel’s-hair brush, dipped in clean water.

The diaphragm-ring should then be placed on a small block of wood, as in fig. 21, and the fibre laid on it, a careful examination being made with a magnifying glass to ensure that the wire falls into the proper cuts. The wire is stretched and kept in place by the wax balls hanging freely on either side.

The cross wire, with as many more as may be required, is laid in the same way.

A drop of varnish is then let fall upon each cut, and a glass placed over the apparatus to protect the wires from dust.

In twenty-four hours the varnish will have set and the diaphragm-ring will be ready to be replaced in the telescope, the ends of the fibres being cut off close to the ring. The damping of the fibres ensures their becoming tight and well stretched when dry. The replacement is a very delicate operation. The best varnish to use is copal, but sealing-wax dissolved in spirits of wine will answer.

Fibres of raw silk can be applied in exactly the same way. The rainy season is the best time to re-wire a diaphragm, as there is no dust and the atmosphere is damp.
Updating the update

John Cole

If Richard Oliver’s investigation into the 1:1250 map and attempt to provide survey dates and sheet totals was heroic,\(^1\) then my 1999 update might fairly be described as brave but foolhardy.\(^2\)

The main objective had been to provide missing map numbers and to identify a few locations not available in 1989 by using the 1:50,000 map, later checked against a borrowed copy of the *Large scale National Grid index* (reviewed in some depth in *Sheetlines 46*). The result was rather better than expected and I cheerfully explained away discrepancies by suggesting that extensions to the 1:1250 area may have ensued. This may have been the case in a few instances but a better excuse was that the *Index* was not altogether user friendly.

Recent recourse to the OS website has produced a far more meaningful result showing that of the seventy five places I listed, twenty totals were correct; a further twenty adrift by just one to three maps (and indeed by this point in time, probably extensions) whilst the rest have errors ranging from ten to 110 maps.

Clarification or correction respecting all of the smaller locations has appeared in *Sheetlines 57, 65 and 73* and whilst mention will be made of the more outrageous map number discrepancies, my main intention is to clarify or correct certain other assertions in *Sheetlines 56*.

There are a few survey date corrections available: Chelmsford, 1948-51; Corringham and Stanford le Hope, 1949-50; Glossop and Hadfield, 1973; Orrell and Skelmersdale, 1973. Queries are removable from the dates for Bridgnorth, Cockenzie, and Olney. Caerphilly (and Bedwas), Egglescliffe (and Yarm), Formby and Wickford were surveyed during the years 1974-9.

Adding further place names to existing locations is rather a thankless task. I listed fifteen,\(^3\) now know of at least a dozen more and can doubtless find further examples.

Map totals for extensions are also rather nebulous but attempts to supply figures for four out of five listed in 1989 were fairly accurate. Moreover East Calder (Livingston), Burntwood (Brownhills), Conwy (Llandudno) and Havant (Portsmouth) are all extensions. To add to the complications Brownhills was an earlier extension of Walsall whilst Cannock, Burntwood and Norton Canes all but join up.

The figures given for the two rather curious amalgamations Aberdare/Merthyr Tydfil and Alloa/Stirling were probably close to being correct except for Merthyr, where the 2006 figure is only 63. There is some doubt whether the village of Abercynon was included with Aberdare and Mountain Ash, or Pontypridd and the Rhondda. If with the former, the map total of 172\(^4\) is -24, and if the latter -43. (The figure for Pontypridd/Rhondda also being below that officially quoted.)

Two names should be removed. First, Bishopton, which is still only at 1:2500 according to the OS website. So it might well be queried where the 24 maps claimed in *Sheetlines 56*

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3 Exning and Harpenden wrongly!
4 *Sheetlines 24* and confirmed by the 1962-3 *Annual Report*. 
came from, since the built up area is not large. But just on the other side of the M8 lies Erskine and a closer inspection of the locality led to a suspicion that this may have been the intended area. I have not in fact been able to trace either Bishopton or Burghead (both in Scotland)\(^5\) in any OS records I have. When the National Library of Scotland large scale index was consulted it was found that Erskine 1:1250 maps ranged in date from 1958 to 1991. This index also agreed that Bishopton was not a 1:1250 survey.

The other casualty is Exning, where the Newmarket 1:1250 survey does not quite reach the village. It was surveyed at 1:500 scale in 1901 and there is a note about this in Richard Oliver’s *Concise Guide*.

A name which possibly should be removed is Ranfurley, which is shown as a district of Bridge of Weir on the latest 1:50,000 map. But Houston, a village just to the north east, can be fairly substituted as a further batch of sixteen 1:1250 maps exist here. There is a degree of doubt about Pontymister (originally Pont-y-mister) at Risca, judging by type size of the name on past and present small scale maps. Risca now links with the Newport 1:1250 area to the east and to that of Abercarn in the north. A similar situation exists at Hindley\(^6\) which links with Wigan to the west and Atherton and Westhoughton to the east.

Note 2 at the conclusion of the *Sheetlines 56* article should be discounted. A straggling north to south line of 1:2500 mapping, just 1km wide in places, still separates (in February 2006) Titchfield from Lock’s Heath and thus the Southampton 1:1250 area from that of Fareham and Gosport. Moreover a similar gap exists between Hedge End, Netley and Hamble, and that of Warsash, Lock’s Heath and Sarisburry. The former comprises 88 1:1250s; the latter 62.

The worst of the *Sheetlines 56* map total errors were as follows (incorrect figure in brackets): Milton Keynes 357 (245) still excluding Bletchley; Pembroke and Pembroke Dock 49 (60), Romsey and North Baddesley 53 (40) and Consett 60 (40).\(^7\) Romsey and Consett figures agree with the 1995 OS *Index*, at which time Milton Keynes was indicating 300+.

A far more detailed inspection of continuous revision extensions (apart from London, Manchester, Liverpool, Glasgow and Leeds/Bradford) indicated that those of Gateshead and Sunderland do not quite merge though Gateshead’s NZ3154SE touches Sunderland’s NZ3253NW! A large extension which could be added is Crowthorne and Sandhurst, 91 (Camberley and Frimley).

All that is needed now is for someone to list the 58,000 or so 1:1250 maps and their states …

**Testing the enhancement**

In the first article I wrote under this title (*Sheetlines 72*) I gave a figure of 2252 km\(^2\) of 1:2500 scale mapping enhanced to 1:1250 standards of accuracy. This figure was obtained from the OS news release of January 2001. In point of fact the present figure is considerably in advance of this as visits to the OS website have revealed numerous such maps in and around 1:1250 areas.

By way of example some twenty were spotted in the Cannock - Brownhills locality. Moreover SK0307 and 0308 are surrounded on all sides by 1:1250 maps.

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\(^5\) Listed in *Sheetlines 24* with dates but not map totals.

\(^6\) Not listed in either *Sheetlines 24* or 56.

\(^7\) Totals as at February 2006.
Living on the edge

Chris Higley

I was brought up in a marginal extrusion on one of my father’s old one-inch Popular Edition sheets. When, as a schoolboy, I bought my first OS map, Seventh Series sheet 144, it came as a pleasant surprise to realise that one did not always have to live on the edge of a map!

The sheet line layout of the pre-war one-inch and smaller scale Ordnance Survey maps of England and Wales on the Cassini projection with Delamere origin is now well understood:

1. The northern sheets of the one-inch Old Series were constructed so as to require the smallest overlap with previously published mapping.¹

2. The one-inch New Series was then laid out by extending these sheet lines southward as a rectangular array of 18 × 12 mile sheets.

3. Each standard 36 × 24 mile sheet in the half-inch small sheet series was designed to cover the same area as four one-inch sheets.

4. The one-inch small sheet series was replaced by the Third Edition Large Sheet Series, in which every four standard 27 × 18 mile sheets covered the same area as nine sheets in the small sheet series.

5. Similarly, the half-inch Large Sheet Series was introduced with every four standard 54 × 36 mile sheets covering the same area as nine sheets of the previous half-inch series.

6. Finally, the one-inch Popular Edition sheet lines were constructed, still using 27 × 18 mile sheets, so that, as far as possible, four Popular Edition maps would exactly fill one half-inch sheet.²

As a consequence of this inter-relationship, many sheet lines were common to maps of the different series and, since all the standard sheets covered an exact multiple of three miles in both width and height, it follows that the sheet lines of the standard sheets of all these series fall on a regular grid of three mile squares. For convenience, we may take this grid as having a false origin in the south-west corner of one-inch small sheet 360. Figure 1 demonstrates the regular sheet pattern of the two small sheet series with the co-ordinates of each sheet line shown measured in miles from our false origin.

A disadvantage of the regular sheet layout was that many coastal sheets consisted largely of sea and, in practice, these began to be combined on publication. A compromise was reached with the Third Edition, Large Sheet Series of England and Wales in which, as Brian Adams has demonstrated and as is shown in Figure 2, the standard sheets were laid out in four regular blocks to provide a reasonable fit to the coastline. The co-ordinates in miles from our false origin, as shown in the figure, are calculated from, and correspond exactly to, the co-ordinates in feet from the origin of Delamere published by Brian.³ A number of non-standard sheets were still required to complete the layout and I have again followed Brian’s lead in not attempting to deduce exact co-ordinates for these.


One-inch New Series and half-inch small sheet series

Figure 1

Italic numerals give sheet numbers of the half-inch sheets, each of which covers the same area as four one-inch sheets.
As is shown by Figure 3, a neater layout was achieved with the one-inch Popular Edition. Here we do know the exact co-ordinates of even the non-standard sheets and these are shown in the figure, again converted from the Cassini co-ordinates in feet given by Yo Hodson to miles relative to our false origin. This makes for a rather crowded diagram on the A5 page but, hopefully, having the values as a small number of miles, rather than as a six-figure measurement in feet, will compensate for this. It must be emphasised that there is no loss of accuracy in this conversion. The figures in feet given in Popular Maps convert precisely to integral numbers of miles from our false origin, with the exception of five Popular Edition coastal sheets which have either one or two edges falling exactly half way between mile grid lines.

A large number of special, district or tourist sheets were also based on one-inch Popular Edition mapping. It turns out that most, if not all, of these have sheet lines again aligned to our mile grid. The table below shows that, for an example edition of a representative cross-section of these maps, all four sheet lines are an exact number of miles north or east of our false origin.

<table>
<thead>
<tr>
<th>Sheet</th>
<th>Date</th>
<th>neat line:</th>
<th>east miles E of origin</th>
<th>south miles N of origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Map of the Aldershot Command</td>
<td>1920</td>
<td>241</td>
<td>265</td>
<td>84</td>
</tr>
<tr>
<td>Cheltenham and District</td>
<td>1922</td>
<td>183</td>
<td>214</td>
<td>134</td>
</tr>
<tr>
<td>The Chilterns</td>
<td>1932</td>
<td>239</td>
<td>268</td>
<td>120</td>
</tr>
<tr>
<td>Exmoor Forest</td>
<td>1921†</td>
<td>108</td>
<td>142</td>
<td>78</td>
</tr>
<tr>
<td>The Middle Thames</td>
<td>1923</td>
<td>237</td>
<td>275</td>
<td>106</td>
</tr>
<tr>
<td>New Forest</td>
<td>1921†</td>
<td>205</td>
<td>231</td>
<td>62</td>
</tr>
<tr>
<td>North East Wales</td>
<td>1931‡</td>
<td>131</td>
<td>160</td>
<td>218</td>
</tr>
<tr>
<td>Salisbury Plain</td>
<td>1920</td>
<td>192</td>
<td>225</td>
<td>84</td>
</tr>
<tr>
<td>Snowdon District</td>
<td>1925§</td>
<td>109</td>
<td>131</td>
<td>216</td>
</tr>
<tr>
<td>Weston super Mare</td>
<td>1918-19¶</td>
<td>156</td>
<td>175</td>
<td>90</td>
</tr>
<tr>
<td>Wye Valley</td>
<td>1929</td>
<td>165</td>
<td>183</td>
<td>126</td>
</tr>
</tbody>
</table>

Some Popular Edition special, district and tourist sheets
The date shown is as printed or first published at the Ordnance Survey Office, Southampton.
Print codes (where dated differently): * 4000/30; † 5036; ‡ 5050/32; § 6036; ¶ 2000/29.

Both regular and special Popular Edition sheets carried a two-mile square reference system, forming an embryonic unnumbered grid. Being anchored to the sheet lines of the map, these squares are closely related the ‘grid’ introduced in this article. It may be that a useful side-effect of the alignment of the special sheets was that the printed lines of the reference squares could frequently be used to disguise the joins between the regular sheet plates used to form composite sheets.

4 Popular Maps, Appendix 7.
5 The sheets selected for the table are those in my own collection. The latitude and longitude of the NE and SW corners of each sheet were deduced from the printed marginal values. These were then converted into Cassini co-ordinates using Ed Fielden’s excellent program at http://www.fileden-productions.co.uk/maps/cconv/index.html.
6 Projections and Origins, 56-57; Popular Maps, 74-78.
Figure 2
The non-standard sheets of the half-inch Large Sheet Series are not always as well behaved. For example, although the column of half-inch sheets 11, 15, 21 and 26 is displaced vertically, the northern and southern edges of these sheets all coincide with sheet lines of the one-inch small sheet series, whereas the common edge of sheets 31 and 36 is surprisingly about 1.1 miles south of its expected position, which would correspond to the southern edge of Popular Edition sheets 127 and 128. What seems to have happened is that sheet 31 was laid out as a standard size sheet, with northern edge just clear of Foreland Point, and then sheet 36 was constructed to abut it, but extended south by about 1¾ miles to clear Prawle Point. Whoever designed this was obviously not thinking about alignment to any sort of mile grid. The half-inch sheets for which I am not yet confident about one or more co-ordinates are shown as dashed lines in Figure 3.

My grid did not, of course, exist in practice, although it would be only too easy, from a study of the maps alone, to deduce that it did. However, the grid can be used to calculate the Cassini co-ordinates of each standard map sheet. We know, from Brian Adams’s work, that our false origin is 906,570 feet west and 1,249,940 feet south of Delamerie. Figure 3 shows that the western edge of Popular Edition sheet 75 is 279 miles = 1,473,120 feet east of our false origin. Hence the sheet edge is 1,473,120 – 906,570 = 566,550 feet east of Delamerie.

Similarly, the northern edge of sheet 75 is 192 miles = 1,013,760 feet north of our origin, i.e. 1,249,940 – 1,013,760 = 236,180 feet south of Delamerie.

The sad case of Uppingham

Because many sheet lines were common to maps of the different series, if you lived in the corner of one map it was quite likely that you would also find yourself in the corner of other maps. If you chose the wrong corner of the wrong sheet, the effect could be disastrous.

Consider Uppingham. Nicely positioned on sheet 64 of the one-inch old series, Uppingham found itself in the SW corner of New Series sheet 157. Not a good position, as this also formed the corner of half-inch sheet 46.

At least with the advent of the one-inch Large Sheet Series, Uppingham was only on the edge of two sheets, rather than in the corner of four. However, it still lurked in the corner of half-inch large sheet 18 and, when the one-inch Popular Edition came out, there it was, back in the corner of sheet 64.

Things were no better with the quarter-inch Map of England and Wales. The small sheet series was laid out with each 90 × 60 mile sheet covering the same area as 25 one-inch sheets. The boundary between sheets 11 and 12 was the southern edge of one-inch small sheet 157, 192 miles north of our false origin and just two miles south of Uppingham! The quarter-inch Third Edition used a sheet size of 108 × 72 miles, the area covered by sixteen one-inch Popular Edition sheets. The result was predictable; the SW corner of sheet 6 was ‘Uppingham corner’.

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7 Measured in feet from Delamerie.
8 A guide to the Ordnance Survey one-inch Third Edition maps in colour, Appendix 7. Brian would have wished me to point out that the foot referred to is 1 foot of the Ordnance Survey standard ten-foot bar O₁, 0.304,800,749,1 international metres. The foot was redefined in 1963 as exactly 0.3048 metres. Neglect of the difference results in an error of approximately 1 metre in the position of the false origin. This may not be regarded as being significant.
9 Compare with Projections and Origins, page 55.
10 Richard Oliver comments that Uppingham is also near to an edge of the half-inch Popular-style Leicester district sheet of 1936 and would have fallen quite close to the west of the unpublished half-inch Second Series sheet 38.
Dashed lines show half-inch sheets with unconfirmed co-ordinates. The large Italic numerals give sheet numbers of the half-inch sheets. Small Italic numerals show non-standard sheet line co-ordinates for one-inch Popular Edition sheets.

Figure 3
As far as I know, there is no record of what Uppinghamians thought about having to buy several sheets of each map as it came out. They may have expected some relief with the one-inch Fifth Edition on the newly introduced Transverse Mercator projection but, as Richard Oliver explains, the sheet line layout was but a modification of that of the Popular Edition and, had sheet 64 been published, Uppingham looks still have been close to the corner.

![Image: 'Uppingham corner' from (left) half-inch large sheet 18 and (right) quarter-inch Third Edition sheet 6 (both about 80% of actual size)](image)

But it is the introduction of the National Grid that shows the universality of Sodd’s Law. Uppingham is exactly 300km north of the false origin of the National Grid – hence the town was on the edges of New Popular and Seventh Series sheets 122 and 133 and, of course, was bisected by the 10km based sheet lines of the 1:25,000 First and Second Series.

The sheet lines of the 1:50,000 Landranger series have their own peculiarities. Why, for example, are sheets 185 and 196 displaced 1 km north from their natural position, leading to an ugly marginal extrusion to accommodate St Catherine’s Point, at the southern tip of the Isle of Wight, and the duplicated mapping of an unremarkable strip of land north of Basingstoke? Is it too cynical to point out that the expected sheet lines would otherwise have clipped the site of OS headquarters at Southampton?

But, for Uppingham, the Landrangers must be the best thing since the Old Series. You open the Bender-folded sheet 141 and there is Uppingham, agreeably positioned towards the centre of the top fold.

**It is the same in every job!**

“Yet I had the gall in later years to claim that you did not get credit for the 99% of the map that was correct, but heard all about the 1% of error.”

– comment from a retired OS surveyor

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An unusual collection

John Cole

Although I did not originally consider it as such, I have it on the very best authority (Richard Oliver) that mine is indeed a map collection.

In effect it is a 1:1250 National Grid map collection, albeit the majority is reduced for economical reasons to 1:2500. Its commencement can be traced to my investigations ten years ago into the bypassed 1:2500 map.\(^1\) I had discovered that the easiest and cheapest way to identify these was to examine the earliest 1:10,560 survey diagrams when these sheets were compiled from mainly post-1945 1:2500 map revision. So far so good, but when I examined that for the Hants/Dorset sheet SZ09NE I was rather taken aback to find a 1:2500 map dated 1944 and another (to its immediate south) 1945. I did indeed obtain a copy of the 1944 sheet, a description of which appeared in *Sheetlines 64*.

Next came an investigation into revision point density on chain surveyed 1:1250 maps. An economic way of pursuing this was to obtain A4 quadrants of 1:2500 sheets which, if carefully copied, would give the relevant 1:1250 quadrant plus about a third of that adjoining. The only ‘losses’ were house numbers and some pavements in narrow streets if an early re-draw – or just house numbers if an early photographic reduction. If out of copyright, the full map could often be obtained and, in A3 sections, the four 1:1250 quadrants.

The vast majority were thus obtained from collections in public libraries. Others came from record offices,\(^2\) university map libraries and even a museum and a history centre. There were remarkable variations in charges, from free (but not on a second application when my name was recalled!) to expensive, which led in some half a dozen cases to my deciding not to bother or to try another source. Occasionally there was friction, and this was after I had framed a more or less standard application which usually worked well. One library declined to fold their maps to obtain the sectors I was after, whilst another claimed all theirs to be in a folder and impossible to extract.

If the maps were, as in the majority of cases, still in copyright, OS rules permitted that a single A4 copy from a single map could be supplied provided it was for private study purposes. Thus my application stated it was for such study into old city or town centres, railways, canals, industry etc., and into OS procedures of the time (which included revision point density). A rather complicated point arising from this is that an offshoot of my private study was an article for *Sheetlines*. Reproduction of copyright material in *Sheetlines* is covered by an Ordnance Survey Copyright Licence and since my twenty-five inch (*Sheetlines 64*) and fifty inch (*Sheetlines 67*) articles were to be viewable in the OS Library I was not exactly being secretive about my map sources.

Again, if the maps were inside copyright, a declaration had usually to be signed. Even if outside, some libraries still require such a declaration. The result is usually a rubber stamp – generally lightly done and not obscuring anything important, but occasionally the reverse! On odd occasions my specification of ‘as near to grid lines as possible i.e. maximum map; minimum margins’ was not adhered to. There is also further word of warning that these are purely copies and the map itself may not be pristine or at worst a photocopy anyway. If the result was particularly bad, charges were often waived – or waived as a result of protest!

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1 ‘Passing by’, *Sheetlines 50* and 58.
2 Only a few as they tend to be expensive.
After a time I began to find these copies highly addictive. Moreover in some important instances where Alan Godfrey has yet to come up with a map, e.g. Cardiff, Swansea, Kings Lynn etc., I was able to ‘jump the gun’ as it were. But worried as I was about this addiction, I felt it was time to think about calling a halt, having exceeded the equivalent of 1,300 1:1250 maps and unlikely to add the remaining 55,000 or so to complete the collection. To this end I rounded things off by obtaining the actual 1:1250s in A3 form (or in odd cases A1s) for those city centres I had previously been unable to capture at 1:2500 – some only just out of copyright.

In addition to the A1s, A3s and (mainly) A4s, I have some fifty year old chart paper maps, both 1:1250 and 1:2500, most completed by myself; a small collection of similar in 1 × 1 km (or quarter km²) format out of date mapping re-cycled to act as butt joint plate containers. These could be opened out into their original state minus four triangular cut-outs. And finally there are the plastic interim documents for two 1:1250 mapped towns surveyed by private contract in the 1980s that I salvaged at the end of their usage.

A small proportion of the copies are basic 1:2500 areas, a few of which were subsequently upgraded to 1:1250, some of these being listed in Sheetlines 64. Three complete 1:2500 maps (in A3 form) for West Lothian, a small batch of 1:2500 A4s for Leicestershire and a single one for Staffordshire were obtained during the investigations into the bypassed maps.

A few final notes: the number of 1:1250 A4 reductions sought averaged four or more depending on the size of the built up area, and how much of the city or town centre could be captured on one copy. As for larger areas: over eighty for London.

A map collector’s lament from ‘Kerry Musings’ in Sheetlines 65: ‘I’m not finding anything these days.’ ‘So why don’t you look for something else?’ ‘I would if I could think of something.’ Just in case the odd reader of my article (who is not already wholeheartedly in the Alan Godfrey large scale camp) thinks it might be a good idea to form a similar collection, if only for his own home town, a few added comments: reduction of the 1:1250 map to 1:2500 unfortunately ceased in 1973, though by this time about four fifths of the 1:1250 total had been published. Post and packing have gone up since I stopped, and there is also the occasional service charge. Specification, as mentioned, is important and most of all the grid reference which some librarians still have difficulty with. Some elderly and much handled maps have been mounted in sections. And some which are themselves copies were virtually impossible to copy with any degree of clarity.

What do other members collect and why? I should be delighted to publish some more letters or short articles on the subject in future issues of Sheetlines. – CJH

3 For description see Sheetlines 65, 60.
Reviews

Irish Historic Towns Atlas No.15 Derry-Londonderry, Avril Thomas, Dublin: The Royal Irish Academy, ISBN 1-904890-13-X, size 405mm x 305mm, €30.00.

In 1955 the International Commission for the History of Towns recommended the publication of a series of European national historic towns atlases to encourage a better understanding of common European roots and to facilitate comparative urban studies. Since then fascicles for over 400 towns and cities in nineteen European countries have been published. This fascicle is part of Ireland’s contribution to the scheme. The atlas has been planned as a series of fascicles, one or more for each town or city in a selection representing various sizes, various regions of both the Republic and Northern Ireland, and various periods, with some bias in favour of the medieval period but not excluding the estate towns, industrial towns and resort towns of more modern times.

The principal map in each fascicle is a large-scale (1:2500) representation of the town as it is believed to have stood at a period as close as possible to 1840. The reconstruction is based on the manuscript town plans made by the Ordnance Survey in 1832-42 and on the manuscript maps compiled by the General Valuation Office. Use is also made of surviving contemporary estate maps and, where necessary, of the earliest (1833-46) published OS maps at six inches to one mile (1:10,560). The base map on which data from these maps are assembled is the most accurate available nineteenth-century town plan, which in most cases is the OS plan at either 1:1056 or 1:500 made at some time during 1855-95. A second map shows the town in its mid-nineteenth-century setting at 1:50,000. This has been prepared from the first (1855-95) edition of the one inch to one mile (1:63,360) OS map of Ireland. The third map is a modern OS town plan at 1:5000. A selection of facsimile maps is included, where possible there are also growth maps and large-scale single period maps reconstructing significant phases of development before the end of the nineteenth century. Other graphic material includes a modern air photograph and facsimiles of early views. The text accompanying the maps comprises an introductory essay, topographical information on the town, selected documentary and literary extracts where appropriate, and a bibliography.

This atlas of Derry-Londonderry is the largest in content so far: it contains 23 maps, eleven plates and one aerial photograph, there are a further six maps and 21 illustrations within the text which runs to fifty pages in all, nine pages on the topographical development, 35 in the form of a gazetteer of topographical information and a three-page bibliography.

To accompany this fascicle is an ancillary publication, Maps & Views of Derry, 1600-1914, a catalogue, W S Ferguson, published by the Royal Irish Academy and Derry City Council, ISBN 1-9048790-07-5, un-illustrated except for two plates plus the cover.

Ferguson was a native of Londonderry and in retirement became honorary city archivist devoting much time to an inventory of local maps and views. His work was virtually complete when he died in 1972. After several attempts to complete the project, it was taken on by the Academy. Of the 319 catalogue entries 151 are for maps, 30 produced by the OS.

The history of Derry-Londonderry is possibly unique amongst Irish towns and, whilst these works may not be a comprehensive history, it is an excellent starting point for anyone interested, and worth having for the map and print facsimiles and the numerous references.

Rodney O’Leary

A portion of this text is taken from the introductory notes to the Irish Historic Towns Atlas.

To quote the publisher’s blurb: ‘Brassiere Hills, Alaska. Molly’s Nipple, Utah. Outhouse Draw, Nevada. In the early twentieth century, it was common for towns and geographical features to have salacious, bawdy, and even derogatory names. In the age before political correctness, mapmakers readily accepted any local preference for place names, prizing accurate representation over standards of decorum. Thus, summits such as Squaw Tit – which towered above valleys in Arizona, New Mexico, Nevada, and California – found their way into the cartographic annals. Later, when sanctions prohibited local use of racially, ethnically, and scatologically offensive toponyms, town names like Jap Valley, California, were erased from the national and cultural map forever.

‘From Squaw Tit to Whorehouse Meadow’ probes this little-known chapter in American cartographic history by considering the intersecting efforts to computerize mapmaking, standardize geographic names, and respond to public concern over ethnically offensive appellations. Interweaving cartographic history with tales of politics and power, Mark Monmonier locates his story within past and present struggles to create an orderly process for naming that avoids confusion, preserves history, and serves different political aims. Anchored by a diverse selection of naming controversies – in the United States, Canada, Cyprus, Israel, Palestine, and Antarctica; on the ocean floor and in other parts of our solar system – [this book] reveals the map’s role as a mediated portrait of the cultural landscape.’

Our thanks go to Shirley Jarvis for drawing our attention to a short review of this work in the New Scientist. Those not of an over delicate disposition are referred to the University of Chicago Press website at http://www.press.uchicago.edu/Misc/Chicago/534650.html which provides a lengthy and entertaining extract from the book itself.

This extract includes the story of Whorehouse Meadow, a feature in south-eastern Oregon, within the Steens Mountain Recreation Area, run by the Bureau of Land Management (BLM). It quotes Lewis McArthur’s 1974 book, Oregon Geographic Names: ‘During the summer one or more of the female entrepreneurs from Vale would set up facilities under canvas in this accessible but secluded meadow a mile east of Fish Lake. In the 1960s the BLM issued a recreation map and in deference to the moralists substituted a namby-pamby name, Naughty Girl Meadow. … The USGS advance sheet of the Fish Lake quadrangle followed suit but in 1971 the [Office of Geographic Names] took strong exception to the change.’ In a late 1972 story on the name, the Washington (D.C.) Star-News reported that ‘folks in the Wild West wish those Puritan pencil-pushers in the federal bureaucracy would leave their colorful place names alone.’

The BLM reversed its earlier decision and used the name Whorehouse Meadow on its 1976 recreation map, while a few years later the federal geographic names board also voted ‘to give official recognition to a name reported to be in established local use.’

Those interested in the naming of Dildo, Newfoundland or Shit Creek, Idaho should consult the online extract – which, perhaps, does not do justice to the wider focus and more serious aspects of the complete book.

Chris Higley
En Septembre, nous sommes allés en France, pour nos vacances. As ever, we took a selection from the 1970s Institut Géographique National maps that we use for holidays, plus a 2006 IGN 1:250,000 road atlas received last Christmas.

In the early 1970s, when I first drove in France, it was very enjoyable, and still a little scary. One had to be aware that travelling at 90 kmh on a main road, did not stop someone (usually four times my age) from pottering out of a side road and claiming their priorité à droite. An almost complete absence of white line markings at road junctions, and poor signage increased the thrill and ‘where did he come from’ element of motoring. One had faith in a GB sticker and large, clear, foreign number plates. Today, all the crumbling plaster with washed out writing on gable walls has vanished. The smell is not the same, and driving is a synch. So easy. Wide open roads, little traffic and nice clear signs, which the French obey. No challenge at all. Might as well be at home. To counteract the ‘improvements’, I try to provide my own element of surprise, make things a little tricky and inject some fun into the driving. Here, maps come to the rescue.

Over the years, as our maps became dated, we started to get hiccups when navigating, and then burps, but never chronic indigestion. So an atlas with motorways, by-passes and major new roads should have been welcome, except that it takes the fun out of things. A foreign country should be different, keep one slightly tense and always alert for the unexpected, especially when driving. Using thirty year old maps maintains the challenge of driving in France. Quick, instant decisions are needed when the road is about to turn into a motorway, or when a four-lane highway appears from nowhere. Expecting to dawdle through a town, you are instantly on a péripherique, going in the wrong direction, with a totally useless map as guide. Wonderful. Just like the old days, and with the 2006 atlas safely out of reach, in the boot.

At home, au Pays de Galles et en Angleterre, I seldom drive an unknown route by myself, but if I do, I have a crib sheet on the passenger’s seat; nice big writing with road numbers to follow, and towns in smaller script. Ten minutes work from an OS atlas the evening before. Not so easy in France, regardless of the dates of mapping used. Except for the blue motorway signs (well, most of them), no road numbers appear at roundabouts or major roads junctions. In order to remain alive, it is essential that you know which town you are heading for. As far as I can see, even this varies, as a town either before or after the one of your choice might be the main one on the signpost. Oh, to know that the turning on the left is the N148 to Fontenay le Comte, and not just Niort. A teeny-weeny little number after a town would be nice. In Britain, at complicated intersections, if one is confronted with a less than useful sign, one always has a second chance, by spotting the wanted road number. Not so in France. No numbers at big intersections.

The IGN and Michelin maps all show roads numbers, so why don’t the road signs? Perhaps it is because the road numbers are all over the place (i.e. not as organised as at home. See www.geocities.com/marcelmonterie/f.htm). Hereabouts, the A458 goes from Welshpool to Shrewsbury, crossing both a county and national boundary on the way. One might expect the French D35 to go from X to Y. Not so. Road numbers frequently change when they cross a département boundary, as every département has its own system and numbers are repeated.
They almost certainly change when one is on the smallest of roads and needs a good strong number to drive by. Sometimes it is easy, as the D135 becomes the D735, but frequently the D64 becomes the D8 and reverts to the D64 in a few kilometres, when one wiggles across the boundary again. Imagine our ‘B’ road numbers changing when crossing from one county to another. Just as the French appear never to pronounce the last third of many words, so, when navigating, it is easiest not to take any notice of the beginning of road numbers. The head of a number is merely symbolic, not informative.

Perhaps it is a hangover from my early years of driving sur le continent, when everything was an adventure and the minor roads saw fewer British cars, but I still like to feel that we are explorers, finding our own way, by ourselves. At a junction, the *Toutes Directions* instruction must be avoided at all costs, even though it is where you want to go. The feel of the country cannot be experienced by following these signs. Too easy. Taking the turning either side of the ‘correct’ one leads to wonderful backstreets in strange towns, (where a 1:25,000 comes into its own, if you happen to have one). However, with the trusty carte, one soon rejoins the main road, without the shame of having followed the herd. Un navigateur is essential on a long cross-country drive. Motorways should be avoided as being far too easy. A navigator to interpret the maps, preferably an old 1:250,000 and 1:100,000 simultaneously. We always take a complete set of the later maps for the route, as when driving in an unknown countryside, the 1:100,000 *Série Verte*, good old metric half-inch, is by far the best map for driving on, even late 1970s versions. All grades of road are shown and numbered, down to F, G, H and unclassified. The atlas is useless, dropping minor road numbers to keep the map uncluttered. During the early 1970s, we initially used a set of Shell *Cartoguides*. Very small scale maps with places of interest noted. One map was especially useful, as it introduced us to *des routes parallèles* – good parallel roads away from the main roads. Look at any French map and these parallel routes stand out beautifully (except on the atlas). Big thick red national routes, and a fine yellow D road running parallel. With even less traffic on them, excellent for driving at 90 kmh, and one passes through small towns and villages, seeing French life, in the absence of heavy traffic.

This year, I decided that French maps are easier to handle than ours. Why? Because they do not have card covers. So why do the OS? The outer surfaces of integral covers bear the creases and dirt, as do card covers, but card makes no difference to the damage caused by continual opening and re-folding of the map during use. Having not pursued the 1:50,000 integral cover experiment of the late 1970s, and having dropped the Pathfinders, all OS maps now have card covers – which I have previously come out in favour of. But having used the French ones recently, I would be quite happy if the OS changed to them. Saddened, but not upset. On one walk, I realised that no matter how confident I am of the path, I prefer to carry a map in my hand, usually closed. And as I like to keep looking at it, I am forever opening it. So, what is the correct thing to do? What do real walkers do (assuming they need a map)? Open for quick reference or closed for protection against the elements? My instinct is that whatever they do, they do not have it folded open in a plastic case, slung around their necks. This is something that I could never bring myself to do, just as when younger, one never sat on the tube and never drank lager. I must look in the SAS manual to see what is considered good practice – probably to have the route tattooed on the forearm and removed by skin graft afterwards. Too drastic for a Sunday afternoon walk to the teashop in Montgomery.
**Letters**

*High Peak Junction*

My initial thoughts on the Ordnance Survey’s placement of ‘Highpeak Junction’\(^1\) were that (apart from the amalgamation of the two words ‘High Peak’) it was quite logical as the name of the hamlet that had grown up around the ‘junction’ of the Cromford and High Peak Railway and the Cromford Canal. The fact that the Midland Railway provided a signal box called ‘High Peak Junction’ more than a mile further south when the C&HPR line was extended to join it was an irrelevance; it was a logical name for the railway junction and OS does not usually name stationless railway junctions at the one-inch scale. The standard histories on the C&HPR provide no real help; precise terminology of infrastructure is even more specialist a subject than the number of rivets on a locomotive’s smokebox door!

Then, out of curiosity, I looked up the Landmark Information Group’s *old-maps* website and the relevant 6-inch maps thereon, dated 1884.\(^2\) The words ‘High Peak Junction’ appear in small print on the east side of the Midland main line immediately south of the bridge over the River Derwent, more or less opposite the point where the trackbeds of the main line and the spur to the High Peak line actually diverge. The signal box is marked a short distance south, opposite the point where the spur physically joins the main line and just north of an occupation bridge over the main line.

The hamlet at the foot of Sheep Pasture Incline is prominently named Railwayend. South of the bridge carrying the main road there is indeed a Post Office and also Railway T.P. [Turn Pike]. The Cromford Railway Workshops are marked but not named and there are three buildings between the canal and the main line railway, one of which is named ‘Junction Inn’. Further south are the Goods Shed and Office at the transhipment wharf. Opposite the goods shed the depiction of the High Peak Railway changes from a ‘ladder’ to a single line with ticks.

Did High Peak Junction sound more mellifluous or upmarket than Railwayend to late Victorian ears? It might seem that the Ordnance Survey were so persuade\(\_\). And today the railway museum at the foot of Sheep Pasture Incline bears a railway-style sign, ‘High Peak Junction Workshops’.

I am unable to explain when OS adopted the name ‘High Peak Junction’ for the workshop area at Sheep Pasture Bottom. However, in *Railways of the High Peak: Onwards to Cromford and High Peak Junction*, by Jones and Bentley,\(^3\) there are reproduced two large scale OS maps which appear to be 25 inch.

The first shows Sheep Pasture Bottom, including the Post Office, in great detail but gives it no name. The second map shows the connection of the Cromford & High Peak Railway with the Midland Railway and is marked ‘High Peak Junction’ immediately above the southbound main line tracks. To the NW is marked ‘Sewage Works (Matlock U D Council) (In course of construction)’ which could help with dating.

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\(^{1}\) *Sheetlines* 76, 63-64.

\(^{2}\) [www.old-maps.co.uk](http://www.old-maps.co.uk)

\(^{3}\) Foxline Publishing.
As Mr. Eckersley says, the Cromford and High Peak Railway was built in 1830. It linked the Peak Forest Canal at Whaley Bridge to the Cromford Canal, and was not originally connected to any other railway. The Cromford canal was built in the 1790s.

I do not think there is any doubt that the original use of the name High Peak Junction was to describe the place where the railway met the Cromford Canal. In fact this is how the name is used locally today and how the buildings on the site are named. Although in the 1850s a junction with another railway was established and a signal box some distance away was named High Peak Junction I do not think this affects the correct site of the junction. Presumably the box was named by the railway company involved and signal boxes, I think, were generally named after the nearest identifiable site, which could be some distance away.

Local historian Peter Naylor, in a book about Cromford, refers to High Peak Junction as relating to the canal. A leaflet published by Derbyshire Council Countryside Service states ‘High Peak Junction is the original southern terminus of the Cromford and High Peak Railway’ and goes on to make it clear this refers to the junction with the canal. The *Cromford Guide* published by the local Scarthin Bookshop and by local authors states ‘High Peak Junction is where the railway met the canal.’

The site is at the bottom of Sheep Pasture Incline and could, no doubt, also be referred to as Sheep Pasture Bottom. Cromford Wharf is at this point, but I imagine this term would specifically apply to the dock and buildings at the side of the canal, rather than to the railway.

I am therefore sure that OS are correct in their siting of High Peak Junction.

*John Langdill*

**How unusual is this cover variant?**

I have recently purchased a Third Edition Large Sheet Series map which has a variant cover. I would be interested to know just how unusual this cover is.

The series sheet is Third Edition LSS number 150, titled *Kingsbridge*. This includes the River Dart and the Royal Naval College at Dartmouth. The map sheet itself has no stamps or overprinting to suggest that it might be of naval origin. On the cover, however, the normally ubiquitous ‘& WALES’ has been cleared and the full stop moved. Into the space so cleared the title DARTMOUTH has been inserted in a non-matching serif typeface, prominent by being printed in red. I presume that this must be an Ordnance Survey printing, rather than a simple overprint by an outside contractor, since only the former could clear the space to provide for the title insertion. None of my other series sheets of this cover design have a title so printed.

Could members please inspect their holdings of the Third Edition LSS, and in particular of this sheet, and report on any other series sheets that they hold with a title inserted on a cover of this design.

*Peter Haigh*
New maps
Jon Risby

This list covers small scale maps published between 1 July and 6 November 2006. 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 July and November 2006.

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

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1 The lists in Sheetlines 76 contained details that could not then be confirmed. The definitive entries are also given here.
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| 176 | West London, Rickmansworth & Staines | D4 | 2006 | 1996-98 | 2006² | 29/09/06 |
| 177 | East London, Billericay & Gravesend | E3 | 2006 | 1999-00 | 2006² | 29/09/06 |
| 192 | Exeter, Sidmouth, Exmouth & Teignmouth | C3 | 2006 | 1997 | 2006¹ | 28/03/06 |
| 202 | Torbay, South Dartmoor, Totnes & Salcombe | D | 2006 | 2002 | 2006¹ | 06/04/06 |

**Explorer – new editions**

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| 42 | Kielder Water | (+A) | A2 | 2006 | 2001 | 2006² | 09/10/06 |
| 184 | Colchester, Harwich &amp; Clacton-on-Sea | A1 | 2006 | 1998 | 2006² | 03/04/06 |
| 195 | Braintree &amp; Saffron Walden | A1 | 2006 | 1998 | 2006² | 03/04/06 |
| 196 | Sudbury, Hadleigh &amp; Dedham Vale | A1 | 2006 | 1998 | 2006² | 03/04/06 |
| 197 | Ipswich, Felixstowe &amp; Harwich | A1 | 2006 | 1999 | 2006² | 03/04/06 |
| 202 | Leominster &amp; Bromyard | A1 | 2006 | 1998 | 2006¹ | 18/04/06 |
| 210 | Newmarket &amp; Havering | A1 | 2006 | 1999 | 2006² | 03/04/06 |
| 211 | Bury St Edmunds &amp; Stowmarket | A1 | 2006 | 1998 | 2006² | 03/04/06 |
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| 250 | Norfolk Coast West | A2 | 2006 | 1996 | 2006² | 03/04/06 |
| 251 | Norfolk Coast Central | A2 | 2006 | 1996 | 2006² | 03/04/06 |
| 252 | Norfolk Coast East | A2 | 2006 | 1996 | 2006² | 03/04/06 |
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The England and Wales 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. (+A) indicates that the sheet is also available in Explorer Map Active format.

**Travel Maps, Tour series – new editions**

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**Irish maps**

**OSI Trail Master – interactive mapping (DVD)**

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### Forthcoming OSGB maps
The following maps have been announced for publication.

#### Landranger – new editions

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#### Explorer – new editions

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395 Glen Esk & Glen Tanar  A1  12/03/07
396 Stonehaven, Inverbervie & Laurencekirk  A1  12/03/07
397 Rum, Eigg, Muck, Canna & Sanday  A1  12/03/07
149 Sittingbourne & Faversham  B2  19/03/07

Maps shown in the list above as (+A) will also be published in Explorer Active format with the same edition letter and on the same date as the standard edition.

Travel Maps – Route Map, new edition

Route Map 2007  23/10/06

Travel Maps – Tour Series, new editions

13 Oxfordshire & Berkshire  C  20/11/06
1 Cornwall  D  04/12/06
5 Devon & Somerset West  D  04/12/06
14 Northumberland  C  18/12/06

Cassini Maps (formerly Timeline Maps) Historical Maps

Cassini’s Historical Map series is expected to cover the whole of England and Wales by the time that this list is published. It is based on Ordnance Survey one inch to the mile (Old Series) maps, published between 1805 and 1874.

A central feature of the Historical Map series is that the originals have been combined, re-scaled and re-projected exactly to match Ordnance Survey modern-day Landrangers. They have the same map identification number and the same British National Grid references. More details are available from http://www.cassinimaps.com, where the maps can also be purchased. An example was reviewed by the Editor in Sheetlines 74, page 45.
**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/](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.

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The Postbridge code – a mystery solved?
Roly Hann

I would be the first to acknowledge that my contributions in recent issues of Sheetlines have been just a shade lightweight compared to the erudite, detailed and finely-tuned research of my fellow scribes. However, the verses published below may well cause turmoil in the lofty realms of Ordnance Survey academia. Professorial heads might be set spinning.

The accepted fact is that the 1801 Mudge map of Kent was the first Ordnance Survey map. A recent discovery would seem to cast serious doubts about this. During some major restoration work at an ancient inn near Postbridge on Dartmoor, a canvas pouch was found in a recess behind some old wooden panelling. In the pouch were some letters and a version of the well-known Dartmoor folk song, ‘Widecombe Fair’ which seems to predate the usual verses. The letters have various dates in the 1790s and appear to be contemporary with the verses. The inn is just a few miles from the village of Widecombe-in-the-Moor.

I make no judgement on the validity of the document. That should be left to my academic peers. All I would say is - don’t shoot the messenger! Now, read on…

Ye Ordnance Survey mappe of Dartmoor

Bill Mudge, Bill Mudge, lend me your plane table
All along, down along, up on the hill.
To survey all Dartmoor then I would be able,
Wi’ Will Faden, Will Roy, Chas Lennox,
Jesse Ramsay, Izzy Dalby,
Old Uncle Tom Colby and all,
Old Uncle Tom Colby and all.

And when next will I see my lovely plane table?
All along, down along, up on the hill.
As soon as we’ve finished we’ll send you a cable,
From Will Faden, Will Roy, Chas Lennox,
Jesse Ramsay, Izzy Dalby,
Old Uncle Tom Colby and all,
Old Uncle Tom Colby and all.

Then Friday did come and Saturday went,
All along, down along, up on the hill.
And I need my plane table for taking to Kent.

Wi’ Will Faden, Will Roy, Chas Lennox,
Jesse Ramsay, Izzy Dalby,
Old Uncle Tom Colby and all,
Old Uncle Tom Colby and all.

So Bill Mudge got up to the top of the tor,
All along, down along, out along lee.
The shattered plane table was working no more.
For Will Faden, Will Roy, Chas Lennox,
Jesse Ramsay, Izzy Dalby,
Old Uncle Tom Colby and all,
Old Uncle Tom Colby and all.

A brand new plane table arrived far too late,
All along, out along, up on the hill.
For the map was reissued as OL 28.
By Bill Brewer, Jan Stewer, Peter Gurney,
Peter Davy, Dan’l Whiddon, Harry Hawk,
Old Uncle Tom Cobley and all,
Old Uncle Tom Cobley and all.