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What a pleasure it has been to welcome back to Charles Close Society the first live event for a long time, with an intriguing October walk in central London, led by our expert leader and committee member John King. London history, railway topics galore, and yes, free maps. Do let us have your suggestions for more walks and possibly visits in 2022.

We are continuing with more live online talks using Zoom, which members are also able to watch later through the links on the CCS website. Thanks to the speakers, and an invitation to all members to enjoy the satisfaction of presenting your favourite maps or topics of interest to the CCS membership. You don’t need to worry about the technical side – the online arrangements are all taken care of.

I’m pleased to report that our membership during the lockdowns has increased, and now tops 700 for the first time, and research has shown that satisfaction rates are high. Yet more good news is that we started our planned co-operation with the British Cartographic Society by taking part in their annual conference, which was held online this year. Following this largely successful joint event we are working with colleagues at BCS & OS to bring more joint talks to both memberships throughout 2022, this time using our CCS tried-and-tested Zoom platform. So all being well, no technical gremlins, travel bills or future lockdowns can stop us. More details soon.

Remember to ensure that we have your email address if you want to keep up-to-date with CCS events, in between issues of *Sheetlines*. Please send your latest email address to memsec@charlesclosesociety.org to receive frequent copies of the Charles Close Society Newsletter.

Finally, a warm welcome to all our new members who have joined during the past year, whether as a result of our presence on Facebook, BCS cooperation, or other activity. We also welcome our new Independent Examiner, Paul Waldron, and new Publications Manager, Martin Bott, who will take over shortly from Stuart Dennison who is retiring. We hope that 2022 will see long-awaited new publications to help keep him busy.

A happy Christmas and mappy new year!

*Gerry Zierler, Chairman*
Forty years on
Alan Godfrey

In September we celebrated 40 years of the Godfrey Edition, our series of reprints of Old Ordnance Survey Maps. The series began in 1981 with maps for Gateshead, where I was then based, spurred on by a suggestion from a sympathetic bank manager that I should reprint some old maps, rather than sell them second-hand. Libraries and education advisers on Tyneside quickly supported the project and within a year I was being encouraged to take the series to Scotland and Northern Ireland.

The concept was simple. OS 25-inch maps were photographed at a reduced scale, to fit a manageable A2 size, and historical notes and directory extracts were included on the reverse. Like all good maps, they were folded and priced to fit your pocket, in both senses of the word - and away you go! Some fine-tuning took place over the first dozen titles but by the end of 1982 they were very much as we see them today. The series now stretches to almost 3,500 titles, mostly taken from the 25-inch maps but also including a 1-inch series that covers England, Wales and much of Ulster.

We held a small celebration at our office, limited to 25 people for social distancing. I was a founder member (and first Membership Secretary) of The Charles Close Society, several of whose members gave me encouragement in those early days, and so was delighted that the society was represented at our party by Peter Ennor. Other guests included the Chair of Durham County Council, and Les Turnbull, that education adviser who supported us from the off.

An early realisation, and one that still bemuses many people, was that the so-called (and often self-proclaimed) ‘historic towns’ were not the key market. Our first genuine bestseller was a map for West Hartlepool, which we had to reprint within weeks, and relatively unfashionable towns such as Rotherham, Wigan and Stoke-on-Trent have always been at the heart of the series. Maps for small market towns, by contrast, are enjoyable to research, but then gather dust on the shelves: customers for Leyburn, Corbridge or Ilchester, to give three random examples, are welcomed with open arms; a map for Jedburgh, taken from a rare early OS colour-printed map, languishes unloved, but Jarrow sales go on for ever. Current projects include groups of maps for Wakefield, Oldham, Lincolnshire, Wiltshire and, coming soon, Dartford. Hopefully I will be able to keep going for a few years yet!
OS200: digitally re-mapping Ireland’s Ordnance Survey heritage

Keith D Lilley and Catherine Porter

“Accompanied by Lieutenant Drummond, Colonel Colby traversed Ireland from north to south in 1824, selecting the most suitable mountains for principal stations, and collecting data for determining probable limits of altitude to be represented in the map.”

2024 is a significant anniversary year for the Ordnance Survey’s connections with Ireland. The bicentenary of Colby’s ‘traverse’ across the island will be marked in many ways and one significant contribution to this occasion is already underway, a research project called OS200.

Thanks to funding, awarded in 2021 by the Irish Research Council (IRC) and the Arts and Humanities Research Council (AHRC), OS200 will enable a collaboration between researchers across the island of Ireland to reconnect - digitally - the historical records of the Ordnance Survey in Ireland. The three-year project is part of a €6.5m programme of research funded by the IRC-AHRC, bringing together world-leading expertise in the digital humanities across the UK and Ireland. The bicentenary year will be marked by OS200 with a conference and exhibition at the Royal Irish Academy, drawing upon the findings of the project, which involves a multidisciplinary team of researchers led by Queen’s University Belfast, University of Limerick, Royal Irish Academy, and the Digital Repository of Ireland.

From the outset, in Ireland the Ordnance Survey not only surveyed and mapped the land at the large scale of six inches to one-mile, but gathered geographical, archaeological, and toponymical information including local customs, antiquities, place-names and topographical features. These records capture localities across the island as they were in the 1820s and 1830s, including farming practices, language, folklore, trades and religion, as well as details of the lives and activities of those employed by the OS in Ireland. One of the key outcomes of OS200 will be a digital platform that reconnects many of these important records. Focusing especially on the OS Memoirs, Letters, Name books and First Edition Six-Inch Maps, the aim is to use digital methods and tools to develop new insights into the practices and processes of the OS operations ‘in the field’. While the history of the OS in Ireland has received much scholarly attention, through the work of John Andrews, among others, how the activities of the OS operated on the ground, across the island, has yet to be studied geographically.

As a focus for OS surveyors, busy recording local place-names, antiquities, folklore, as well as undertaking trigonometrical and topographic surveys, ‘the field’, rather than the archive, is principally what interests the project’s

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researchers. Accessing the field as a locale of OS operations requires careful study and linking of the many disparate surviving records of the OS in Ireland. Some of these sources, such as the OS 6-inch maps and OS Letters, already exist in a publicly-accessible digital form, while others, such as the OS Memoirs and OS Name books, exist in-part as digital records but are not public. Moreover, these records have yet to be brought together as a single corpus for analysis. Reconnecting them digitally offers significant potential for exploring how the OS operated in the local landscape, especially through tracking particular individuals named in these accounts, as they traversed the island.

With the creation of a digital corpus for OS200 and linking Ireland’s OS records, it will be possible for the first time to visualise who was doing what, where and when. This is important, as the connections between people and places are difficult to comprehend currently from surviving, disparate historical accounts of OS personnel. Using new techniques of geovisualisation and spatial analysis, the geographical and biographical information extracted digitally from OS Letters, Memoirs, Name books and 6-inch maps, will reveal the otherwise ‘hidden’ networks within which and through which Ireland was surveyed and mapped two hundred years ago, in effect following the footsteps of those involved on the ground.

In particular, the project seeks to reconstruct an ‘ethnography’ of the OS in Ireland, looking in detail at the movements of individuals, as well as their links with others, with informants and other OS personnel, studying the timing and geography of these movements and the unfolding of OS operations across Ireland during the late-1820s through into the 1830s. The accounts available for this are in certain areas more detailed than for others. With the Memoirs availability for the northern counties, the research team will be able to draw these together with other contemporary accounts, especially the Letters and Name-Books and to this end work has begun on a pilot focused on County Armagh. The common reference point found in OS records is the ‘townland’, that unique ancient administrative unit of Ireland. With the townland, the textual records of the OS can be fixed geographically, located and related to the townlands marked on the OS 6-inch maps. Using Geographical Information Systems (GIS), the digitised boundaries of townlands shown on the First Edition 6-inch maps provide a geographical ‘container’ to place those other, textual records of the OS. This geographical approach, then, resituates the surveyors back into ‘the field’ and the myriad localities where they had worked.

The challenge facing OS200 researchers lies in sourcing and integrating digitally these disparate records of the OS. The gains however will outweigh the difficulties, for not only will the project offer new insights into the early work of the OS in Ireland, it will result in a more accessible digital resource for users. The records of the OS in Ireland are of international importance and interest, not only for historians of cartography and historical geographers, but for linguists, folklorists, archaeologists, genealogists and archivists the world-over.

Nineteenth-century Ireland is well recognised as having been the first entire country to be mapped systematically at the scale of six inches to one mile, and it
was Colby’s measurement of the Lough Foyle Baseline, in 1827-8, that attracted the attention of George Everest who then adopted Colby’s ‘beautiful system’ for the Great Trigonometrical Survey of India. To this end, the digital outcomes of the OS200 project will not only advance our understanding of how Ireland was mapped two centuries ago, but also open up to wider and new audiences the legacies and impacts of the OS, recognising the lasting significance of what was accomplished and marking the bicentenary of its instigation.

‘Sketch showing the mode of proceeding in measuring the Lough Foyle Base’ W Yolland, An account of the measurement of the Lough Foyle Base in Ireland (1847).

Professor Lilley (a CCS member) and Dr Porter are joint leaders of the OS200 project. To contact OS200 please email k.lilley@qub.ac.uk and to keep track of the project on Twitter, please follow @IrelandMapped.
OS name books of Scotland and the study of place-names

Nevis Hulme

The Ordnance Survey name books (OSNBs)\(^1\) referred to here list the place-names collected for the 1st edition OS maps in the 19th Century. This article describes how to access the OSNBs of Scotland, what they can reveal as well as cautions and limitations about the information contained in them. It concentrates largely on Gairloch parish, Wester Ross in the Scottish Highlands, but much of the content should be of value to anyone in the early stages of studying the books.

I have known about the OSNBs since the 1980s when I was able to refer to them on microfiche in our local Museum.\(^2\) We are fortunate that the vast majority of the Scottish name books are now available for research online.\(^3\) The ability now to search a website for the occurrence of particular terms, whether it be a place-name, the name of one of the sappers who collected the names, or their informants, makes research so much easier.

The arrangement of the OSNBs on the internet

The OSNBs can be found by entering ‘Scotland’s places name books’ in a search engine and going to the county of interest, listed alphabetically. Each county is divided into volumes which are listed, not entirely precisely, with the parishes covered in each. The layout of volumes varies by county: some cover parishes in separate volumes while others, eg Ross and Cromarty, do not. Figure 1 shows the volumes for Wester Ross parishes and exemplifies the muddled arrangement that can make study difficult.

The volumes are divided by the scale of map on which the names are plotted: 1:10,560, 1:2,500 maps and larger for large settlements (eg 1:500 for Aberdeen). The map scale can be found by looking at a volume’s title page\(^4\) or its index. In the case of Gairloch parish, volumes 12-14 contain place-names of settlements at 1:2,500, the largest scale mapped in the parish but omitting some equally deserving crofting townships. The remainder are at 1:10,560. The wide area covered by some volumes can be seen from the example given in Figure 2.

Each county has a number following ‘OS1/’; Ross and Cromarty Mainland\(^5\) is ‘OS1/28/’ followed by a volume number, in this case, from 1 to 51. This is useful

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1. Their official name is Object Name Books but they are commonly known as OSNBs. The objects named included those given descriptive names, eg Well, Cave and those with distinctive names, eg the name of a hill or a settlement.

2. Gairloch Museum has a valuable resource of materials related to place-names including those collected by Roy Wentworth, referred to later in the article, and those contained in censuses, rental records and other estate papers. (The Museum was a joint winner of the prestigious Museum of the Year Award for 2020 and an essential stop for anyone visiting Gairloch.)

3. According to National Archives, only those for England and Wales relating to Cumberland, Durham, the Isle of Wight, Northumberland and Westmorland survived enemy action in 1940. Those for Northumberland have recently been put online (https://namebooks.org.uk). Many of those for Perthshire, Scotland, were similarly lost.

4. For some reason, the title pages appear near the end of the list of pages for each volume.

5. As opposed to ‘insular’ covering Lewis catalogued OS1/27/. It was part of Ross and Cromarty until 1975.
for logging the location of a name within the OSNBs and, with care using a county’s URL (each is different because compilation dates are included), it is possible to navigate to particular pages. It is worth also being aware, however, that the URLs do not always correspond to the appropriate OSNB page.

When viewing a page within a volume, the website shows an image of that page from the original OSNB with, where it has been completed, a transcription below of the page’s contents. The actual layout of the name book pages does vary a little across the country but the information included is basically the same.

**Searching the OSNBs**

Finding the place-names from the OS maps in the OSNBs can be tricky even with the search facility on ‘Scotland’s Places’ website. The names need to be input with any accents used but, as far as I can work out, this can only be achieved by importing the term or accented letter from, e.g., Word. So, if looking for Cùl-chbreag, you will need to input the ‘u’ with its grave. The search will give you occurrences of the name without the accent because this name appears on another page without the grave. This, though, is just chance. Not taking anything from the work of the transcribers who have given us searchable data, there are a few errors in the transcriptions that can cause further confusion or frustration.  

The arrangement of the OSNBs for Ross and Cromarty Mainland throws up further difficulties. Finding one name in an area of interest does not mean other adjacent names will be nearby in the name books. Take the place-names of the townships of Aultgrishan and Melvaig, north of Gairloch village, as an example. The settlements extend over the relatively small area of around three square-kilometres but are found in two name books and not always on consecutive pages, i.e., in volume 12 on pages 66 and 77-79 and in volume 36 on pages 87, 93, 95, 99 and 103.

**Figure 1** (left) Volumes of Ross and Cromarty Mainland containing Wester Ross parishes.

**Figure 2** (below) OS 1:10 560 1st edition maps covered by Ross and Cromarty Mainland volume 44. The one shown in pink was not listed on the title page for the volume, another impediment to analysis.

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6 An amusing example is found on Lewis (OS1/27/101/7) where the word ‘midway’ was misread bringing a railway to the island in 1849 years before any of the unsuccessful plans were proposed.
Collection of place-names in the OSNBs

There is no doubt that, without the work of the OS, many of the names that we see on maps would be unknown today; the name books are valuable additions to the historical record of the country. I have not come across a description of the exact method used for the compilation of the OSNBs; what follows is from an ongoing analysis of those for Gairloch parish. The process probably started with the survey and drawing of a draft map\(^7\) after which ‘authorities’\(^8\) would be identified. The surveyors then noted names of features of interest from residents of the area, probably by walking the ground together to identify remote features.

Gaelic was the main language of the people at the time and it is unlikely that all of the informants (the term used here for the people consulted in the area concerned) spoke English. I do not know how much, if any, Gaelic was possessed by the OS staff, but translators would probably have been required to make sense of what was being said. The names were written in column two of the name book forms by, or under the direction of, the Royal Engineer officer responsible for the OSNB volume. The final spelling was added to the left-hand column once checks had been carried out and it is this that virtually always appears on the map.

It is clear from how some names have been deleted that the details in the other columns were completed later. This was delegated to a sapper who wrote in the names of the informants, the map on to which the name was to appear and, in the right-hand column, a description of the feature. Looking at the locational information in this last column, it cannot always be trusted to unambiguously pinpoint a feature. I suspect that these were simply written by reference to the map and have little real value. The translation of the Gaelic names seems to have been compiled from a dictionary.

The OS had a hierarchy of informants regarded as reliable\(^9\). Top of the list tended to be those least likely to be familiar with the place-names, namely the landowners, doctors, teachers and suchlike who probably had not lived all their lives in the area and, in many cases, would not have been so knowledgeable in Gaelic, the local dialect in particular. Bottom of the list were the tenants of the land, those who worked the land daily, spoke the local dialect and would have learned place-names from their parents and neighbours through the need to identify, for example, the location of cattle grazing over a large area of moorland.

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\(^7\) The map surveys are usually in the same year as the dates on the name books. The name books were completed with reference to the maps as the map number and trace are indicated within them. The website gives (at the time of writing) the dates of OSNB compilation for Ross and Cromarty as 1848-52 but this refers to Lewis (Ross and Cromarty Insular); the mainland was surveyed around 1875.

\(^8\) In addition to people with the requisite knowledge, authorities included relevant plans, documents and other written material.

\(^9\) It is probable that some guidance similar to that of the *Instructions to Field Examiners*, 1905 (https://www.bhsaccess.org.uk/uploads/instructions-to-field-examiners-os.pdf) was used although any earlier guidance is not available (other than an insistence dated 1825 (https://www.ordnancesurvey.co.uk/documents/resources/os-history.pdf) on using the ‘best authorities’ in the survey of Ireland.)
The informants in Gairloch extended across this range. Many of the names over large areas of sparsely inhabited moorland were given by one crofter or farmer informant; exceptions to this were more general names such as those for settlements. It can be seen from census records that the people selected to assist the OS were long-standing residents who had been brought up in the area and had worked the land through their lives. It is possible that the landowner, Sir Kenneth Mackenzie, 6th Baronet, or someone of appropriate status in the community, would have recommended a tenant as a reliable informant. ‘M. McKenzie’ of Peterburn’, for example, is recorded as living in Melvaig in 1841, at which time he was 35. He was in Peterburn, a couple of miles away in 1851, aged 42, and still there in 1861, aged 50 (age irregularities are common in census records). Murdo, Murdoch or Murchadh, as he would have been called in Gaelic, was well-placed to speak of the 115 place-names that he gave from the area.

There is a great deal of variety in the contents of the OSNBs depending on the sapper noting the information. There may be details of the construction and use of a building or the vegetation cover of a small island, for example. In some volumes, whole pages are devoted to the description of one feature.

**The value of OSNBs for local history research**

The following illustrate some of the ways that OSNBs have assisted in place-name study and are described to show their possible application elsewhere.

OSNBs can be a help when names on maps change over time. One example of this was found in NG8185 where there is inconsistency in the last letter of the place-name between the 1st edition (*Figure 3a*) and the 2nd edition (*Figure 3b*). This probably happened because part of the letter ‘e’ was thought to be another rock outcrop on the named hill. Reference to the relevant OSNB shows what was originally recorded (*Figure 4*), corroborating A’ Chreag Chaoidh11 given recently by local informants.

*Figure 3: Representations of A’ Chreag Chaoidh on 1:10,560 maps*

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10 Sometimes (Mr) Murdoch McKenzie. Mackenzie and MacKenzie are two other spellings for this surname.

11 The probable correct Gaelic spelling of the place-name with a common Wester Ross structure and pronounced similarly to the mangled form recorded. It can be translated as ‘the rock of mourning’.
Figure 5 shows part of another page from an OSNB. The second name on this page, *Allt Gat Mbiaig* (NG7486), has not been recorded before or since. Furthermore, its meaning is unknown. This burn (Scots for stream) has a number of names noted from residents recently but this name is a curiosity that appears to this day on OS maps (see Figure 9). This could be an example of a name being noted incorrectly, the informant misunderstanding the name or the informant not being certain of it; these have all been encountered. Although in this case the outcome is inconclusive, sometimes the *Various modes of Spelling the same Names* can be useful in interpreting names.

![Figure 4](image-url) Extract from OSNB Ross and Cromarty Mainland, volume 12, page 90

The name books have a column, *Descriptive Remarks, or other General Observations which may be considered of Interest*, in which can be found some useful information, as mentioned above. For *Allt Grisignon* (the spelling used for the river), the following is written.

A large stream rising in the
and E. of Altgreshan
hill s. east of Melvaig formed
by the junction of several
smaller streams. It formed the
boundary between Melvaig and
Altgreshan and falls into the
Minch west of the latter place
at Altgreshan

This, a reasonable representation of
the original, comes from O.S. name
book for Ross and Cromarty Mainland,
volume 12, page 78.

This filled the remainder of the line,
to prevent additions being made, in
theory.

Bold type is used above to indicate additions to the description written by J. Durran, the sapper working in the district, who had some of his entry scored out. This is not in the transcription on the Scotland’s People website so shows the value of going to the original OSNB for research.
The boundary between the townships of Aultgrishan and Melvaig (around NG7486) has varied over the years. When researching this, a good deal of information was gleaned from Gairloch Estate rental records but the OSNBs cast some interesting light on this too. The informant made out that the river formed the southern boundary of Melvaig, something that had not been the case for 29 years. The entry has been changed to reflect the situation as from around 1846 when the current crofts were established. What the informant said, though, reflected what had been the case previously and has provided further evidence supporting the boundary changes. Figure 5, for Melvaig, shows similar confusion.

Off the north end of Skye, visible from Melvaig but outside Gairloch parish, are a number of small islands (NG3679). One of the OSNBs for Inverness-shire, OS1/16/5/5, includes these and among which are The Cleats. The reference states, “This name is given to four or five small rocks on which there is a speck of pasture on each. they [sic] are situated a short distance to the east of Gaeilavor Island…” Figure 6 shows how, having initially been plotted correctly, over time ambiguity has led to misinterpretation so that, by the Seventh Series of the One Inch map (1957), The Cleats have been reallocated. It is interesting that the nautical chart shows what has become The Cleats to the OS as being called Schoun (Figure 7) although it was not until 1957, coincidentally, that the name The Cleats appeared on an Admiralty Chart. The OSNB here was invaluable identifying the original location of the name; without it, we may forever have been misled.

Figure 6  various representations of The Cleats 6a (above left): The Cleats clearly refers to the islets between Gaeilavor Island and Thon Eilean. One-inch 1st Edition 1884. 6b (above right) This is ambiguous with the possibility of believing that The Cleats refers to the islets to the south of the name. One-inch ‘Popular’ edition 1931. 6c (lower left) There is no doubt as to what The Cleats now labels. One-inch Seventh Series 1957.

\[12\] Thanks again to Gairloch Museum.
The need for caution with names in OSNBs (in addition to those already covered)

Some reasons to be cautious when using OSNBs are outlined below using examples of Gaelic place-names. Other areas may have different problems to be aware of.\(^{13}\)

Figure 8 is an example of a name that was most probably recorded incorrectly. Given by Mr Mackenzie, mentioned earlier, this hill-name has been recorded as *Sithean Bard na Beinne* (NG7487). In the last column, under ‘Sig.’\(^ {14}\), the meaning is given as ‘Hill of the Poet of the Mountain’. For this to be correct, *Bard* should be *Bàrd* and an accurate translation would be ‘the hill of the poet of the mountain’ (with or without capitals according to taste). Figure 9 shows how it has changed on maps to the present day. The name recorded more recently, in the 1980s, is a little different: *Sithean Bhad na Beinne* means ‘the hill of the patch of the hill’\(^ {15}\). It cannot be proved that this hill name has not changed over time but the latest record is much more likely than the earlier ones. I have not viewed the OSNBs for the 2nd edition, if they are available, but these may throw light on fairly numerous differences between the 1st and 2nd editions.

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\(^{13}\) For example, where informants were not Gaelic speakers but were relaying Gaelic names, corruptions can be such that the actual names are difficult to interpret.

\(^{14}\) This was used to indicate the significance of the place-name. Some sappers just wrote ‘Meaning’.

\(^{15}\) The translation of this is open to a good deal of variety but will not be discussed here.
Sometimes names are added to maps in the wrong place or they shift over time. Figure 10 shows Port an Amall as it appears to this day on maps. This is north of Melvaig at A’ Rubha Rèidh (NG7391). It is not known why it was placed where it is shown but it has been recorded recently as being to the south of the lighthouse built in 1912 (and added to Figure 10) where Sròn na h-Àrd-iolaich, itself an ‘interesting’ name, is positioned. It could be said that the more recent informants are wrong but the argument in their favour is that amall means ‘swingle-tree’ and, at half-tide, either the rock layers on the shore, the way the waves break in two directions or both give the impression of this system for bridling horses.

One further error is the incorrect translation, or recording of a translation, of a place-name in the OSNBs. Figure 11 shows the entry for Geodh’ a’ Chriosain (NG7692), on the coast about three kilometres east of the lighthouse mentioned above. This is translated as ‘Cove of the Little Beet’. (An) criosan, the nominative form of a’ chrionsain, can be found in a Gaelic dictionary to mean ‘belt, slender waist, apron’ revealing the obvious mistake that has been made here. Whether the true meaning is ‘belt’ would require further examination of the inlet as it may possibly take its name from being narrow at its seaward end.

This spelling is a better reflection of how the name was given in the 1980s.
**OSNBs are not the final word in place-names**

The OS did not set about recording every place-name in an area; it would be interesting to study how names were selected for inclusion. Some names written in the books were omitted from the maps; in some cases they were regarded as superfluous and, in other cases, this may have been because other mapped features would be obscured. There was a bias towards particular types of features. In an analysis of place-names on the south side of Loch Gairloch (available at https://spns.org.uk/presentations-from-spns-spring-conference-2021), it was found that water courses made up 27 per cent of those in the OSNBs but only nine per cent of all place-names recorded in the area. Loch and headland names were far more numerous on OS maps while names for crags, rocks, slopes, areas of flat land and those related to agriculture were under-represented.

Whether other unmapped place-names are still available will depend on historical records or the local population knowing them. Few, if any, of the Wester Ross informants who gave information to Dr Roy Wentworth, for whom we are to thank for collecting place-names from 1984 until his untimely death in 2003, are now alive. Without having done this work, many of these names would have been lost. The richness of what has been lost in many places may be seen from a comparison between names recorded by the OS and those collected more recently by Roy and me in Aultgrishan and Melvaig. In the former case, there are twenty names and, in the latter, around 100.

**Conclusion**

The OSNBs are clear evidence of the value of the work of Ordnance Survey and the sappers who collected the names. While there may be shortcomings in the information, they are a treasure trove of information and offer many opportunities for research in a variety of fields. It is hoped that this article will go some way to encouraging further work drawing on their contents.

**Acknowledgements**

All maps, except figures 1, are reproduced with the permission of the National Library of Scotland. National Records of Scotland gave permission to reproduce extracts from OSNBs.

Thanks to those, especially Richard Oliver, on the ordnancesurvey@group.io forum whose answers to my queries have been incorporated in this article.
Meanwhile, south of the border …

… an online resource containing transcriptions (and original images) of the Name books for Northumberland went ‘live’ in September this year.

The project, ‘Northumberland Name Books - Places and People c 1860’, began in May 2016 and involved some forty volunteers who contributed to the task of transcription. They created digital images of the books, transcribed the indexes in full to make a searchable index (doubling as a gazetteer of Northumberland in the mid-19th century), and transcribed complete name books. The initial plan was to transcribe a sample of at least ten parishes, then as many more as could be achieved. ‘Fortunately the enthusiasm and stamina of the project members have enabled the whole run to be transcribed’. It is hoped that the templates and guidelines drawn up during the course of the project might serve as useful aids should similar enterprises be contemplated for the three other surviving English name-books, covering Durham, Cumberland and Westmorland. https://namebooks.org.uk/.
Did the landlord of The Highlander ever see this 19th century equivalent of a TripAdvisor review?
Changes in drainage of an area south of Maldon, Essex

Peter Wynn

Ovenden\(^1\) stated that in the investigation of changes in drainage networks over time, the generalisations in their representation on one inch Ordnance Survey maps is too great. He also referred to the difficulty of establishing precise dates for revision information on the 1:25,000 series. These opinions were queried, at least as far as the Old Series one-inch maps are concerned, by Hellyer and Oliver who stated that the point needs more thorough investigation before any general conclusion can be reached.\(^2\) This article is intended as a contribution to that investigation.

Maldon lies at the head of the Blackwater Estuary about 10 miles east of Chelmsford (figure 1). To the south of the town there is an area of low-lying land, once agricultural but now subject to expanding urban encroachment. Although there is little early documentation, maps, including those of the Ordnance Survey, indicate changes in drainage patterns, including the naming of water courses, since the Eighteenth century.

![Figure 1 (courtesy www.openstreetmap.org).](image)

**1721 Survey**

Part of the study area, owned by Westminster Abbey, was surveyed in 1721 as shown in figure 2.\(^3\) It is possible to suggest that a stream flows north east from Mundon Road before entering a pond and turning south east towards South House Farm. The evidence for the southern limb is strong, being represented by a double line on the plan. The area adjacent to the sea wall described as “Waste Land” will be discussed further when the 1845 Tithe Survey is described.

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3. Westminster Abbey Muniments, 8134.
In 1759 it was reported that Joseph Pattison Senior took an underlease of Brickhouse Farm and Parsonage Marsh and subdivided the lower marshes in an attempt to more effectively drain them. The attempts were not wholly successful and it was stated that about 81 acres belonging to Brick House (Old Marsh, Great Marsh, Little Marsh, Twenty Acres and Small Gains) remained submerged in wet weather and that effective drainage would require co-operation between affected landowners.\footnote{Westminster Abbey Muniments, 8132, Survey by Thomas Yeoman quoted by J.R. Smith, The Borough of Maldon 1688-1800: A Golden Age, Studley: Brewin Books, p.304. Yeoman was the first president of the Smeatonian Society of Engineers.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{brickhouse_farm_parsonage_marshall_1721.png}
\caption{Brickhouse Farm & Parsonage Marsh Estate Survey (1721) (by permission of Westminster Abbey Muniments Document 8134).}
\end{figure}

\textbf{Chapman & André (1777)}

This map of Essex was produced on a two-inch scale as both an atlas of 25 sheets and as a wall map.\footnote{Peter Walker, Printed Maps of Essex from 1576, Chelmsford, Friends of Historic Essex, 2016, vii-viii and 26-28.} Walker states that the map is legendary for its level of detail and accuracy. Figure 3 shows the major course of the Limebrook as initially
flowing north-eastward from Woodham Mill before being joined by a smaller left bank tributary that had its origins close to Limebrook farm. After crossing the Fambridge Road the stream heads south-eastwards and enters the Blackwater Estuary at Limbourne Creek. A small right tributary enters about halfway along the south-eastwards trending part of the Lime Brook. The probable stream identified to the east of Brick House in figure 2 does not appear on Chapman & André's map.

**Figure 3  Chapman & André (1777)**
By permission of Essex Record Office  Document MAP/CM/37/4.

**Ordnance Survey Preliminary Drawing (1799)**

The Preliminary Drawing for the One-Inch map (figure 4) shows the Lime Brook flowing eastward from Woodham Mill, past Maldon Jenking and entering the Blackwater Estuary at Limbourne Creek. Another un-named stream initially follows the eastwards path of the Lime Brook that had been shown on the 1777 plan but, instead of then flowing to the south-east, continues eastwards, passing to the south of Brick House Farm. Presumably this links, although it is not apparent from the map, to the watercourse that flows eastwards from Mundon Road to the pond. The latter corresponds to the watercourse and pond shown on the 1721 survey (figure 2).

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6 British Library http://www.bl.uk/onlinegallery/onlineex/ordsurvdraw/m/zoomify82297.html
Figure 4  OS Preliminary Drawing (1799)
By permission of British Library Shelfmark: OSD 139 pt. 3; Item number 8.

**Ordnance Survey One-inch Old Series Sheet 1 NE (1805)**
The published version of the one-inch map (*figure 5*) shows a similar general disposition of watercourses to the Preliminary Drawing. However the courses are more irregular. Areas of marshy ground along the watercourses are more extensive than those on the Preliminary Drawing. The published map does not show the pond that was on the Preliminary Drawing.

Figure 5 OS One-Inch Old Series First edition Sheet 1 (1805).
**Greenwood 1825 1:65,000 map**

This map\(^7\) (figure 6) shows the two watercourses broadly as the 1805 Ordnance Survey map and, as with that map, only the southern one bears a name, in this case Limburn Brook. Whilst the line of each is drawn more smoothly than on the Ordnance Survey map, it is made very clear that the northern stream flows to the west of Mundon Road before resuming an eastward path. It can also be seen that the northern stream runs alongside a track to the west of Fambridge Road.

![Image of Greenwood 1825 map](image)

**Figure 6  C. & I. Greenwood 1:65,000 Map of Essex (Surveyed 1824 & Published 1825). Courtesy of Pierre Joppen.**

**Ordnance Survey One-inch Old Series 1844 Re-engraving and later editions**

The 1844 map shows the watercourses in the same location as the 1805 map. However as seen on figure 7 it is now the northern stream that is labelled as the Limebrook with no name given to the southern stream. This time the map makes clear that the stream to the east of Brick House runs adjacent to the west side of Mundon Road. Other differences include an altered alignment shown for the road south of the crossing of the stream close to Silly House.

![Image of OS 1844 re-engraving](image)

**Figure 7 OS One-Inch Old Series re-engraving Sheet 1NE (1844).**

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\(^7\) The map is described in Peter Walker, *Printed Maps of Essex from 1576*, Chelmsford, Friends of Historic Essex, 2016, 37.
The later edition used for the David & Charles reprint \(^8\) shows the railway from Woodham Ferrers to Maldon, opened in 1889,\(^9\) crossing the watercourses which are shown unchanged from those in figure 7. This is confirmation, if any is needed, that the revision was confined to the insertion of railways.

**Tithe Award Map of St. Mary, Maldon 1845**

This map (figure 8), produced at a scale of 1 inch to 4 chains, from a survey by Robert Baker, shows the three ponds that had appeared in the 1721 survey. It also shows the stream flowing from the easternmost of these ponds southwards towards South House Farm. However the northern stream initially flowing eastwards from the direction of Limebrook Farm. The course is almost straight until it reaches Fambridge Road, suggesting deliberate re-engineering. After passing Fambridge Road, the stream no longer follows its eastward course but instead is shown to flow south-eastwards joining the southern stream before discharging into Limbourne Creek. This course is generally similar to that shown on Chapman and André’s 1777 map. The Tithe map shows a pond to the south of Brickhouse Farm which appears to be on the former alignment of Lime Brook and in the same position as one had been shown in the 1721 survey. As Limbourne Creek is approached, it is clear that a number of the fields have “wet boundaries” with links into the system of borrow dykes or delph ditches landward of the seawall. The area shown as waste land in the 1721 survey now has the appearance of being a decoy pond and has several watercourses connected to it.

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On these maps none of the watercourses are named. The overall pattern is best viewed in the less busy One-inch map (figure 9). The general pattern follows that of the Tithe Survey. An exception is that the original course to the south of Brick House Farm continues to be shown, but is now cut off from the main flow at the point where the south-easterly diversion commences.

The detail from the 1:10,560 map (figure 10) shows the arrangement at the point of the diversion. The original easterly route remains south of Brickhouse farm as a ditch as shown on the larger scale extract. This runs adjacent to the eastern side of the Mundon road over part of its course. It can be noted that the depiction of the road south of Silly House has reverted to that shown prior to the 1844 map.

![Figure 9 OS One-inch New Series Sheet 241 (1896) (NLS).](image)

![Figure 10 Detail near Brickhouse Farm from OS 1:10,560 Essex Sheet 54 (Surveyed 1873-4 & Published 1881) (NLS).](image)
The Six-inch map reveals a series of ponds lying close to field boundaries south of the inn on Fambridge Road (see figure 11). Although none of the maps examined previously has placed a watercourse in this location, it is speculated that these ponds may represent a former stream. Such a stream may have formerly been used to define the Liberty and Parliamentary boundaries shown close by.

Ordnance Survey 1:2500 Revision 1895 (Published 1897)
It is necessary to resort to the 1:2500 map (figure 12) to view the next significant changes to the stream that had been cut off to the south-west of Brickhouse Farm. Its direction of flow has been reversed and has now been re-connected to the main channel flowing towards Limbourne Creek. A separate stream now flows eastwards from Mundon Road.

Figure 11 Ponds near Royal Oak from OS 1:10,560 Essex Sheet 54(10) (Surveyed 1873-4 & Published 1881) (NLS).

Figure 12 Background 1:10,560 with changes in detail from OS 1:2500 Essex Sheet 54(10) (Revised 1895 & Published 1897) (NLS).
Ordnance Survey 1:10,560 Revision 1919-1920 (Published 1924)
The previous maps were limited because they did not show all elements of drainage. The 1924 maps show the direction of drainage in some ditches that formed field boundaries, even when they were not wide enough to be mapped as separate entities, and enable a more comprehensive picture of drainage patterns to be established (figure 13).

Figure 13 OS 1:10,560 Sheet Essex New series Sheets N55, N56, N64, N65 (Revised 1919-20 & Published 1924) (NLS).

One-inch New Popular Edition (Fully revised 1930 and published 1945)
Apart from the omission of the more minor ditches, as shown in figure 14, this shows little difference from the larger scale maps of a decade previously.

Figure 14 OS One-Inch New Popular edition Sheet 162 (Fully Revised 1930 & Published 1945) (NLS)
1:25,000 1983 Pathfinder and 1998 Explorer
The expansion of the urban area has resulted in elements of the open drainage system being replaced by piped sewerage. Outside of the built-up area, as part of a scheme to improve agricultural drainage in the late 1960s/early 1970s, the sinuous course of the Lime Brook has been replaced by a linear section following an existing field boundary to the west as shown in figure 15 from the 1998 Explorer map.

![Figure 15 OS 1:25,000 Explorer Sheet 176 (1998) showing new course of Lime Brook following late 1960s/early 1970s drainage scheme.](image)

Discussion
Ovenden suggested that One-inch OS maps, especially those postdating the Old Series, were too generalised for detailed study. Hellyer and Oliver speculated that this statement might be applicable to those after the Old Series mapping, but more through investigation was needed before conclusions could be reached on the Old Series. I believe in view of the current study the reputation of the later mapping can be redeemed and present as my evidence an annotated version of the Environment Agency’s Main River Map (figure 16).

The 1799 Preliminary Drawing and the 1805 Old Series One-inch map show a watercourse A-B-C-D-E-F-G from Woodham Mortimer passing to the north of Maldon Jenking farm and discharging into Limbourne Creek. The 1825 Greenwood map also shows this but with a simplified line, calling it Limburn Brook. Subsequent OS mapping, shows little change to the route of this watercourse and, within the limitations of scale, the one inch maps are a reasonable representation. One aspect that the recent mapping cannot show is

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that this watercourse no longer discharges into Limbourne Creek at Point G. As a result of the late twentieth century drainage improvements, discharge is now at Point H.

The Preliminary Drawing and the 1805 Old Series map shows a northern unnamed watercourse from Limebrook Farm following the line I-J-K-M-N-O-P. It must be assumed that this linked, perhaps by a ford along the road, to position Q from which the watercourse continues to a pond shown on the Preliminary Drawing at position R. The 1825 Greenwood map and the 1844 re-engraved One-inch map make clear that these watercourses are linked by a channel to the west of Mundon Road. It is not possible to say whether this corrects previous mapping or represents the construction of a channel to replace the conjectured ford. Neither of these maps show an outlet from the pond at R. However the 1721 survey by Westminster Abbey, not only showed the section between Q and R, including the pond, but also an outlet from the pond to positions S and T. The section R-S-T reappears on the 1845 Tithe map, the Six-inch sheet surveyed in 1873-1874 and the 1896 One-inch map as well as the New Popular edition. As the current Main River map shows the section R-S-T in apparently the same location, albeit in culvert beneath a former twentieth century landfill between R and S, as in the 1721 survey, it seems unlikely that it ceased to exist for a period during the early nineteenth century. In this respect the later One-inch maps appear more reliable than the Old Series.

The straightening of the watercourse between J and L shown on the 1896 one-inch map is also shown on the Six-inch map (surveyed 1873-1874) and is thus
genuine, not just a simplification. In 1844 and 1896 the OS have transferred the name Limebrook to the northern watercourse.

From the 1845 Tithe map it is apparent that the northern stream had been diverted at Point N to flow southwards to join the southern stream at Point E. It is notable that this map no longer shows a watercourse between N and P. However it does show a pond at a point along that former line, in a position similar to that on the 1721 survey. By the time of the 1873 survey a watercourse had been restored between points N and P and that water flowed between P and Q on the east side of Mundon Road. The 1895 large scale mapping shows a subsequent reversal of flow the drainage direction of the portion of the northern stream between Points N and P had been reversed and that this truncated section was now a tributary to the diverted main watercourse. The New Popular edition of the one inch map also showed this reversal. The 1983 Pathfinder and 1998 Explorer maps accurately reflect the new cut southwards of point M.

Turning now to the 1777 Chapman and André map: this did not show the B-C-D-E-F-G portion of the southern watercourse. Instead from B it is shown following the approximate dashed path between B and K where the northern stream joined it as a tributary. The combined stream then flowed eastward to around Point L before heading south-eastwards along the approximate dashed line to Point X, then following the path X-E-F-G to Limbourne Creek. The Chapman and Andrè map also shows as a tributary the section V-W-X. This does not appear on the 1799 Preliminary Survey, nor the 1805 and 1844 Old Series maps, nor the Greenwood map but is shown on the 1845 Tithe map, the Six-inch map, surveyed 1873-74 and the subsequent revised one-inch sheet of 1896. It remains on the New Popular edition and forms part of the Main River, Woodham Mortimer (alias Hazleigh Hall) Brook. Again it adds confidence to the post-Old Series one-inch maps for historical studies.

From the foregoing it would appear that the 1896 Revision and New Popular Editions of the OS One-inch maps present, within the limitations of scale, a reasonable representation of the watercourses but that the Old Series cannot be relied on to show all the watercourse features.

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That calls for a drink …

Members numbers 1 and 2, Dr Yolande Hodson and Dr Christopher Board, raise their glasses in a belated toast to celebrate the fortieth birthday of CCS (which was actually in 2020, but went unmarked - apart from a ‘birthday edition’ of Sheetlines - due to the pandemic).

[Photo: Chris Dean]
Michael Spencer writes: In the August issue of Sheetlines, Richard Oliver discusses some proposals for changes to the symbolism on the current OS map. I take issue with him on two counts. First, he clearly wants to have the symbol for a lighthouse withdrawn entirely, and secondly, he dismisses the mapping of factory chimneys in half a line.

Perhaps Richard’s abandonment of tall chimneys arises from his living in Exeter, poor chap, where of course there aren’t any, and he can see no value in them. For several years I lived on the moors above Rochdale, and we saw mill chimneys as providing the only vertical relief in a monotonous landscape. On the map, we greeted them as old friends.

But I could be persuaded to live with that change; on the other hand, Richard’s dismissal of the lighthouse symbol is an offence against the mind’s eye of the people. Ask anyone to draw a lighthouse, and you will get something like the OS’s symbol: a slim, tapering pillar with a lantern on top. No other structure exhibits this curious outline, which derives from the necessity of resisting the power of the sea, and converting the horizontal onrush of the waves into a vertically-climbing fountain offering no danger to the building itself. Consider the four great lighthouses around the British coast: the Inchcape Rock, Skerryvore, the Bishop Rock and the Eddystone. Each is a pillar about forty feet across at the base, tapering to about fifteen feet a hundred feet up, and rising as a cylinder for another fifty feet or more, constructed of three-ton granite blocks dovetailed and joggled together to make a monolithic structure weighing four or five thousand tons - nearly as much as the weight of steel in the Forth Bridge - and carrying a lantern on top bright enough to be seen from a ship thirty miles away.

This is a flowering of the marvellous symbiosis between engineering and aesthetics that permeated much of Victorian thought. And Richard proposes the indication of it by an undifferentiated black blob, maybe a scale forty feet across and maybe not. Nay, lad, this willna do. Richard’s proposal runs into a serious difficulty of scale. On the 1:25,000 scale, a forty-foot circle on plan is 1/52 of an inch in diameter: not entirely commanding, one might say, and perhaps not really achievable with modern drawing instruments. But using the current convention - and note, it is only a convention - the position of the mapped entity is taken to be at the centre of the baseline of the symbol; so all the problems of scale simply do not arise. What’s the difficulty with that? Maps do not attempt to offer a final depiction of reality, but only one interpretation of it: to seek to change that interpretation, by lessening the pictures it depends on, is to risk a similar lessening of the picture of one’s self.

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1 Richard Oliver, ‘Is there ideal basic content for a topographic map?’, Sheetlines 121 (August 2021), 2-12.
John L Cruickshank writes: I read with interest Richard Oliver’s proposals for dumbing down and restricting the usefulness of OS maps. His proposals strike me as wrong-headed, if not repugnant. The Society as an organisation should make very clear that it does not support them.

The opening page and a half of his article comprises a blizzard of unrelated factoids that set the scene for his opinions that follow. There is however one important error in this section. He omits the scale of 1:10,000 from his list of the topographic scales. The OS map at this scale is a topographic map, in that height data is represented by contours. It is also the topographic basis on which the 1:25,000 maps (and all smaller scales) rest. While the 1:25,000 map is no longer produced by direct reduction of the 1:10,000, the one is still derived from the other. Of course, the use of 1:10,000 and equivalent scale maps by the general public (with the obvious exception of the nineteenth-century 6-inch sheets) is currently unfashionable. Richard seems silently to be advocating the abandonment of this scale. Were this to happen, the accuracy and generalisation of all the other topographic scale maps would be profoundly degraded, which seems to be Richard’s aim.

Once again, Richard indulges his fantasy of a 1:100,000 cycling map of the country. That neither Bartholomew nor the OS could make such a map commercially viable seems to have passed him by. His comparisons with the maps produced by IGN France are false. The practicalities of mapping France, a much larger country than Britain with a lower population density, and a rather different tradition of map-use, are quite different. Their 1:50,000 series was abandoned for the same reason that the OS 1:25,000 Provisional Edition was very nearly abandoned. The small sheet-sizes and thus the huge numbers of sheets to be maintained and marketed were an impossibility both for the IGN and their customers. The large sheet-sizes of the successive French 1:100,000 series of recent decades have been the key to their success for general use (as well as for cycling). That success has been at the expense of the traditional more diagrammatic Michelin maps, which used to reign supreme, but for decades now have struggled to compete with the more detailed and multi-functional IGN maps.²

Richard’s use of the pejorative word ‘soft’ to describe a huge range of useful information plotted on maps is regrettable. He seems to suggest that a century and a half of improvements in the nature of the information provided by OS maps should be rolled back. What is particularly unfortunate is his suggestion that boundary information is in some way ‘soft’. As he must know well, since he has written important work on the subject, the administrative boundaries of England are some of the oldest and most stable features of the landscape of the country. From before the Norman conquest until the mid-nineteenth century there was no legal mechanism to change them. They provide the essential framework within which any study of the landscape takes place, whether historical or geographical.

² Before Michelin there were of course the Taride maps, but their heyday is now beyond living memory.
Likewise they are essential to understanding how local administration is presently organised and has formerly been organised. And in turn, representative democracy can only work effectively when these boundaries are publicly known.

As Richard blithely comments, from Victorian times (indeed from the Tithe Surveys) onwards public boundaries have been repeatedly changed and gerrymandered under the influence of politicians and administrators, all keen to increase their own personal status and power, and to downgrade that of others. The regrettable effects of this instability are now all too obvious. The public are nowadays widely unaware of where public boundaries are. If they are aware of the positions of any boundaries, these are usually those of local government units that have been superseeded or changed beyond recognition (e.g. townships, ridings, pre-1974 counties, etc). This instability protects local politicians and administrators from scrutiny by the public. It also makes impossible the construction of time-series of data that might reveal their failure to fulfil promises made. That the public now feel disengaged from local government (even more than central government) is hardly to be wondered. Wide knowledge of local administrative boundaries is essential for the democratic process to work properly.

Their suppression or removal from OS maps is more than regrettable, it is a suppression of democracy.

Furthermore, for all historical and geographical studies, and until dated boundary layer overprints become readily available, the modern boundaries shown on current maps have to be used as an approximation to their older positions. The heavy use of the National Library of Scotland website is in part because of boundary information recorded on the early First edition Six-inch maps that is missing from all later issues. Nevertheless, even on those, some of the boundaries shown were novelties established by the Tithe Commissioners.

Richard goes on to discuss the introduction of ‘tourist information’, seeming to condemn this useful step forward as being due to ‘consumerism’ and ‘the motor car’. That these particular bogeymen were chosen tells us more about him than about maps. He then suggests that there is a lack of an ‘evident family relationship’ in the various maps produced of the United Kingdom and those of the Republic of Ireland. He cites no source for this assertion which seems perilously close to colonialism, if not something worse. Perhaps, before taking this argument further, he might consider the multivariate statistical analyses produced (and published in *Sheetlines*) by Alex Kent.

After three and a half pages of such stuff he reaches a section heading ‘Basic content’. He immediately makes two fundamental assumptions. The first, that a key to symbols should appear on the map, seems reasonable, but is hardly a novelty. The second is an insult to anyone who uses OS maps for any purpose other than travel and way-finding. Historians, archaeologists, and a multitude of other map-users are all to be denied the maps they currently work with. Nevertheless he uses these assumptions to justify a reduction in the number of symbols on OS maps by well over half.

The enclosure pattern provides essential landmarks for navigation in both rural and urban areas. Waymarking of footpaths is by no means universal, and the
courses of lightly-used paths are often challenging to find. Having to climb over hedges, fencing and walls should be unnecessary, and is undesirable for a long list of reasons (including protecting one’s private parts from serious injury). Richard’s inadequate maps would not only infuriate walkers, but also (just as importantly) farmers and land-owners. He suggests that Access Land should be shown, but how the physical boundaries of that Access Land should be represented is unstated. His suggestion that rock-drawing should be abandoned is quite simply terrifying, because crags are useful navigational landmarks, as well as potential hazards. He might as well suggest that rocks and reefs should not be shown on Admiralty charts. There are countries where current topographical maps do not include rock-drawing. There are many where it is quite limited. Those maps have to be used in awareness of this, and with very great care. OS rock-drawing may not be as good as that on Swiss topo maps (where it is based on terrestrial photogrammetry), but by and large it is still pretty good, and certainly very useful.

Similar criticisms can be made of all his suggestions for other categories of information. I was a little unclear why he thinks ruined abbeys should only be shown at smaller scales. English Heritage, Cadw and the National Trust (and their Scots counterparts) would undoubtedly have a view on this! Blanking them out at 1:25,000 would create all the problems associated with security deletions. His quaint suggestion of categorising woodlands into those composed of broadleaf trees and those of conifers ignores the present profound changes underway in the nature of UK woodlands, as many of the old monoculture Forestry Commission plantations are harvested and either replanted with mixed crop species or restored as broadleaf woodlands. New woodlands have been, and are, being established, not only for timber production but also to produce biomass fuel, and to mitigate flooding and climate change. Some are explicitly for recreational purposes. On the other hand Phytophthera-infected larch plantations are currently being extensively felled across western Britain in a possibly vain attempt to control that disease. The impact of ash-die-back on broad-leaf woodlands is only now starting to become depressingly obvious, but elms are regrowing well after the ravages of Dutch elm disease. Present-day forestry practice is no longer binary in the way that it was at the beginning of the twentieth century.

Richard needs to recognise that the information currently shown on OS maps has not accumulated by some unfortunate accident. It is all there for a reason, and because particular map-users have wanted it included. It is there because it is useful.

In respect of the 1:50,000 map, the problem is that it shows too little detail, not too much. I appreciate that most users these days do not use a magnifying glass to read the fine detail on a printed map, and electronic devices tend to shift between different scale maps as one enlarges or shrinks the image. Nevertheless that very flexibility of scale reduces the need to limit the amount of detail on the image.

The success of the 1:25,000 maps is very much because they do provide greater detail, and accordingly that scale has become the norm for most walkers,
including myself. Even for motor touring I tend now to use the 1:25,000 series. If the 1:50,000 is to maintain its value and to recover its role, it needs more content, not less. I personally much prefer to use a printed map, but the argument that a complete key to symbols has to fit onto the printed sheet is becoming less and less persuasive as the use of electronic images of maps on small-screen devices becomes the norm.

The question should not be whether the 1:50,000 maps should become simplified to enable their use as 1:100,000 images, but whether the 1:25,000 maps should evolve to become closer (once more) to the 1:10,000 series. The limitations imposed in the past by printing technology and human visual accuity should not necessarily constrain the future use of OS maps. The aim should be to convey more geo-information to the user, not less.

Richard's symbol chart summarises the defects in his arguments well. His symbols for surface cover and vegetation are crude and unworkable. He needs to look at the Soviet symbol sets which are far in advance of his ideas.\(^3\) His symbols for objects are just odd. Why he should suggest that the symbol for the seat of a bishopric should be used for a church with a steeple is entirely incomprehensible. Richard's affection for windmills on old OS maps is known to all, but at present most surviving tower windmills have been left as round towers without sails. His symbols for windmills are thus arguably superfluous, while his representation of all towers as quadrangular is simply wrong.

This is not to say that I regard all the present symbols on OS maps as being perfect. They are not. In most urban areas there are now many highly visible mosques, gurdwaras, temples and synogogues that should be recorded as such on OS maps. Some are former Christian places of worship, but many have been purpose-built to designs unrelated to Christian ecclesiological traditions.\(^4\) Minarets in particular should be shown on OS maps. Appropriate symbols were devised long ago and are used in many other countries (and were used in many of Britain's colonies). They should be added to the OS symbol set. To my mind many of the tourist symbols are too large, such that they have to be placed sideways from the actual position of the object, yet still obscure important detail. And there must be a better symbol at 1:25,000 for a public convenience. Also at that scale, the green symbols for the different categories of rights of way could be improved to retain clarity while not obscuring the fine detail carried on the black plate. And the widely spaced dots of 'other routes with public access' work well in open unenclosed country, but are unhelpful and often misleading in closely enclosed situations, particularly if the landowner has withdrawn permission for use of parts of the route. Nevertheless what is required is evolutionary change, not Richard's bull-in-a-china-shop approach. An iterative cycle of regular re-assessment and revision of symbol sets in the light of wider economic and

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societal change, as was the practice in the USSR, has much to commend it.\textsuperscript{5}

\textbf{Richard Oliver responds:} My article has generated two interesting responses.\textsuperscript{6} Michael Spencer concentrates on two aspects: factory chimneys and lighthouses. Although a ‘chimney or tower’ sign was introduced with the 1:50,000 Second Series (now \textit{Landranger}) in 1974, in practice it is very rarely used, and the same applies to the 1:25,000 Second Series family (now represented by the \textit{Explorers}). Presumably there is a minimum height, which I would guess to be at least of the order of 200 feet or 60 metres, perhaps more. One looks in vain for all those mill chimneys around Rochdale, or Bolton or Bury or Oldham, on successive editions of the One-inch, or on \textit{Landranger} 109 or on \textit{Explorer} 275! Equally one looks in vain for the chimneys of various chemical works with which my father was associated during a 46-year career in Luton, the Humber bank, and Redhill. By the way, Exeter may not have much in the way of mill chimneys (it lost out in textiles to northern England), but a hospital within a quarter of a mile of me has a locally conspicuous chimney, perhaps 60 feet high, and there is a very much higher chimney on the recent refuse incinerator a mile away, which is lighted as a low-flying obstruction.

The engineering skill involved in constructing offshore lighthouses is not doubted, but any argument for their distinctive depiction needs surely to rest on surer foundations. Quite a lot of ‘lighthouses’ are just towers; at Spurn Head, the imposing 120-foot-high building of 1895 has been disused since 1985, replaced by what amounts to a glorified municipal lamppost (Figure 1), perhaps 20 feet high. My proposal considers buildings in terms of physical characteristics: under them, the 1852 lighthouse at Spurn would receive due recognition (Figure 2). Any ‘dot’ or ‘blob’ would have to be of a suitable minimum size: I would suggest possibly about 1 mm (about 0.03 inch) in diameter, which is similar to the ‘disc’ element of the current church-with-spire sign on the current \textit{Landranger}. In my article, I did suggest two possibilities for a lighthouse sign, with and without ‘rays’ (Figure 3). It is also worth noting that non-pictorial signs have been used for air and marine lights on aviation mapping – though I admit that the light vessel sign is not of this type! (Figure 4)

\textbf{Figure 1 (far left)} The ‘lighthouse’ at Spurn in use since 1985.
\textbf{Figure 2 (near left)} The 1852 ‘low light’ at Spurn, in 2010.
\textbf{Figure 3 (below)} Suggested lighthouse signs.


\textsuperscript{6} Though ‘symbol’ is too good a pun to lose, there is a view that ‘sign’ should be used rather than ‘symbol’ for what is discussed here, so I use ‘sign’.
John Cruickshank’s criticisms are wider. A serious-seeming one is ‘dumbing-down’, but that certainly wasn’t my intention, and I think the growth of pictorial signs – a few introduced to the One-inch in the late nineteenth century, then large numbers in the 1970s – could be considered ‘dumbing down’: that is certainly the reaction of some CCS members to the ‘beer mugs’ for pubs, amongst others, on the Explorers in the later 1990s. There is also a difference between dumbing-down and simplicity of approach: I doubt that anyone would argue that, say, the string quartets of Beethoven and Bartok, each only employing four instrumentalists, are ‘dumbed down’ compared with, say, the film music of John Williams, employing a large orchestra! It seems to me that depiction based on geometrical signs is more sophisticated than that using more evidently ‘pictorial’ ones, and thus the opposite of ‘dumbing down’. There is also the question of classification: the fewer classes, the fewer signs needed. What in the nineteenth century may have seemed distinct enough – churches, windmills, lighthouses – may now tend to ambiguity. The greater the proportion of margin needed to ‘explain’ the map relative to the map area, the more one has a feeling of the tail wagging the dog.

Part of the problem is a persisting ‘one size fits all’ approach: there may well be a market for a version of the 1:25,000 or 1:50,000 series with tourist overprint, and another with detailed administrative boundaries, a third with archaeological find spots, and so on. The perfect answer might be a print-on-demand service with an individual customer profile, so that, having logged on to one’s account, one could have a map with, say, contours in green in which the only tourist information was car parks and gardens in pillar-box red, if that agreed with one’s needs, aesthetic preferences, or particular colour-vision preference. Unfortunately we haven’t got that yet; nor do we have the smaller scales generated direct from the large-scale MasterMap data.

John suggests that I omitted 1:10,000, and by implication Six-inch, mapping and contends that as it is contoured it is ‘topographic’. The great historian of Irish mapping, John Andrews, once observed that ‘Every map-classification runs into trouble sooner or later’, and though written in the context of pre-OS farm and

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**Figure 4** Marine and air light symbols used on the quarter-inch Civil Air Edition (amongst others): mid 1930s.
estate mapping in Ireland, it is worth applying to the six-inch map. As first published in 1833-46 none of the 1875 sheets of the Townland survey of Ireland were contoured; these were added to some sheets relatively soon after publication, to others after some decades when revised, and to yet others only in the early twentieth century when ‘the townland’ was largely replaced by a 1:2500 resurvey. At first contours were a standard component of the six-inch of Great Britain, of which publication began in 1846, but opposition to the method caused it to be curtailed, and large areas of upland, and huge areas of Scotland, were published at six-inch without contours, and indeed only began to be covered by contoured six-inch and later 1:10,000 mapping when resurvey got under way in 1956. Further complications are several thousand six-inch photozincographed quarter-sheets produced in a ‘First Edition Without Contours’ in the 1880s, which were subsequently republished with contours, but otherwise unaltered. If a ‘topographical’ six-inch or 1:10,000 is to be defined by contours, then we have a very complicated situation! It may be that the modern 1:10,000 (also offered at 1:5000) as both Landplan and VectorMap Local is contoured throughout, but its ‘market penetration’ is constrained by a price structure that aims it very definitely at the ‘professional’ rather than the ‘consumer’ or mass market, and what I was concerned about in my article was mass-market general-user mapping. I suspect that in an age of photo-copying, scanning and zooming on electronic devices a lot of ‘non-professional’ ‘six-inch’ or ‘1:10,000’ usage may be of enlargements from what is offered at 1:25,000, but originated at the larger scales.

Whilst John associates my espousal of an official 1:100,000 scale with cycle-touring, my experience with this scale in Britain has been much more with motoring, and my continued interest in the subject very much has ‘quiet motoring’ in mind as well as cycling. In the south-west of England we have cover by 1:100,000 maps published by CroydeCycle, which I drew attention to in Sheetlines 104, which are sold as for ‘touring’: by implication motoring as well as cycling.

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8 I undertook tours by cycle in Britain at least annually in 1983 and 1985-98, for which good 1:100,000 or 1:125,000 mapping would have been useful, but on most of which 1:50,000s were lugged about; in 1984 I covered over 700 miles by cycle in the Republic of Ireland using half-inch maps. The only subsequent ‘cycle tours’ that I have undertaken have been on a Brompton folder: some 70 miles in Lincolnshire in 2000, using doctored Philip Navigator mapping, and some 240 miles from Hastings to Deal (not the direct route!) in 2011, using reductions from 1:50,000 to 1:100,000 on A5 cards. Since 2001 my wife and I have undertaken at least two car trips every year for which good 1:100,000 or 1:125,000 mapping would have been useful, to complement the 1:25,000 we use for walking; in practice we have used OS 1:25,000 and 1:50,000, and Philip Navigator and AA Close-up 1:100,000 atlas mapping. For a recent trip from Exeter to Weardale our sole ‘cartographic equipment’ was the AA close-up atlas (2006), and OS Explorers OL 24, OL 31 and 307, OL 24 being a reserve that proved unneeded. I may not have a driving licence, but I have navigated cars over many more miles than I have cycled!
cycling. I have used both the Philip Navigator (various editions) and, particularly, the AA Close-up atlas. The AA offering was reviewed in Sheetlines 78; relative compactness is offset by poor cartography, which seems more appropriate to 1:200,000 or smaller scales. Anyone who has used the AA atlas and doesn’t know the meaning of ‘figure-ground’ after navigating across country never will grasp the term! I have never advocated a good 1:100,000 or 1:125,000 as simply a ‘cycling map’: look at the photos in Sheetlines 109! My ‘ideal’ provided for four main scales: 1:25,000, 1:50,000, 1:100,000 and 1:250,000. All but 1:100,000 are currently in production by OS. I have analysed the apparent failures of the Bartholomew 1:100,000 and OS half-inch Second Series elsewhere. As it happens, there is now a national series for cyclists at 1:110,000, produced on behalf of Sustrans; I reviewed it with the Croyde Cycle mapping in Sheetlines 104. Frankly, I think it’s dreadful – but as the series was taken through to national cover, at any rate of England and Wales, one must assume that it has met with a success that has eluded Barts, OS and others!

Some of John’s comments seem to me a little odd. The boundaries I suggested are those shown at present, with the exception of constituency boundaries, which seem the most changeable of all. For most of us current electoral wards are what matter, and mass-market OS mapping does not show these. (As far as I can see, only a minority of street maps include this information – perhaps its changeableness tends to militate against inclusion?) OS must show boundaries as they are, but perhaps John, and others, are not aware that over twenty years ago we in Exeter constructed a set of parish, township and other lowest-level historic boundaries applicable before the ‘rationalisations’ of the mid nineteenth century onwards, which were designed to address exactly the problem he identifies, without need for approximations enforced by later changes. Encomia found with a search engine suggest this boundary dataset has given rather greater satisfaction than do my ‘ideal map’ schemes!

John writes that I suggest ‘that there is a lack of an “evident family relationship” in the various maps produced of the United Kingdom and those of the Republic of Ireland. He cites no source for this assertion which seems perilously close to colonialism, if not something worse.’ Dear me! What I actually

wrote was ‘In both Britain and both parts of Ireland the various topographic scales have been initiated at different times and have developed independently, so that there tends to be a lack of the evident ‘family relationship’ and sense of conscious relationship between scales that is characteristic of, for example, the French and Swiss equivalents.’ I fail to see anything ‘colonial’ about this, and anyone who knows me will hardly consider me an imperialist, or even passionate unionist! Rather, what I meant was a lack of ‘national coherence’, so that one has a sense of about eight or ten different styles instead of three. The use of Univers on the *Landranger* and Gill Sans on the *Explorer* is symptomatic of this: Arial on both would be a step in the right direction.

It is a little difficult to see how historians and archaeologists are denied information by my proposals. I pointed out that a lot of ‘archaeology’ of periods right up to the recent past simply does not appear, and constraints of space readily explain why this is so. The lists of recent finds and investigations in county archaeological journals will abundantly prove the point. Equally, eight-figure grid references enable find-spots to be located readily, and often there is no trace on the ground – which is usually ‘private’, anyway. The suggestion is that ‘heritage’ and ‘archaeology’ are ‘incidents’, exceptions: a century of air survey, and now LIDAR, have shown landscapes to be palimpsests, with the archaeology an integral layer, like soil, rather than something exceptional. At present, the ‘dead hand of tradition’ leads both to certain categories of information only being shown, and aesthetic absurdities, notably the use of Lutheran for classical or later buildings – see, for example, the ‘Palmerston folly’ forts around Portsmouth – and sans-serif (a successor to ‘Egyptian’) for the identification of Roman remains. Compromises of the 1820s and 1830s leave their mark nearly two centuries on. John seems to think that I would exclude ‘landmark ruins’ (my phrase) at larger scales, but in fact my proposal is all the other way, which would probably lead to an increase in such remains being shown at the 1:250,000 scale.

Any reader wanting to see a really bizarre treatment of ‘antiquities’ is referred to the half-inch ‘Provisional Edition’ sheet 51 of 1956, where only the Battle of Hastings appears: treatment of the important Roman site at Richborough is illustrated in figure 5 (left).

Rock drawing is not quite as straightforward as John suggests. In my view cliffs or dangerously steep slopes are sufficiently indicated by close or fused contours. I investigated the OS’s handling of pictorial relief generally in the later 1980s when researching for the introductory essays of the later volumes of the Harry Margary one-inch Old Series volumes, and concluded that it was a very doubtful use of both field and cartographic resources. Subsequent experience has reinforced that view, even if pictorial treatment did produce maps of great beauty, notably *Killarney* and other one-inches in ‘relief’ style. Rock drawing was investigated by
the OS on several occasions between 1947 and 1965, when developing the Regular Editions of the 1:25,000 and six-inch, and this elicited that climbing clubs, who might be expected to have a particular interest, in practice did not use mapping for clambering, though they presumably did for general location. I’m a little surprised that John does not mention scree, which is more of a ‘rough country’ hazard than are rock faces.

The suggestion that woods be categorised as conifers and broadleaf is ‘quaint’ is at odds with long-standing OS practice, going back at least to the start of the survey of Ireland in 1825 (Figure 6), and continues to be the practice, as reference to any Explorer or Landranger legend will attest. This distinction has always been made at 1:25,000 and larger scales, as it was on the half-inch mapping of the United Kingdom from 1910 for as long as it lasted – in the Republic of Ireland into the 1990s – and also on the Ordnance Survey of Northern Ireland’s half-inch Second Series of 1968-70. On the one-inch scale woodland was differentiated up to the earlier one-inch Fifth Edition, but not from 1936 on that and the derivative New Popular Edition, or on the limited redrawn half-inch material produced in the later 1930s, where plain green tint was used. Perhaps that was regarded as a simplification too far, as differentiation by sign reappeared in 1947-8 on experimental redrawn material for the half-inch, quarter-inch and one-inch Seventh Edition, and was standard on the Seventh Series. At first the 1:50,000 showed woods similar to the later Fifth Edition, undifferentiated, but differentiation reappeared on the Second Series from 1980 onwards. This apparently followed criticisms made at the time of the Ordnance Survey Review Committee (‘Serpell Committee’) of 1978-9, which also led to the more detailed depiction of foreshore cover at this scale. It may be concluded that there is a public demand for the conifer-non-conifer/broadleaf distinction, at any rate at 1:50,000 and 1:25,000. John suggests that this conifer-broadleaf distinction is outdated as forestry is no longer ‘binary’ – but was it ever so? That isn’t the impression I have received from OS maps, where there has always been provision for a ‘mixed’ classification. Abandoning the conifer-broadleaf distinction hardly seems justified by changes in practice in individual woodlands; recording

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14 See the following files in The National Archives: OS 1/355 [minutes 58-71, 87, 90], OS 1/567 [minute 33], OS 1/1014 [generally], OS 1/1119 [papers 81A, 83A, 89A, 91A]. Rock-drawing will be studied in more detail in Roger Hellyer & Richard Oliver, Ordnance Survey Intermediate-Scale Maps, (London: Charles Close Society, publication hoped for in 2022).
such things is what map revision is all about, after all. The OS’s classification of woodland is based on easily recognised physical characteristics; on the 1:25,000 the classification includes coppice, which might be thought a differentiation too far, even though coppicing is enjoying a revival. An alternative treatment is based on management, and this seems to have been the usual practice on estate mapping in the eighteenth and nineteenth centuries: it appears in Robert Dawson’s recommended signs for tithe mapping of 1836 (Figure 7). This classification provided for broadleaf as well as conifer plantations, whereas the OS’s of 1825 mentions specifically ‘fir’: coniferous ‘ancient’ woodland was evidently not expected! It seems likely that the underlying principle was and is to aim at objectivity, on the basis that tree types are more easily identified than planting history.

![Figure 7 Woodland symbols recommended by Lieutenant Robert Kearsley Dawson for use on tithe maps, 1836.](image)

The styles of land-cover that I illustrated are indicative rather than to be taken too literally, and, for woods particularly, they do include quite a few alternatives. I’m not sure that the Soviet signs are to be emulated. It seems to me that land-
cover should be a combination of broad vegetation types and ‘going’, though, given the variable waterlogging of much moorland, that is admittedly not the easiest thing.

John has a good point about the desirability of recognising minarets as a distinct feature, but this might run into the ‘objectivity’ problem: churches, mosques, temples … how many signs would be needed? Would some faiths, denominations and sects be lumped together as, say, ‘temples’? Is it not easier to sidestep the problem by simply identifying buildings with ‘steeples’ or similar? The question has certainly been considered by OS in the past: around 1994-5 the century-old church-or-chapel-with-tower-or-spire was replaced by ‘place of worship’, and ‘tower’, ‘with spire minaret or dome’, and ‘without such additions’.

A few years later another investigation led to places of worship on an experimental 1:25,000 map being represented by ‘Building with spire, minaret or dome’, ‘Building with tower’, and ‘Large religious building’ (Figure 8): how large is ‘large’? Howls of protest, including an article by Sir Simon Jenkins in The Times, led to OS denying that it was proposing mass ecclesiastical demolitions, and to date there has been no change of practice. One problem with concentrating on the steeples is the large number of architecturally notable other churches and chapels, by no means all Anglican. John thinks my suggestion of ‘the symbol for the seat of a bishopric should be used for a church with a steeple’ ‘entirely incomprehensible’. It certainly would be if the St John’s Cross or cross passé were a recognised sign for such, but in practice it isn’t. Both Christopher & John Greenwood and Andrew Bryant used it on their one-inch maps of 1817-35 (Figure 9), and it has been used elsewhere more recently; for example, Bartholomew Road Atlas Britain (1993) uses it for ‘religious building’, which includes abbeys and some architecturally notable larger churches.15 The sign might be used more effectively than a plain cross in some situations, for example at Reculver in Kent on half-inch sheet 51 of 1956 (Figure 10). All in all, this is perhaps a matter for further consideration in Sheetlines.

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15 And some eccentricities: what is it about Tortington Priory in Sussex that justifies inclusion, but not the Roman Catholic cathedral just to the north at Arundel – and, in the East Riding of Yorkshire, why the ruined church of 1810 at Nunkeeling but not Bridlington priory? Strange the byways of commercial cartography.
The depiction of windmills on Ordnance Survey maps has been the subject of a monograph by Bill Bignell, of which I was proud to be successively both joint doctoral supervisor and publisher’s editor. That said, one of the windmill signs that I suggest was used occasionally by the OS in the nineteenth century (Figure 11), and a ‘vertical’ version will also be found on the 1:20,000 and 1:40,000 mapping of the Western Front of 1915-18, GSGS 2742 and 2743.

As I said earlier, there is material here for quite a number of articles in Sheetlines exploring points of detail, and endeavouring to explain Ordnance Survey practice as it has been and is – quite apart from how it might be.

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LiDAR re-lights the issue of mapping lime kilns in Scotland

Paul Bishop

There have been several Sheetlines papers on the mapping of lime kilns in Scotland and I now return to this matter (I hope with the forbearance of readers not so interested in lime kilns). This note is prompted by the recent addition to the National Library of Scotland Maps website of the capability to view a map series side-by-side with 0.5-1.0 m resolution LiDAR data. The LiDAR data have been processed to represent a digital terrain model (DTM), which is the ground surface with features such as trees and buildings removed. The removal of trees enables the visualisation of features on ground now covered by forestry, including lime kilns. Moreover, even in the absence of tree cover, the LiDAR data provide much higher resolution imagery than the usual freely available imagery, such as Google Earth Pro or Bing Maps (Aerial). In good conditions and with good imagery appropriately processed, these latter sometimes do enable subtle features such as lime clamp kilns to be identified but this capability can be hit-and-miss and in any event these aerial imagery packages provide nowhere near the precision and confidence in identifications that come with using the LiDAR data. Current LiDAR coverage of Great Britain is shown in figure 1 and further background on LiDAR is given on the NLS Maps website at https://maps.nls.uk/communities/lidar

I present here some examples to highlight the increased capabilities provided by the availability of the LiDAR data on the NLS website. Not the least of these capabilities is being able to use the dual cursor capabilities built into the NLS side-by-side viewer to make a side-by-side comparison of a location with its mapped representation on 6-inch and 25-inch second editions mapping. It is also then relatively simple to jump to the corresponding first edition mapping.

In a recent paper on the exclusive use of clamp kilns to burn lime in the west of Scotland, it was argued that the OS had mapped less than half the

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1 Sheetlines 98, 19-31; 101, 42-47; 106, 32-33; 107, 20-22
total number of clamp kilns identified by my fieldwork. The LiDAR data now show that I missed many in my fieldwork, especially in areas that I did not map in the field, and so the shortfall between OS mapping and the field data is even greater. I report this, not to draw attention to ‘failings’ on the part of the OS but to indicate an appropriate degree of confidence when using OS mapping for historical research. Some of the kilns that I missed in my local area are shown in figures 2 and 3.

Figure 2 LiDAR DTM of the area between Baldernock and Lennoxtown (Campsie Parish; modern East Dunbartonshire) with many clamp kilns (the side-by-side U-shaped depressions). The black arrowed examples are mapped on the OS first and second editions 25-inch mapping. The examples in a single red circle are mapped on the 25-inch first edition but not on the 25-inch second edition. The examples double-circled in red are mapped on neither the first nor second editions 25-inch mapping. The three unmapped clamp kilns at far right are under woodland trees and not visible on aerial imagery. The unmapped kilns at left comprise at least three (and probably more) clamp kilns. Note the circular pits, which are either mine shafts or ventilation shafts. The clarity of the clamp kilns is striking and the image can be viewed online even more clearly and enlarged at https://tinyurl.com/22zvyaj6. (The LiDAR data here and in other images in this paper are Crown copyright Scottish Government, SEPA, Fugro, and Scottish Water (2012-2020)).

A second example from the reference in fn 2 is also instructive. The structure at lower right in figure 3, which appears to be a run of six clamp kilns adjacent to a mine shaft, was unknown to me when writing that paper and there is no indication of it on either the first or second editions 25-inch mapping, except that both editions include at lower right the ‘Old Limestone Pit’ (which the LiDAR data now show is adjacent to the kilns). We noted in the paper referenced in fn 2 that the lime clamp kilns were most commonly located adjacent to a mine shaft and so the mapping of the ‘Old Limestone Pit’ at lower right in figure 3 should

perhaps have alerted me to the possibility of the limekilns that are apparent in the
LiDAR imagery.

Figure 3 Side-by-side view of (left) second edition 25-inch and (right) LiDAR DTM
from the area adjacent to Glorat Lime Works, on the northern outskirts of Milton of
Campsie (modern East Dunbartonshire). Note how the curving line of the former
tramway into the mine entrance (‘Level’) at lower left in the map extract is clear in
the LiDAR image. This area is under woodland and the tramway line is of course
completely obscured by trees in aerial images, as is the crater-like shaft entrance at
centre left in the LiDAR image. See https://tinyurl.com/r4t27cwb to view the LiDAR
with better resolution and in greater detail.

Even more striking is the number of clamp kilns revealed by the LiDAR at the
Balgrochan lime burning site, ~2.5 km northwest of the Glorat Lime Works in
figure 3. The LiDAR data indicate that there are something like 33 clamp kilns at
this site (figure 4). None of these is mapped on the 25-inch first or second
ditions, the only hint from OS mapping of their possible presence being the
second edition’s label of ‘Old Quarries’ for about 55,000 m$^2$ of disturbed ground.
And Google Earth Pro is only slightly more helpful in that the bulk of the >30
clamp kilns on the site are not visible on the clearest imagery currently available
via Google Earth Pro (from May 2009) (figure 5).

Figure 4 LiDAR imagery of the
Balgrochan lime works with quarries and
disturbed ground broadly from upper left
to lower right, and U-shaped clamp kilns
skirting the southwesterly edges of that
disturbed ground. The group of what
appears to be ~11 small U-shaped kilns at
lower right is particularly striking. See
https://tinyurl.com/2ab2ku3e to view the
LiDAR with better resolution and in
greater detail.
Finally, we consider the Whit(e)field Quarry and kilns, where the OS labelled open-ended structures as ‘Limekilns’. There are in fact two quarry and clamp kiln sites at Whit(e)field, one to the west of the main road northeast from West Linton and one to the east of that road.\(^3\) Doug Mitchell and I have argued that these open-ended structures represent a different form of clamp kiln, suggesting that these kilns were open at each end, rather than at one end as in the usual U-shaped clamp kiln.\(^4\) Thus, the kiln consists of a pair of parallel lines of raised ground (the sides of the kiln), and banks of kilns consist of a series parallel lines of raised ground. It seems that these linear clamp kilns were used earlier and then superseded by two draw kilns.\(^5\) The representation of the clamp kilns at the West Whit(e)field site on OS 25-inch mapping and Google Earth Pro and by LiDAR data is shown in *figure 6*. The clearest image in Google Earth Pro reveals most of the linear clamp kilns (*figure 6*), and comparison of the OS mapping with the representations in Google Earth Pro and by LiDAR shows that the OS did not represent all of the linear kilns at this West Whit(e)field site.

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\(^3\) These two sites, either side of the road from West Linton, are explored individually below with OS 25-inch mapping and can be viewed together, with Bing aerial imagery, at https://tinyurl.com/8xu8p8jy.


\(^5\) Ibid.
Figure 6 OS 25-inch mapping (left), Google Earth Pro from December 2007 (middle) and LiDAR (right) of the West Whit(e)field Quarry and limekilns, on the northwestern side of the road from West Linton, 2.4 km northeast of West Linton, North Lanarkshire. To view the LiDAR in more detail and to compare with the second edition 25-inch mapping, go to https://tinyurl.com/3bewytak.

Figure 7 OS 25-inch mapping (left), Google Earth Pro from December 2007 (middle) and LiDAR (right) of the East Whit(e)field Quarry and limekilns on the eastern side of the road from West Linton, North Lanarkshire. To view the LiDAR in more detail and to compare with the second edition 25-inch mapping, go to https://tinyurl.com/7wajad6f.
OS 25-inch mapping does not represent any of the linear kilns at East Whit(e)field on the eastern side of the road from West Linton (figure 7, across the road from the area in figure 6). The Google Earth Pro image reveals several of the linear kilns but vegetation obscures many of them and the LiDAR image highlights the wealth of linear kiln remains. The sheer number of linear kilns at the site would not have been known without access to the LiDAR imagery. Such linear kilns in old quarries at Bents, about 2 km southeast of the Whitfield East site, have also been identified on Google Earth Pro from December 2007 and LiDAR.6 These linear kilns have so far not been found anywhere other than these three sites near West Linton and so it seems to have been a notably local practice.

As already noted, the purpose of this short piece is not to criticise the OS for omissions in its mapping. Rather the aim is to highlight the wealth of data that become available when the mapping is used in conjunction with Google Earth and LiDAR. The latter two are silent of course on what a particular feature is or represents. Thus, if OS surveyors chose to represent a feature or to label a broad land-use associated with a feature, then the OS mapping is indispensable for understanding that former land-use. It simply needs to be remembered that OS surveyors might not have recorded all the detail or all the examples of that former land-use.

Acknowledgments

Richard Pearson is sincerely thanked for voluntarily undertaking the mammoth task of processing the Scottish Government LiDAR data for the National Library of Scotland. I am also grateful for discussions with Chris Fleet and Ian Roy, which improved the material presented here.
Why the **County Series**?

Rob Wheeler

The six-inch survey of Northern England and Scotland was authorised on 1st October 1840.¹ There seems to be nothing in the discussions that led to this about its projection(s) or sheet lines. Three options were open to the Survey:

1. Each county to have its own Cassini projection, based on an origin within the county, and (as a consequence) a system of sheet lines unrelated to that of any other county.

2. A smaller number of projections to be used, each serving a region (or perhaps one for the whole country) with a system of sheet lines running unbroken across the region. A particular form of this could involve

2a. The counties of northern England to be on the Cassini projection on the Delamere origin.

3/3a. As 2/2a, with a sheet lines grid running across each region but a separate numbering system for each county.

¹ had been in use in Ireland,² but the arguments that might have led to its adoption there were not necessarily applicable to Great Britain. ² was adopted in Germany, where the 1:25,000 series in Bavaria (for example) used the same projection as the earlier smaller-scale maps. Indeed the projection used for Prussia prior to 1871 was in due course extended to the whole Reich. ³ was increasingly used for the County Series in Great Britain from the 1870s.

The first of the English Six-inch sheets to be signed off was Lancashire 23, in 1842.³ Since its sheet lines are based on the Lancashire meridian, that tells us that by 1842, a decision had been made to go for option 1. Why?

**Why not?**

It is logical to start by explaining the problems with 1: 

*Extra work.* In contrast to the position in Ireland, there was already a higher-order triangulation, with coordinates calculated (for northern England) on the Delamere meridian. Using a county meridian necessitated taking a set of astronomical observations to determine that meridian, and then converting the higher-level trigs to these local coordinates. Assuming the One-inch was to be continued northwards (which was clearly Colby’s intention) it would be necessary to convert the coordinates of the corners of the Six-inch sheets to the Delamere projection as a preliminary to transferring the reductions of the Six-inch to the new One-inch. Furthermore, unless Lancashire and Yorkshire were to be published as incomplete counties, it would be necessary to resurvey the southern parts that had already been done at the two-inch scale. Doubtless the new survey would be far superior to the old but, given the pressure from Scotland, it seems a curious decision to delay their survey so that southern Lancashire might be re-done.

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¹ R Oliver, *The Ordnance Survey in the Nineteenth Century*, 2014,149.
² See *Sheetlines* 30, 16-17 for the county origins.
³ Survey was particularly easy, in that there was no land on the sheet.
Inconvenience at county boundaries. It seems to happen all too often that the place in which one is interested lies at the junction of four sheets. The solution in such cases was to buy all four sheets and have the map agent mount them together; it added to the cost but produced a perfect solution. In contrast, if the place lies close to a county boundary that solution was only available if the map agent trimmed one sheet along the boundary, a fiddly job that was almost never done. This remained a problem (albeit eased by the move to combined meridians) until the end of the County Series.

Interdigitation of Counties. Certain townships, like Donisthorpe (figure 1) were a complete patchwork of parts of different counties, in this case Leicestershire and Derbyshire. The northern counties of England seem to have been reasonably free of such problems, but that was not the case in Scotland. And was there no aspiration to extend the six-inch survey in due time to the rest of England?

Detached Parts of Counties. Even where detached parts of counties had saner boundaries than in Donisthorpe, there were still problems. Leaving an empty hole in one map, to be filled with a detached part on a different map drawn to a different projection seems an unsatisfactory solution. Perhaps the intention was to ‘tidy up’ the counties for survey purposes, transferring enclaves wholly surrounded by another county to the surrounding county; but unless the surveyors moved smoothly across from one county to the other the enclaves might remain unsurveyed for some years after their parent county had been completed. This was liable to lead to protests from those enclaves, backed up by representatives of the counties (notably their MPs) that the Survey was
engaged in an unauthorised diminution of ‘their’ county. Northern England was about to be rationalised by the Counties (Detached parts) Act of 1844 but Scotland would retain its oddities until 1889.

Scale distortion

Given the strength of the case against county meridians, it is worth trying to find the reasons they might have been adopted. I have outlined some below, along with the counter-arguments that seem to render so many of them of little weight.

The argument most usually cited is scale distortion. The Cassini projection exaggerates north-south distances by a factor which increases in proportion to the square of the displacement in longitude from the prime meridian. The factor is actually the secant of the angle on the great circle perpendicular to the meridian. It reaches 1 per cent some 500 miles away from that meridian. Thus at 200 miles it is about 0.15 per cent; and the whole of Great Britain lies within 200 miles of the meridian at 3°W. This would be the maximum distortion on a Cassini projection on this meridian. Northern England is about 165 miles across, so one could choose a meridian that gave a maximum distortion of 0.025 per cent: 1 part in 4000.

This distortion is independent of the scale chosen for the map, and it is worth noting that it was thought perfectly acceptable in 1840 to have the one-inch map of northern England on a single Cassini projection and (later in the century) to have the one-inch of England and Wales on a single Cassini projection. Because the one-inch was the scale likely to be used for military purposes, a map from which simple soldiers might need to take measurements in a hurry, without time to worry about scale corrections, one might regard scale distortion on this scale as more critical. However, it is doubtful whether any military use of maps at these dates required measurements more accurate than 0.5 per cent. Determination of range by artillery seems the most demanding application; but the uncertainty of corrections for wind and for the particular batch of powder introduce a greater uncertainty. Fortress artillery might be an exception; but was mostly concerned with moving targets (ships) and obtained distances from range-finders, not from maps.

This brings us back to the Six-inch map. There were plenty of users capable of measuring the side of a field who might have had difficulty understanding scale distortion resulting from the Cassini projection. For example, they might be subdividing a field and might find it convenient to take measurements from the map as well as directly on the ground. How accurate do we suppose their measurements might be? At the western extremity of Scotland (taking the hypothetical case of a single projection for Great Britain) the terrain is so rough that I would question whether one can chain a distance to an accuracy of even 1 per cent. East Anglia offers easier terrain, but here the start and end-points would normally be a hedge. Can one really determine the ‘root of hedge’ to an accuracy much greater than a foot? So, potentially one is looking at an error in chaining comparable to the scale distortion.
But the greatest difficulty faced by anyone planning to compare a distance on the ground with a distance on the map is paper shrinkage. Shrinkage in the east-west direction is surprisingly variable: measuring three flat sheets of the engraved one-inch chosen more or less at random (albeit, all printings of the 1890s) I found shrinkage from 1.5 per cent to -0.3 per cent. This was done by measuring distance between neatlines with a metal rule (and checking the result against the scale bar). In all three cases, the north-south shrinkage was an order of magnitude less - a consequence of the fibre structure of the paper. Thus the error a surveyor will make if he measures an east-west distance using a graduated rule is of the order of 1 per cent; likewise if he measures a north-south distance using the scale bar on the map. The only reliable way to measure a distance off an engraved map is to use the dimensions between neatlines to calculate the shrinkage separately for the two directions, and to apply each factored by the sine or cosine of the bearing of the line one is measuring. Any surveyor who is sufficiently knowledgeable and careful to take that much trouble is perfectly capable of including the extra north-south factor for the Cassini projection.

In short, even if the whole of Great Britain were mapped on a Cassini projection, the scale error resulting from the projection would be less than that from other sources.

In the calculation of areas, it would be necessary to apply an additional factor beyond a certain distance from the prime meridian, and this factor would vary with longitude. However, for the maps envisaged in 1840, there would be very little calculation of areas. If private surveyors tried to use the six-inch maps to calculate areas of fields, they would be unable to achieve any great accuracy because of the small scale of the maps and because of paper shrinkage. If they could cope with these, they could certainly cope also with scale distortion.

**Meridian error**

When counties were moved to common meridians from the late 19th century, there was a tendency to group counties in north-south strips. The most extreme case is the use of the Dunnose meridian for a group of counties stretching from the south coast to the Midlands (see figure 2). This suggests that at this date it really was concern about scale distortion that was driving the policy. In contrast, for the early surveys each county generally employed its own meridian, even if it lay within the range of longitudes of a county to north or south that had already been surveyed. (I exclude here a couple of Scottish ‘joint counties’ like Perth and Clackmannanshire, where the smallness of one of the counties seems to have been the driving factor.) This seems to suggest a concern that the origin used ought not to be too far in any direction from the area where it was being used. Such a concern cannot have been driven by scale distortion.

One possible explanation for this might have been that small errors in determining the direction of north at the origin would lead to misplacement of the grid lines, the sheetlines themselves being the only public manifestation of

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4 This is still not perfect, as paper shrinkage is not uniform across the map, but non-uniformity is smaller by an order of magnitude.
this grid. Such an error might cause an object which ought really to have been on one sheet to be on an adjoining one; it is difficult to see how this could be rectified without completely redrawing all the sheets. Might that have been the concern?

Figure 2 The tidied-up meridians (from Winterbotham, The National Plans, 1934).

Any consideration of this needs to start with the likely error in the astronomical observations to determine the direction of true north at the chosen origin. David L. Walker has kindly reviewed the accounts of these observations and agreed that an error of 0.05 mRad or 10 secs of arc is a reasonable order of magnitude to assume. At a distance of 30 miles from the origin, such an error will cause the sheet corners to be displaced by about 8 ft on the ground or 0.01 inch on the map. I note that Brian Adams in his articles tended to regard one-
hundredth of an inch as the smallest change on the map that was measurable. Such a change would only be noticeable in extreme instances, such as when the dot at the centre of a trig might be coincident with the neatline of a map or might be to one side or the other.

If an origin is chosen that is reasonably central to a county, then we can conclude that the likelihood of an error in measuring the meridian causing an observable error in the maps is small. In contrast, using the same origin for a whole group of counties might be thought to involve an unacceptable risk.

That prompts the question of why, if this explanation is correct, the Survey was willing subsequently to move groups of counties to a common meridian. I suggest the answer may lie in the rather casual attitude within the Survey to the exact positions of the county origins, as indicated by what Brian Adams called “the Ordnance Survey’s most inaccurate map(?)”.5 If one finds that the true longitude of a county origin is actually 10 seconds of arc east of where it has always been supposed to be, the easiest way out is to declare the origin to be 10 seconds of longitude east of where it had previously been stated to be. That will be about 60 feet on the ground, which may be slightly inconvenient if the origin has a name like ‘Danbury Church Tower’, but is quite all right if it has a vaguer name like ‘Delamere’. Indeed, such a shift has actually been applied to Greenwich, which is a good deal more famous than any of the county origins.6 Assuming that all the coordinates used in calculations are referred to a False Origin to avoid negative values, one can move the origin without moving the False Origin. The error is rectified, but nothing needs to be changed.

**Politics**

There is another argument for a County series which is not technical at all. Given a national set of sheet lines for the Six-inch, it would be difficult to avoid a national sheet lines diagram. In this context national may mean Scotland, or Scotland with northern England. Either way it would consist initially of a small number of published sheets and a large number of projected sheets. Annual progress reports, assuming that Parliament or the Treasury demanded such things, would all look much the same: a few more sheets coloured in as complete but a massive number still to be done. There would be pressure for a quicker outcome, and that pressure would inevitably lead to an argument for reverting to the one-inch scale.

There would also be continual tension between tidiness - a steady progression from south to north - and giving priority to those areas where the need or benefits might be greatest. This was apparent already in the pressure from Ross-shire to be surveyed out of turn - presumably because of the utter absence of any half-decent county map rather than because of any prospect of industrial development. As long as the jockeying for position was between counties, it could be accommodated by the existing political process: each county had its representatives in Parliament and if necessary Parliament could decide the order.

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6 *Projections and Origins*, 2006, 41.
of priorities for counties. But a national series of sheetlines allows much greater subtlety of choice and raises the prospect of a scatter of isolated sheets being surveyed because they corresponded to a Burgh constituency (many of which consisted of multiple small towns, deeply jealous of their status as burghs and utterly insignificant economically). Indeed if influence was to determine priorities, one might envisage pressure to survey the estates of certain great landowners who were government supporters in preference to those of their neighbours who were so perverse as to be in opposition.

Doing the survey a county at a time prevented the worst of these abuses. It also allowed annual reports to describe progress: ‘This year saw the completion of Blankshire’. Yet a further advantage was that it became possible to avoid a national sheetlines diagram.

None of this required county origins: option 3 or 3a would suffice. Nevertheless, having a different projection for each county would reinforce the message that counties must be treated as a whole and no demand for a national diagram could be entertained.

Conservatism
Continuing with the procedures that had been adopted in Ireland certainly made sense. Colby had transformed the Survey into what has been termed a ‘map factory’ manned by men trained only for very specific roles. This made the use of the six-inch scale in England necessary if a great deal of retraining was to be avoided. However, the choice of meridian affected only a very small proportion of the Survey’s staff, most of whom were at a level where they might reasonably be expected to have all the necessary skills and knowledge.

The complete adoption of Irish practices, to the extent of employing individual county origins looks more like thoughtless drift than a considered desire for continuity.

The town scales
The early surveys of towns at the 10-foot scale also had their own meridians. When questions were asked about the authority for undertaking these surveys, Colby’s answer in 1843 was that urban areas were surveyed at this scale as part of the process of producing the Six-inch map. Manchester appears to have been in the lead; and the 10-foot and the Six-inch maps clearly share a common source, although, because they were not published simultaneously, pre-publication revision has resulted in differences between the two. So why do the two maps use different meridians? It must have occasioned extra work: the coordinates of trigs established for the six-inch work would need to be converted to the local meridian; and, when the six-inch was reduced from the 10-foot work, the sheet corners of the 10-foot would need to be converted back to the county meridian.

One difference with maps of urban areas is that it really is possible to take accurate measurements on the ground. The corner of an important building, faced

7 The OS in the 19th c., 184.
in ashlar with good sharp arrises, can be determined to 0.1 inch. Another is that these were originally intended to be manuscript surveys rather than a printed product; thus paper distortion would be less. Even so, if one has an urban area, 2 miles square, lying 40 miles west of the county origin and one measures a distance that is 10 sheets north-south, counting each sheet as being exactly 24 inches high, the effect of scale distortion will amount to 0.004 inches. That is less than the accuracy with which one can plot a point on the paper. So there really was no need for separate town meridians - and they were abandoned quite early on.

Nevertheless, considering the town scales forces us to concentrate on the manuscript record, which was in effect the Survey’s topographical database. I implied early on that a scale error of 1 part in 4000 was acceptable. This would amount to a maximum of 0.006 inches within a single 3 feet x 2 feet sheet. It is less than the accuracy with which a point could be plotted, but it is on the edge of what is discernable. Colby was somewhat obsessive in his pursuit of scientific accuracy. Perhaps his thinking was that, in the course of time, plotting might be made more accurate but map construction would still be dependent on graphical construction: therefore a projection which built in a scale error that could reach 1 part in 4000 was unacceptable.

**Conclusion**
The practice of using individual origins for each county would be the cause of trouble and vexation for the next hundred years. The use of local origins for the town scales suggests that scale distortion away from the prime meridian was the underlying cause, but no attempt appears to have been made to quantify the effects and balance them against the inconveniences of multiple projections. Continuing with the procedures established in Ireland seems to have been a default option, and Colby’s autocratic style of command must have prevented any of his subordinates from proposing any changes.

**Postscript**
I have since found that Winterbotham expressed similar views to this.

*It was not until the battle of the scales that the Ordnance Survey seems to have realised the inconvenience implied by so many divisions [ie meridians]. [Sir Henry] James spent what was evidently an unpleasant quarter of an hour in trying to explain to the lay mind that surveys would join up even if sheet lines would not. Major Larcom stated at a later date that, had the public convenience of more continuous areas been realised earlier, Great Britain would have been plotted on three parallel*[^8] *meridians. ... The original survey left us burdened with 42 meridians in Great Britain, not from scrupulosity, but from accepting, without due forethought, the habit of mind of contemporary surveying.*[^9]

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[^8]: Of course, two meridians can never be parallel. What is meant is three meridians applicable in north-south bands lying alongside one another.

**Letters**

As pointed out by Paul Bishop (*Sheetlines* 120, 50), the Society’s zoom meetings have on several occasions, including that on Swiss mapping on Monday 7 June, brought up the topic of hill-shading. The Ordnance Survey’s use of this form of cartographic relief representation has been fitful, and (some would say) ineffective. My view is that this is perhaps a function of the landscape which OS is representing: the mental re-construction of shapes from shading is most efficiently done when there is considerable and sharp contrast between the darkest and lightest areas of the continuously varying shaded surface image. Thus, in terrain with distinct ridges and incised valleys (eg the Alpine landscapes of Switzerland), hill-shading is much more effective in rendering the landscape than in the rolling hills of Surrey, the drumlin fields of Hellifield, or the gentle slopes of Fife. Tourist maps produced by OS in the 20th century of upland locations including Loch Lomond, Dartmoor and the Peak District suffered, as their non-precipitous terrain features did not lend themselves well to hill-shading; although the 1960s Lake District 1-inch tourist maps displayed better attempts.

![Lake District 1-inch Tourist Map C/// (copyright dated 1966).](image-url)
I don’t think OS ever produced a special tourist map with hill-shading for Skye – but I do think the Cuillins would be ideal terrain for impressive visual relief representation by shading. And, of course, the popular Bartholomew’s mapping of Britain in the 20th century relied solely on layer (hypsometric) tinting, rather than hill-shading, to depict the landscape of Britain.

In fact, the technique of rendering a two-dimensional image with the intention of implying a three-dimensional surface was developed artistically in 16th century Italy, and thus given the name ‘chiaroscuro’ (‘light-dark’ in Italian). Central to this, and all Western representational painting since then, has been the lighting of the scene from the top-left: this seems to be driven partly by human visual psychology, and partly by the prevalent right-handedness of painters.

Thus, in addition to the suitable nature of dissected terrain, in creating a realistic portrayal on a map by shading, the direction in which the shading falls is also important. Notwithstanding Paul Bishop’s conjectures, I do not think the Ordnance Survey thought too deeply about such direction of illumination: it has long been apparent (reported by researchers from the mid 18th century onwards), from a perceptual psychology standpoint, that the human visual system is best able to cognitively create 3D mental environments from 2D shaded images when the shading ‘falls towards’ the eye ie when the imaginary illumination is portrayed as coming from the top of the flat image – the northern edge, or northeast/northwest corners, on most standard topographic map sheets. If the illumination is portrayed as coming from the bottom of the sheet, and the shadows ‘fall away’ from the eye, an inverted version of the relief is perceived by the eye, with valleys appearing as ridges and vice versa. It was an example of this odd design choice, on the Schülerkarte sheet map used in school classrooms in the Luzern canton of Switzerland, which was shown by Bill Batchelor in the June zoom meeting; and it certainly gives an ambiguous view of the territory.

Practiced in the past, manual hill-shading gave the opportunity to the cartographer to artistically modify the direction of the imaginary oblique illumination, for example to deal with ridge lines which were oriented parallel to its precise direction, and which needed supplementary distinction by varying shading of slope facets on either side of the ridge. Contemporary software used for digital versions of hill-shading offer extensive options incorporating such multiple directions of illumination; and also modifiable colour palettes; diffuse or point source lighting; automated aerial perspective (ie making valley floors a little fuzzier than high level summits and arêtes); variable surface reflectances from the digital terrain model; vertical exaggeration of surface height; contrast and transparency settings; and even seasonal and weather parameters. Such tools can be easily applied to OS contemporary high resolution gridded digital height data.

David Fairbairn
After my article *From Ruabon to Rangoon: The 61 Indian Reproduction Group IE* was published in the August 2021 edition of *Sheetlines*, Mike Nolan of the Defence Surveyors’ Association contacted me. He pointed out that the tactical maps used for military planning in the Burma campaign were much more detailed than the maps reproduced in the article. An example of a tactical map in Ron Waddams' collection of papers is the map of Meiktila and Myingyan Districts, 2nd edition, April 1945 (see illustration), printed when the 61 Reproduction Group was in Imphal. However, the maps reproduced in the *Sheetlines* article are part of a numbered series of ten maps that summarize visually key moments in the Burma campaign, from the perilous days of the Japanese assault on Imphal and Kohima in September 1944 to the aftermath of the triumphant capture of Rangoon on 3 May 1945. They may have been produced for a report of the campaign, and were probably printed in Rangoon. Since the 61 Group reached the Burmese capital on 1 June 1945, the summary maps were probably produced in the second half of 1945.

*Ian Jacobs*
An interesting bit on page 64 of Sheetlines 121 in “Kerry Musings” about David Archer’s trapezoidal portacabin! Some research and detective work via Google Earth and the OS Maps website leads me to locate the portacabin at NG Ref SO 15537 89038. It would appear that OS may have changed their digital specification since I retired in 2003 in order to avoid very small TOIDs, (a Topographic Identifier is a label in the data for every enclosed area on the large scale map).

When I was a Chief Surveyor in charge of large scale mapping operations I would certainly not have approved of any of my surveyors including a corner of any building in an area of open ground, no matter how small. It is very unlikely that the wall(s) of the portacabin coincide exactly with the rootline of the boundary hedge, or even the centre line of a boundary fence. There will actually be a small separation between the corner of the portacabin and any boundary feature. Now that all OS large scale surveyors digitise the maps on hand-held computers at the time of survey it would be possible to survey the portacabin and the boundary feature in such a way that a gap, no matter how small, could be contained within the digital data, even though on any printout of the map at a reasonable scale the gap would not be visible. The TOID of David's garden would therefore leak into the small triangle of land between the portacabin and the boundary feature, thus retaining the correct rectangular shape of the portacabin and avoiding a small detached TOID. Problem solved! I do wonder if the “OS surveyor” who attended David’s property was one of the ex Land Registry staff who were transferred to OS sometime in the last decade or so? From Land Registry’s point of view the situation of the trapezoidal portacabin may make some sense, but to us old experienced OS trained “proper” surveyors it would offend the eye, and in our basic training in the survey and revision of large scale mapping we were always taught, “if it doesn't look right, it isn't right.”

David Andrews

2022 AGM

It is intended that an Annual General Meeting will be held at 1200 on Saturday 14 May at the National Library of Wales, Aberystwyth. This is necessarily subject to the decisions of the Welsh Government and of the National Library: members are advised to avoid making bookings until the April Sheetlines has confirmed arrangements. If a decision is taken earlier than this it will appear on the website and will be communicated in CCS News to those members who have supplied email addresses for this purpose. Should it be necessary to cancel this meeting it is planned to hold a virtual AGM in August, in a similar manner to the last two years.

It is currently anticipated that the Carto-Cymru conference will take place on 13 May and will have an Ordnance Survey theme.
Kerry musings

David Archer

Have you ever returned home with some new additions for your collection, and wondered who had previously owned them and what they had been used for? Not easy to answer, but sometimes the maps themselves do yield clues, unlike cars bought second-hand or which you pass on to the used car market. Apart from the previous keeper, one knows little about a used car, who owned it, where it had been or what it had been used for, unless someone had sat in it and eaten a fish and chip supper within three weeks of selling it.

I do not know why, but for some reason, most maps pass through this world without any history sticking to them. Of the thousands of maps I have handled, only a very small percentage have ever had any markings, stickers or annotations on them that indicate previous owners or usage. One sometimes wonders how ninety year old maps survive, only to appear for sale in mint condition, whilst other, much younger examples have obviously been used to the limit and are literally falling apart. Alas, most cannot tell us. But some can offer hints.

It is no use quoting the Ordnance Survey marketing people through the years, and saying that maps were bought by walkers, cyclists and motorists. These are only the groups they thought would buy maps and for whom they produced the advertising material. Although, these people did buy maps and probably for the purposes embedded in the group names, a lot of other people bought or owned maps for entirely different purposes to those suggested by the advertising, just as refrigerators are advertised with low temperatures to prevent food from deteriorating, but Eskimos buy them for their high temperatures that prevent food from otherwise freezing solid in their climes.

Signatures are the piece of information that comes most readily to hand and shows who owned a map, or at least who put their signature on it, usually on the front cover.1 One-inch Populars probably have more signatures than any other series, and my feeling is that this quite often dates from the age of rambling clubs, or ‘going for a tramp’ as was said in such unclear terms in those days. If one was with a group, it was inevitable that maps would be passed round whilst resting and eating a sandwich, and so ownership needed to be indicated. On the early white covered One-inch Third Editions, many signatures include military attachment details: H.N.R. Lampard, Vth Fusiliers or 16th (Service) Battalion, The Royal Scots, R.C. Lodge, without saying what the maps were used for. Manoeuvre maps with signatures, might appear to imply an obvious use, but what use? What was involved in using a manoeuvre map? “Go on”, one could say, “show me a manoeuvre”.

Similarly, ‘For Official Use Only’ and ‘Sonderausgabe! Nur für den Dienstgebrauch!’ appear as semi-threatening headings on some maps, without any mention of what the official use was or the dire consequences that would follow unofficial use. Sometimes a signature rings a bell, OGS Crawford, CW Phillips, Frank Pick and J Betjeman all added their mark to map covers, as did many

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1 I believe that most names on maps are signatures, rather than autographs.
organisations that acquired large scale maps. Yes, the name of an organisation might suggest a possible use for a map, but then one might also ask what on earth did they want maps for? The Denbighshire War Agricultural Executive Committee stamp appears on 1:2500 County series maps, but why did they have them?

Teaching sets with possession stamps show that educational establishments, schools and universities, primarily geography departments, owned a lot of OS maps. Note the past tense. Indeed, in the early part of the last century, OS maps were printed specifically for them, often with the name of the school in a box in the top margin, *This map is supplied for use in Hanson Secondary School, Bradford....* Revised New Series 69.2 We know who owned these maps, possibly who they were issued to, but we do not know how they were used in a lesson or lecture, or even the subject being taught.

Just as names in isolation do not tell us what a map was used for, so markings of all sorts, or annotations shall we call them, do not tell us who undertook the work or why. Sometimes the purpose of an annotation is clear, or we might have no idea what they are. I once bought a large number of Seventh Series maps in the red laminated covers which all had airfield runways coloured red, by hand and very well executed. No other annotations, no notes and no clue as to ownership. One can guess that this was to make the runways easier to spot, but was there more to it than that? We shall never know. Other maps have had pencil lines, never ink, going through three or more church towers and must have been owned by ley line hunters, who understandably never identified themselves. Nor did the person who marked every bus garage on the 1971 Greater London One-inch map and joined the dots together to produce a perfect London Transport roundel, closely aligned to the north and south circular roads. Far more convincing in my book.

Schools have probably produced the most examples of unidentified use, usually related to geography lessons. Maps with contours pencilled over and lines between the highest points on a map both show that some sort of instruction had been in progress, without naming anyone. A variety of books on map reading have been produced, for schools and the military, all containing map extracts, which does tell us what the maps were used for. An even more exact fit would be the map extracts used in geography examinations. Here, if lucky, we come across the whole production, a coloured map extract, a named and dated examination paper with the questions relating to the map, and sometimes notes by the nameless candidate. We know exactly what the map was used for, but not the user.

Small scale maps often have walks and drives marked, but we cannot tell whether these are proposed walks or finished walks. I am afraid that when planning a walk, I treat a map as I do a cooking recipe, I like to get the general idea, know what I am aiming for and modify everything as I go along to suit my

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2 The latest I have seen is for the *Education Department, Preston* on Manchester District 1924, 9750/28.
preferences. Maps are intended to help you get around the countryside, not to record your walk. When shown, so few walks are annotated ‘muddy’ or ‘steep’; problems are usually remembered for the next visit, not written down. Yes, it has always amazed me how infrequently maps bear any annotations, let alone annotations indicating what an owner has used the map for. Where we are rewarded, notes are often of birds seen, meals eaten and train times, implying the map has been used during a visit, but was also seen as a diary or memo pad. Not something the OS advertised as a use. Occasionally one comes across a map where a user has added a road improvement or new roundabout, such as the Old Series full sheet I once had with the M5 added in blue biro down Taunton way.

The condition of maps is a good indication that they have been used, with small scales, especially the One-inch and 1:25,000 frequently being rather tatty. Large scale maps when well used frequently have annotations showing why they are in such a condition. Maps that have been owned by estate agents who are also land agents frequently show annotations by way of measurements and sketches of boundaries. Estate agents appear to have had the habit of merging, and large scale maps from this source often bear several different possession stamps, as do many maps from government departments, where maps were transferred. In addition to annotated maps, there are many where the civil sheets have blank areas, but military versions display full details, such as the fortifications shown on some Hampshire Six-inch and 1:2500. Again, we cannot say for certain what this extra detail was used for.

And then we come to those maps which were used for a known purpose, and we know by whom they were used; sometimes annotated and sometimes not. It seems that when we do have full details of ownership and what a map was used for, more times than not, the usual suspects, walkers, motorists and educational establishments are not represented. Within the last twenty years, there has been a surge in people using Ordnance Survey maps for works of art, and I do not mean all those cushions, curtains, notepaper and deckchairs in the shops today. The first that I can remember was Geoffrey Fisher, an artist wanting mint copies of Seventh Series maps to make into small pieces set in cases. A map background with globes, cubes and so on all covered in the same mapwork. He had an exhibition in 2000, Boxed map constructions, and since then, I have had numerous requests for maps from artists, usually with condition of little importance, but seeking a variety of scales offering different colours and visual textures. On a similar theme, people often want maps as a substitute for wallpaper. One customer again wanted mint Seventh Series maps to cover one wall of a three storey London stair-well, with Land’s End in the basement and Shetland on the attic level, whilst others sought a more manageable task by papering the ty bach with OS maps.

Ordnance Survey maps, almost since the beginning, have been a requirement for many legal procedures. Richard Dean has given us a very clear insight into the use of OS maps by railway companies for legal purposes, whilst I have beside

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3 Richard Dean, Ordnance Survey on the rails, Sheetlines 106, (2016), 4-11.
me several maps which accompanied licensing applications before 1940. Such maps are single or composite 1:2500 sheets, marked with concentric circles at $\frac{1}{8}$, $\frac{1}{4}$ or $\frac{1}{2}$ a mile from the applicant's premises and have filled coloured circles showing other outlets: red for Ale houses / Public houses, green for Beer houses and yellow for Off licenses, with all outlets named. Such use of maps was never included in any OS advertising, nor did they envisage what the Great Western Railway would do with large scale maps.\footnote{Gavin Johns, The use by the Great Western Railway of Ordnance Survey maps in preparing land plans, \\*Sheetlines* 105, (2016), 44-53.}

Bill Bignell has shown how OS maps can be used for historical research into windmills,\footnote{Bill Bignell, *Mapping the windmill*, London, Charles Close Society, 2013.} whilst a customer in Lancashire has been using early Six-inch maps to identify rifle ranges around the country. I have used maps to identify fords, stepping stones and holy wells within Wales, whilst others have sought early twentieth century post offices in Devon, golf courses and very early airfields. Whilst I am always surprised at the variety of information found on OS maps, it has never been the aim of the Ordnance Survey to produce maps that can be used for research into the features they show. They produce maps to show the landscape as it is, and if in the future maps are used as historical landscapes, so be it. Alan Sillitoe, a keen Ordnance Survey enthusiast and collector once mentioned in a radio interview that he liked to use the names on OS maps for characters in his works. Local place names used as personal names help create a more convincing character. Thus, we can have a name and a use, but no remaining evidence on the maps themselves, showing how infrequently people do mark maps. I have a box of errors on OS maps and map covers, and nobody has altered an error before it came into my hands. Maybe they were not spotted, but the same goes for books, where spelling mistakes and missed or extra words are never corrected by observant readers, if spotted. There are obviously many examples of maps being used for specific purposes by known owners that I have never come across, and that such things keep appearing is one of the delights of OS maps.

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**Puzzle solutions and solvers**

The beaches and/or resorts which readers were asked to identify in *Sheetlines* 121 were (in alphabetical order): Bigbury; Blackpool; Booby's Bay; Bridlington; Cayton Bay; Cheswick; Coll; Largo; Luce Bay; Shoreham; Skegness; Towyn. I am unsure if it was exceptionally difficult or exceptionally confusing (there were queries and doubts expressed about the alphabetical order; some of those doubts being justified, some not; however, I intend once again to plead the fifth amendment). In any event, only eight readers submitted answers, although not necessarily the correct answers. I feel it would be invidious to select One of them as a winner, given the element of confusion. Congratulations therefore to all of them – namely Dave Vaughan, Tony Walduck, Roger Holden, Michael Spencer, Malcolm Stacey, Peter Addiscott, David Purchase and David Fairbairn.