

# *Sheetlines*

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

Number 116

December 2019



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The Society's membership year ends on 29 February. For the eighth successive year the annual fee remains unchanged, at just £15 for Ordinary members. It would be helpful if those members who do not have Standing Orders would renew in good time. You can renew online, or by bank transfer or by post. Full details are given inside the back cover of this issue.

Your *Sheetlines* mailing cover (which is biodegradable) shows your membership number and you are kindly asked to use this when renewing and in other communications with the Society. The address label also has the legend 'No email' in cases where we do not have your email address. We regularly send out news and information by email; if you do not already receive this and wish to do so, please get in touch with the editors.

Two years ago we ceased including members' names and addresses in the Almanack, to comply with the requirements of data protection legislation. Many of you asked us to find a way to resume the practice, which we have now done by listing those UK-based Ordinary and Family members who have explicitly given us permission to do so. The new list is distributed with this issue and will appear annually. If you are not listed and wish to be so, please contact the editors.

Next year's AGM will be held in Lincoln on Saturday 9 May. Full details will be included in April *Sheetlines*. The business includes the election of the Committee to manage the Society's activities. This vital work is interesting and rewarding and new volunteers are welcome. Nominations are required 60 days before the meeting (see the constitution at [www.charlesclosesociety.org/constitution](http://www.charlesclosesociety.org/constitution)).

Other forthcoming meetings include 'Show and Tell' sessions on 8 January at Wall, Staffs; 8 February at Notting Hill, London and 28 March at Redbourn, Herts.<sup>1</sup> We are planning visits to Scott Polar Research, Cambridge; Mercer Hall Archives, London and other venues. Details are not yet finalised and will appear on the website home page, in news emails and on the Society Facebook page at [www.facebook.com/groups/charlesclosesociety](https://www.facebook.com/groups/charlesclosesociety).

Our Facebook presence is a new innovation, which has proved popular, having a thriving community of contributors and lively discussions. Try it!

Meanwhile the website continues to be developed and extended. Popular features include the Map Cover collection (now with over 2000 examples), the *Sheetlines* archive and Sheetfinder old map search and display facility. We are planning to refresh the website in 2020 and would welcome suggestions about what you would like to see there.

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<sup>1</sup> Contact, respectively, [lez@watsonlv.net](mailto:lez@watsonlv.net), [John@jomidav.com](mailto:John@jomidav.com), [david-watt@outlook.com](mailto:david-watt@outlook.com)

### ***Fair Maid to Custom Made – CCS visits***

The oldest surviving secular house in Perth, the Fair Maid's House, was the venue for CCS June visit to the Royal Scottish Geographical Society. RSGS was founded in Edinburgh in 1884, later moving to Glasgow, then to Perth in 2008. The Fair Maid's House, featured in Sir Walter Scott's eponymous novel, dates back to 1475; it was restored and extended in 2011 to house RSGS library, exhibition space, geographical information and education centre and visitor centre.

Margaret Wilkes and Andrew Cook, both RSGS volunteers and long-standing CCS members, hosted the visit and laid out a display of some of the treasures of the collection. These included the surveying equipment, desk and drawings belonging to John Mathieson (1855-1945), OS surveyor, later OS Division Superintendent and RSGS vice-president. Also on view was the 1:10,560 map of the remote island of St Kilda surveyed and paid for by Mathieson, published in 1928, shortly before the voluntary evacuation of the 48 residents. Other OS-related items displayed included the 1946 initial draft plan for the new town of East Kilbride, pencilled-in on a composite 1:10,560 sheet and German 1:100,000 reproductions of Half-inch OS maps of Edinburgh and Portsmouth areas.

RSGS has a strong connection with Polar exploration; the collection includes a hand-written, self-composed poem 'Antarctica' by JG Bartholomew, founder of the map-makers and co-founder of RSGS, and items relating to explorers WS Bruce, Angus Erskine, Ernest Shackleton and the Scottish Arctic Club.

From Perth the CCS trip progressed to Glasgow, to visit the University Map Library and the Scottish Canal Archive.

At the map library, retired librarian John Moore (another long-standing CCS member) laid out an extensive display comprising Glasgow maps through the ages and unusual Scottish OS items; the latter including One-inch Popular sheet 19 showing the summit of Beinn a' Chlaidheimh erroneously as a flat plateau. The reason, John explained, was that the landowners, the Whitbread family, allowed the surveyors only a few days on their estate and the weather was poor.

Rob Maclean, assistant librarian of the rare books collection, arranged an exhibition of unique historic maps and journals from the 16th to the 19th centuries.

The Scottish Canal Archive occupies an attractive canal-side former warehouse near the city centre. Here records manager Angharad Stockwell showed original drawings and plans used in the construction, and still used for the maintenance, of the canal network. Canals being essentially linear and narrow, displaying the plans required a long table. One of the many items of interest was the 1839 detail drawing for the inclined plane at Blackhill on the Monklands canal, installed in 1849.

The following month, 400 miles south, CCS visited Dennis Maps, printers of OS and many other maps, in Frome, Somerset. Here can be seen the processes in the production of printed maps, from blank paper and on-screen images, through 4-colour printing, cutting, folding, laminating, attaching map to cover and packaging. The whole process can be seen in miniature in the Custom Made department, where individual one-off sheets and their personalised covers, ordered online, are printed and despatched.

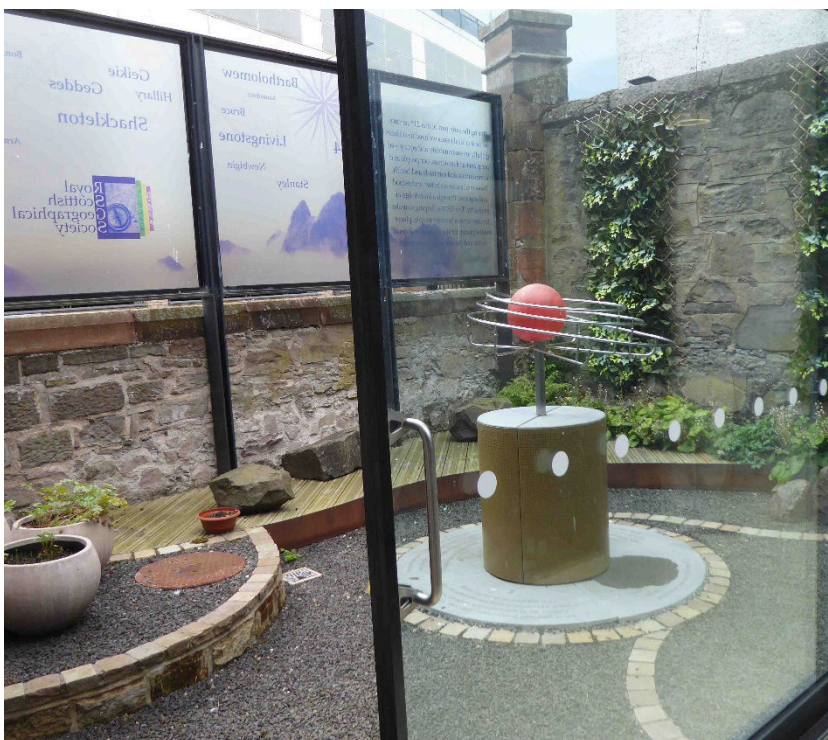
***John Davies***





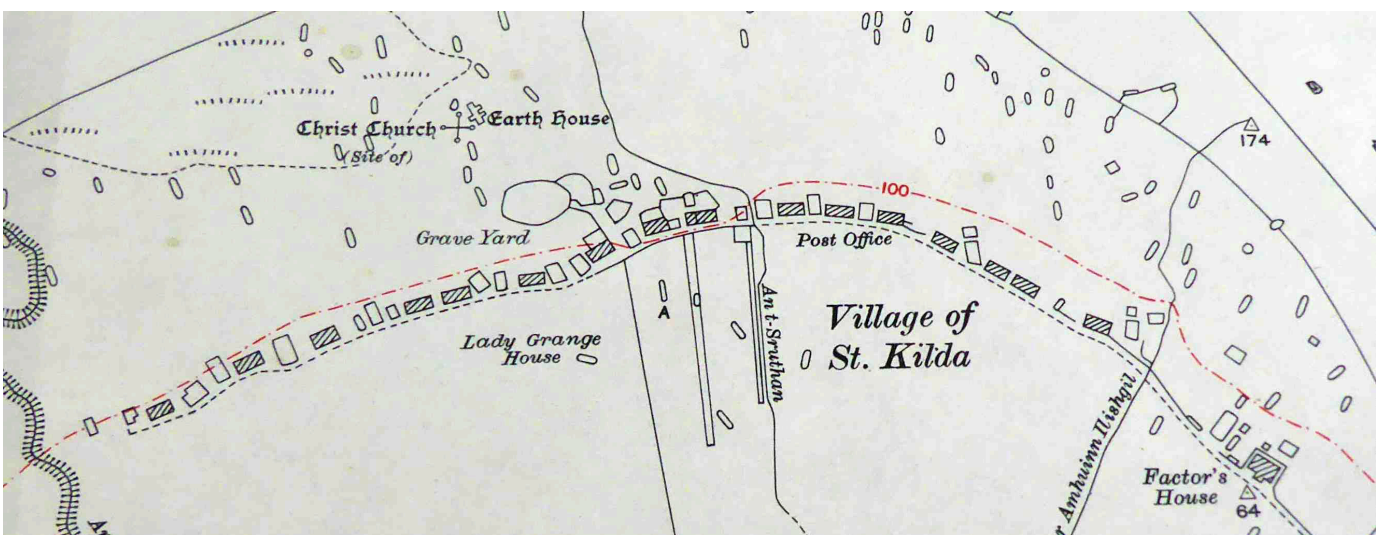
***Royal Scottish Geographical Society,  
The Fair Maid's House, Perth***

*Left: the library, below left: the courtyard*

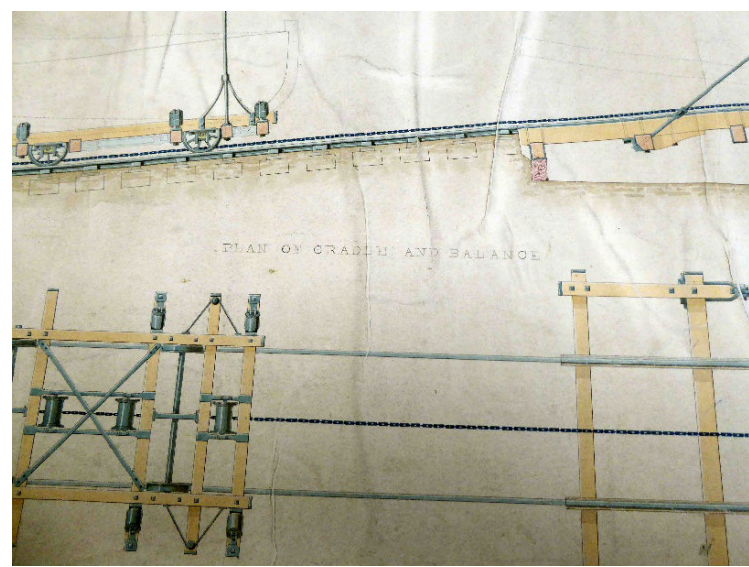
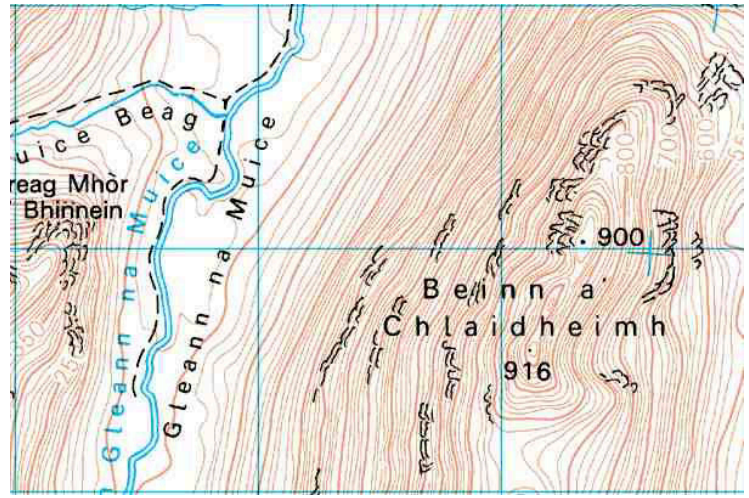
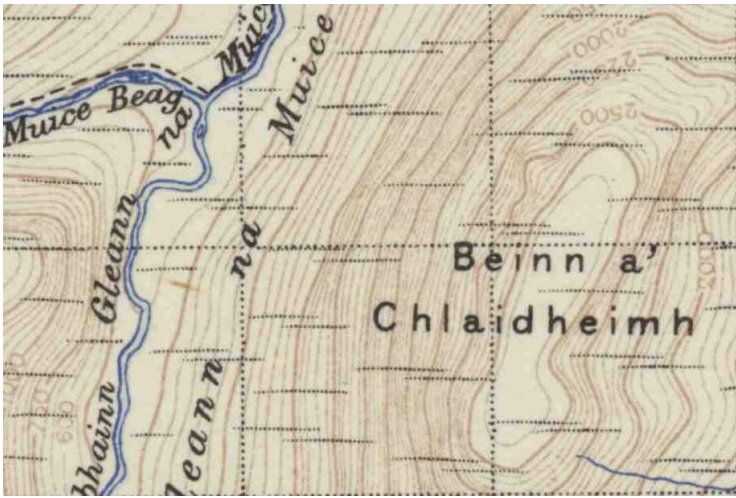


*Above: Proposed roads and roundabouts in East Kilbride pencilled-in on 1946 composite of 1:10,560 sheets Lanarkshire X.SE, XI.SW, XVI.NE and SE, XVII.NW and SW*

*Below: Detail of 1:2500 inset of the Village in 1928 1:10,560 map of St Kilda, surveyed by John Mathieson*







### ***CCS in Glasgow***

*Top row: The view north to the Campsie hills from the University library window, John Moore and Paul Bishop deep in concentration*

*Middle row: Beinn a' Chlaidheimh as depicted on the Popular Edition and modern Landranger*

*Bottom row: Outside the Canal Archive, detail of the Monklands inclined plane*



## ***The Ordnance Survey and the mapping of tram routes: some preliminary observations***

***Richard Oliver***

An enquiry in mid-August 2019 on the Ordnancemaps.io discussion group on the depiction of ‘busways’ on 1:25,000 *Explorer* mapping led to an extension of the topic to ‘trams’. I put it in quotes as the extended discussion highlighted the problems in defining a ‘tramway’ or ‘tramroad’. Here I will use the term ‘tramway’ to cover the mainly on-street systems of the sort that first appeared in Britain in 1861, and ‘wagonway’ to cover other sorts of ‘tramway’, which served collieries and other extractive industry. I will also use the relatively recent term ‘heavy rail’ to cover what are sometimes called ‘main-line’ railways, and otherwise approximate to what was nationalised as British Railways in 1948. The precise definition of ‘tram’ and ‘rail’ is rather tricky, and therefore what follows may not please everyone.<sup>1</sup> The whole question of the depiction of rail transport, however defined, on Ordnance Survey maps is worthy of an extended study such as has been accorded to windmills.<sup>2</sup> What follows therefore is very much a preliminary foray, which will certainly be found to be incomplete and to need correction in detail; readers will no doubt be able to draw attention to further additions and anomalies. This article is confined to Great Britain: Irish practice remains to be explored.<sup>3</sup>

### ***Early ‘railways’ and the early Ordnance Survey***

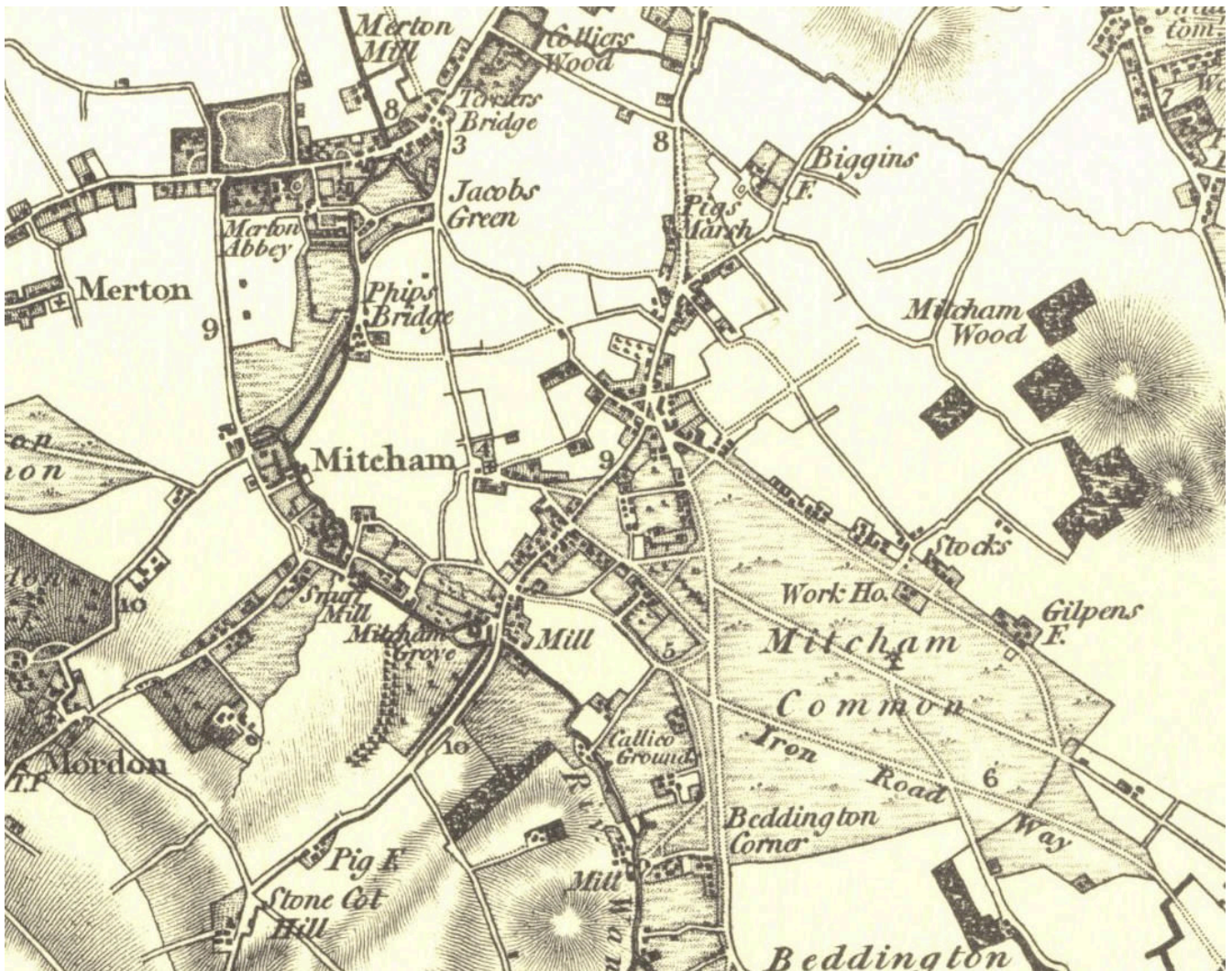
The first ‘tramways’ and ‘railways’ were effectively the same thing: rails of L-section on which horse-drawn wagons ran. The Surrey Iron Railway, opened in 1803, has claims to be the world’s first public railway: be that as it may, it had L-shaped rails, and it differed in function, carrying a variety of minerals and other freight, rather than physical form from wagonways or ‘tramroads’ elsewhere. It is the first ‘railway’, in the broadest sense, to be clearly identified as such by the Ordnance Survey, as ‘Iron Road Way’ on sheet 8 (published 1816) and ‘Iron Railway’ on sheet 7 (published 1822) of the one-inch (1:63,360) Old Series. Otherwise its depiction was that of a minor road, and around Mitcham and Tooting its course is not at all obvious. (*figure 1*). The Survey continued to show non-passenger railways in a similar manner on the one-inch map until about 1887, when it introduced a far more comprehensible line-and-crossbars symbol: map legends, introduced at the same time, described this as ‘Tramway’, though in fact some ‘heavy rail’ branches which did not carry passenger services were treated thus. In this context ‘Tramway’ really meant ‘non-passenger’ (*figure 2*).

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<sup>1</sup> As may the comparative lack of references to railway literature for opening and closing dates and modes of operation.

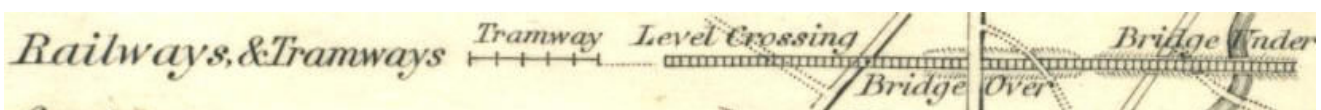
<sup>2</sup> Bill Bignell, *Mapping the windmill: the Ordnance Survey in England*, London: Charles Close Society, 2013.

<sup>3</sup> It also largely ignores the 1:25,000 family.



*Figure 1. The Surrey Iron Railway on one-inch Old Series sheet 8 (1816). The course is not at all obvious through Mitcham*

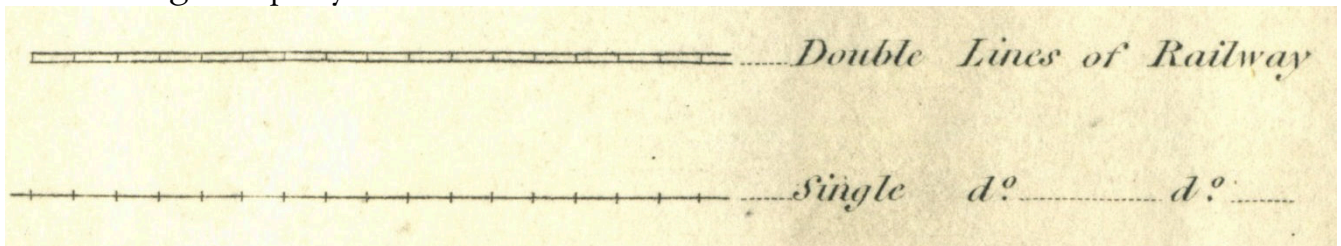
A distinction between 'tramways' or wagonways and 'railways' or 'heavy rail' first appears around 1836-7 on Old Series sheet 72, with the introduction of a distinctive 'ladder' symbol, first used for the Grand Junction Railway. This was a 'trunk railway' using edge-rails, steam-worked, which in principle would handle all the traffic that was offered to it, conveyed in vehicles with flanged wheels. The rapid extension of 'heavy rail' was reflected in an almost equally rapid extension of the 'ladder' symbol across the one-inch maps of Great Britain, on both existing sheets as they were revised, often just for new railways, and on newly-published sheets as cover extended. The 'tramway' symbol looked subordinate both in quantity and quality: the mileage depicted was much less, and even the later line-and-crossbar symbol was far more discreet than the 'ladder' symbol. A variation on the line-and-crossbar symbol was used on the one-inch New Series, and up to



*Figure 2. Railways in the legend of one-inch New Series sheet 220 (1889): the 'Tramways' are evidently a late insertion.*

the Third Edition, to show London underground lines: this never appeared in map legends, and will not be discussed further here.<sup>4</sup>

In 1841 six-inch (1:10,560) mapping began in Britain, in Lancashire, which was already well supplied with both wagonways and 'heavy rail'. The procedure that developed was to map double-track railways with the 'ladder' symbol, though with wider-spaced 'rungs' than on the one-inch, and both single-track railways and 'tramways' with a line-with-crossbars symbol (*figure 3*). 'Tramways' (wagonways) were distinguished by annotation thus, and 'heavy rail' usually had the owning company's name.



*Figure 3. Railway symbols used on early six-inch maps of Britain: from an untitled legend sheet.*

Whereas these symbols were appropriate to the six-inch, they were not to larger scales. Parallel to the adoption of the six-inch, larger towns were mapped at a scale of five feet to one mile (1:1056) and all railways, of whatever sort, were effectively drawn to scale, with pairs of rails – or, for mixed-gauge lines, three rails. In 1853-4 the 1:2500 scale was adopted, and on this scale, too, rails were drawn to scale.

### ***The 'street railway' complication***

So far development was fairly tidy, both of the transport mode(s) and of the cartography. The upset came in 1861, when GF Train tried out the first 'street tram' in Britain. Within ten years 'street tramways', mainly for passengers, were spreading rapidly – as was confusion of the language, as the 'street tramway' was quite a different affair from industrial wagonways. The term 'street railway' was a better reflection of their function: they were oriented towards the carriage of people rather than of things, and they were predominantly urban. It was decidedly confusing that they were known as 'trams'. As the Ordnance Survey encountered them in the course of urban survey, they were recorded as 'tramways'; in this the Survey was simply reflecting general usage. At scales smaller than 1:2500 they presented a cartographic problem, as on the six-inch they were likely to 'clutter' the map, and still more so on the one-inch; on the latter scale there was also the problem of a line-and-crossbars symbol being used for underground lines in London, which tended to run under streets. Street tramways were never mapped on the one-inch scale, and they were omitted from the six-inch once fully revised editions at this scale started to appear from 1891.<sup>5</sup>

<sup>4</sup> See Roger Hellyer & Richard Oliver, *One-inch engraved maps of the Ordnance Survey from 1847*, London: Charles Close Society, 2009, 94.

<sup>5</sup> This generalisation is one that needs to be tested more thoroughly than was possible in the preparation of this article.



'Tramways' for minerals continued to be shown: perhaps map-users were expected to infer function from geographical context.

These early 'street tramways' were invariably laid along public highways, and were usually horse-worked, though some were worked by small steam locomotives, and a few were cable-worked. The only surviving example of this type of tramway is that at Douglas in the Isle of Man. Legislation enabled tramways to be built and operated without much of the regulation entailed in 'heavy rail'. Rural examples of tramways were few, and had mixed success: generally, they handled both passengers and freight. The narrow-gauge Alford and Sutton Tramway in east Lincolnshire operated only from 1884 to 1889, so its appearance on one-inch New Series sheet 104 in 1891 was too late to be of use for journey-planning. The standard-gauge Wisbech and Upwell Tramway, opened in 1883-4, was effectively a branch of its 'heavy rail' owner, the Great Eastern Railway: it closed to passengers in 1927 and to freight in 1966. Both the Sutton and the Upwell tramways used locomotives with boxed-in wheels and motion; by contrast, the standard-gauge Wantage Tramway (1875-1945) used ordinary locomotives.

Another 'tramway' variation was represented by the Hundred of Manhood and Selsey Tramway, which ran from Chichester to Selsey. It was opened in 1897: it ran wholly on its own reservation, used ordinary rather than 'tram' locomotives, and in many ways resembled 'heavy rail', though several of the 'stations' were little more than a name-board on a pole. Before its closure in 1935 the distinctly 'heavy rail' Southern Railway contemplated taking it over.

A third variety of 'tramway' that came close to 'heavy rail' was that represented by the Weymouth Tramway, along the quay, over which passed boat trains from London conveying Channel Island steamer passengers. The line was worked by ordinary locomotives, equipped with warning bells. The Ordnance Survey usually mapped it as a 'tramway', but the one-inch Seventh Series showed it as a 'railway'.

### ***Electric tramways: a further complication***

In 1893 work began on a revised version of the one-inch mapping of Great Britain, to a modified specification. The legend (*figure 4*) distinguished single and double-track railways and 'Mineral lines and tramways'; the latter embraced a wide range of engineering and function, from 'heavy rail' lines with impressive earthworks that had no passenger service (the Lincoln 'avoiding line' and (later) the Gowdall and Braithwell line in south Yorkshire come to mind), to wagonways that dated from, and had scarcely changed since, the eighteenth century, and very narrow-gauge lines in gravel-pits. Street tramways wholly in built-up areas were simply not mapped. By itself this was a natural extension of Ordnance Survey practice since 1836, but now a complication presented itself.



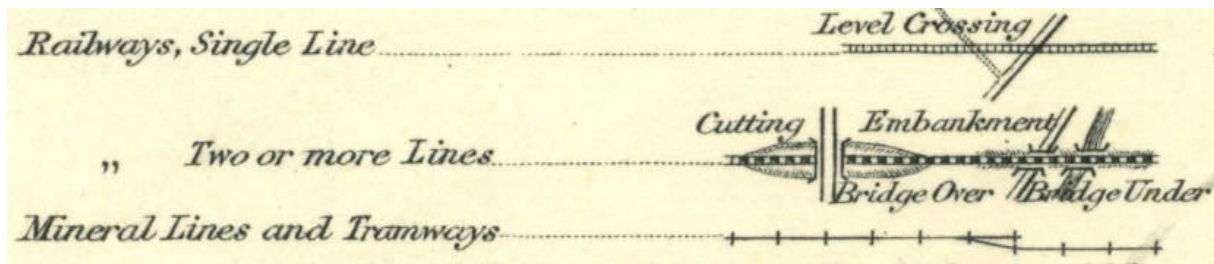


Figure 4. Railways in the legend of one-inch England & Wales Third Edition sheet 220 (1904).

That was the ‘electric tramway’, which had begun to develop in the 1880s. Although various other methods were tried, the preponderant method of working was by current collection from overhead wires, suspended from or between poles: both the horizontal and the vertical features of this system were conspicuous in streetscapes of larger urban areas in Britain in the first forty years of the twentieth century.

The introduction of electricity enabled both faster transit times and more ambitious networks, and tramways extended in a way that would not have been practicable with horse traction. At one time it was possible to travel all the way from Liverpool to Manchester by electric tram, albeit with several changes and a good deal more slowly than by any of the three ‘heavy rail’ alternatives. This in turn produced a new phenomenon: the extension of a ‘street tramway’ that did not always follow a road, but struck out on a route of its own: an early example of this was the Blackpool and Fleetwood tramway, opened in 1898. Some of these tramways were constructed under earlier legislation designed to facilitate the construction of street tramways; others were built under the auspices of the Light Railways Act of 1896.

It took some time for the Ordnance Survey to come to terms with the electric tramway. None of the infrastructure for electric working was recorded by the Survey, which continued to show only what had been depicted hitherto: rails and depots. The vertical supports for the overhead wires were evidently treated similarly to telegraph poles, as street furniture that was not mapped; the overhead equipment of electrified ‘heavy rail’ was and continues to be treated similarly. The instructions for one-inch revisers of 1901 laid down that: ‘Tram and mineral lines are to be distinguished by writing “Tram” or “Mineral” line, and the gauge... Termini of tram or mineral lines should always be described, *e.g.*, “Colliery”, “Lead Mine”, so that they may if possible be described on the 1-inch.’<sup>6</sup> This indicates that ‘tram’ was still being thought of in the ‘wagonway’ rather than the ‘street railway’ sense. By 1909 the latter were being taken account of, and field revisers were instructed that: ‘Electric tramways are to be shown by writing the name along the line of route where they follow the road, and by adding the symbol ... where they leave the road. The symbol is not to be shown along the roads.’<sup>7</sup> This policy was broadly followed up to the near-demise of first-generation ‘street railways’ in the early 1960s: in 1936 draughtsmen were

<sup>6</sup> ‘Instructions to One Inch Field Revisers’, 1901, sections 84, 85: copies at British Library Maps 207.d.14 and Maps 207.b.34, and at The National Archives [UK] (TNA) OS 45/2.

<sup>7</sup> ‘Instructions for the revision of the 1-inch map’, 1909, section 116: copy at TNA OS 45/9.

instructed that ‘where they run along country roads the symbol is not shown, but the words “Tramway” or “Electric Tramway” are written’.<sup>8</sup> In 1961 – by which time ‘street railways’ were practically obsolete – revisers were told: ‘Tramways in towns are not shown, but where trams or railways run along country roads write the description along the road. Show sections that leave roads by appropriate conventional signs and annotate. Show other tramways such as those inside large quarries, but ignore temporary portions near working faces. Distinction in annotation must be made between normal tramway and very narrow gauge.’<sup>9</sup> The instructions about temporary tramways simply codified for the one-inch revisers what had always been the Survey’s practice at larger scales.<sup>10</sup> The practical result of these and other instructions was that much of the urban tramway system was never depicted at the one-inch, 1:25,000 or six-inch scales: collectively, they are a ‘silence’, though one that can be explained by the limitations of scale rather than any intention to suppress information.

It is possible that the 1909 instructions arose from problems encountered in field revision, and were designed to regularise the position, but, be that as it may, the one-inch Third Edition, revised 1901-12, shows things that merit further investigation, not least taking into account the legal status of individual lines. One might expect the line-with-crossbars symbol to be used consistently for both the descendants of wagonways and for extensions of street tramways ‘off-road’, but this was not always so, as the following examples will illustrate.

### ***Some case-studies in depiction***

The Portsdown and Horndean Light Railway (1903-35) was built using the 1896 Act, although in operation it was really just another street tramway. Most of its course was alongside the main road from Portsmouth to London, later A3, but at its south end, at Cosham, it ran on an independent course, and was shown on the one-inch Third Edition as a single-track railway. It was named in lower-case Roman in the style used for ‘heavy rail’ (*figure 5*). On the successor one-inch Popular Edition it was shown using the ‘tramway’ symbol, but named discreetly as ‘*Electric Tram*’ only towards the Horndean end (*figure 6*); unlike on the Third Edition, there was no indication that it continued south of Cosham. The treatment on the six-inch was similar to the Popular Edition, with no hint whether or how the system extended south of its reservation at Cosham (*figure 7*). The depiction on the half-inch (1:126,720) and quarter-inch (1:253,440) Second Edition followed that of the one-inch Third Edition, except that it was named simply ‘Electric Ry’; on the quarter-inch Third Edition (published 1920) the treatment followed that of the Popular Edition.

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<sup>8</sup> *Instructions for revision and drawing of the one-inch (Fifth Edition) map*, Southampton: Ordnance Survey, 1936, 11, section 42: copy at TNA OS 45/26

<sup>9</sup> ‘Instructions for small scale revision (The Green Book)’, 1961, ‘Appendix A’: copies at British Library Maps 207.aaa.15 and TNA OS 45/75.

<sup>10</sup> The possible ramifications of this are another reason to keep the present article within strict limits.



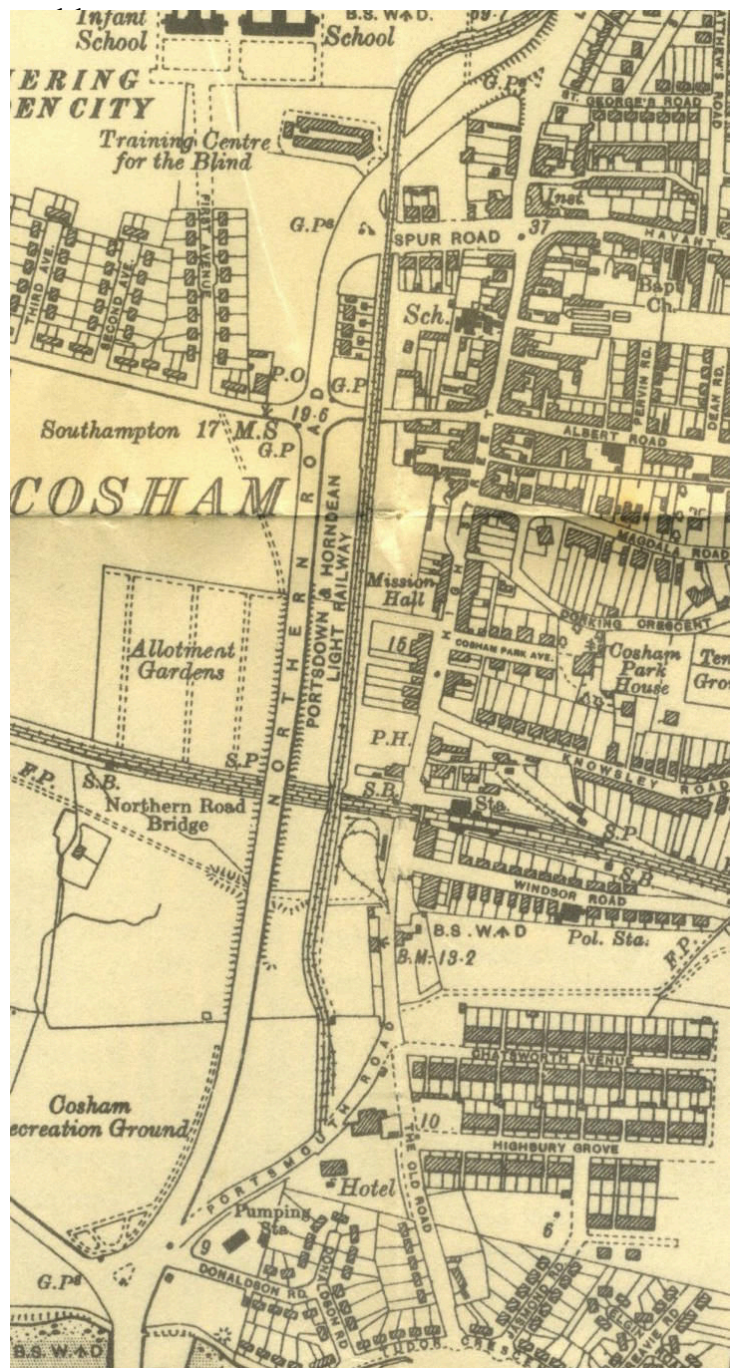


Figure 5 (top left). The Portsdown and Horndean Light Railway at Cosham, from Third Edition (Large Sheet Series) sheet 135 (1908). The full name is spread out along the course of the tramway, with the addition of 'Electric'.

Figure 6 (left). The Horndean tramway at Cosham, from one-inch Popular Edition (England & Wales) sheet 135 (1921). The name is placed further north along the line.

Figure 7 (above). The Horndean tramway at Cosham, from six-inch 'Town Map' of Portsmouth (1933/35): observe the abrupt termination of the line where it joins a public road.





*Figure 8. Depicted (almost) by discs: the Blackpool and Fleetwood tramway on one-inch Third Edition (England & Wales) sheet 3 (1920): observe that there is no hint of the tramway in Blackpool or Fleetwood towns.*

The Blackpool and Fleetwood tramroad remains the only 'first generation' electric 'street railway' to have lasted into the twenty-first century, and provides a good example of the varying practices of depiction – or otherwise. Blackpool town had acquired a very early example of the electric tramway, opened in 1885, which was duly mapped by the Ordnance Survey a few years later at 1:2500 and 1:500, but not at smaller scales, and this treatment was followed when the 1:2500 was revised in 1910. The Blackpool and Fleetwood was until 1920 independent of the municipal system: it began at the then north end of the built-up area of Blackpool, and mostly ran alongside or very close to public roads, but south of Fleetwood it ran for about a mile or so on an independent course. On the one-inch Third Edition, revised 1911-12, the whole route was shown except in the built-up part of Fleetwood, as a 'tramway', and named thus, with 'halts'. On the one-inch Popular Edition, revised in 1920, the 'halts' were omitted. On the Seventh Series, revised in 1950-1, only the short off-road section south of Fleetwood was shown, annotated 'Tramway'. On the half-inch map the route was shown by the 'tramway' symbol, without stations. The quarter-inch second edition omitted the line completely.<sup>11</sup> The Third Edition, published in 1921, showed the Fleetwood tramway with the 'Mineral line and tramway' symbol and the stations indicated: these last were so close together that the depiction was effectively by a sequence of red discs (*figure 8*). On the Fourth Edition, first published in 1935, the stations were omitted, and on the Fifth Series, published in 1957, the tramway was omitted completely.

The Selsey Tramway was steam-operated. On the one-inch Third Edition and Popular Edition and on the half-inch it was shown with the 'tramway' symbol, with stations. On the quarter-inch Second Edition it was shown with the 'railway' symbol, perhaps in recognition that, whatever its title, it was an appendage of the 'heavy rail' system. On the Third Edition it was shown similarly to the Fleetwood tramway, though the 'stations' were further apart.

The electric 'street railway' went into a gradual decline in Britain from the late 1920s onwards; the motor-bus had reached maturity, was more flexible, and could be extended to fast-growing suburbs without any special infrastructure.

<sup>11</sup> Earlier editions of the quarter-inch, up to the Second Edition, omitted non-passenger 'heavy rail' lines, which explains the omission of lines such as the Cromford and High Peak Railway, but hardly explains the omission of the Fleetwood line.

Some smaller systems closed altogether – Luton’s lasted only from 1908 to 1932 – or else were gradually converted to trolleybus operation, as in Grimsby and Cleethorpes.<sup>12</sup> Larger systems did better for a while – Birmingham’s was actually extended as late as 1938 – but after 1945 the decline was more rapid: the last London trams ran in 1952, the last in Sheffield in 1960 and the last in Glasgow in 1962. The Blackpool and Fleetwood line became thus a solitary relic. A late closer, in mid-1961, was the Grimsby and Immingham tramway, opened in 1912 and owned by the Great Central Railway and its successors. It was intended to link up with the Grimsby corporation system but never did so.<sup>13</sup> It was unusual in that much of its route ran alongside one of its parent’s ‘heavy rail’ lines; at the Grimsby end it ran along streets.<sup>14</sup>

At the same time there were some modifications to Ordnance Survey practice. On the one-inch Fifth Edition, of which publication began in 1931, the line-with-crossbars symbol was used for ‘Sidings and Tramways’ and, in principle, the single- and double-track symbols were used for all ‘heavy rail’ lines. A separate symbol was used for narrow gauge lines (*figure 9*). This treatment was followed on the Seventh Series and on the 1:50,000 First Series, but on the 1:50,000 Second Series, later *Landranger*, on which work began in 1969, there was a reversion to earlier practice, with the distinction of ‘Track multiple or single’ and ‘Freight line, siding or tramway’<sup>15</sup> (*figure 10*). The ‘quarter-inch’ (actually 1:250,000) Fifth Series and its successors followed the method introduced on the one-inch Fifth Edition.<sup>16</sup>

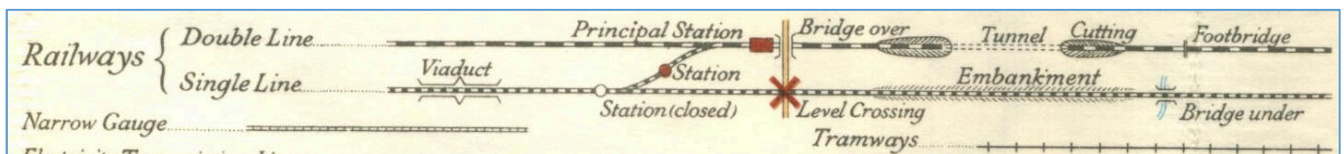


Figure 9. Railways in the legend of one-inch Fifth Edition sheet 127 (1934).

<sup>12</sup> Trolleybuses had the advantage of being able to reuse the overhead apparatus of tramways, but the disadvantage of being confined to electrified routes. Those in Grimsby were typical in that they lasted until 1960.

<sup>13</sup> The existing Corporation Bridge needed rebuilding before trams could run over it; it was duly rebuilt in 1928, but by that time Grimsby was inclining towards trolleybuses.

<sup>14</sup> The different depictions of ‘heavy rail’ lines at Immingham by the Ordnance Survey and by Bartholomew are another matter that should be investigated by a study of depiction of ‘railways’ on topographic maps in these islands. The treatment of the ‘heavy rail’ direct line between Grimsby and Immingham on the Seventh Series is also ‘interesting’.

<sup>15</sup> This distinction was not adopted immediately, but was by 1977. For problems of ‘freight’ line depiction on the Second Series see Richard Oliver, ‘Railways, cyclists and the purple plague’, *Sheetlines* 53 (1998), 37–45, esp pp 37–8; this difficulty was addressed in the partial redesign of the 1:50,000 in 2000–1, discussed later.

<sup>16</sup> The half-inch Second Series, under development from 1946–7 but abandoned in 1961, did not mention ‘tramways’ in its legends, and it is unclear how such systems might have been treated at this scale.



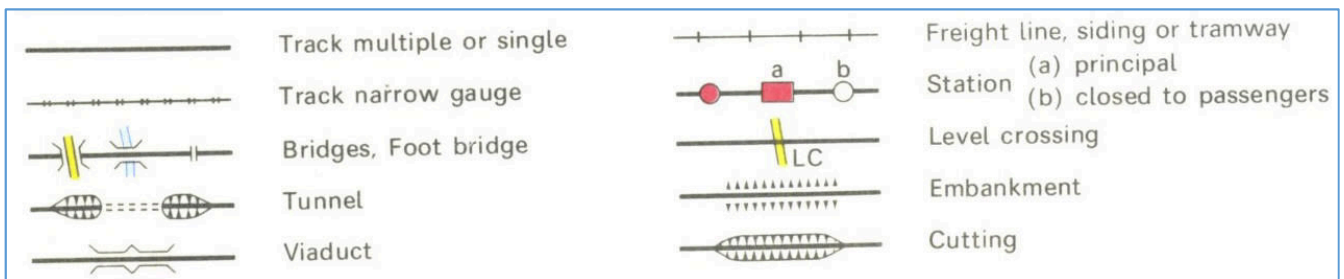


Figure 10. Railways in the legend of 1:50,000 Second Series sheet 113 (1977).

The practice of not showing ‘street railway’ tramways on the six-inch was varied after 1919. On the series of ‘Town Maps’ at this scale produced between 1919 and 1924, street tramways were indicated by purple lines (*figure 11*). On the six-inch mapping of Blackpool consequent on the 1:2500 revision of 1930 the system was shown complete, except that at Fleetwood the on-street section was omitted. At Grimsby, revised shortly afterwards, the on-street section of the Grimsby and Immingham tramway was also omitted.<sup>17</sup> At Blackpool, the 1:25,000 Provisional Edition mapping produced from 1945 followed the six-inch in showing the system complete, except for the northern part in Fleetwood.



Figure 11. Tramways on the six-inch Town Map of Portsmouth (n.d. ?1921). Tramways branching from the ‘heavy rail’ line are shown by the line-and-crossbars symbol and are on the parent six-inch County Series mapping: those in purple have been added especially for the Town Map, presumably from the 1:2500.

<sup>17</sup> Lancashire six-inch sheets 38 SW (Fleetwood), 50 NE and 50 SE (Blackpool); Lincolnshire sheet 22 NE. One possibility is that there was a short-lived policy in favour of showing on-street sections, which was in force when the Blackpool sheets were being drawn, but had been reversed shortly afterwards when the Fleetwood and Lincolnshire sheets were in hand.



An interesting anomaly appears on the six-inch National Grid Provisional Edition mapping of Grimsby, published in 1956, and using revision of 1951 made primarily for the one-inch. On TA 20 NE, the on-street portion of the tramway is omitted, but on TA 21 SE this section of line is shown (*figure 12*). TA 21 SE was immediately out of date, as the on-street section of the tramway was closed in mid-1956 and the rails soon removed.

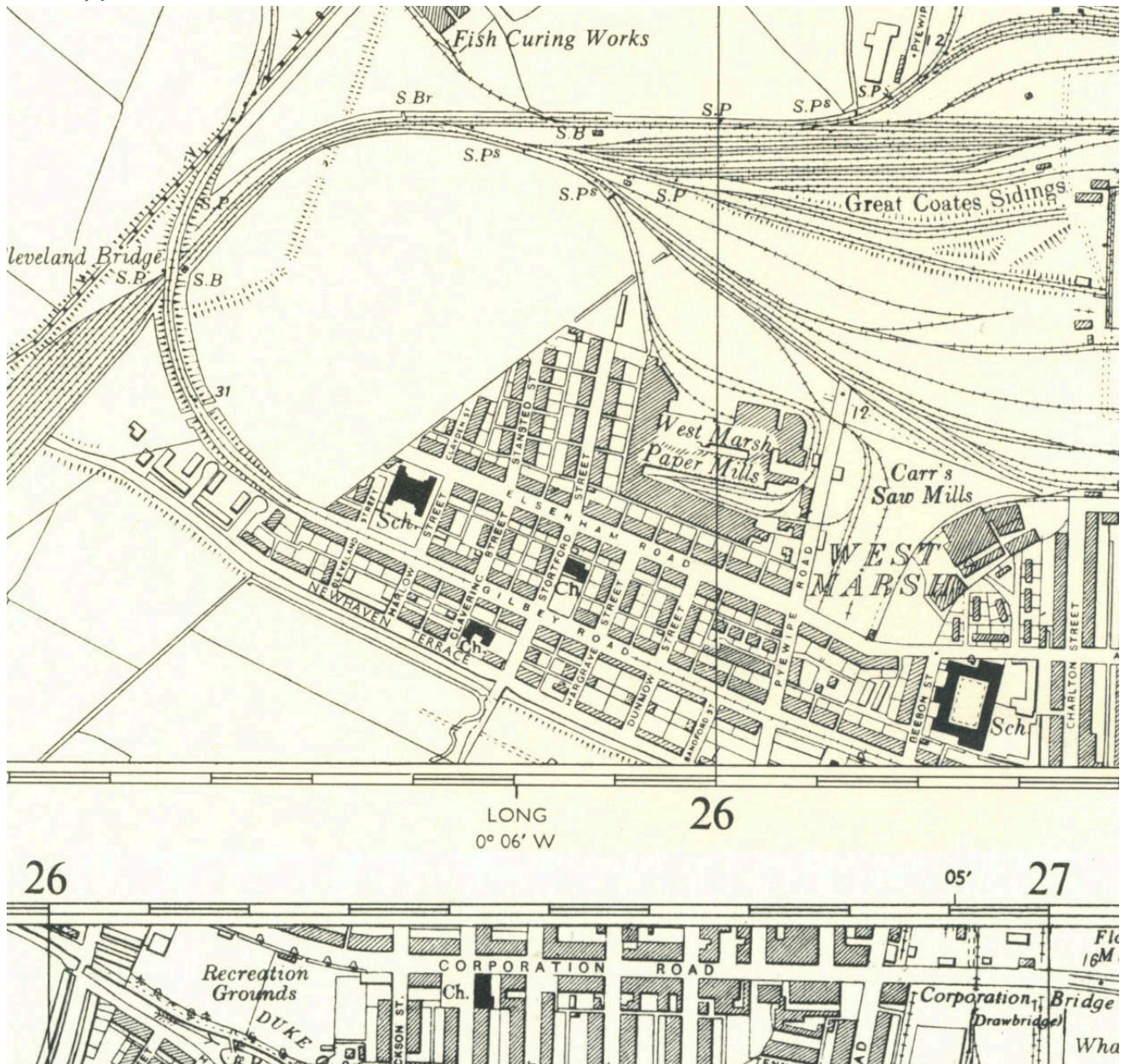


Figure 12. The Grimsby and Immingham Tramway on the six-inch National Grid Provisional Edition (1956): above, TA 21 SE, showing the tramway running along Gilbey Road; below, TA 20 NE, with no hint of the tramway, which actually ran along Corporation Road to the west end of Corporation Bridge.

### ***The 'LRT' era***

After 1962 Blackpool had the only remaining urban 'tram' system in Britain. Between 1970 and 1980 a narrow-gauge tramway was opened between Seaton and Colyton in Devon along the course of a closed 'heavy rail' branch line. This has been consistently mapped by Ordnance Survey with the line-with-crossbars symbol and the 'station' symbol for the three stopping places on the line, which nowhere runs 'on-street'. At the same time as the Seaton line was being developed there was growing interest in 'Light Rapid Transit' (LRT) systems, and in 1981-2 a 'Metro' system was opened on Tyneside: the above-ground sections were almost all 'heavy rail' taken over from British Railways, and indeed some sections continued to carry 'heavy rail' trains, both passenger and freight, but the basic concept was 'LRT'. Before 2002 Ordnance Survey showed these lines as 'heavy rail', in the same manner as the above-surface sections of the London underground system, which indeed in many ways the Tyne & Wear Metro resembles, save that far less is in tunnel. In 1992 the whole of the Blackpool system appeared, using the 'tramway' symbol but without 'stations', on the fully-revised 1:50,000 sheet 102; it may be that showing all other above ground 'railways' was felt to make its omission hitherto inconsistent.

But there may be another explanation: the development of the LRT, which the Blackpool system certainly was, in function if not in name. The year 1992 also saw the opening of another LRT system, the Manchester Metro. Like the Tyne & Wear system, it mostly used 'heavy rail' routes taken over from British Railways. However, through the centre of Manchester the Metro ran along streets, and operation was by tram-cars that imitated contemporary mainland European practice. The cartographic treatment was interesting: on the 1:50,000, as on Tyneside, the former 'heavy rail' section continued to be shown as before, with stations, whereas the street section was shown using the 'Freight line, siding or tramway' symbol, with no indication of the various stations in the city centre: to be fair, to attempt to show them would have been to 'clutter' the map.

In 2000-01 the 1:50,000 underwent some redesign, and this included the treatment of railways. Freight 'heavy rail' lines were once more treated as they had been on the one-inch Seventh Series, and the single-line-with-crossbars symbol was now used for 'Light rapid transit system, narrow gauge or tramway': perhaps the thinking that the aggregate mileage of these was modest. A separate symbol for 'Light rapid transit system station' was also introduced (*figure 13*). In practice treatment was not always consistent: on sheet 88 the 'heavy rail' symbol was retained for the Tyne & Wear Metro, though the stations were infilled yellow. On sheet 109 the Manchester Metro was now shown by the LRT symbol, but still no on-street stations were shown in the city centre. On the 1:25,000 *Explorer* sheet 277, produced nearly simultaneously, the system was shown using the established 'tramway' symbol for this scale, with stations – including those 'on-street' – indicated by a 'Metro' symbol (*figure 14*). This symbol was also used on *Explorer* 316, although the 'heavy rail' symbol was retained for the tracks.



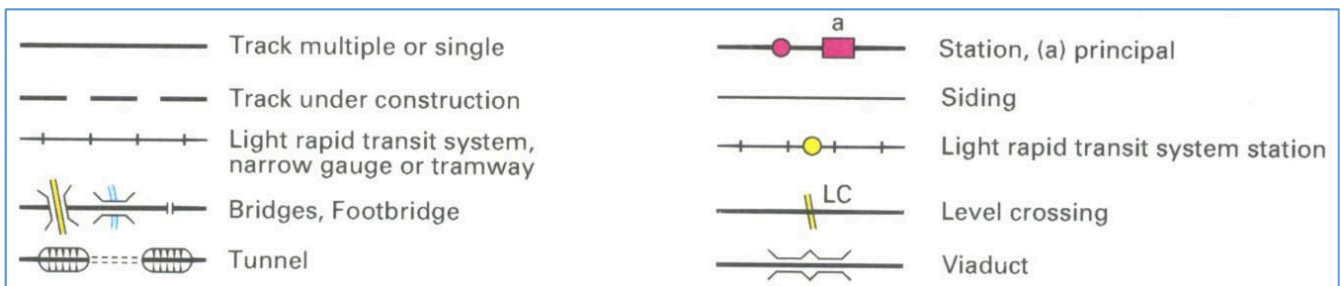


Figure 13. Railways in the legend of 1:50,000 Second Series sheet 88 (2002).

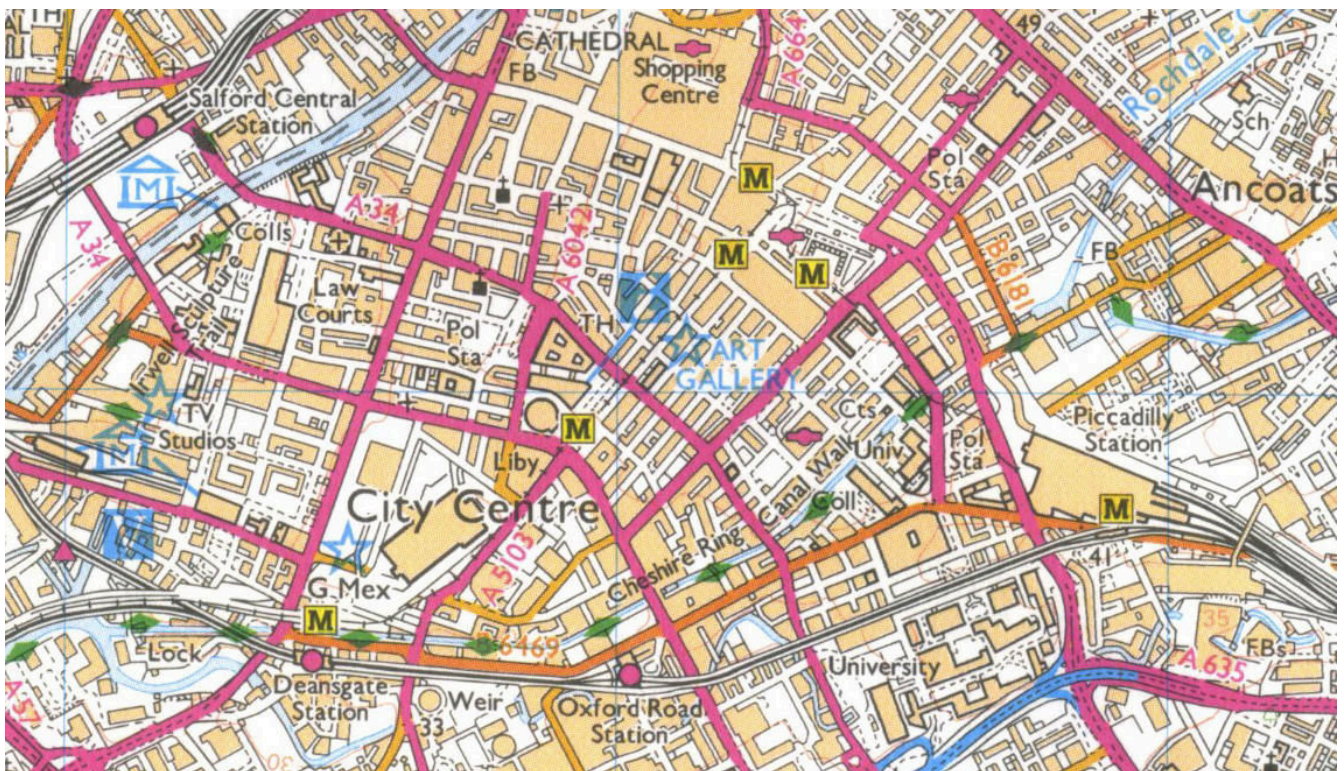


Figure 14. Metro stations and lines and other railways in central Manchester, from 1:25,000 Explorer sheet 277 (2001).

Space constraints may account for LRTs being treated as 'heavy rail' on the 1:250,000 *Travelmaster* series, introduced in 1993. In 2001 this mapping was republished as a *Road* series, which included symbols for LRT lines and stations.

### **Conclusion: 'the usual'**

'How does Ordnance Survey show tramways?' If the question is posed of current mapping, then the answer appears to be that they are 'Light Rapid Transit systems', and are shown as fully as the scale permits. If the question is, 'How were they shown in the past?', then the answer is 'apparently not entirely consistently'. I am rather tired of reading it, as well as writing it, but 'further work needs to be done'.

## ***Ordnance Survey British Army training maps 1906-1918***

***Derek Deadman***

Training troops in the British Army after the end of the Boer War in 1902 took place at all organisational levels, from the individual soldier receiving personal instruction, to manoeuvres and exercises involving upwards of 50,000 people and large groupings of different units. Map reading was seen as an important part of such instruction, whether it was for reconnaissance or scouting purposes, or for ascertaining the nature of the ground over which troops might have to move. Some units such as the Cavalry and Mounted Infantry would be expected to be better prepared to use maps than the infantry, with officers, perhaps, more highly trained in this skill than those of lower ranks. From an analysis of some of the training maps described below, however, it might be wise not to be too dogmatic on these points.

This article seeks to describe and illustrate some Ordnance Survey maps published between 1906 and 1918 explicitly intended to be used in training by the individual soldier or unit. Not covered here are the manoeuvre maps used for the large set-piece manoeuvres and exercises held in most years between 1902 and 1914. Typically, these maps have areas prohibited to the military marked on the face of the map. A recent history of these large scale activities can be found in Simon Batten.<sup>1</sup> Also not covered here are maps probably intended for training purposes such as those entitled *The Country Around Aldershot, Wareham and Surrounding Country* and the many maps of Salisbury Plain, or the maps produced for military purposes with direct printed covers that presumably found a use as training maps.

The most commonly encountered OS training maps are the half-inch maps of England and Wales, Scotland and Ireland published between 1912 and 1915. For England and Wales, Hellyer<sup>2</sup> (Hi 36.B.4) indicates a virtually complete covering of England and Wales through training maps with 34 out of the 40 sheets available in the half-inch series known also to exist as training maps. A much smaller coverage is known for Scotland (Hi 37.B.3) and Ireland (Hi 39.A.3). All maps carry a price of 6d, suggesting that these maps were also made available for public sale. The maps are purely topographical with no military markings. To the information in Hellyer may be added a sheet 5 (Belfast) for Ireland and subcontracted printers for sheets 24 (White & Pike Ltd, Birmingham), and sheets 32 and 33 (Moody Bros, Birmingham). One copy seen of sheet 39 (Brighton) has a stamped overprint on the front cover for '2/5th The Queens RWS. Regt', that is The Queens Royal West Surrey Regiment. This suggests, as would probably be expected, that units bought their local sheets directly or on behalf of their troops for training purposes.

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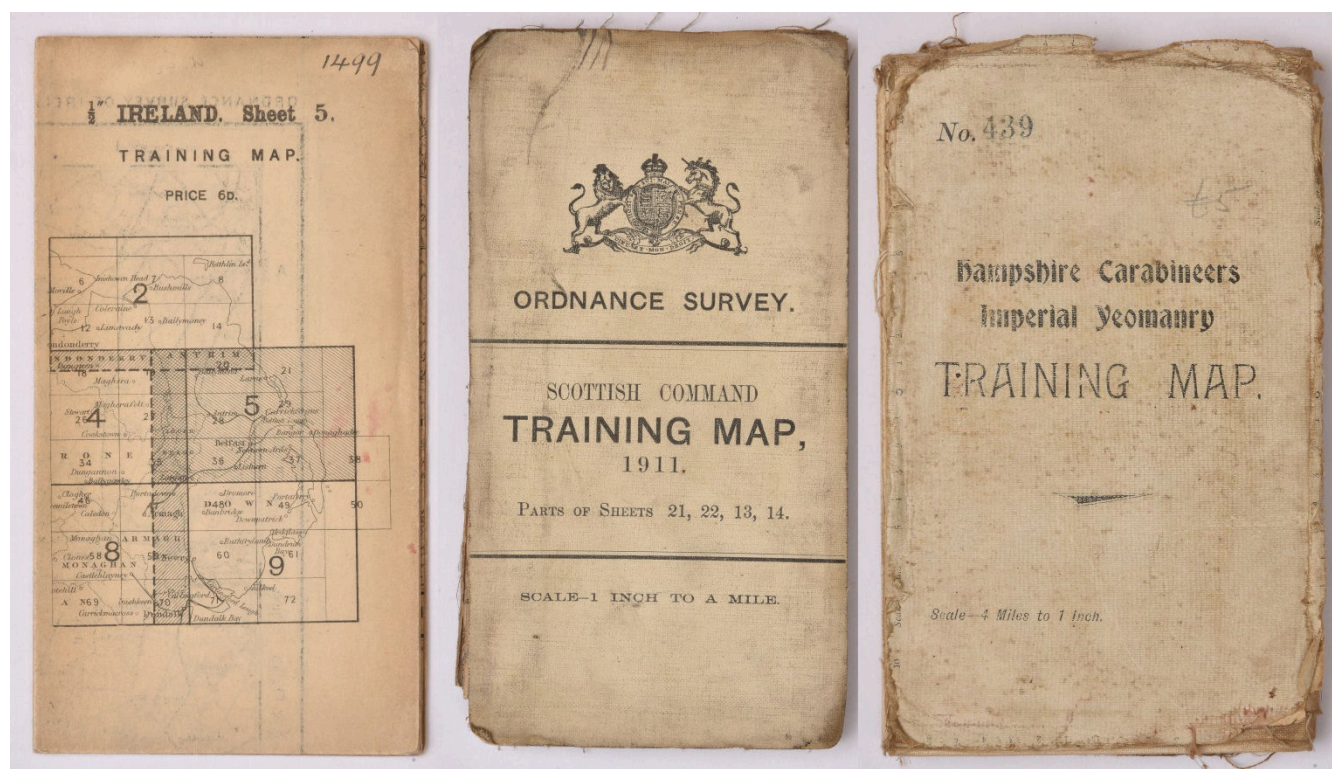
<sup>1</sup> Simon Batten, *Futile Exercise? The British Army's Preparations for War 1902-1914*. Helion & Co, 2018.

<sup>2</sup> Roger Hellyer, *Ordnance Survey Small-scale maps indexes: 1801-1998*. David Archer, 1999.



The use of existing OS maps for training purposes with covers printed or stamped to show ownership was not uncommon. Both Oxford University Officers Training Corps (1911) and Cambridge University Officers Training Corps (1912) used their local one-inch third edition district maps in this way, in both cases with otherwise militarily unmarked maps. Hellyer (Hi 8.8.2) states that the 1913 *Windsor and Neighbourhood district map* was prepared specially for Eton College Officers Training Corps. It carries an ECOTC stamp at the top of the front cover, but otherwise has no military markings. Hellyer and Oliver<sup>3</sup> (p72) illustrate a selection of covers with a military training theme.

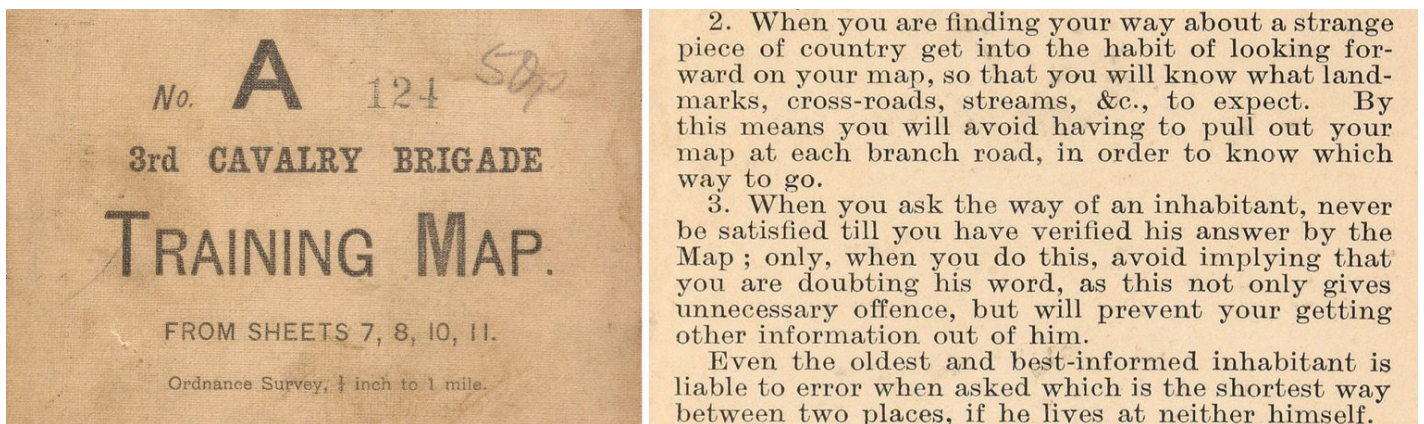
A map that does display military markings on the face of the map is the *Scottish Command training map* of 1911, consisting of parts of sheets 21, 22, 13 and 14 of the one-inch Scottish Third Edition (no-alpha numeric border). Hellyer and Oliver (p135) list this map which is probably an example of Hi 15.3. Similar to manoeuvre maps of the period, this shows Prohibited Areas such as fox coverts, warrens, Her Ladyship's Gorse, Ayr Race-course, and 'Pheasants reared here'. It would seem odd to have a specific date for a training map which, generally, could be thought of as being useful over a number of years. The manoeuvres in England in 1911 were cancelled, but whether this map was intended to play some part in wider military training seems unknown.



Two training maps that deserve more research share both concept and some text and should be considered together. Not previously noted, as far as the author knows, both exhibit some very unusual features as far as both OS training maps

<sup>3</sup> Roger Hellyer and Richard Oliver, *A Guide to the Ordnance Survey one-inch Third Edition maps, in colour*. Charles Close Society, 2004.

and other OS maps are concerned. As it appears that further examples of a similar construction and purpose are likely to exist for other units, members are asked to let the author know if they have such. The earlier map (1906) has a cover title *Hampshire Carabineers Imperial Yeomanry training map* and the later map (1913) has cover title *3rd Cavalry Brigade training map*. (The usual spelling of the name of the Hampshire unit is Carabiniers after the carbine rifles carried by their soldiers). Both maps are at the quarter-inch scale. The most unusual features of both are that they are maps made explicitly for named units in the British Army, and that both dissected maps have what could be termed a numbered page training manual for the individual soldier affixed in individual sheets to the reverse of the dissections. The text for the Brigade map manual actually mentions the Brigade by name, so the manual was clearly made for the map. The Hampshire map has an introduction addressed 'To the Yeoman Using this Map' so could have been appropriate for a wider group of units. Both units were mounted – mounted infantry and cavalry – and the texts of the associated manuals reflect this.



Like most of the maps discussed earlier, the maps themselves carry no military markings. The Hampshire map is a First Edition Quarter-inch map of England and Wales, coloured edition with hill shading, sheets 19 and 23 conjoined (Hi 51.2.2). It carries a date code of 12.05. The manual comprises sections on Field Days, Manoeuvres etc., Map Reading, The Principal Duty of Yeomanry in War, General Remarks on two of the Duties of Yeomanry. Observation and Protection, Crossing Rivers, Notes on Signalling, Time and Space, Notes on Supplies, Field Cooking, Care of Horses, Veterinary Hints etc, Health Hints for Use in the Field, Short Hints on First Aid and Tables of Weights and Measures. There are 30 dissected panels with pages 7-36 of the manual affixed to the back of the map. The map itself covers 24 dissected panels with pages 1-6 of the manual forming a row of six panels below the map at the front. The back cover dated 1 January 1906 contains the surprising statement that 'These Maps are the property of the Hampshire Carabineers Imperial Yeomanry. Every Non-commissioned Officer and trained duty man to be in possession of one [...] The map will invariably be carried on all Yeomanry duties. Each copy will be signed for by the individual to whom it is issued, and any loss or damage through want of proper care will be charged for



at cost price, viz 4/- per copy'. All maps were individually numbered on the front cover, presumably in case of loss. This was a map intended for the non-officer class, which is the opposite of the established view that it was the officer class that used maps. The idea that the lower ranks would all carry a map certainly seems unusual. Lists of required personal kit carried by troopers at this time do not mention maps. Furthermore, although the volunteer Hampshire Yeomanry strength would be smaller than a Brigade (Brigades were about 4000 men in 1914), it would still have been expensive to equip each soldier with a copy of the map.

The 3rd Cavalry Brigade was stationed in Ireland. The 3rd Cavalry Brigade training map does not explicitly mention the rank of soldier for whom it was intended, but the manual overlaps in great part with that of the Hampshire Carabineers map and the front cover of the map is also individually numbered. The map is displayed on 36 dissected panels except for two panels that have a map of Ireland at scale 1:50,000 marked up for the counties. The 36 dissections each have a page of text of the manual affixed to the back. Some sections are taken verbatim from corresponding sections of the Hampshire map, others are edited versions from that map rewritten to make them explicitly relevant for Cavalry rather than Yeomanry forces. The Cavalry version has no notes on signalling, semaphore and abbreviations, nor does it contain notes on field cooking. Unsurprisingly, given that a major role of the Cavalry was reconnaissance, it does have more extensive notes on scouting. As Batten remarks (p190): "Since the Boer War, the work of Robert Baden-Powell (Inspector-General of Cavalry) and Michael Rimington (Commander of 3rd Cavalry Brigade), which included the use of specially trained scouts, innovative training methods and a far greater emphasis on care for the horse, had resulted in a marked improvement in the performance of the cavalry in its reconnaissance role ..... (that was) commended in the manoeuvre reports for 1912 and 1913". The map is a quarter-inch map of Ireland coloured edition with hill shading (Hi 69.2.1) made up from sheets 7,8,10 and 11. It has no military markings apart from a broken red line following the Province boundary that presumably marks the training area of the Brigade. It carries a publication date of 1913. Batten (p149) notes that in that year, The Irish Command held manoeuvres involving 14,000 men.

The final training map considered here is different from those above in that it was produced by a private firm using Ordnance Survey maps. The Map of the Country Round Berkhamsted<sup>4</sup> is unusual in that a detailed account of how it came to be made and its specific features were published shortly after its publication, and the full text of this account is available online.<sup>5</sup> The Inns of Court Officers Training Corps was stationed at Berkhamsted for the duration of World War I. In August 1914 the actual strength of the Corps was 268. Its role was to train officers with a view to placing them in other units as needed. By the end of

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<sup>4</sup> *Map of the Country Round Berkhamsted Prepared from the Ordnance Survey for the Exclusive Use of the Inns of Court Officers Training Corps* by Sifton Praed & Co. Ltd, London, 1916.

<sup>5</sup> Col FHL Errington (ed), *Inns of Court Officers Training Corps During the Great War*, 1922.

the war, 13,000 men had passed through training, of whom between 11,000 and 12,000 had received commissions; 2100 of these officers were killed and three were recipients of the Victoria Cross.

The account of the way maps were used at Berkhamsted says that for the first eighteen months of the war, uncoloured Ordnance maps were available for training purposes but the preferred coloured Ordnance maps were in short supply. Whilst all men were required to have maps, instruction in the use of them was given 'incidentally rather than systematically .... (but) in the course of time it became a regular part of the curriculum to which more and more importance was attached'. The account states that 'When, however, the use of squared maps became general in France, it was necessary to accustom recruits to use them, and at the same time to familiarise them with the scales which they would find in use when they went abroad. Accordingly, in 1916, by the kind permission of the Director-General of the Ordnance Survey, a special map of the Berkhamsted area was prepared by the well-known map publishers, Messrs Sifton, Praed & Co, on the scale of 1:40,000, and squared according to the system then in use in France. The map was produced by photographic enlargement from the Ordnance sheet, the contours being overprinted in red (with approximate form-lines at 50ft VI (vertical intervals). Owing to the enlargement, the contour-lines were necessarily rather large, and the red colour made them conspicuous .... For instructional purposes it was a clear advantage'. (Errington, p51). Peter Chasseaud<sup>6</sup> (p6) discussed this Berkhamsted map in his articles on Artillery Training Maps of the UK because of the system of squaring used on the map, but did not think it was used for artillery training. Hellyer and Oliver<sup>7</sup> (pp 8-10) consider several different military grids of this period.

*Thanks are given to Peter Gibson, David Howell and Rob Wheeler for helpful comments on earlier drafts of this article. Remaining errors and opinions are those of the author.*

7. A Map on a large scale is much easier to follow than a small scale one. For this reason you will prefer the 1 inch to 1 mile Ordnance Survey Map to this; but remember that on service we shall hardly ever be able to use a larger scale Map than  $\frac{1}{4}$  inch to 1 mile. For one thing, think of the number of sheets we should have to carry about. *This 3rd Cavalry Brigade Training Map alone occupies no less than 56 different sheets of the 1 inch to 1 mile Ordnance Survey* (see diagram on back of cover), and yet we should move right across it from North to South in four moderate marches.

<sup>6</sup> Peter Chasseaud, *The Development of Artillery Squares and Artillery Training Maps of the UK 1914-1918, Part I. Sheetlines* 10, 2-8, 1984; *Part II. Sheetlines* 11, 12-14, 1984.

<sup>7</sup> Roger Hellyer and Richard Oliver, *Military Maps. The one-inch series of Great Britain and Ireland*. Charles Close Society, 2004.

## *Use of metric measurements in Victorian times*

**Michael Spencer**

In October 2018 I prepared a short article for *Sheetlines*, remarking on Richard Oliver's use of metric measurements to describe the border details of the One-Inch Old Series,<sup>1</sup> and asserting my belief that in 1820 the Ordnance Survey was not likely to have been thinking in metric units. Richard's difficulty in understanding how the dimensions of the border were arrived at was, I suggested, cleared up by an appeal to Imperial units. I sent the text of this article to Richard for his comments, and he was kind enough to reply that he "would certainly re-investigate".

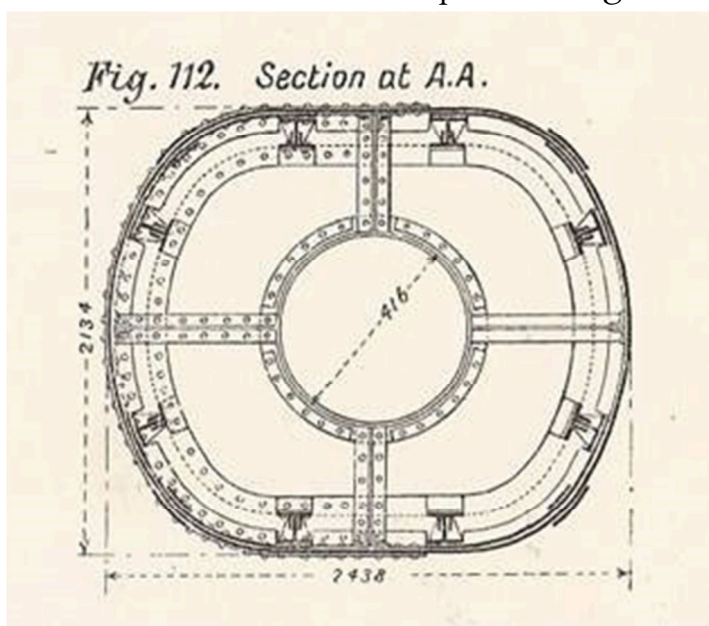
More recently, I obtained a copy of Westhofen's book "The Forth Bridge". Wilhelm Westhofen (1842-1925) was a German engineer, specifically engaged on the works at Inchgarvie where the central pier of the bridge was constructed, and in 1890 he published an article in *Engineering* describing the construction of the whole bridge. The Forth Bridge was of course the cynosure of the world at the time, being the first large structure anywhere to be built entirely of steel – 55,000 tons of it, held together with about seven million rivets – above its concrete and masonry foundations.

The book in my hands is a facsimile of the article. It runs to 70 pages, each 14" by 10", followed about three dozen photographs. Within the text are 150 engineering drawings of the bridge and the various ancillary machines used in its construction. Most of the drawings are general-arrangement drawings; less than half of them are dimensioned, and only salient dimensions are shown at that.

Throughout the text and drawings, as might be expected from a Victorian British publication, dimensions where given are entirely in Imperial units, though I have found four exceptions (Figs. 56 to 58 and 112). The first three are

dimensioned in metric units alone, and Fig. 112, a section through the diagonal strut of the central tower, is dimensioned in both Imperial and metric units (see the figure). The metric dimensions are precisely equivalent to 8 feet by 7, and the manhole in the middle is shown as 4ft 6in.

The present editorial staff at *Engineering* are unable to throw any light on the practices of their forebears of 130 years ago, and so I can say no more than that I am still very confused.



<sup>1</sup> Roger Hellyer and Richard Oliver, *The First Ordnance Survey Map: The One-inch Old Series of England and Wales*. The Charles Close Society, 2015; p.86.



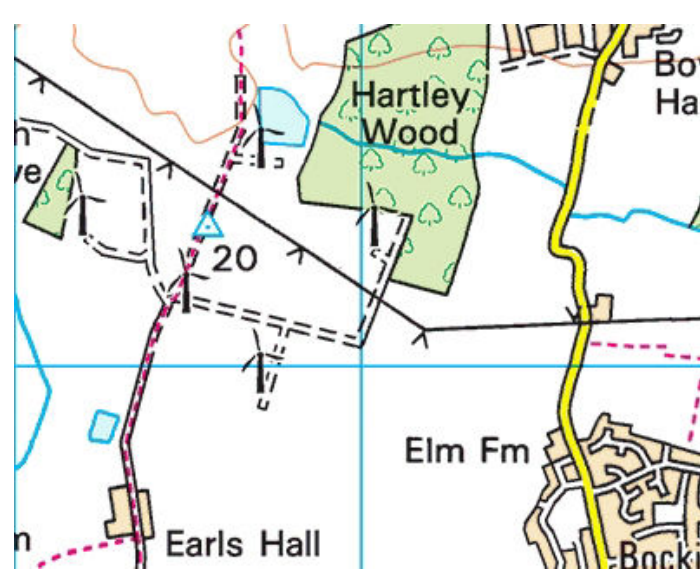


Figure 1. Windfarm west of Clacton,  
TM1417

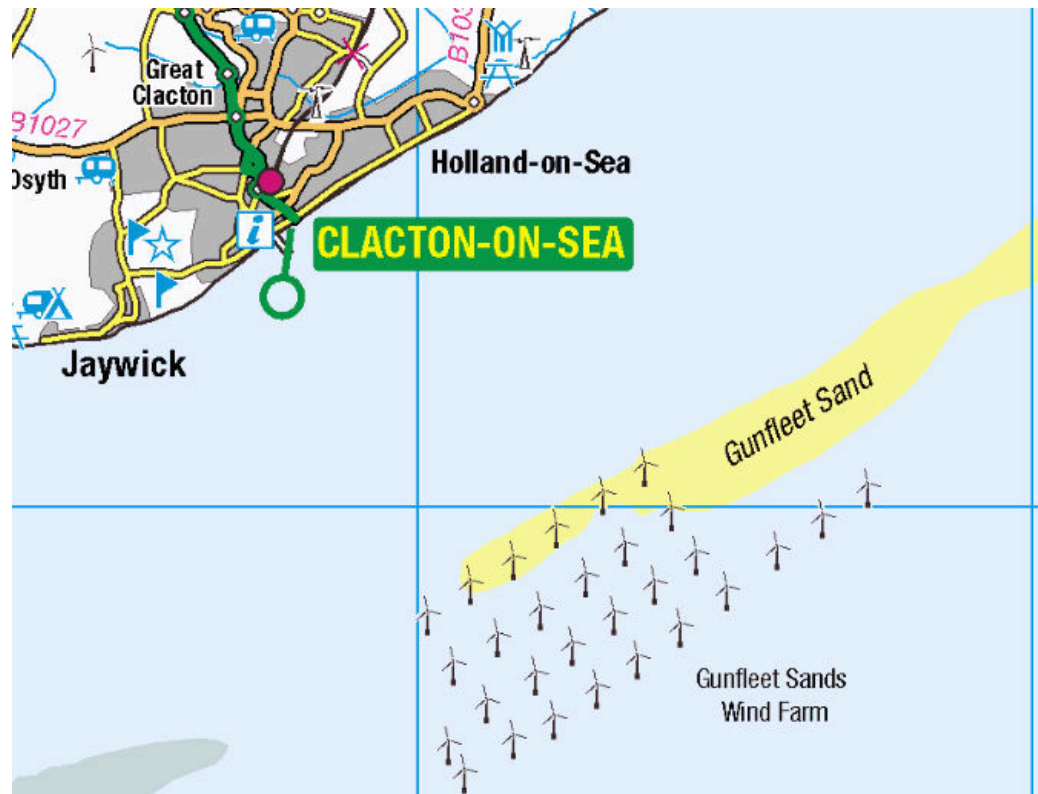


Figure 2.  
1:250,000  
sheet 8

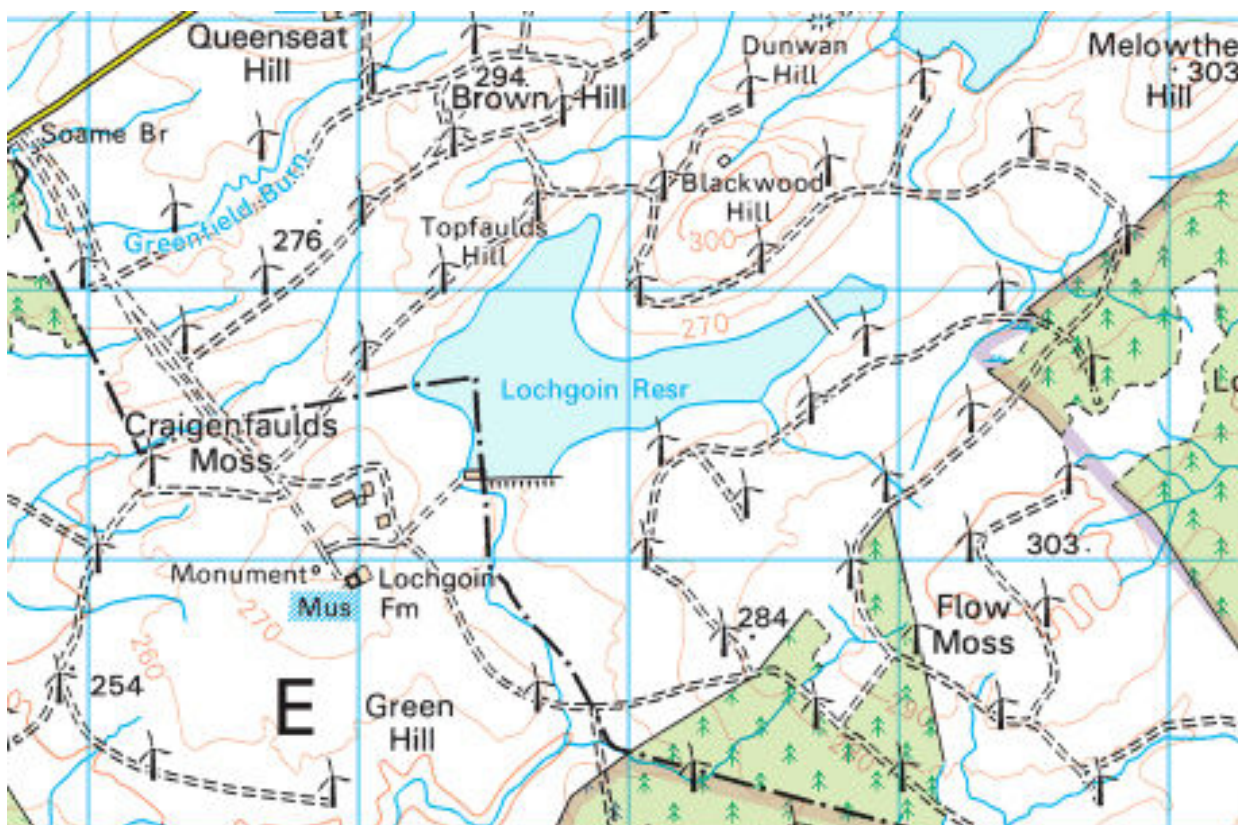


Figure 3.  
Whitelee  
Windfarm,  
East  
Renfrewshire  
1:50,000  
sheet 64

## ***Disappearing wind turbines on OS maps***

***Bernard Anderson***

Offshore windfarms are an increasingly common feature around the coast of Great Britain; indeed the proliferation of these installations has made the country one of the leaders in this field. This prompted one member to ask about the way in which they are depicted on OS maps.<sup>1</sup> He noted that the extensive group of turbines comprising Burbo Bank windfarm in Liverpool Bay was marked by a single turbine symbol on the relevant 1:50,000 sheet (108 Liverpool, Southport and Wigan). In a later post it was observed that 1:250,000 sheets provide, at least superficially, more detail about the extent of offshore windfarms.<sup>2</sup>

This short article reports a small-scale investigation undertaken with the following in mind. First, to compare the way both onshore and offshore windfarms are shown on OS maps of differing scales, and second to make a comparison with information provided on nautical charts.

The area chosen for this study was North East Essex, as fortuitously there are examples of both onshore and offshore windfarms within easy reach of the author's home. Maps covering other areas have been included where these form part of the author's collection and provide useful additional information.

To start with the presentation of onshore windfarms. There is a small one located on agricultural land to the north west of Clacton near Earls Hall and on the relevant 1:50,000 sheet (169 Ipswich and the Naze) the individual turbines are marked (*figure 1*). Since it is located on agricultural land no other details such as access tracks are included. (As it happens since the last revision was carried out in 2014, a fifth turbine has been added.) On the 1:25 000 sheet (184 Colchester) which covers this area, the windfarm is absent as the most recent revision in 2012 took place before it was completed. The 1:250,000 sheet (8 South East England), which was revised in 2016, also shows this onshore windfarm; however, due to limitations of scale it is depicted by a single turbine symbol (*figure 2*). For comparison, maps covering the more extensive Whitelee windfarm in East Renfrewshire were consulted. Both 1:50,000 (sheet 64, Glasgow, Motherwell and Airdrie) and 1:25,000 (sheet 334 East Kilbride, Falston and Darvel) show individual turbines and in addition their access routes (*figure 3*).

In comparison, the presentation of offshore windfarms is rather confusing. Three windfarms have been established on Gunfleet Sands, approximately four miles SE of Clacton-on-Sea. As with the Burbo Bank windfarm, which is marked with a single wind turbine symbol, each of the two windfarms in operation at the time of the revision of sheet 169 is only depicted by a single turbine symbol (*figure 4*).

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<sup>1</sup> Alan Bowring, [Ordnancemaps.groups.io](http://Ordnancemaps.groups.io), 26 May 2019.

<sup>2</sup> Alan Bowring, [Ordnancemaps.groups.io](http://Ordnancemaps.groups.io), 27 May 2019.

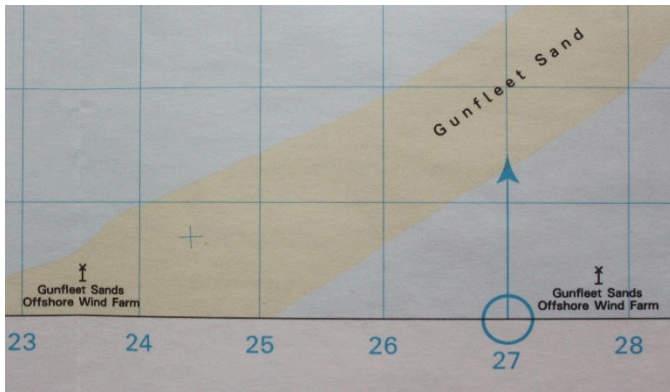


Figure 4

(figure 2). Although the general form of the combined windfarms is accurate, the number of symbols on the 1:250,000 map (32) does not correspond to the actual number of turbines in the three farms (50). This difference is almost certainly accounted for by the limitations of scale.

A preliminary conclusion might be that where scale permits, onshore windfarms are mapped showing the location of individual turbines and, where relevant, access routes, as they serve as useful landmarks and reference points for map users. In general, offshore windfarms, even when clearly visible, are less obviously useful as landmarks for onshore map users. However, their location and extent are sometimes of interest to users of smaller scale maps who might view them from a coastal car park or picnic site.

From the perspective of the mariner and hence chart-maker, both offshore and onshore windfarms assume a different significance, and as a result much greater attention is given to the way in which both are shown on charts.

The guidelines for onshore windfarms are concerned with their value as landmarks when visible from the sea. The advice provided to chart makers is that subject to the limitations of scale it is preferable to chart individual turbines in their actual positions.<sup>3</sup> On this basis the small onshore windfarm to the north west of Clacton which is too far from the sea to serve as a landmark is not marked although the church near Clacton pier does appear on the chart as does the very prominent Port of London radar mast near Holland-on-Sea (figure 5).

It is essential to chart offshore windfarms, as in addition to being useful aids for determining a vessel's position they also represent both a restricted area and a potential navigational hazard. As with onshore windfarms when scale permits individual turbines should be charted.<sup>4</sup> In any event, both the extent of windfarm and associated aids to navigation, typically flashing yellow lights, should be marked.<sup>5</sup> Although not noted on charts, every turbine must be painted yellow to a height not less than 15 metres above highest astronomical tide (HAT).<sup>6</sup>

<sup>3</sup> B 374.6 Regulations of the IHO for International Charts and Chart Specification of the IHO, Edition 4.8.0, International Hydrographic Organisation, October 2018.

<sup>4</sup> B 445.8 6 Regulations of the IHO for International Charts and Chart Specification of the IHO, Edition 4.8.0, International Hydrographic Organisation, October 2018.

<sup>5</sup> Marking of Man-made Off-shore Structures, IALA recommendation O-139 (2nd Ed) December 2013.

<sup>6</sup> Ibid.



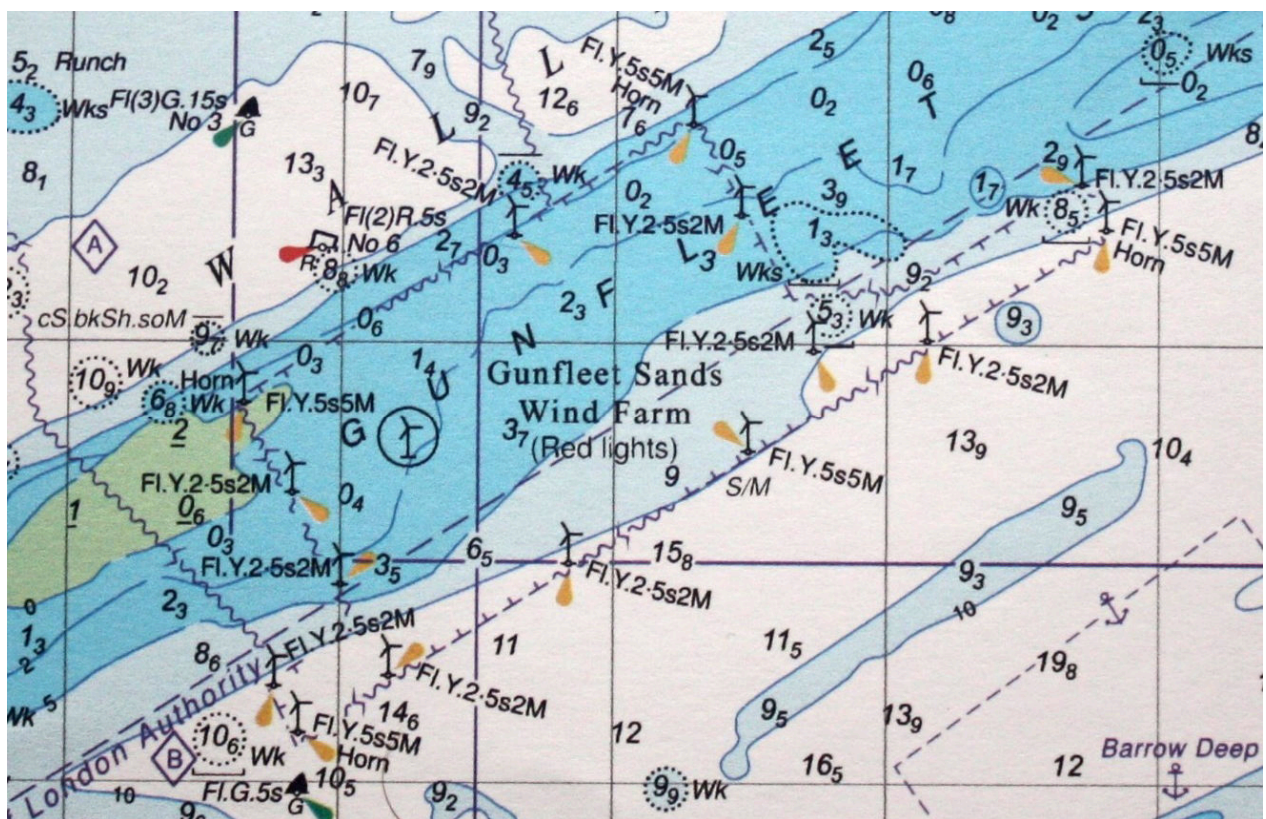
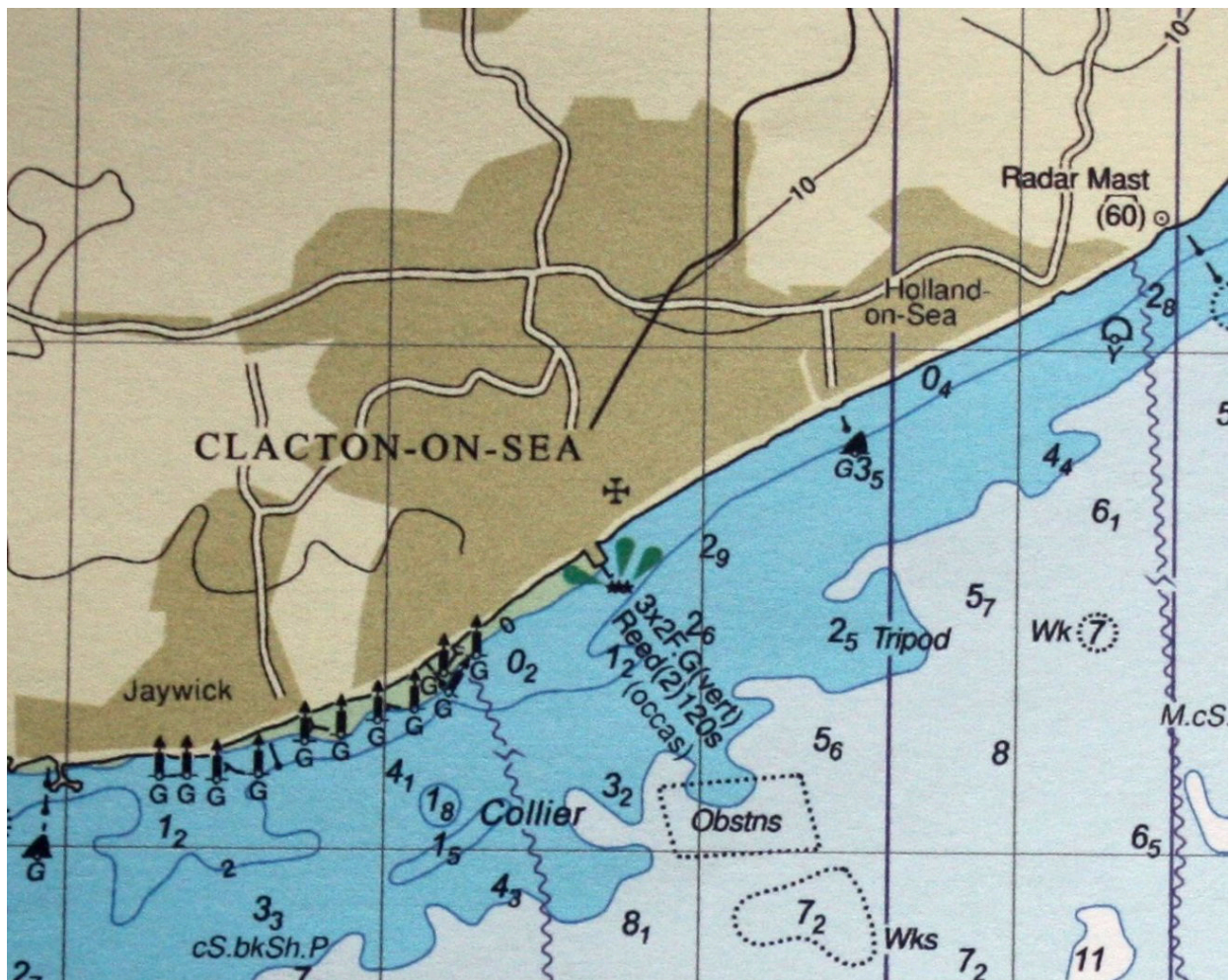


Figure 5 (top) Clacton-on-Sea and the surrounding area as it appears on a chart

Figure 6 Gunfleet Sands windfarm as charted. Note only peripheral turbines are individually charted. A summary symbol has been used for the remainder to avoid obscuring other detail.

The chart chosen to illustrate these points for the Gunfleet Sands windfarms is SC 5607.2 (Edition 12, 2018) (*figure 6*). As with the OS 1:250,000, chart makers (in this case UKHO) have treated the three windfarms as a single unit. At this scale, individual turbines are not marked. Instead the approved windfarm symbol<sup>7</sup> has been used so that other important detail is not obscured. However, the limits of the windfarm, along with the location of power cables, are clearly indicated. In addition, the significant structures around the periphery are marked along with their light characteristics and other aids to navigation that identify them. The same approach has been adopted by an alternative chart produced by Imray (C1 Thames Estuary corrected to January 2019).

Although maps and charts are produced for different users and different purposes and hence are not interchangeable,<sup>8</sup> it is of interest to determine the extent of correspondence between the grid references for the turbine symbols on OS mapping and the charted extent of the offshore windfarms.

Considering first 1:50,000 scale mapping. As noted above, there are just two symbols marked on sheet 169. These have the grid references TM235103 and TM278103; using a co-ordinate converter<sup>9</sup> the equivalent position using WGS 84 for latitude and longitude are 51°44.8'N; 001° 14.2'E and 51°44.7'N; 001° 17.9'E respectively. The first of these lies just inside the north west limit of the wind farm while the second lies just outside the north east limit. Both are close enough to justify the claim that they mark the position of the windfarm, although they do not indicate either its extent or the position of any of the individual turbines.

For the 1:250,000, the scale means that it is only possible to estimate grid references from the paper map. However, estimates for the North West, North East, South East and South West, extremities and latitude and longitude may be calculated using the same converter as for the symbols on 1:50,000 sheet 169. These results and the co-ordinates obtained from chart SC 5607.2 are tabulated below.

	<b>1:250,000 (Sheet 8)</b>			<b>Chart SC 5067.2</b>	
<b>Corner</b>	<b>Approx. Grid Ref</b>	<b>Lat</b>	<b>Long</b>	<b>Lat</b>	<b>Long</b>
<b>SW</b>	TM203208	51°43' 22"	001° 14' 28"	51° 43' 42"	001° 11' 18"
<b>NW</b>	TM233210	51°44' 39"	001° 13' 56"	51° 45' 00"	001° 14' 30"
<b>NE</b>	TM207200	51°44' 59"	001° 11' 43"	51° 44' 30"	001° 17' 36"
<b>SE</b>	TM203204	51°39' 33"	001° 10' 59"	51° 42' 12"	001° 11' 42"

<sup>7</sup> Symbols and Abbreviations used on Admiralty Charts NP5011, UKHO 2018 Section L 5.2.

<sup>8</sup> When working as a local Coastguard rescue officer the author once had to provide advice to a boat owner who had become lost while attempting to make a passage across the Thames Estuary from Whitstable to the entrance of the River Blackwater using a road atlas and was escorted by a Trinity House vessel to Harwich.

<sup>9</sup> Available at [www.bgs.ac.uk](http://www.bgs.ac.uk).



From these figures it is clear that even though the number of turbines and turbine symbols do not correspond, the information concerning the position and layout of the Gunfleet Windfarm on the 1:250,000 map is reasonably accurate given the limitations of the scale. From the perspective of the map user it is possible to identify the windfarm and form a clear impression of its scale and extent.

Since the original question posed concerned the windfarm on Burbo Bank in Liverpool bay, it is appropriate to conclude with a comment on it. On Imray Chart C52 only the extent of this windfarm is shown, using the symbol for undersea power cables <sup>10</sup> and its name in text. The associated marginal note states: *Windfarms shown on this chart consist of numerous turbines. Each turbine has a vertical clearance from 20 to 24 metres. Unauthorised navigation is prohibited within 50 metres of any turbine tower.*

Unlike the Gunfleet Sand windfarms, Burbo Bank does not present a potential hazard to navigation as it lies outside the approach routes to Liverpool and hence at least on this chart and at this scale no aids to navigation are charted.

The limits of the original windfarm derived from the chart are tabulated below:

<b>Corner</b>	<b>Lat</b>	<b>Long</b>	<b>GR</b>
<b>SW</b>	53° 28' 12" N	003° 10' 48" W	SJ218976
<b>NW</b>	53° 30' 12" N	003° 14' 12" W	SD180014
<b>NE</b>	53° 30' 12" N	003° 11' 12" W	SJ214014
<b>SE</b>	53° 28' 12" N	003° 9' 00" W	SD238987

The grid reference for the turbine symbol was given as SJ211988 which converts to 53° 28' 47.95" N, 003° 11' 25.3" W. This lies within the charted limits of the windfarm.

In conclusion, as already noted, maps and nautical charts are aimed at different users and this determines the information included. Onshore wind turbines and wind farms are useful, if not essential, reference points on a topographical map. On this basis, as much detail as possible should be included bearing in mind the limitations of scale. Although the user of a topographical map may notice or know the general location of an offshore windfarm, the number and precise location of individual turbines is likely to be of little value, with the result that OS may consider it appropriate to provide no more than a general impression of its location.

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<sup>10</sup> Symbols and Abbreviations used on Admiralty Charts NP5011, UKHO 2018 Sections L 31.1; L31.2.

## ***An ancient alignment – the Baldernock parish boundary stones***

### ***Niall A Logan***<sup>1</sup>

*The parish of Baldernock is in the county of East Dunbartonshire (formerly in Stirlingshire), some ten miles north of Glasgow. This contribution is a substantial revision and update of NA Logan, 'The Baldernock parish boundary stones', Vernacular Building, 39 (2016), pp. 81-94.*

The stones of the title were discovered in connection with the exploration of some ruined buildings,<sup>2</sup> because in the First Edition Ordnance Survey six-inch map<sup>3</sup> consulted for that study a line of boundary stones was marked nearby, within what is now a forestry plantation. The northern part of the forest had not been harvested in recent times, and in the hope that some of the stones marked there might still survive, I went in search of them in the summer of 2014.

#### ***The parish***

The original parish of Baldernock was very small – the western half, roughly speaking, of its present area – with the eastern boundary following the Branziet Burn. This burn rises near the northern boundary and runs south to the River Kelvin, which forms the southern boundary (see *figure 1* inset). The church thus stood nearer to the centre of the parish than it does now, and the village of Balmore was in Campsie parish. In 1649, the Lords Commissioners for the Valuation of Teinds (tithes) disjoined all that part of the parish of Campsie that lay between Balgrochan (to the east) and the Branziet Burn and annexed it to the parish of Baldernock *quoad sacra* (ie for sacred matters only, and so without civil obligations).<sup>4</sup>

Baldernock was thereby doubled in size by extension to the east, and now included the village of Balmore as its largest settlement, but the church now stood well to the west of the centre of the parish. Kilpatrick parish – which lies to the west of Baldernock – was split into New and Old (or East and West) Kilpatrick parishes by an Act of Parliament on 16 February in the same year. A history of New Kilpatrick parish stated that this change was made at the behest of the marquis of Montrose – the landowner – because for some parishioners the churches of Baldernock and Strathblane (a parish lying to the north west of Baldernock) were closer to them than their own church; Kilpatrick Church lies far to the west near the River Clyde.<sup>5</sup> It seems reasonable to assume that the expansion of Baldernock was also an initiative of Montrose; especially as the new parish boundary followed a line that had been established by his family many years earlier, as described at the end of this article.

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<sup>1</sup> Niall Logan is a retired professor of systematic bacteriology. He is Chair of the Scottish Vernacular Buildings Working Group, a trustee of Auchindrain Township Museum, near Inveraray, Argyll, and now devotes much of his time to vernacular architecture, archaeology, and local history.

<sup>2</sup> NA Logan, *South Craigend and Cornhill: reading the ruins*, Vernacular Building, 38 (2015), pp 55-72.

<sup>3</sup> Ordnance Survey, six-inch First Edition, Stirlingshire Sheet XXVII; surveyed 1860, published 1865.

<sup>4</sup> J Lapslie, *Parish of Campsie*, The Statistical Account of Scotland, William Creech, Edinburgh, Vol XV (1791-1799), pp 314-315. J. Pollock, *Parish of Baldernock*, The New Statistical Account of Scotland, W Blackwood, Edinburgh, Vol. VIII (1834-45), p 169.

<sup>5</sup> J McCardel, *The Parish of New Kilpatrick*, R. Maclehose, Glasgow (1949), p 19.



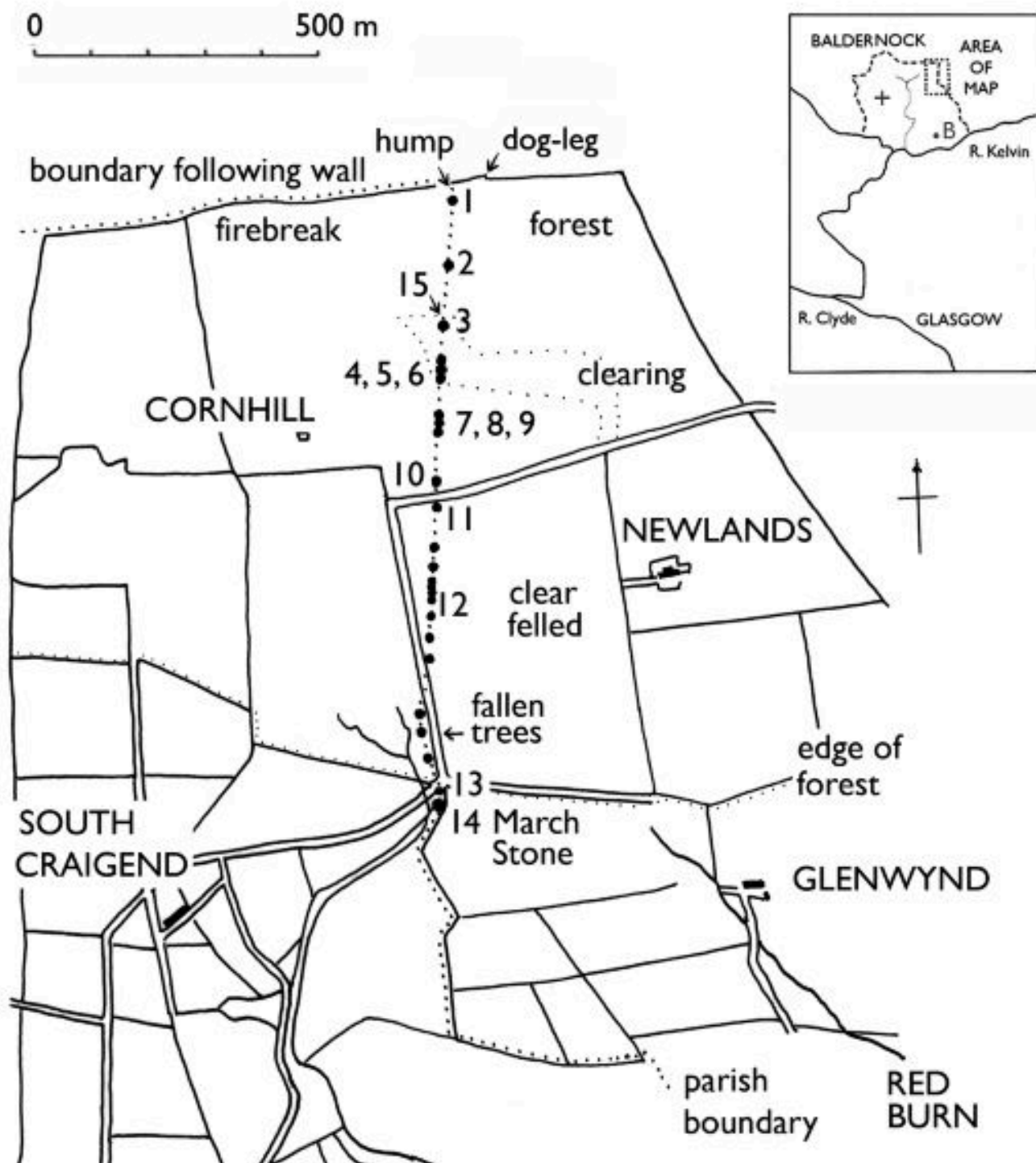


Figure 1. Sketch map based on First Edition six-inch and twenty-five inch Ordnance Survey maps, and Lennox Estate maps of circa 1850, showing the line of the boundary stones, and other features mentioned in the text. Inset shows location of church (+) and Balmore (B), with the Branziet Burn passing between them.

### **The boundary**

Going clockwise, from the northwestern corner of the parish at Craigmaddie (NS 572772), the parish boundary runs slightly north of east for 3.14km, following a wall. From NS 599770 (at the north-western corner of the area shown in *figure 1*), this wall forms the north side of a firebreak in Lennox Forest. At NS 603771, the boundary turns approximately 80°, across the firebreak, to run south for 1.03km. The First Edition OS six-inch and twenty-five inch maps mark a row of twenty-five boundary stones <sup>6</sup> lying

<sup>6</sup> The 2nd Edition six-inch and twenty-five inch maps (Stirlingshire Sheet XXVII.SE and Stirlingshire Sheet XXVII.16, respectively, revised 1896 and published 1899) show nineteen

along this line to the south, terminating with a stone at NS 603761, beyond the southern edge of the plantation, near a drystone wall. The boundary then follows that wall for a short distance to the southwest before turning with it to the southeast (*figure 1*). On viewing the terrain today it is astonishing that, in the mid-nineteenth century, most of the fields shown in *figure 1* were described in estate plans as ‘arable’. Only the irregular field immediately south of the March Stone, and the two in the north by Cornhill, were listed as pasture.<sup>7</sup> Nowadays most of the area around South Craigend is rough grazing, with only the southernmost fields shown in *figure 1* being managed pasture. North of Cornhill, the land rises to 231m at Mount Huillie on the Clochore Ridge.

Within the plantation, the line of stones is roughly divided into northern and southern halves by a forestry track that runs from east to west, and which then turns through 90° to run south (*figure 1*). This track was part of the route linking Baldernock and Campsie in the days before motor vehicles; later, the east-west leg of the track was extended further to the west, passing to the south of Cornhill. Within the northern half of the plantation the boundary line – from the wall by the firebreak down to the track – is 519m long, and the First Edition OS maps show ten boundary stones along it. Throughout this part, a grassy track runs alongside the boundary line, immediately to its west, through the forest. It is probably a leader track for vehicle access, as it is too narrow to be a firebreak. The lines followed by this track, and by the firebreak that runs to the west from its northern end, appear to have been chosen with respect for the preservation of the parish boundary. In this part of the plantation, about halfway down, the boundary line crosses a clearing; this is boggy ground and was probably not planted (*figure 1*).

The southern part of the boundary line runs for 459m until it meets the edge of the plantation, encompassing thirteen boundary stones in the First Edition OS maps. Most of this area was clear-felled relatively recently; the ground surface is treacherously uneven and it has a vigorous regrowth of trees, so its exploration was deferred. However, two more boundary stones are marked on the maps as lying outside the plantation (*figure 1*), and these were sought and discovered early on. In *figure 1* and the account below the stones that have been traced have been numbered consecutively from north to south, but this does not indicate the order of their discovery.

### ***Initial discoveries***

First sought was the Parish March Stone, the principal marker at which boundary perambulations would start and end. A mid-nineteenth century Lennox estate map<sup>8</sup> located it just south of Peathill Wood, in the east of the parish, in an area of rough grazing just south of the present forest. In dense undergrowth I found a damaged piece of sandstone at NS 603761 (Stone 13). It had clearly been made by and placed by man, and lies on the parish boundary as shown by the OS maps.

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boundary stones, compared with the twenty-five shown in the 1st Edition maps. These discrepancies are noted at the appropriate places in the text.

<sup>7</sup> Logan (2015), op. cit.

<sup>8</sup> Woodhead, Kinkaid & Antermomy, Plans of Farms and Abstracts of Leases. LC 630, William Patrick Library, Kirkintilloch. Farms of Newlands & Cornhill, Glenwynd, South Craigend & Hillhead. Plan from Lennox Estate Papers; photograph P21237, William Patrick Library, Kirkintilloch.





*Figure 2 (top left). Stone 14, the Parish March Stone, seen from the north with the drystone boundary wall beyond it. It measures 60x60cm and stands 35cm above ground level.*

*Figure 3 (lower). Stones 7 and 9 viewed, after cleaning, from the north. The earth bank on which they stand can also be seen. Stone 7 is 60x40cm and stands 40cm above ground level, and 9 is 75x65cm and 25cm above ground level*

*Figure 4 (top right). Stone 6, standing in the forest clearing. Although it is much weathered, the letter "B" can clearly be seen on its western face; it stands 30cm above ground level and is 25cm wide by 17cm thick.*



However, its top part appeared to have broken off and it seemed too slight to be the principal boundary marker; besides, the estate map showed the 'Parish March Stone' somewhat south of here. Cutting back an area of undergrowth near a bend in the above-mentioned drystone wall, 17m north of it, revealed a more convincing candidate. It is a large, irregular boulder of reddish whinstone (Stone 14, *figure 2*) at NS 603761, lying 8.5m south of the damaged stone, with a drainage ditch running between them; part of this ditch close to the stone is shown as a circular pool in the Second Edition OS maps, with the stone itself not marked – it was probably submerged. It is in linear alignment with the damaged stone and the presumed continuation of this line to the north by three stones lying (beneath fallen trees) in the plantation nearby, running slightly west of north for 128m. The line then swings slightly east of north and runs straight for 856m, crossing the forest track, as far as the most northerly marked stone, and from there it is another 34.5m to the wall that the boundary follows to the west (*figure 1*). While the discovery of these stones coinciding with the parish boundary was encouraging, two points do not an alignment make!

Therefore, the northern section of forest was explored along the leader track. I soon found a moss-covered boulder at NS 603767 (Stone 9) laying at the eastern edge of the track, and then a little way to the north another mossy boulder (Stone 7) in line with the boundary. Both boulders are of whinstone, and are seen in *figure 3*, after they had been cleared of moss. They appear to lie atop a broad length of earth dyke, whose margins may well have been emphasized by the ploughing and wheel ruts of forestry operations; however, the boulders may have discouraged forestry workers from driving across it. The distance between the two stones seemed to match that implied by the maps. According to the OS maps there was a group of three stones in this area, but precise and accurate positions could not be determined because grid references were only introduced to OS maps after re-triangulation in the mid-twentieth century,<sup>9</sup> and in any case, my hill-walker's GPS unit was ineffective beneath the forest canopy. Pacing the same distance to the north and south did not locate a third stone, and it seemed probable that it lay beneath a stray tree growing within the leader track. Another large whinstone boulder (Stone 2) was found further up the leader track, on its eastern edge, at NS 603771. It is in line with the pair of boulders found earlier, but there was no discernible remnant of the earth dyke. No further boulders were found between here and the top of the leader track. Where the boundary crosses the firebreak and meets the wall that it follows to the west the possible line of a dyke is just discernible – a low hump that is not associated with a drainage ditch. However, as none of the stones found so far carried any markings, it might be argued that they were just random boulders – even though no other large stones had been encountered along the track.

Returning south down the track I almost tripped over another stone, hidden among blaeberry undergrowth in the boggy clearing. It stands at NS 603768 (Stone 6, *figure 4*), in line with the other stones so far found, but is a shaped, dressed stone whose upper part has been dressed and cut to give a curved top, so that it looks like a gravestone for a dog. It has carvings upon it: a much weathered and indecipherable set of marks on the top, a 'B' – presumably for Baldernock – on its western face, and a 'C' – presumably for Campsie – on the eastern one. It was upright and exposed when found, although set rather low; it may have sunk somewhat in the boggy ground. The lateral dimensions are not so very different to those of the first, damaged stone that was found (Stone 13), and

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<sup>9</sup> WA Seymour and JH Andrews, *A History of the Ordnance Survey*, Dawson (1980).





Figure 5 (above). Stone 1 seen from the west, after re-erection and cleaning; the archaeologist's trowel gives an idea of scale. It measures 42cm above ground level, 25cm wide by 18cm thick at the top. The letter "B" measures 10cm high and 6.5cm wide, and the other side bears the letter "C" which measures 9cm high and 7.5cm wide.

Figure 6 (top right). Stone 10 following excavation. It measures 28cm wide by 16.5cm thick at the top and 30.5cm by 18cm at the bottom of the dressed part. It is 58.5cm in overall length, the undressed base being 18cm long and the dressed, exposed top 40.5cm long. The letter "C" is 9cm high and the same wide.

Figure 7 (middle right). Stone 10, showing the date "1817" carved on its top, viewed from the east. The figures are 7.5cm high and together they span 18cm).

Figure 8. Profile of excavated boundary dyke, showing Stone 7 on top of the clay ridge, with U-shaped depressions at either side. The dimensions are: a-b 51cm; c-d 122cm.



so it is probable that the missing part of that stone also carried carvings. The First Edition OS maps indicated a line of three stones at this location, but pacing the distances implied did not lead to any further discoveries.

### ***Further finds***

A diagram was then prepared from the six-inch First Edition OS map, showing distances between the stones, converted to paces north of the forestry track. Pacing a straight line was rarely possible, owing to obstacles such as drainage ditches, low branches and fallen trees, so the exercise was rather challenging. However, two buried stones (Stones 1 and 10) were located by plunging an archaeologist's trowel into the ground around locations indicated by the pacing. They are both pieces of sandstone that are similar in their shapes, sizes and marks to the carved stone in the clearing (Stone 6). I pause here to pay tribute to the remarkable accuracy of the early OS surveyors.

*Figure 5* shows the northernmost stone (Stone 1) of the line at NS 603771. It lay fallen and buried beside a forestry drainage ditch, and was excavated, set upright and cleaned. The lower part, set in the ground, is undressed, the side that would probably have faced west is carved with the letter 'B', and the other side bears the letter 'C'. As with Stone 6, the carving on the top is not legible; when viewed from the east, the right-hand side of the top has been defaced, but on the left-hand side the figure '1' is clear, and just to the right of it part of a rounded numeral such as 6 or 8 can be made out.

At last there was the discovery of an undamaged, carved stone (Stone 10), at the other end of the leader track, near the southern edge of this part of the forest (NS 603766). When located it was lying as shown in *figure 6*, but completely buried under mud and moss. It is a block of dressed sandstone with a curved top, like stones 1 and 6. The lower part, to be placed in the ground, has been left rough. When exposed it was lying flat, bearing a letter 'C' on the upper face, and carving of letters or numbers on the curved end. A pit was dug to receive the bottom end, and it was set back upright, and cleaned. The top is carved with '1817' (*figure 7*), which presumably marks the year of erection; the '8' is cut with less clarity and depth than the other figures. As with stones 1 and 6, the face that would have looked west is carved with the letter 'B', and the face to the east with the letter 'C'. The letter 'B' is carved smaller and with less assurance than the letter 'C' – which is neatly finished with serifs. Perhaps 'B' was cut by a different hand to 'C' and '1817', maybe at a later time; whatever the reason, it seems possible that this and the other carved stones were commissioned by Campsie parish, perhaps with less effort being spent on cutting the letter 'B'. So far six of the ten stones in the northern part of the plantation had been located, but the remainder were elusive.

### ***Threat and safeguard***

In late November 2014 I learnt that harvesting operations were imminent, and so contacted Forestry Commission Scotland (FCS) to see if the stones could be protected. I received a very positive response, and a few days later met the FCS Environment and Heritage Manager for the Scottish Lowlands Forest District, Yvonne Grieve, at the site. FCS policy is to define a five-metre protection zone around features of archaeological interest, and to mark them in the digital maps that the forest workers use. The boundary stone locations indicated on the nineteenth-century OS maps had already been transferred to the digital map, and using the power and accuracy of Yvonne's GPS we located a further stone at NS 603769 (Stone 3). It is a large whinstone boulder lying



close to a drain at the north edge of the clearing. As with Stone 2, it lies directly upon the boundary line, but there is no detectable remnant of an earth dyke.

I was now determined to trace the remaining stones that were marked on the maps in groups of three: two remained to be discovered in the clearing by Stone 6, and one by the first pair of boulders found (Stones 7 and 9). By probing thoroughly in line with Stone 6 in the clearing, the missing stones (Stones 4 and 5) were soon located; they sit just a few paces apart (*figure 10*). The intervals between their centres – working from the north – are 1.3m and 1.5m, which are much smaller than those implied by the maps; the symbols had evidently been printed so as not to overlie each other, and their placement did not indicate the actual distances. They are relatively small whinstone boulders with their tops lying just below the present ground level, among dense vegetation. As with Stone 6, it seemed possible that they were larger than they appeared, but had subsided in the soft ground. In the Second Edition OS maps, only two of these three stones are marked.

Given that the intervals between Stones 4, 5 and 6 were smaller than those implied by the maps, I probed between Stones 7 and 9 and found a large boulder (Stone 8) buried midway between them; it did not, after all, lie under the accidental tree! It is of sandstone, has a fragmented upper surface, and lies just beneath ground level, so that substantial excavation would be required to determine its dimensions. It may have been of greater height originally, the top part having been lost. As with Stones 4, 5 and 6 these stones are sited closer together than implied by the map, but are equidistant, with intervals between their centres of 5.5m, and again their symbols were presumably placed this way so as to avoid them overlying each other in the printed map. As mentioned above, notwithstanding the disturbance caused by forestry operations, it was believed that these three boulders lay atop a low earth bank or dyke. Excavations of this feature are described in 'An ancient alignment' below.

Although exploration of the southern, clear-felled area was not attempted during the early part of the project, a fifth carved stone was traced (Stone 11) at NS 603766, immediately to the south of the forestry track, just outside the harvested area. It was found by carefully extrapolating a line from the alignment of stones in the north, and then probing along it from the edge of the track towards the south. It was largely buried and covered by rough grasses. As it lies close to the track, it would be vulnerable to damage or theft if left exposed, and so after photography it was covered again; in fact, I have been unable to locate it since! Only the 'C' was visible, and the carving on top is defaced. The damaged or weathered marks on the tops of Stones 1, 6 and 11 are quite consistent with the '1817' on Stone 10, but the significance of that year is unknown.

### ***Yet more finds***

In 2017, the clear-felled area south of the forestry track was explored, but accurate pacing was not possible across the rough terrain, with its new growth. It was much disturbed by modern timber-harvesting machinery and was rather dangerous going, with many deep and hidden trenches and hollows. Only one boulder that was almost certainly a boundary stone was encountered (Stone 12), perhaps surviving because it stands at the intersection of two deep drains; owing to these, it was not possible to approach closely to measure it. It is one of four in the vicinity that were marked on the First Edition OS maps, though only two were shown in the Second Edition sheets.

The sites of other stones have either been obliterated by harvesting and replanting operations, or were inaccessible owing to the dense growth of young trees. The area that contained three stones – in the lower part of the line west of the track – lay under

fallen trees until recently, but within the last two years harvesting operations and subsequent fire have so damaged the area that in 2019 a careful search for these stones proved fruitless. Even without that damage the chance of finding any stones here was slim; the Second Edition OS maps marked only the southernmost one.

However, this is a site that keeps on giving. During the writing of this article, when revisiting the stones with an interested guest, I noticed a hummock just north of Stone 3. Dense, low branches and extensive overgrowth of moss had previously concealed it but, following nearby felling and the dry summer of 2018, it was now quite conspicuous and proved to be a fifteenth boulder, not shown in the OS maps. It is marked '15' in *figure 1*.

### ***An ancient alignment***

The harvesting work on the northern part of the forest – encompassing stones 4 to 10 – was completed in late 2015, and the site could not be revisited until late 2016, once the timber had been removed. The stones had indeed been protected during forestry operations, all was well, and I explored the alignment further, having come across the following record related by Cameron in 1892:<sup>10</sup>

'There is an extant agreement, of date 1587, between the then "Erle of Montrose and John Lennox of Woodheid", settling the boundaries of their respective estates, which they had defined by the erection of an earthen ridge. This archaic march "dyke" may still be seen stretching across the Clochoore [*sic*] Moor, sometimes in a straight line, sometimes in a crooked one. In one place there is a rectangular diversion, intended to exclude what had apparently been a hut. This ridge is about four feet wide by two feet high, and in it there is inserted at intervals large stones. It can be seen best between Newlands or Cock-ma-lane farm and Mount Hooly [*sic*], immediately overlooking Clochoore.' The contract Cameron refers to is dated 10 November 1587<sup>11</sup> and with a few hours effort it was transcribed. It refers to "merches betwixt the Landis of lechad and cul--athrik (there is a hole in the document in the middle of this word) ... the said noble lord is content to set in tak (lease) ... for maill and Bounteth (rent and gratuity) to the said johne Levenox of wodheid all & haill the saids lords part of his lands of the hill of lechad ... for all the dayis & terms of the said johnes lyftimis ... [for] four pundis maill". Lecket Hill<sup>12</sup> (NS 644812) is about 3.5 miles north west of Stone 1. 'Cul--athrik' is undoubtedly a spelling variant of 'Culphatrick', which appears to be an archaic name for the estate of Craigbarnet (NS 594791), west of Lechad.<sup>13</sup> A line extrapolated to the

<sup>10</sup> J. Cameron, *Parish of Campsie*, D. MacLeod, Kirkintilloch (1892), p 204.

<sup>11</sup> National Records of Scotland (NRS) GD220/1/A5/2/4.

<sup>12</sup> 'Lechad' and 'Lecket' are probably derived from 'Leacaidh', meaning 'flat rock place' or 'bare hilltop'; I. Taylor, *Place Names of Scotland*, Birlinn, Edinburgh (2011), p 107; P. Drummond, *Scottish Hill and Mountain Names*, Scottish Mountaineering Trust (1992), p 33.

<sup>13</sup> A Retour [a procedure for inheritance of land held of the Crown] of April 23, 1647 concerning James Livingston of Kilsyth mentions 'Lecket, et Culphatrick'; B. Durie, *Retours of Services of Heirs*, Volume B, Lulu.com (2015), xix, 35. The latter name is seen spelled as Calfadrick, Korfatrick, Corsatik and Kirpatrik, and the estate is also referred to as Ballebrochyr, Balgrochqueris, Balgrochan, and Craigbernard; D. Rixson, *Campsie*, in *Land Assessment Scotland* at [www.las.dennisrixson.com](http://www.las.dennisrixson.com). Documents dated c 1390-1400, and 13 February 1400 refer to Malcolm, son of Bernard of Herth, and to Alice of Erth, Lady of Craigbernard, and lands called Ballebrochyr and Lechad; NRS GD220/2/1/37, GD220/2/1/38, GD220/2/1/39. A sasine [document attesting possession of property] of 1575 refers to 'terris de balgrochro et Liechatt'; NRS GD220/1/A4/3/1.



north from the boundary alignment would pass between Craigharnet and Lecket Hill but after about a mile it would meet the Finglen Burn, which rises in the north west and runs to the south east, and which might well have been used to mark the continuing boundary between them.

Clochore and Mount Hoolie lie to the north of the point where the boundary stone line appears to run as a hump across the firebreak to meet the east-west wall. The construction of the earth dyke was presumably necessary because there were no natural or man-made features available to mark the boundary between the two landowners as it ran across featureless moorland. It is not known how much further north from the firebreak wall the march dyke may have run, and there are no traces to be seen on the ploughed-up forest floor immediately north of there. Neither in the OS maps nor upon the ground nowadays is there any sign, on the line of the boundary, of the rectangular diversion to which Cameron refers (above); however, 63m to the *east* along the wall – so lying well within Campsie parish and distant from the boundary – there is a dog-leg 5.5m to the south, after which the wall continues eastwards (*figure 1*).

The hump running across the firebreak, and the bank associated with Stones 7, 8 and 9, appear to be remnants of the sixteenth-century dyke, or restorations of it, and it seems quite possible that other boulders originally set upon the top of that dyke now lie below the soil surface, so that they were not observed by the nineteenth-century map surveyors; we have already seen that some of the boundary stones marked in the First Edition maps were not shown in the Second Edition revisions. In 2017, I obtained permission from FCS to carry out some limited excavation of the dyke, in order to explore its structure and to seek further stones. It was a very wet summer that year, which made investigation difficult.

A slot was cut across the dyke beside the south side of Stone 7. The thin, superficial, organic layer of blackish peaty material and tree roots was removed from the heavy clay beneath, and the cross-section revealed two shallow, U-shaped depressions either side of a mound of grey and yellowish clay, upon which stood the boulder. Such a profile is consistent with the earthen ridge described by Cameron and the dimensions he gave (*figure 8*), and the clay appeared to lie not as an unstructured mound, but as large lumps or clods, such as may have been cast up by spade or shovel from the ditches either side; it had not been penetrated by roots. The site was revisited in 2019 and further excavation was made of the dyke at its west side immediately north of Stone 9, to see if the observations made at Stone 7 could be replicated. Overlying tree roots restricted the work, but the appearance of the small area exposed was indeed very similar to that seen in the slot cut beside Stone 7 (*figure 9*), and it may be concluded that the putative dyke is indeed a man-made feature, and not just an artefact created by the ploughing and wheel ruts of forestry operations. It is tempting to believe that the profile observed dates from construction of the dyke in 1587, especially as some of the exposed clods of clay actually underlie the large and heavy boulders. However, as the line of the dyke apparently only survives along the parish boundary, with no traces evident elsewhere, it is quite possible that the excavated features reflect restoration works done at a later date.

Also in 2017, and 2019, some excavation was carried out at Stones 4, 5 and 6. The objective was to see if, despite the soft ground, a profile similar to that seen at Stone 7 could be uncovered. However, rather than providing further clarification, this work served only to confuse. Instead of the hoped-for evidence of a bank lying between two ditches, with boulders set upon its top, six further stones were found lying a little



Figure 9. Close-up view of boundary dyke at Stone 9, showing construction from clay clods. The dimension a-b is 23cm.

Stone c appears to have been displaced to a greater extent – although it might fit comfortably into the gap between Stones b and 4. Stone e cannot be explained so easily. Stones 4, 5 and a-f are all appreciably smaller than Stones 2, 3, 7, 8, 9 and 12, and of fairly uniform size – mainly 58-69cm long by 30-43cm. The further excavation of Stones 4 and 5 at this time showed that they were in fact no larger than they appeared to be at the time of their discovery in 2014.

Cameron further recorded<sup>14</sup> that in 1630 the Earl of Montrose feued (perpetually leased) the Eleven Ploughlands of Balgrochan to local proprietors in Campsie parish, with the farmlands of Newlands (or 'Cock-ma-lane') and Glenwynd (*figure 1*) representing the westernmost two of these. Their western boundaries also appear to follow the 1587 boundary line closely. South of the March Stone, the parish boundary has an irregular route that follows the western margin of Glenwynd, as set in 1630; however, it appears that the 1587 dyke and its boulders were adopted in 1649 to mark the new parish boundary as it ran north of here.

By macabre coincidence, the years 1587 and 1649 respectively saw the beheadings of Mary Stuart and her grandson Charles I.

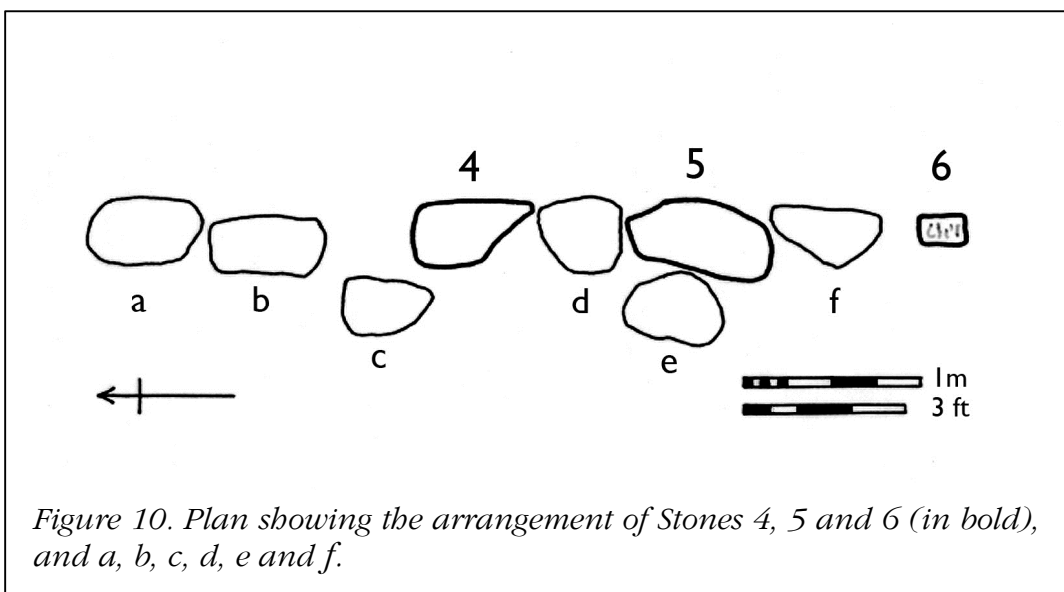


Figure 10. Plan showing the arrangement of Stones 4, 5 and 6 (in bold), and a, b, c, d, e and f.

<sup>14</sup> Cameron, op. cit., pp. 205-207.



## ***The Black Letter Prayer Book – a revelation?***

**Bill Henwood**

One of the byways of Ordnance Survey history is the reproduction by photo-zincography of a variety of historical documents, done mainly in the 1860s when Sir Henry James was Director General. The best known and most frequently seen of these are the county facsimiles of the Domesday Book.<sup>1</sup>

Among the others, the Black Letter Prayer Book of 1636 seems especially curious and has been referred to by several authors.<sup>2</sup> Although it had been replaced by the 1662 Book of Common Prayer more than two centuries earlier, copies would still have been around when it was photo-zincographed, and the question “why was it done?” has been asked before.<sup>3</sup> In *The Ordnance Survey in the Nineteenth Century*, Richard Oliver hints at the reason, describing it as having been “originally prepared in 1869-70 for the Ritual Commissioners”.<sup>4</sup> But neither this nor other secondary sources appear to quote its full title, which answers the question:

Fac-simile  
of the  
Black-letter Prayer-book  
containing  
Manuscript alterations and additions made in the year 1661  
“out of which was fairly written”  
The Book of Common Prayer  
Subscribed, December 20. A.D. 1661. by  
The Convocations of Canterbury and York,  
and annexed to  
The Act of Uniformity, 13 & 14 Car. II., C.4, A.D. 1662

So, this was no ordinary Black Letter Prayer Book. It was the annotated copy attached to the Act of Uniformity, which in the 1860s was being stored in the House of Lords Library at the Palace of Westminster.<sup>5</sup>

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<sup>1</sup> Bill Henwood, ‘An unnecessary distraction?’ *Sheetlines* 84, 13-16; Rob Wheeler, ‘Sir Henry James’ Domesday Book’, *Sheetlines* 113, 42-7.

<sup>2</sup> These include: Tim Owen and Elaine Pilbeam, *Ordnance Survey – Map Makers to Britain since 1791*, Southampton, 1992, p59; I Mumford in WA Seymour (ed.), *A History of the Ordnance Survey*, Folkestone, Wm. Dawson & Sons Ltd., 1980, p164; Richard Oliver, *The Ordnance Survey in the Nineteenth Century*, Charles Close Society, 2014., pp309, 311.

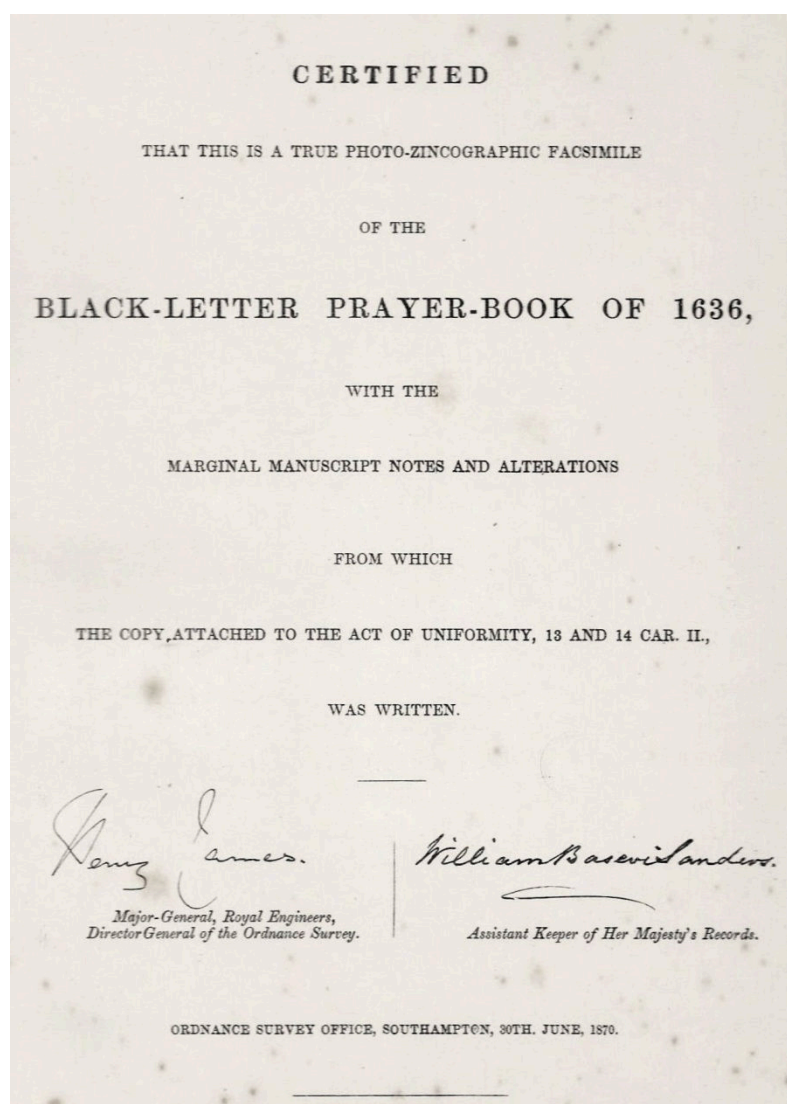
<sup>3</sup> ‘*Ordnancemaps topics: Black Letter Prayer Book*’ (question by Hugh Brookes, answer by Richard Oliver), *Sheetlines* 66, 50.

<sup>4</sup> Oliver (2014) p309.

<sup>5</sup> The copy to hand is dated 1871 and was jointly published by Longman & Co., London; Basil M Pickering, London; Parker & Co., Oxford; and Macmillan & Co. Cambridge. An edition was still available over 50 years later: *Catalogue of Maps and other Publications of the Ordnance Survey 1924* (Ordnance Survey, 1924), p17. Owen and Pilbeam op. cit. p59 illustrates the title page. This shows annotations but their significance is not explained.

*Sheetlines* is not the place to try to unravel the politics of the Church of England in either the mid-seventeenth or later-nineteenth centuries. Suffice to say that with the rise of the 'high church' Oxford movement, elements of the C of E became concerned about excessive ritual creeping into the liturgy. A Royal Commission, established in 1867 to find out what was going on and what needed to change, sought the production of primary documents, including the annotated Black Letter Prayer Book.<sup>6</sup>

James has been criticised for his foray into the facsimile reproduction of historical documents, possibly at the expense of the progress of map production. The production and printing of the facsimile annotated Black Letter Prayer Book, which comprises more than 500 pages, measures 10 inches by 16 inches, and weighs over 3.5kg in its original binding, must have involved much time and effort. But its full title reveals that it was done for a very specific official purpose, and not on a mere whim or as a vanity project.



<sup>6</sup> The terms of reference, workings and conclusions of the 1867-70 Commission are summarised in the report of a 1906 Commission. Transcription by Thomas JW Mason (2001) at <http://anglicanhistory.org/pwra/rced9.html>





## The form of solemnization of Matrimony.

**E**lest, the banes must be asked three severall Sundayes or Holy dayes in the time of Service, the people being present after the accustomed manner.

And if the persons that <sup>are to</sup> be married, dwell in divers Parishes, the Banes must be asked in both Parishes: and the Curate of the one Parish shall not solemnize Matrimony betwixt them, without a certificate of the Banes being thrice asked, from the Curate of the other Parish.

At the day <sup>& time</sup> appoynted for solemnization of Matrimony, the persons to bee married shall come into the body of the Church, with their friends and neighbours. And there ~~the Priest shall say thus, standing to:~~ <sup>gather, y<sup>e</sup> Man on y<sup>e</sup> right hand, & y<sup>e</sup> woman on y<sup>e</sup> left; y<sup>e</sup> Priest shall say,</sup>

**D**eare beloved friends, We are gathered together here in the sight of God, and in the face of his congregation, to joyn together this man and this woman in holy Matrimony, which is an honourable estate, instituted of God in paradise, in the time of mans innocency, signifying unto us the mysticall union that is betwixt Christ and his Church: which holy estate Christ adorned and beautified with his presence, and first miracle that he wrought in Cana of Galilee, and is commended of S. Paul to be honourable among all men, and therefore is not to be enterprised nor taken in hand unadvisedly, lightly, or wantonly, to satisfie mens carnall lusts and appetites, like brute beasts that have no understanding, but reverently, discreetly, advisedly, soberly, and in the fear of God, duly considering the causes for which matrimony was ordained. <sup>First it was ordained for</sup> ~~One~~ <sup>his Holy Name</sup> was the procreation of children to be brought up in the fear and nurture of the Lord, and praise of God. Secondly, it was ordained for a remedy against sinne, and to avoid fornication, that such persons as have not the gift of continency,

¶ 4

might

<sup>#</sup> First, the Banes of all, that are to be married together, must be published in y<sup>e</sup> Church three severall Sundayes, or Holydaies in the time of Divine Service, immediately before y<sup>e</sup> Sentences for the Offertory; y<sup>e</sup> Curate saying, after y<sup>e</sup> accustomed manner [I publish y<sup>e</sup> Banes of Marriage between M. of <sup>& K. of</sup> If any of you know cause, or iust impediment, why these two persons should not be joynd together in holy Matrimony, ye are to declare it: This is y<sup>e</sup> first, [second, or third] time of asking.]

## ***A Six-inch Lancashire and Yorkshire cartobibliography***

### ***Rob Wheeler***

#### ***Rationale***

The 1st edition six-inch maps of Lancashire and Yorkshire are one of the Ordnance Survey's most attractive and interesting products. Finely and delicately engraved, they show northern England at a time of enormous change with the massive investment under way that produced the world's first industrial economy. One sees the country scattered with coal pits and - more prominent and also more costly - the canals and railways that carried their output to consumers. One sees vitriol works, iron works, glass works, the buildings of the cotton and wool trades, along with the housing thrown up to house their workers. It is a fascinating picture and it is one which, on some sheets can be followed through multiple stages.

Between sheet publication and a date around 1867, new public railways were surveyed in within a few years of opening. As I explained in *Sheetlines* 113, mapping a new railway required attention to not just the structures of the railways itself but also the alterations to roads, field boundaries and watercourses that it had caused. Moreover, the railway needed to be fixed in relation to adjoining detail, so, if that detail had altered, those changes needed to be mapped too. Thus new industrial buildings or houses adjacent to the new railway were mapped. The process was extended to new private railways that connected coal pits, etc, to the new line. Normally the rest of the sheet was left unchanged. However, CHA Townley<sup>1</sup> gives instances where private branches elsewhere on the sheet and tramways unconnected to any public railway were altered at the same time. I suspect that these alterations were outside the remit of the officers sent to undertake these revisions; however, those officers will necessarily have had dealings with coal-owners' agents, and if the agent to the Duke of Bridgewater took the trouble to draw one's attention to important developments on his Lordship's property elsewhere, it would be inexpedient to refuse to take an interest. Such factors may explain how revision sometimes extended beyond its normal bounds.

When these alterations were added to the copper-plate, no change was made to the marginalia. The Survey subsequently realised the problems this might cause. A few sheets were even stamped with a note in red, warning that railways had been added after the "publication date hereon", but these amount to less than 10% of the sheets affected by revision. This causes problems when 'desk-top assessments' are commissioned from archaeologists who all too often are ignorant of the finer points of Ordnance Survey maps, and assume that, because a feature appears on a map that declares itself to have been published in 1849, that feature must necessarily have been extant at that date. The problem is made worse because the most readily-available copies of these maps are those on the NLS

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<sup>1</sup> CHA Townley, "1:10,560 Ordnance Survey Maps - Lancashire Sheets 85, 92, 93, 94, 95, 102, 103", *Sheetlines* 42, 10.



website; and the copies they scanned are usually ‘Record maps’ from the very end of the series’ publication history.

It would therefore be a great boon to have a list showing which sheets were revised when, and where specimens of that state can be found. In effect, what is needed is a cartobibliography. The task of addressing all the counties surveyed at this scale would be a major one, and Roger Hellyer, quite understandably, felt he had enough on his plate already. I therefore floated the idea of a cartobibliography which should be a cooperative project and which should appear on the Society’s web-pages as a working tool even while it was still incomplete. Indeed, the existence of pre-publication states (as recorded in *Sheetlines* 113) means that no list of this nature is ever likely to be altogether complete.

With the invaluable assistance of Roger Hellyer’s list of public railways, which he kindly expanded to show which six-inch sheets were traversed by each line, I have put together a structure listing, for each sheet, the lines constructed between the commencement of survey and the end of the 1860s.<sup>2</sup> These are listed in date order, and there is an implicit assumption that they were added to the plate in that order: in other words, if one railway on my list is shown then all the preceding ones will be shown too. If this turns out to be false (as it surely will in at least a few cases) this can be accommodated by changing the order of railways in the list. Against each railway, there is space for the location (and date) of specimens which include that railway and its predecessors but not those which follow. Of course, many of these potential states will turn out not to exist. If two railways open within a month of one another, it is unlikely that surveyors sent to deal with the first will ignore the second. There are a few complications like non-railway alterations, which typically arose from sanitary surveys or from the creation of new municipalities, but enough has been said to convey the general idea.

Much of the work of populating this structure for Lancashire has been undertaken by Richard Oliver. What is needed now is for CCS members who have occasion to use 1st edition maps for the two counties in question to see whether they ought to be added to the list and, if so, to let me know.

### ***Description of the Lists***

Separate spreadsheets have been compiled for Lancashire and for Yorkshire. Each is presented in three versions: a pdf for normal reference, a shortened pdf, and a csv (comma-separated variables) file for those who would like to import into a spreadsheet or have a format to which they can add extra columns. The shortened version is intended for those who encounter a map in an archive and want to check it using a file they can download to a smartphone. To keep the size down, the Yorkshire shortened version is split into three: sheets 1-100, sheets 101-200, and sheets 201 onwards.

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<sup>2</sup> These are to be found on the Society website at <https://www.charlesclosesociety.org/provo>

### ***Normal pdf and csv layout***

Column A gives the Sheet number.

Cols B & C gives dates of survey and of publication, taken from the sheet's lower margin.

Column D lists the railways on the sheet. All public railways opened to passengers before 1870 have been listed, along with selected private lines and mineral branches. A *name* and/or *description* are given. The name is that used by the OS, albeit heavily abbreviated to save space. It is normally taken from the (late) NLS copy but it is thought that changes during the life of the edition are unusual. Where a line does not appear on the NLS copy, the name is taken from the following edition. Although some of the names abbreviated may be unfamiliar, it is easy enough to check whether a railway name that might be abbreviated to (say) OA&GB appears on the map. The *description* normally takes the form A-B; if A or B are places off the map (and not indicated by a marginal "from A" or "to B"), the place name is placed in brackets. A name preceded by a '\*' indicates that the place is within the area of the map and may be found on later editions but not on the 1st edition. Villages close to the edge of the map are sometimes used in preference to places off the map; their use does not imply that the railway terminated there, this aspect being apparent from the following two columns. Where *name* and *description* are both given, they are separated by a colon.

To ease the task of searching for a particular railway,

Cols E & F give a 2-figure sheet-specific reference for the beginning and end of the railway; for example a spot slightly to the right of the mid-point (west-to-east) and almost at the bottom neat-line is designated as '50'. If a railway runs right to the neat-line this is indicated by using W, E S or N in lieu of a figure. Thus a point on the neat-line slightly to the right of the NW corner is designated as '0N'. These references have been estimated by eye, so absolute accuracy is not to be expected. When a number of railways appear in col D (typically when listing railways already in existence at the date of survey) cols E & F may describe just one of them. When a railway vanishes from the map (through crossing neat-line or county boundary) and re-appears, a note '(2 parts)' appears in col D; only the extreme end-points are referenced in cols E & F.

Column G gives the date when a railway opened for passenger traffic in form yyymmdd. If opening for goods is given, the date is followed by 'g'. A suffix 'app' indicates 'approximately'. Likewise only the year or year & month may be given in some cases.

Column H gives the copies that have been found of that state. An abbreviation indicating the collection is followed by a hyphen, a letter, and a date (m.yy, or just yy). The letter indicates the evidence for dating:

e - embossed printing date

a - accession date

c - 'circa', an argument based on a collection having been assembled at the same time,

l - electrotype date



If none of these is available, a single digit is given, which is the price in shillings (with 6d rounded up). Prices were reduced in 1866, but sheets which are mostly sea (or blank) were cheaper, so dating a by price alone is not straightforward.

P after the date indicates 'pre-publication', recognisable by incomplete marginalia.

R after the date indicates a Record Map Library stamp, or similar.

Only copies which indicate the extreme ranges of currency of a state are shown in this column, except that at least one accessible copy will be listed here when possible.

Column I is used occasionally for the 'Y' or 'N' indicating presence or absence of a non-railway feature (like a municipal boundary) - explained in Col J.

Column J is for notes. 'Addition' or 'Insertion' is entered against a railway opened close to the publication date to indicate that it appears, by the different depth of engraving or by clashes with names, to have been added after the rest of the detail had been engraved. The practice was mentioned in *Sheetlines* 113 and appears to have been common.

Column K is used for further specimens of a state, listed because they may be more accessible for some, and to save their repeated examination in fruitless searches for a missing state. Copies listed by Townley at Lancs Record Office are not repeated here.

### ***Abbreviations for Collections***

BLg - British Library, geological maps

BLo - British Library, bound volumes on open shelves

CUL - Cambridge University Library

LROo - Lancs Record Office, open shelves

LROp - Ditto, photocopies

NLS - maps.nls.uk

PC - Private Collection

RGS - Royal Geographical Society

### ***Shortened pdf Layout***

This starts with the sheet number, then a 'Y' if a specimen of the state is known, otherwise "..", then columns E & F above. The free-text items (railway description and notes) follow, in a single column, with '|' as a separator between the two. This is so that, even with a very small screen, the user can scroll down the left-hand side of the pdf to find the state in question and then scroll right if he needs confirmatory details like the railway name.

## ***Ordnance Survey Apprentice Tradesmen Boys RE<sup>1</sup>***

***Alan Gordon***

On the night of 30 November 1940, incendiary and high explosive bombs showered down onto the buildings in Southampton that housed the Ordnance Survey, an event repeated the following night. The destruction was massive and among the precious items lost was the original Ramsden 3-foot theodolite which was said to have melted in the intense heat. Lieutenant Jack Keleher and Boy NS Thompson were awarded the George Medal for conspicuous bravery and devotion to duty during that awful night. However, this action by the Luftwaffe led indirectly to the formation of a unique training establishment, the Ordnance Survey Apprentice Tradesmen Boys RE, also known colloquially as the RE Apprentice Tradesmen (Survey) or 'RATS'.

It had long been mooted that there should be a military version of the Ordnance Survey's Scheme A apprenticeship which trained 16-year-old boys in basic 'map construction'. The 'diaspora' caused by the comprehensive destruction of the Southampton offices provided the impetus to set up such a unit. The now Acting-Captain Keleher GM RE was tasked with the formation of the unit and remained as its Commanding Officer until mid-1945 when Captain George Whally RE took over.

The first dozen or so students were mainly buglers and were housed in the White House Hotel at Milford-on-Sea on the south coast near Bournemouth. Active recruitment, principally in the Southampton area and from the Duke of York's Military School at Dover, rapidly increased numbers, and so larger premises were needed. These were found at The Grand Marine Hotel at nearby Barton-on-Sea where the school stayed until April 1943 when it moved to the small stately home of Bryn Howell near Ruabon in north Wales. This was an eminently sensible location as not only was it deep in peaceful rural Wales but it was also very near to the Survey Training Centre RE (STC RE) that was based in Wynnstay Hall in Ruabon itself.

In December 1945 the STC moved into the grounds of Longleat House and the OS Boys followed in May 1946 to be absorbed into the STC as 'A/T Company'. However, this arrangement was not to last for long; in 1948 the boy soldiers moved to Taunton to become part of the Army Apprentice School, although within a short space of time Survey training of apprentices was moved to the Army Apprentice School at Harrogate.

In retrospect, ex-RATS, as they fondly refer to themselves, consider that it was not a bad life. The boys were issued with two sets of service dress, one 'working' and the other for 'best'. These were of the old pattern which buttoned uncomfortably high up in the neck and were made of thick 'itchy' serge. Denims

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<sup>1</sup> This article, published in response to a letter from Adam Kerfoot-Roberts in *Sheetlines* 115 p53, first appeared in the Defence Surveyors' Association journal, 'The Ranger,' in 2003. It is based upon the reminiscences of Ian Keleher and other ex-RATS, supported by information from the *History of the School of Military Survey* (1980) and *Ordnance Survey* by Owen and Pilbeam.



were the attire for a multitude of tasks, including ‘jankers’ the usual punishment for minor misdemeanours, and were also worn when off-duty but not going out of camp. PT kit doubled up as nightwear – pyjamas, let alone sheets and pillow cases, were unheard of luxuries for ORs in those days and two blankets on their own could be a bit cool in the north Welsh winter. Discipline was fairly strict – to be scruffy was a major sin – but was fairly applied by people such as Company Sergeant Major (later Lieutenant Colonel) Jock Robertson, who devised his own system of ‘punishments to fit the crime’.

The first three months were spent on a ‘Drawing and Lettering Course’ where the apprentices learned how to write in ‘Sloping Egyptian’ – the font deemed suitable for mapping purposes. Upon completion of that course, the boys graduated to a cadastral survey course to master the use of chains, tapes and other contemporary surveying tools. Then came either a Surveyor Topographical Course, which was plane tabling, or a Surveyor Trigonometrical Course, each of which lasted about 9-12 months. Draughtsman Topographical, which included graphical air survey methods, and print trades were included latterly as trade options. In addition to the technical syllabus there was a full programme of academic, military and physical training such that most of the waking hours from Monday to Saturday were ‘usefully’ filled. Sundays were taken up largely by church parade, which included marching off up a mini-mountain to the church itself. The young men were encouraged to play a lot of sport and the unit produced gymnastics display team of such a high standard that it performed at local fairs held to raise funds for the war effort.



*Bryn Howell gymnastics display team, 1944*

Academic training was considered to be of such importance that the unit had its own 'schoolmaster', a former public-school teacher – Sergeant, later WO2, Stone. He was a much-respected tutor who was tasked with getting the boys through their Army Certificate of Education First Class and, for those deemed capable, chosen subjects for the 'Special Certificate'.

RATS only existed for seven years and never catered for large numbers but from its ranks emerged many who enjoyed very successful careers either in Military Survey or in commercial life. The bonds of friendship born in the austere environment of a 1940s military institution have survived into the twenty-first century with bi-annual reunions held at Bryn Howell itself. Some 70 or so former OS apprentice tradesmen boys are still in contact with each other and at least 20 manage to attend the dinners – among them Ian Keleher, son of the founding CO and a proud ex-RAT.



*Bryn Howell in the 1940s  
... and today (photograph  
courtesy Bryn Howel Hotel)*



# ROYAL ENGINEERS

## Apprentice Survey Tradesmen.

Apprentices in survey trades of the Royal Engineers are enlisted as boys between the ages of 15½ and 17 for training in Surveying with a view to eventual employment in the Ordnance Survey. Boys may be registered for vacancies from 15½ years of age. They are clothed, accommodated and fed under the conditions laid down in Army Regulations and while under training they will receive pay at the prescribed Army rates, which are :—

On enlistment or transfer, 1s. 5d. per day; subsequent increases according to service and proficiency up to 2s. 1d. per day. Boys who qualify are paid at tradesmen's rates from 17½ years of age.

Boys must obtain the permission of their parents or guardians to enlist in the Army for 8 years with the Colours and 4 years with the Army Reserve—service to count from 18 years of age. They will be trained in survey work and drawing and thereby enabled to qualify for the trade of Surveyor (Ordnance), a "Group A" trade, carrying the highest rate of Army Trade Pay.

Education is continued to Matriculation standard and Courses are arranged at Universities for selected boys. Personnel of the Survey Branch of the Royal Engineers are eligible for promotion to Non-commissioned, Warrant and Commissioned Ranks.

It will be appreciated that it is not possible to guarantee what the situation will be at the end of the war period but the technical training and education given to the boys will place them in a favourable position to take advantage of available opportunities.

Before the outbreak of war personnel of the Survey Branches of the Royal Engineers normally served with the Ordnance Survey for the whole of their Army Service and on its completion were able to join the permanent civilian staff of that Department. There were frequent opportunities of volunteering for periods of service in the Colonies as surveyors.

The rates of pay of the Ordnance Survey permanent civilian staff rise to £230 per annum exclusive of any war bonus for Class II and, on promotion to Class I, to £340 per annum exclusive of any war bonus. There are also supervisory grades, receiving higher rates, ranging up to £600 per annum.

This civilian service is pensionable, so that on retirement at 60 years of age there would be, in addition to any military pension, a cash gratuity and a civil pension based on length of pensionable service as a civilian and the rate of pay on retirement.

Applications to :—

Officer Commanding,

Ordnance Survey R.E. Boys,

BRYN-HOWEL, near Trevor,

Wrexham, Denbighshire.



## ***River basins***

***Peter Wynn***

The Thames Conservancy map submitted by Keith Jameson (*Sheetlines* 114,18) includes as part of its title ‘showing main river’. The map was produced in connection with its land drainage responsibilities.

The Land Drainage Act 1930 set up Catchment Boards in England and Wales responsible for main rivers. In most cases these were new bodies. However, in the case of the Thames and the Lee, the existing Thames and Lee Conservancies were given the role. The areas of responsibility of the Catchment Boards were defined by the rivers (or in some low-lying areas the arterial drains) to which drainage was directed; for example, the Thames Conservancy’s area included all drainage entering the Thames above Teddington Lock. It was the duty of the Minister of Agriculture and Fisheries to “cause to be prepared, in relation to each catchment area, a map determining the extent of the catchment area and showing by some distinctive colour that part of the channel of the river which is to be treated as the main river ... and the watercourses which are ... to be deemed to be part of the main river.”<sup>1</sup>

Although it post-dated the Rivers Board Act 1948, a government report issued in 1951 included a folded map showing the 1930 Catchment Board boundaries and Main Rivers at a scale of approximately one-and-a-quarter inches to 30 miles.<sup>2</sup>

Over time a number of bodies have had the land drainage responsibilities originally given to the catchment boards (River Boards, River Authorities, Regional Water Authorities, the National Rivers Authority and today the Environment Agency), but until recently the basic provisions for the preparation of the Main River Maps have been little changed, even though the legislation behind them has been subject to several re-enactments. However, the Water Act 2014 made substantial changes to responsibility for the Main River Map.<sup>3</sup> Whereas from 1930 onwards it had been a government minister who issued the map to the relevant land drainage body, responsibility for maintenance of the map was transferred to the Environment Agency. The agency now makes the decision as to what constitutes Main River although this is subject to Government guidance.<sup>4</sup> The principal criteria in the guidance are:

1. A watercourse should be a main river if significant numbers of people and/or properties are liable to flood. This also includes areas where there are vulnerable groups and areas where flooding can occur with limited time for warnings.
2. A watercourse should be a main river where it could contribute to extensive flooding across a catchment.
3. A watercourse should be a main river if it is required to reduce flood risk elsewhere or provide capacity for water flowing from, for example, a reservoir, sewage treatment works or another river.

These criteria reflect the change in emphasis from land drainage towards flood risk management. It is now a requirement that the Main River Map is kept in electronic form. The map can be accessed on-line and the dataset is also available as GIS Shapefiles.

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<sup>1</sup> *Land Drainage Act, 1930*, section 5(1).

<sup>2</sup> Ministry of Agriculture, Fisheries and Food (1951) *Land Drainage in England and Wales*.

<sup>3</sup> *Water Act, 2014*, section 59 which amended the provisions of the *Water Resources Act, 1991*.

<sup>4</sup> [www.gov.uk/government/publications/designation-of-main-rivers-guidance-to-the-environment-agency](http://www.gov.uk/government/publications/designation-of-main-rivers-guidance-to-the-environment-agency)

APP. II  
REFERENCE

REFERENCE

MAP  
REFERENCE

1	ADUR	50
2	ALT.	15
3	ANCHOLME AND WINTERTON BECK	13
4	ANGLESEY RIVERS	23
5	ARUN	46
6	AVON (BRISTOL)	40
7	AVON AND STOUR	44
8	BIRKET AND FENDER	18
9	CAERNARVONSHIRE RIVERS (INCLUDING THE RIVER CONWAY)	22
10	CARMARTHENSHIRE RIVERS	35
11	CHESHIRE RIVERS	19
12	CROSSENS	11
13	CUCKMERE	51
14	DEE AND CLWYD	21
15	DOUGLAS	10
16	DYSYNNI	25
17	EAST NORFOLK RIVERS (INCLUDING THE RIVER WAVENEY)	31
18	EAST SUFFOLK RIVERS (EXCLUDING THE RIVER WAVENEY)	32
19	EDEN	2
20	ESSEX RIVERS	43
21	HAMPSHIRE RIVERS	45
22	HULL	9
23	ISLE OF WIGHT RIVERS	53
24	KENT	5
25	KENT RIVERS	41
26	LEE	37
27	LUNE	7
28	MERIONETHSHIRE RIVERS	24
29	MERSEY (ABOVE IRLAM WEIR) AND IRWELL (ABOVE HUNTS BANK)	12
30	MID GLAMORGAN RIVERS	39
31	NENE	29
32	NORTH EAST CHESHIRE RIVERS	17
33	NORTH LONSDALE RIVERS	4
34	NORTH NORFOLK RIVERS	27
35	NORTHUMBERLAND RIVERS	1
36	OLD HAVEN (PEVENSEY) AND BULVERHYTHE STREAM	52
37	OUSE (GREAT)	30
38	OUSE (SUSSEX)	47
39	OUSE (YORKSHIRE)	6
40	RODING	38
41	ROTHER AND JURYS GUT	48
42	SEVERN	26
43	SOMERSET RIVERS	42
44	SOUTH LANCASHIRE RIVERS	16
45	SOUTH WEST SUSSEX RIVERS	49
46	STOUR (ESSEX AND SUFFOLK)	33
47	THAMES ABOVE TEDDINGTON LOCK	36
48	TRENT	14
49	WELLAND	28
50	WEST CUMBERLAND RIVERS	3
51	WITHAM AND STEEPING RIVER	20
52	WYE	34
53	WYRE	8

LAND DRAINAGE ACT 1930.

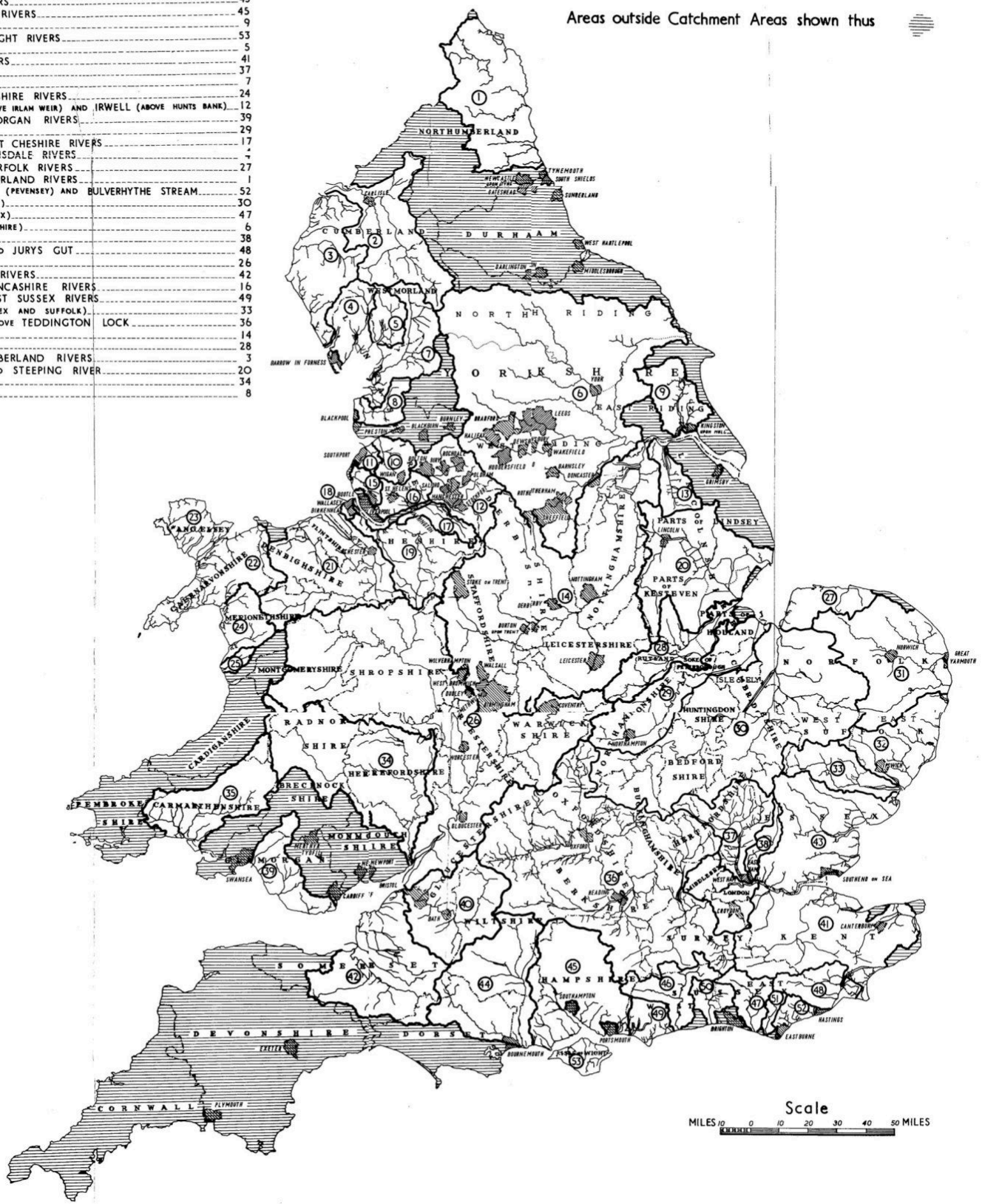
ENGLAND AND WALES

SHOWING MAIN RIVER, COUNTY AND  
COUNTY BOROUGH BOUNDARIES

CATCHMENT AREAS as at 31st MARCH 1949 for  
which CATCHMENT BOARDS have been established

APPENDIX III

Areas outside Catchment Areas shown thus





## ***The Fundamental bench mark (and others) at Windsor Castle***

***Frank Iddiols***

For the last six years or so I have furthered my research into Ordnance Survey bench marks (BMs). Having been aware of these since my apprenticeship, I decided these were a more realistic proposition for study than

trig points, as, being sited everywhere, they should be more accessible. Also, from a historical view it would be interesting to use traditional OS mapping to locate, identify and record the BMs.

The more I investigated, the more I wanted to collect enough information to tell their story to other interested groups. Having researched my local area (St Albans) and found a number of bench marks on the ground (well, mostly on walls), I further developed an interest in the whole network and how BMs are linked.

The initial levelling survey (1GL) was undertaken between 1840 and 1859 in which the OS set out the network to cover England and Wales. This levelling was based on the Liverpool Datum. The traceable bench marks that are still in existence from this survey are getting fewer and fewer.

The OS needed to bring its accuracy in levelling up-to-date (during the Charles Close era) so between 1912 and 1921, the Second Geodetic Levelling survey (2GL) was undertaken.<sup>1</sup> Due to the improvements in surveying instruments, techniques and general understanding, the OS introduced a new network using three classes of levels. The first class (later called 'primary') used the specially constructed Fundamental bench marks (FBM). These are the only parts of the system that the OS still uses. Although they originally built 115 FBMs, due to WW1 they reduced the number used to 86. FBMs consisted of two buried reference points (only for use by OS surveyors) and a visible granite pillar with a special bolt on top. The OS set up three Tidal Observatories at Dunbar, Felixstowe and Newlyn,<sup>2</sup> the latter being the one chosen as the National Datum in 1921.

Following a recent visit to Felixstowe I did not find any evidence of the 2GL OS Tidal Observatory.<sup>3</sup> I did, however, find evidence of the 'Observatory circuit' consisting of a number of flush brackets (FBs) that would have been used to check the validity of the readings taken, but unlike Newlyn and Dunbar the Felixstowe circuit was not related to two FBMs that were required to bring it up to the required standard.

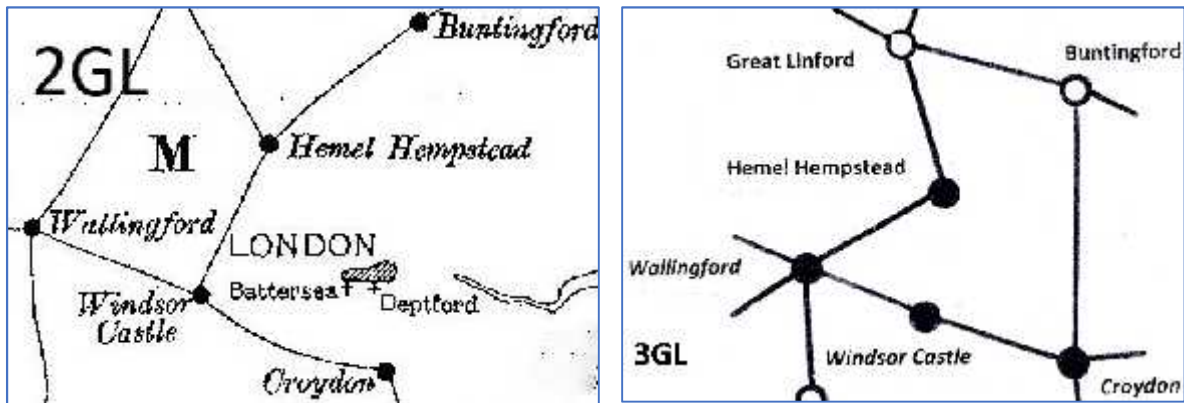
The 2GL also used Flush Brackets for the first time as the second-class levels (now known as 'secondary' levels) which consisted of the familiar purpose-made plate (bracket), each identified by a unique number, to be set into vertical surfaces. An adjustable bracket could then be used to provide an accurate level.

<sup>1</sup> *The Second Geodetic Levelling of England and Wales, 1912-1921*. Ordnance Survey, (Charles Close Director General OS) published 1921.

<sup>2</sup> *The Newlyn Tidal Observatory* published by the Newlyn Archive, 2018 (book review, *Sheetlines* 114,5)

<sup>3</sup> Proving Michael Spencer's assertion, *Sheetlines* 115,41.





*Second and third geodetic levelling lines around Windsor*

The third-class ('tertiary') levels were mostly cut marks which formed the vast majority of bench marks, estimated up to around 750,000; there were also pivot, rivet and projecting bracket bench marks.

So why Windsor? My interest in visiting the Windsor Castle FBM was that it is at the end of one of the levelling lines from Hemel Hempstead (my nearest FBM) to Windsor Castle. My problem was that whilst most FBMs are in publicly accessible places, the Windsor Castle FBM is in the Royal Family's private grounds and so is naturally a restricted secure area.

While chatting at a CCS local meeting, Caroline Watt mentioned that David Watt had a contact at the Castle and he may be able to arrange a visit. To my delight, the Assistant to the Master and Superintendent, Colonel Duncan Dewar, emailed to say that the Queen had graciously approved our request to visit and to photograph the bench marks at Windsor Castle. After completing various security checks we were all set for the visit.

Later, David Watt contacted the Royal Archives, at Windsor Castle, asking if they had any information, such as diaries etc, covering the periods during which the OS surveyors built and/or used the FBM to see if 'Windsor' recorded their presence, and maybe even who the surveyors were. They don't have such records but The National Archive at Kew may have. This I will investigate.

During our visit to Windsor Castle, Colonel Dewar guided us around the grounds allowing us to take photos of the bench marks that I had requested to see. The highlight for me was the FBM (*right*).



The result of the visit was as follows: using 1:2500 OS maps:

- 1868 map showed *twelve* BMs of which *eight* were identified
- 1899 map showed *thirteen* BMs of which *nine* were found
- 1933 map showed *ten* BMs of which *six* were found.

It should be noted that some BMs above were shown on more than one map from a particular date and also covered some of the public areas, as well as the private areas of the castle.

We were also shown an additional cut BM that was not on any of the historic maps that I was using.

Overall, I hoped to find some fourteen BMs identified on the various maps (including the FBM). We actually found ten including three that were located behind areas that contractors were working on.

The Windsor Castle FBM was built for the 2GL (1912-1921) and levelling lines as follows:

- Windsor Castle to Wallingford (used Nov 1913 to Jan 1914)
- Hemel Hempstead to Windsor Castle (used Nov 1913 to Mar 1914)
- Croydon to Windsor Castle (used Jan 1920 to Apr 1920).

It was also used in the later 3GL (1950 to 1968) with two levelling lines as follows:

- Windsor Castle to Wallingford (specific date was not given)
- Windsor Castle to Croydon.

All the levelling lines above used secondary flush brackets which were usually spaced at about one mile apart and can be located using the Bench Mark Database<sup>4</sup> which identifies which ones are still there and the ones that have been lost (or not yet found). It also gives much more detail on the location, together with access to interactive maps, grid references and when it was visited with comments etc.

Since my visit I took up the invitation to deliver a presentation to the Windsor Castle Garden Club on *Ordnance Survey Bench Marks*, which I did in September, as Mike Cottrell reported on the CCS Facebook page.<sup>5</sup>

*Photograph credits: Royal Collection Trust © Her Majesty Queen Elizabeth II 2019.*

I'd like to thank Caroline and David Watt for organising the visit and Her Majesty the Queen and Colonel Duncan Dewar for making it possible.

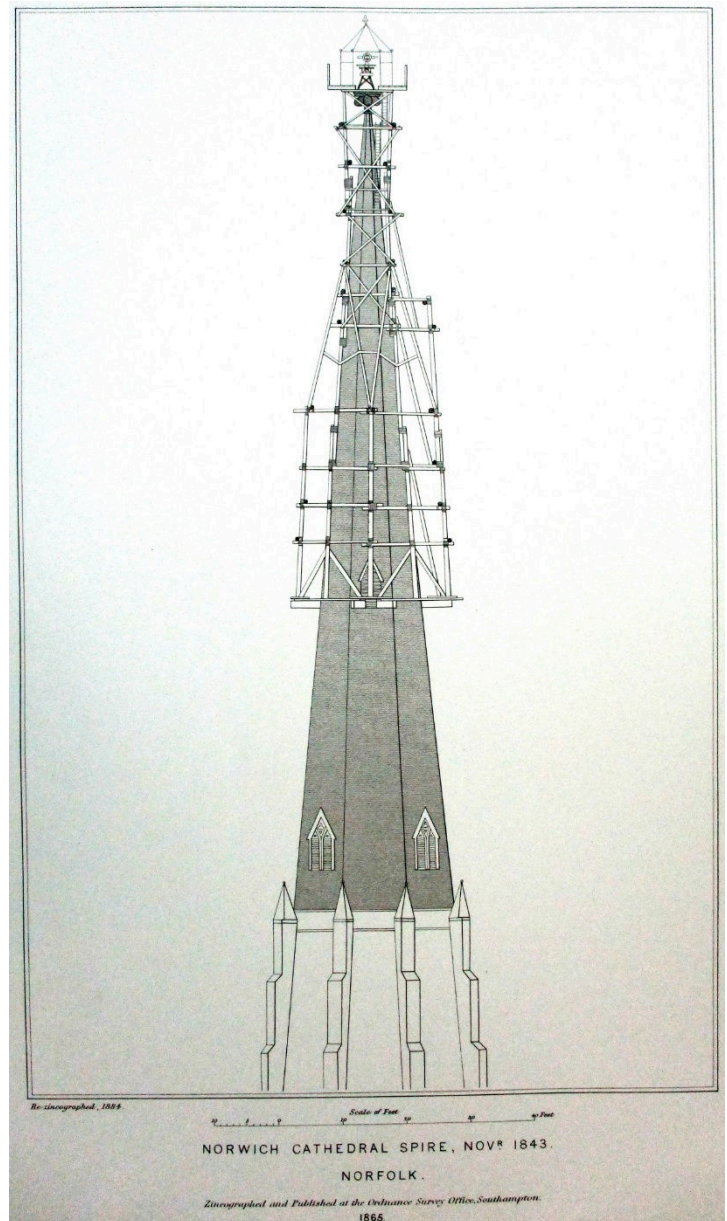
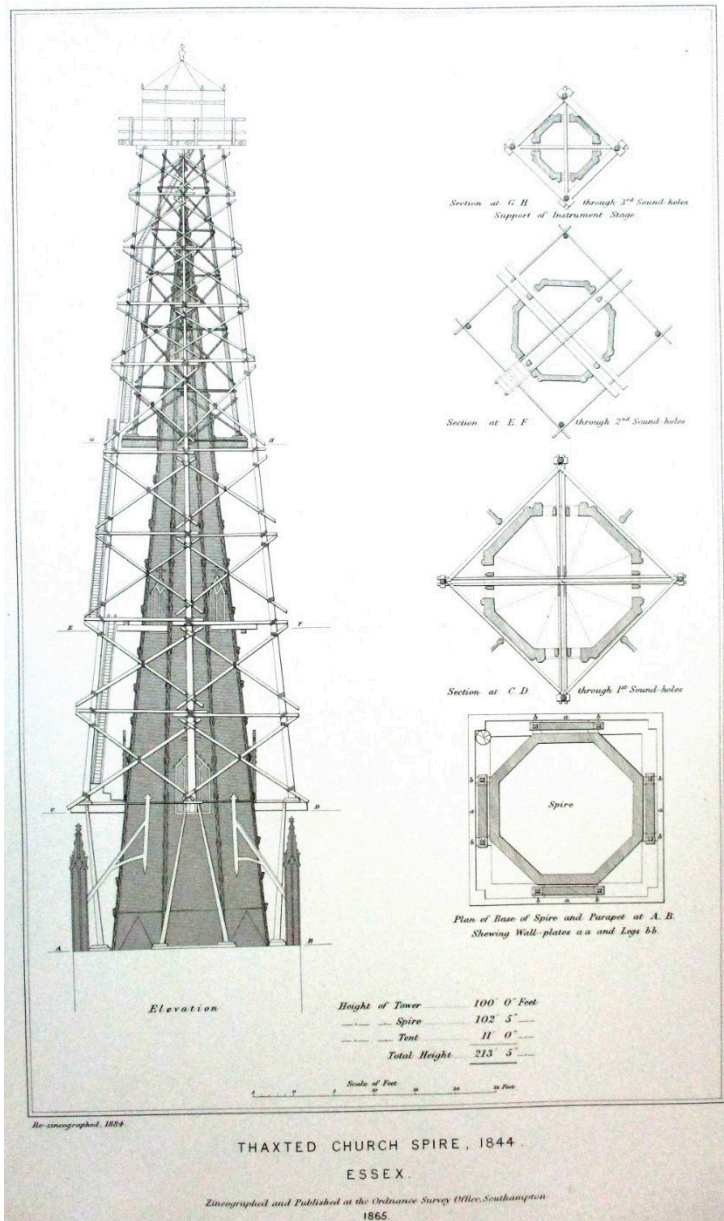
***Dave Watt asks if any CCS members would be interested in a group visit to Windsor Castle. Depending on the response and security arrangements, he would be happy to enquire about the possibility of such a visit.***

***Contact the editor if you are interested.***

<sup>4</sup> <https://www.bench-marks.org.uk>

<sup>5</sup> <https://www.facebook.com/groups/charlesclosesociety> on 19 September 2019.

## Letters



I was taken by Robert Fenner's article (*Sheetlines* 115) on the Principal Triangulation. Some time ago I photographed drawings of scaffolds that were constructed in the mid-1840s during the triangulation. These were printed in the mid-1860s and reprinted in the mid-1880s. It is the last which I have copied. These drawings include both Thaxted and Norwich, both of which were described in Robert's article. I have about 29 similar images, including of course the St Paul's one.

**Mike Nolan**

The article *No Bridge at Hullbridge* in *Sheetlines* 115 raises once again the issue of how the depiction of public Rights of Way on OS small scale mapping conflicts with what exists on the ground.

I think the issue was first raised in CCS circles in *Sheetlines* 97, p20, *Changing the map – a brief introduction to Definitive map modification orders*, which covered the subject of Definitive Maps and Definitive Statements. However, it did



not specifically explain that OS are obliged to publish on their maps what the relevant local authority tells them about the positions and alignments of public rights of way. *Sheetlines* 103, p52, *Washed out*, covered an anomaly where a public footpath crossed over, (through?), a water feature depicted on OS mapping.

I responded to that article in *Sheetlines* 104, p28, *Scaling the depths – a wet walk*, in which I recounted my experience with the North York Moors One-inch Tourist Map B edition in 1965/66. I explained that the authority for the position and alignment of public rights of way is the relevant local authority, (usually the county council or the national park authority). Ordnance Survey is obliged to accept the information provided by that authority and publish the rights of way exactly as depicted on the relevant Definitive Map and described in the relevant Definitive Statement on the OS mapping at 1:25,000 and 1:50,000 scales.

As the article in *Sheetlines* 104 makes clear, this can lead to illogical depictions of rights of way on OS mapping, despite the best efforts of OS to resolve any anomalies prior to publication of the mapping.

I suspect that during pre-publication stages of one of the editions of the 1:25,000 scale map you quote, (*Explorer* 175), the anomaly at TQ809956 was raised with the relevant local authority. Presumably they were as intransigent as North Yorkshire County Council initially were in 1965/66. NYCC were eventually so embarrassed by the published map that they rapidly revised the Definitive Map and Definitive Statement for the footpaths crossing Scaling Dam reservoir, enabling the anomaly to be corrected for the following editions of the OS mapping, albeit that they simply deleted the footpaths over the water leaving them terminating at the water's edge. (I am pleased to note that the latest edition of the *Landranger* map has rectified the situation of footpaths terminating at the water's edge of Scaling Dam reservoir!) *Sheetlines* 108, page 18, *Not so definitive maps*, also covers the topic of right of way anomalies on published OS mapping, but this time no need for wellies or flippers!

**David Andrews**

Those who admired Mathieson's map of St Kilda during the CCS visit to RSGS (see page 2 of this issue), may be interested to learn of the exemplar in RGS Map Collection <sup>1</sup> that is annotated by ornithologist James Fisher. On 20 November 1987 I re-catalogued this item in the Fisher Collection, noting: "With ms (pencil, pen & ink, and watercolour) additions and notes on birds made in 1939 or later by James Fisher FRGS".

Naturally, the RGS-IBG Map Collection has also a 'clean' exemplar; both have separate OPAC records: 'Control Number' rgs 515783 ('clean' exemplar) and 'Control Number' rgs 515784 (Fisher's annotated exemplar). Metadata for both, and an earlier St Kilda 1:31,684-scale map, can be found at [www.rgs.org](http://www.rgs.org) (then, eventually, 'Search-our-collections' for the OPAC).

**Francis Herbert**

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<sup>1</sup> CCS members are reminded that they are welcome to visit the RGS-IBG Foyle Reading Room map library in Kensington Gore, London on production of their CCS membership number (found on the wrapper of *Sheetlines*).

## ***Kerry musings***

***David Archer***

Another nice thing about Ordnance Survey maps is their variety, which can be beneficial when one's circumstances change. It could be argued that one's youth is the best time to collect maps. The quick thinking hunter, exploring all avenues in search of a trophy. Find a map, briefly look at it, and on to the next. No time to sit back and study it or to spend hours comparing it with others. That can wait until a more comprehensive collection exists and greater leisure time allows. The thrill of the chase dominates. I am not mocking or criticising those who collect maps without studying them. I speak from experience. I did it.

Note the past tense, as I have now joined those who still look for maps when passing a bookshop, but otherwise play little part in the hunt. And with the decline in looking for maps, one increasingly does study them, which was the assumption when younger. The only problem is that so often, one has left it too late. Most maps collected have been small scales, folded in covers, and with age, looking for minute detail changes whilst wearing glasses and using a magnifying glass is rather frustrating. With a glass, it is impossible to flick from place to place easily, let alone sheet to sheet, with anywhere near the ease of good eyesight, so eventually, many give up. I know several people who have disposed of their map collections due to age-related difficulties. They were frustrated at not being able to get out as easily as previously, and when they did, the places where maps were often found no longer existed, meaning little was bought or added to their collections, whilst concurrently, failing eyesight and failing fingers made it harder to look at what they had.

But hold on, give up your maps because they are no longer fun? No, I say; OS maps provide something for everyone, whatever their capabilities. One just has to have the foresight to plan and be willing to adapt. We are always being told to plan for our old age, and to do it whilst one can, but few undertake the task as seriously as required, and many get caught out. The saddest part is when someone decides to give up maps completely, and forfeits the most enjoyable of hobbies through not planning for the future.

We have neighbours who were keen gardeners, with flowers in bloom most of the year and hours and hours spent tending them. They had no intention of losing their hobby due to age, and had the future planned. In good time, they reduced the floral beds and built raised island beds, which they could reach with less bending and eventually worked sitting on a small stool. When this started to become a problem, they got rid of some raised beds and planted low maintenance flowering shrubs and small decorative trees, so that when the last of the raised beds went, they were left with a maturing garden that they could enjoy from the house.

What does this have to do with Ordnance Survey maps? I suggest that well before you become disenchanted with folded maps, you explore the possibilities of the larger scales, 1:2500 and better still, even larger scales, which in many respects are ideal for the older person, and offer all the fun that most of us enjoyed from the small scales. The fun of discovering the different series, what is shown on them and all the oddities can be the cartographic equivalent of large print books. In later life, a lot of people mention the ease with which 1:25,000 maps can be read compared to one-inch or 1:50,000 sheets, yet fail to extend this to the larger scales, which are even easier to read. Why? Probably because many are unfamiliar with them, having seen few for sale and by

not having used public collections to any extent. So, if left too late, pursuing a new interest in large scale maps would be a very uphill struggle, just at the time when love of the chase is declining, and where one has to begin from scratch with little prospect of building a good collection.

Doubting Thomas now asks to be given the sales pitch on large scale maps. The biggest and most obvious advantage is that, well, the detail shown is .... large, big, making them nice and easy to read. No contours or colours get in the way, just nice crisp black on white detail, with an abundance of names, for buildings, streets and objects. They are well laid out on regular sheet lines, unlike the plate of spaghetti called the Explorer index, and for those with minor memory or reasoning problems such regularity means it is very easy to navigate between sheets, especially as adjacent sheet numbers appear in the map margins. Their content is ideally suited to the interests of older people. With retirement, many have the time to take up family or local history, for which the detail on large scale maps is excellent. And even if they only wish to bring back memories of the past, a detailed map of where one grew up is a fine starting point, far in advance of a one-inch map, with an added bonus that commentaries on the area studied are usually available in the form of local histories.

What else is in their favour? Well, most examples are encountered as flat sheets, making them easier to handle without endless unfolding and refolding, and as only certain areas will be of interest, there will be no pressure to collect sets just for the sake of it. Large scales somehow seem more relaxed, and more fitting for those with increased leisure time. With such advantages, I wonder why more people have never migrated to the larger scales later in life?

Having decided that large scales are the new direction in which one wishes to travel, the main problem is that they appear for sale far less often than do small scale maps, with a rough correlation between increased detail and scarcity. Meaning, that one would be hard put to build a good collection of local maps, especially with all the problems of later life. Yes, I agree that whilst there are still free transport passes, one could visit the local archives or local history library armed with spectacles, magnifying glass, note pads, pencils and lots of 10p pieces for photocopies, looking like a latter-day Crackerjack contestant without the cabbages, though even here, if allowed, it is difficult to position the centre of a 1:1056 scale map for copying. Perhaps one should use a camera instead, and take as many photographs as are needed? A better bet? Maybe. Maybe, because once the images are transferred to the computer at home, one has to keep jumping between them in a most annoying way, unless one is very capable and can join them together on screen. But as far as I am concerned, life is too short to start learning such complicated tricks, and anyway, when you visit a collection to take photographs, someone else will be using what you want or it cannot be found. Increased leisure time often means increased hassle and disappointment.

If, having read the above words of wisdom, you decide that large scales are for you, do not even consider looking for maps to buy; save your money, time and effort and power up your computer. Having done so, head for the National Library of Scotland website : [maps.nls.uk/os](http://maps.nls.uk/os). Nearly all that you will ever want is here, to be enjoyed in the comfort of your own home, with your slippers on and a cup of tea beside you, offering facilities far in advance of any hard copy map collection. Yes, the joy of holding a paper map of considerable age cannot be equalled, but having them on-line has so many benefits. As long as they are available on-line, which they increasingly are.

Regardless of where you live, you have no need to build a personal collection of



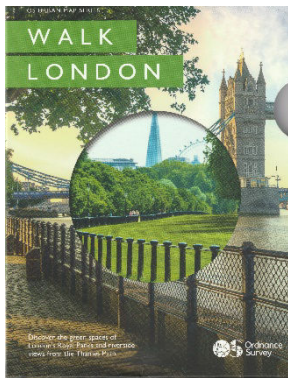
large scale maps when the National Library of Scotland website exists. Why? Look at the site and you will see. The map series offered are numerous, with excellent coverage at 1:2500, offering 120,000 sheets as I write; plus nearly 6,000 sheets of town plans for 100 towns, 1840s-1890s, and the five feet plans for London. More than enough to keep anyone going for while, surely?

Having decided on a series, maps are offered as either single sheets with full margins, including survey and publication dates, or as a seamless map, where the margins have been cropped and the mapping is 'pasted' together. Both have their advantages, with single sheets having the feel of originals, whereas with the seamless map, one is not inconvenienced by having to dig out an adjacent sheet if following a road or railway.

Things really hot up once you begin looking at maps, as the zoom facility makes a magnifying glass seem almost Stone Age. Spot a feature and instantly enlarge it without having to place the glass and then search around for what you were looking at. Zoom out and you continue with your work. For example, following a road looking for milestones, spot something, zoom in, get the details, and zoom out to continue along the road. One is also able to print extracts from these on-line maps, at the original scale or enlarged. I find it very convenient to print the same extract from two different editions and then compare them side by side without being distracted by the rest of the map. Not everyone likes to sit at a screen for long periods, so printing a map section is most useful, and far cheaper if printed at home, with the added advantage of being able to take them 'into the field'. And if you wish to discuss a map with a friend, you can both see the same thing on screen, where previously one of you might have lacked the sheet under discussion.

Now the clever part; if one is organised, it is easy to bookmark items of interest, thus building your own large scale collection, courtesy of the NLS, on your computer, with maps displayed in an instant, and never in use by someone else. All the other irritating problems of using a public collection vanish, such as getting there in the rain and finding all the tables occupied, curling maps needing to be weighed down, or maps encased in shiny material making photography a challenge. Access to on-line maps means there is no need to leave the house, and one can study any time of day or night, free from ever more limited opening hours of libraries and archive offices. One is not disturbed by other readers; uncomfortable conditions such as too hot or cold and poor lighting are not encountered and there are no travelling costs or time involved. Nothing is spent on buying the maps sought, and usually, all are available, saving endless searching for missing maps, and no pacemaker-stopping moments at auctions, or fear that another collector might get to a book fair before you. Too good to be true. And if your research interests change, the maps to support your new interest are all at hand, and you don't feel guilty at having spent money on discarded maps. Not that anyone has ever felt guilty about having bought a map.

If you do plan a move to the larger scales, well, surely it was your youthful intention to study maps eventually? Which is why you built a small scales collection, and having moved up the scales, why dispose of your collection just because you do not add to it nor look at it? Keep it and live in hope of filling a gap at an AGM. Be comforted by seeing it on the shelves, showing what you achieved. But plan to move on in good time, so allowing continuing enjoyment from maps without the need to build another collection from scratch. Sounds good to me.



### Walk London, OS Urban Map Series, OS, 2019, £9.99

When is an OS map not an OS map? When it has no scale defined? When the mapping is actually an oblique aerial view? When it suggests 'best selfie opportunities'? When the key shows 'train station'? When 'packed with fun facts and anecdotes'?

*Walk London* has all these and may perhaps be thought of as a bold attempt to innovate. Or possibly as a sad case of 'dumbing-down'.

The product consists of a card, 1.5m in length, folded to a page size of about 180mm by 140mm, printed on both sides and presented in a card wallet. Interestingly, neither the card nor the wallet is printed by Dennis Maps.



One side comprises three maps (or views) covering four parks: Richmond Park, Hyde Park and Kensington Gardens, and Greenwich Park (*extract left*). For each there is a suggested walk with highlighted points of interest, with other notable buildings or features labelled with callouts.

On the other side is a linear map (it is a map) of the 23-mile route linking Richmond Park and Greenwich Park along the River Thames.

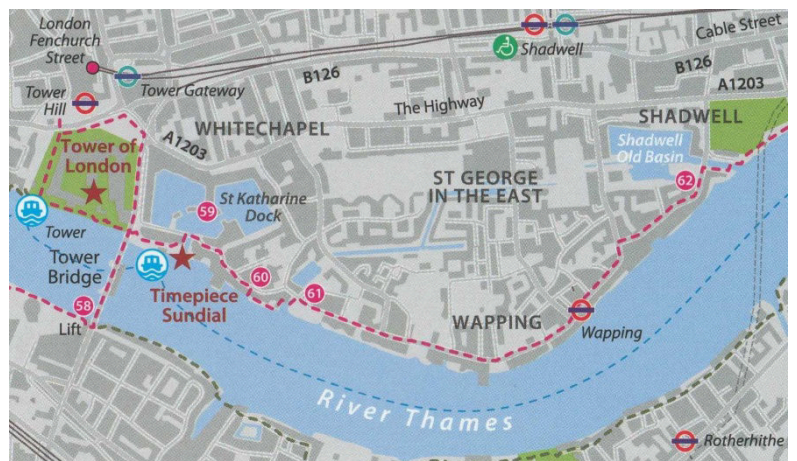


Thames. In fact, the map depicts two routes, the official Thames Path (part of the National Trail network) and a suggested route (*in red in the extract below*), which actually takes the opposite bank all the way, crossing the river to swap sides at the same bridges as does the official route (*in grey*). Only at the Tower of London do the two coincide.

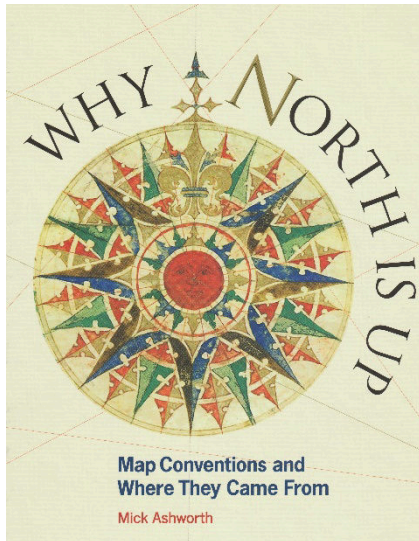
What to make of this product?

Certainly, anything which encourages people to get out walking and exploring is good, as is experimenting with new ways of presenting maps. Nevertheless, this reviewer was left with a slight sense of disappointment at a missed opportunity.

**John Davies**







**Why North is up, Mick Ashworth, Bodleian Library, 2019, £20**

We seem to be in a golden age of book publishing with houses like Bodleian and Birlinn regularly producing high-quality, beautifully illustrated and affordable map-related volumes.

This latest one is sub-titled *Map conventions and where they came from*, but could just as well have been *Everything you always wanted to know about maps but were afraid to ask*. It comprises thirty short chapters organised into seven sections: Map structure, Symbols, Relief, Names & boundaries, Thematic maps, Specialized conventions and Post-convention mapping.

The book is ideal for the satnav generation, showing how cartographic language has evolved from Ptolemy's *Geographia* to crowd-sourced online OpenStreetMap. But this is far from just an introduction for newcomers; most readers are sure to discover something new here. This reviewer was surprised to learn that Chinese maps had accurate, systematic grids in the first century CE.

As would be expected, the book is copiously illustrated with relevant map extracts, faithfully reproduced; many are from the Bodleian Library, others from a variety of other sources. Several familiar maps are included, such as Gough's map, Ogilby's *Britannia*, Roy's military survey, Wm Smith's geological map, Snow's cholera map, Booth's poverty map, Beck's Underground and Soviet Oxford, as well as a hundred or so less well-known examples. The extracts in the chapters on digital mapping do bring home the limitations of traditional book publishing; screenshots of real-time online maps fail to convey the sheer power and variety of information instantly conjured up at one's fingertips.

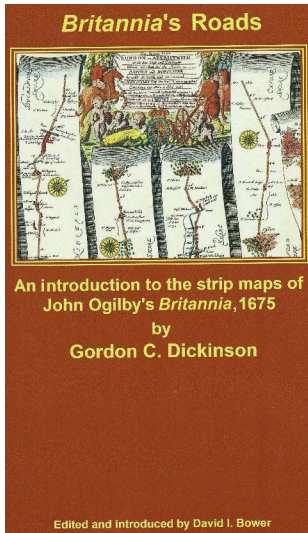
One surprise is how few OS maps are included. That may be an authorial choice, but may possibly be due to punitive royalty charges. If that is so, then OS has missed a trick; you would expect Britain's national mapping organisation to strive to be well-represented in a British book about the history and practice of cartography.

If there is a criticism to be made, it is a minor one. The chapters have been given humorous by-lines as well as titles. To this reader, they come across as forced and trite. For example, the chapter titled Colour has the by-line 'Deep blue sea?', Generalization has 'Fake maps?', Spot heights has 'On the dot', Hachures 'Sloping off' and so on.

But these are easily ignored and the book certainly earns its place on the aficionado's bookshelf.

**John Davies**





**Britannia's Roads; An introduction to the strip maps of John Ogilby's *Britannia*, 1675. Gordon C Dickinson, edited and introduced by David I Bower, £33<sup>1</sup>**

This book should have been published years ago! Members of the CCS may know of Gordon C. Dickinson as the author of some of the essays on the backs of the Godfrey reprints of OS plans, and also as the instigator of a series of reprints of OS and other maps from the (now defunct) map library of the Geography Department of Leeds University. He died in 2017. This book was written over a decade before that, but failed then to find a

publisher. The present posthumous publication, with an additional introduction by David Bower, is intended as a tribute to Dickinson's memory.

John Ogilby published the first instrumentally surveyed maps of the roads of England and Wales in 1675. Chunks of the work have been copied, plagiarised, abstracted and republished ever since, and the maps (usually in isolation from their accompanying texts) have been used as source material by innumerable historians. However the accuracy, precision, and overall reliability of his surveys has not hitherto been assessed. This is important because the topographic information he presented is from a century before most eighteenth-century county surveys, and a century and a half (or more) before the OS surveys. Topographic change during that period was rapid, and Ogilby's maps provide a unique detailed baseline representation of seventeenth-century topography and the national road network before turnpikeing and (in particular) the widespread adoption of Parliamentary enclosure of both arable and grazing land.

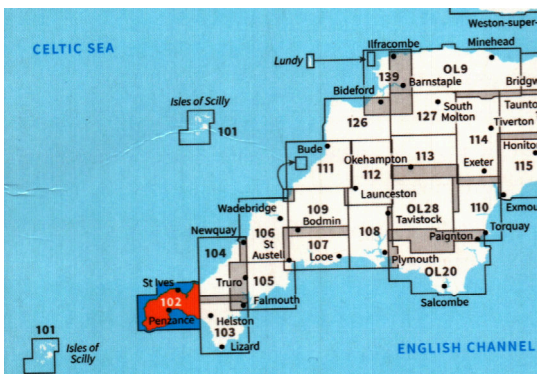
The opening chapters describe Ogilby, the origins and purposes of his survey, and the changing scope of his project as his aspirations outstripped both his means and his health. The road system he mapped is defined and described, and the choices he made when selecting which roads to map are discussed. Chapter five introduces examples of roads that were well represented on his maps and others that were not. Chapters six to eleven then systematically analyse and quantify the various sources of error detectable. These include some surveying errors but rather more copying and drafting errors. Such errors tend therefore to be quite localised. An important chapter looks at the accuracy of his distance measurements. To me the demonstration of how many seventeenth-century main roads had subsequently fallen out of use or had been re-routed before the turnpike era was a revelation. The final two chapters then provide examples of the interpretation and use of Ogilby's maps in the light of the earlier chapters. I felt these two chapters to be less valuable than the earlier ones because they repeat earlier material in a very slightly different form. Appendix 1 gives supplementary material assessing the quality of the field surveys. Appendices 2, 3, and 4 give bibliographies for this book, a list of Dickinson's publications, and available on-line sources for Ogilby's original publication.

<sup>1</sup> Published by David Bower, 2 Welburn Avenue, Leeds LS16 5HJ. £33 including p&p. Enquiries to david@dibower.co.uk

David Bower has, for obvious reasons, made only minimal changes to Dickinson's original text. This is a shame, because had a publisher taken on the book before Dickinson's death I'm sure some further editing would have taken place to reduce some redundancy and to update some of the ideas in the rapidly developing field of landscape history. In particular, Dickinson focusses too simplistically on Parliamentary enclosure to the exclusion of enclosure by agreement and by unity of ownership, both of which were more important in the seventeenth century.

This is nevertheless an important book that should be in all historical and cartographic libraries, and should be read by anyone planning to use Ogilby's *Britannia* to understand the topography of the seventeenth century. This book allows Ogilby's maps to be used with much greater confidence and understanding than hitherto. Buy it now, because I suspect that when the time comes to reprint it, it will be very much more expensive.

**John Cruickshank**



**Dave Watt** was surprised to see the Isles of Scilly appearing twice on the index diagram of his 2015 copy of *Explorer* 102.

**Don Clayton** notes that the October 2019 issue of *Aeroplane* magazine has an article *Mapping the enemy* describing the work of 'Project Hillside', the Air Ministry's secret cartographic operation during World War II at Hughenden Manor, Bucks. The National Trust now owns the property, which has a permanent

exhibition dedicated to the work of the map makers.<sup>2</sup>

New layers have been added to the online OS Maps.<sup>3</sup> These include the National Cycle Network and 'National Park pathways'. These appear on the 'standard' (non-topographic) map, rather than *Explorer* or *Landranger* mapping.

OS is to drop the revered 'Naismith's rule'<sup>4</sup> from its calculation of walking times in favour of crowd-sourced data submitted by walkers using the OS mobile app.



This 'Greenground map' by Helen Ilus, part of the *London National Park City* initiative,<sup>5</sup> showing walking routes in the capital can be downloaded from:

[http://www.nationalparkcity.london/images/articles/places\\_to\\_go/Greenground-Map-NationalParkCity-HelenIlus.pdf](http://www.nationalparkcity.london/images/articles/places_to_go/Greenground-Map-NationalParkCity-HelenIlus.pdf)

<sup>2</sup> See [www.nationaltrust.org.uk/hughenden/features/hughendens-second-world-war-story](http://www.nationaltrust.org.uk/hughenden/features/hughendens-second-world-war-story)

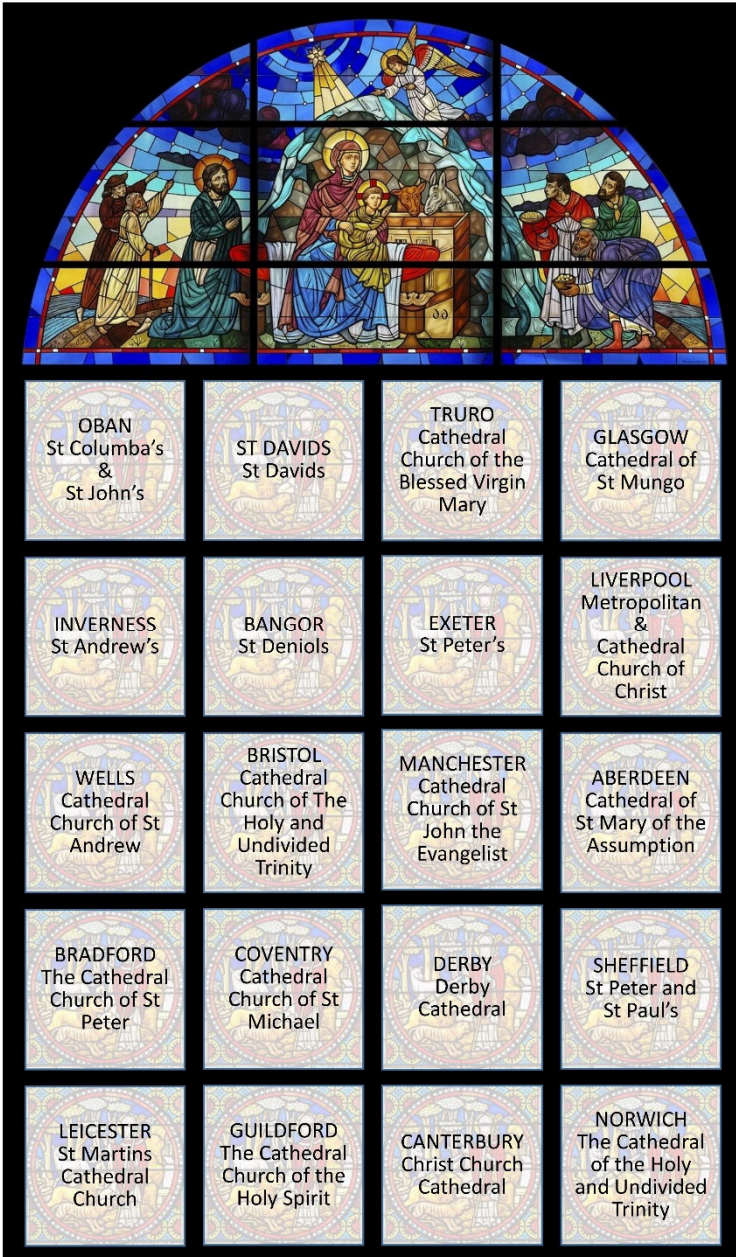
<sup>3</sup> <https://osmaps.ordnancesurvey.co.uk>

<sup>4</sup> Naismith in 1892 suggested an hour per 3 miles plus an hour per 2000 ft of ascent.

<sup>5</sup> See *Sheetlines* 111,60.



### ***Cathedrals quiz solution and solvers and Christmas quiz***



The twenty images were arranged west to east by longitude (not by NGR, which would have had Truro and Bangor preceding St Davids and Inverness respectively). It was intended that 22 cathedrals would appear, but Ian Hardy and David Smith both pointed out an extra cathedral (depicted but not labelled: Sheffield RC, due south of the C of E cathedral on the map).

David Sherren's stained glass window provides the answers and the winner was Ian Hardy.

Successful solvers, (including those who identified the cites, but omitted the cathedral names) were Peter Addiscott, John Ambler, Keith Andrews, Matt Ashley, Andrew Barton, Martin Buckley, Jim Chisholm, Don Clayton, Chris Dean, David Fairbairn, David Graney, Ian Hardy, Bill Henwood, Richard Higgs, Bill Hines, Roger Holden, Christine & Paul Horbury, Graham James, Barbara Jones, Geoff Kent, Lyndon Knott, Alan Mais, Nick Millea, Mike Parker, Phil Pearson, David Purchase, Michael Richardson, Jonathan Roberts, Ted Rogers, David

Sherren, David Smith, Nigel Smith, Michael Spencer, Duncan Stewart, Peter Strugnell, Paul Swindell, Chris Tennant, Andrew Turnbull, Dave Vaughan, Paul Waldron, Tony Walduck, Keith Warman, John Winterbottom, Alan Young.

### **Christmas quiz – a Rail and Road double puzzle**

**Can you name the towns (depicted in alphabetical order) in which these stations once existed and identify the motorways on which these junctions 1 to 20 occur?**

**Answers to the editor by 29 February for the usual book prize.**



