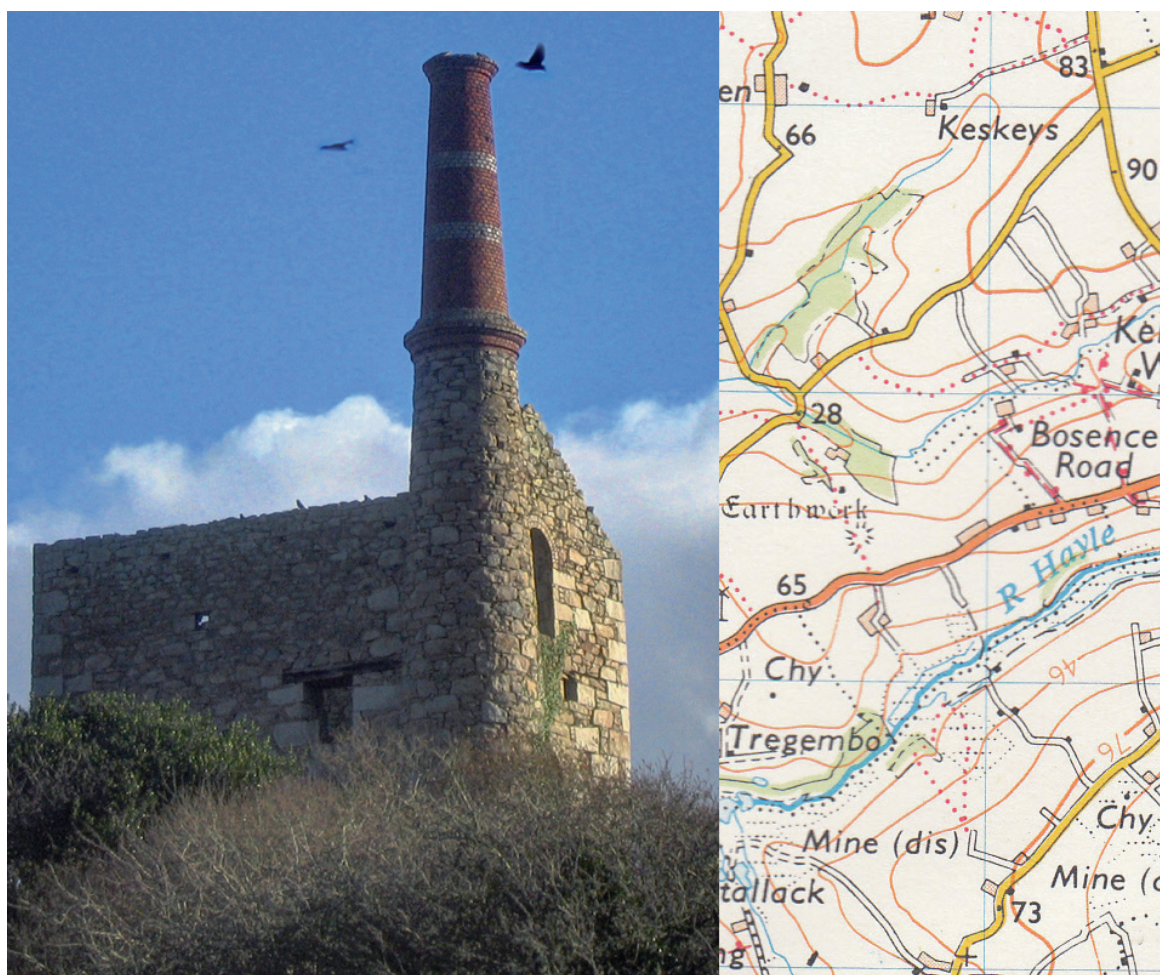


Sheetlines

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

Number 124

August 2022



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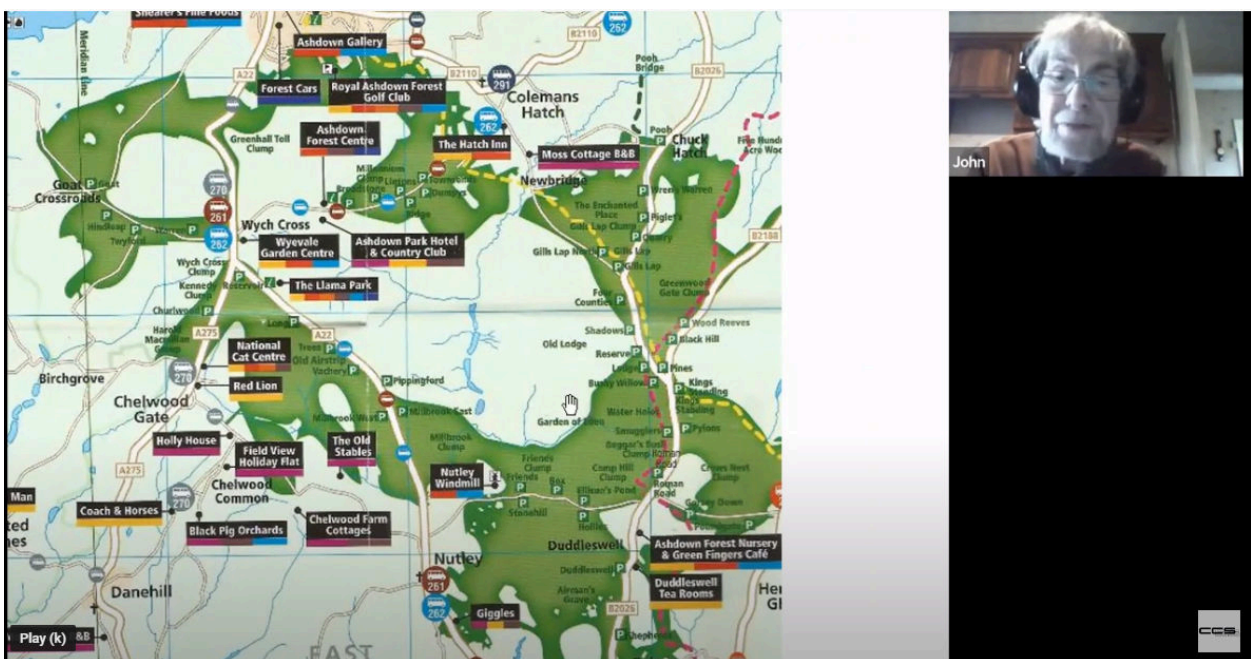
Sheetlines

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The Society's annual general meeting, to be held on 20 August, will, alas, once again be an online affair – a victim of the pandemic. However, as the chairman suggests in his annual report accompanying this edition of *Sheetlines*, there is every hope of a return to business-as-usual from next year.

Despite the restrictions, Society activities have continued, although in virtual rather than physical form. The continuing programme of online meetings has worked well, the most recent being entitled “Look, they gave me a map” – a discussion and show-and-tell on the topic of maps which were designed not to be sold; some were given away for promotional reasons, by organisations as diverse as tourist boards, estate agents, bus companies, hotels, petrol stations and even the manufacturers of tonic wine. Some were carefully designed to tempt the traveller to explore, while others look as if they were thrown together in five minutes. A few even used recognisable Ordnance Survey base mapping. If you missed the meeting, a recording of it is now available to view on YouTube ... <https://www.charlesclosesociety.org/zoom-meetings>.



A note from Richard Oliver : My review in Sheetlines 123 of the Historical maps of Alnwick and Alnmouth from earliest times to 1918, published by the Historic Towns Trust and Alnmouth Civic Society, suggested that the Bondgate Waggonway was omitted from the map. It has been pointed out to me by one of those involved in the production that in fact the waggonway is present, and even has a text label, though it is conceded that ‘perhaps it needed a stronger symbol’.

The Patrick Welham Collection of New Popular Maps

Rob Wheeler

In carrying out any investigation we tend to set bounds which we do not wish to go beyond. Sometimes we declare them, but often we take them for granted, and assume our readers do too. For example, the Hellyer & Oliver cartobibliographies limit themselves to the maps as they came off the printing press; they do not concern themselves with mounting and covers, even for 20th-century series where these aspects were undertaken by the OS itself and where most of the sales were in this form.

One reason for this is that maps were mounted in smaller batches than the print runs; consequently maps from a single print run can appear in quite a variety of covers. This is particularly true for the New Popular series, for which Keith Andrews identified no fewer than 41 styles of cover.¹ In no way daunted, Pat Welham sought to collect a specimen of each state of each sheet of the series in every possible cover. In fact he went further. By careful scrutiny of the marginalia, he identified substates within those that Richard Oliver had defined, and extended his aim to these as well.²

One bound which is almost universally respected by students of modern mapping concerns print defects. If they are gross, we may allude to them, but we do not (normally) seek to collect them; whilst the minor defects, the odd broken letter or superfluous blotch, we ignore altogether. We leave such things to philatelists.³ Pat refused to be limited in this way and paid particular attention to the National Grid paste-overs which were applied to the early sheets and which usually developed a number of print defects in the course of their print runs.

The study of the series was somewhat shaken up by a post on the *ordnancemaps* site by Richard Evans, asking why the Norwich sheet (126) sometimes was labelled 123 on the rear index map. The answer was that it was a print defect, and this led to a joint paper⁴ explaining how this had eventually been spotted and had been corrected, with certain other improvements being made to the index at the same time. While this subject was under investigation, Pat identified a dozen or more other defects that were sometimes visible on that rear cover (see Appendix). What is more, he expanded his collecting aims to include them. But when the paper was compiled, convention re-asserted itself: apart from the regrettable deterioration of '126' to look like '123' all other print defects were passed over and the paper concentrated on the deliberate changes that sought to improve the legibility of the index.

¹ KS Andrews, 'One-inch New Popular map covers distinguished', *Sheetlines*, 76 (2006) 14-28.

² See KS Andrews & PS Welham, 'More New Popular printings and other discoveries', *Sheetlines*, 88 (2010) 25-29.

³ For the student of early engraved maps, tracking the propagation of cracks in a copper plate can be a way of dating printings and observing when a plate has reached the end of its life. But the OS introduced electrotyping before any of its plates reached such a state.

⁴ KS Andrews & PS Welham, 'The New Popular index damaged, mended and improved', *Sheetlines*, 87 (2010) 44-49.

Undoubtedly this produced a more readable paper, but at the expense of ignoring a question that had been posed in correspondence. To explain that question it is necessary to explain the manner in which New Popular covers were printed. The *common form*, those things that applied to all sheets, was printed lithographically from red and black plates in very large print runs. Sheet-specific matters, like titles, were then added in letter-press. This printing - certainly the litho portion - was done '8-up', that is in large sheets each having eight copies of the cover. To produce the plates a master copy of the index will have been copied, by lithographic transfer, eight times. Any defect might be on the original master, or it might have occurred as part of the transfer process, or it might have developed in the course of these very large print runs on one or more of the replicates on the master. Thus the question might be posed as: "Is it legitimate to describe these covers by a single history? Do we not need eight parallel histories?"

If the OS had been considerate enough to label the replicates '1', '2', '3', etc, this question would be easy enough to answer; but it hadn't. Thus our evidence comes muddled together from eight different strands. When we say that the number '126' deteriorated to look like '123' and was corrected, do we mean that this happened in all of these strands, or in just a few? We do not actually know.

This is where Pat's careful examination of sundry other defects comes in useful, along with the analyses he carried out on them. He did not reach the stage of providing an answer but he progressed considerably towards it.

The first point to note is that we are dealing with common form, so the particular sheet number on a specimen is irrelevant. Pat was trying to collect each particular sheet, so he assembled quite large samples that can profitably be examined. The second point is that, although we cannot date individual cover printings in this era, the 'KA' cover-variants allow us to assemble a chronological sequence. That sequence is not perfect: the article pointed out that batches of covers printed with common form might not always be used in strict sequence. Furthermore, there is a degree of parallelism, with KA-2s running in parallel to KA-3s, not to mention paper and cloth covers. Nevertheless, the KA-numbers permit an approximate examination of the order in which things were happening. The third point to note is that, if a print defect occurs on or after the transfer process, it effectively serves to identify a particular replicate. One can identify three strong candidates for this function, those described by Pat as 'Foula', 'Appleby', and '5°2' (illustrated in the appendix). The first two are on the black plate, the third on the red plate but that is of little consequence. The reason we know that they must have occurred after transfer is that they never occur in conjunction; and the sample size is such that we would expect this to have happened had they simply occurred at random. Thus we can identify three of the eight strands during the critical period when the '126' issue was dealt with.

The table below lists the cover variants and also the form of the Norwich square encountered. Exact definitions are given in the appendix, but basically for '30' the number looks like 123; '60', '61' etc are different forms of 126. The figures in the last three columns are the number of sheets listed in the catalogue showing the defect in question. The table is limited to KA-3 covers; the numbers of KA-2s

and KA-4s exhibiting the defects in question is small and, as already observed, they tend to change in parallel to the KA-3s.

KA-	Norwich	'Foula'	'Appleby'	'5°2'
3.4	30	4	6	
3.5	30	9	21	14
3.6	30	7	7	12
	60	1		3
	62			1
	63		2	
3.7	30	1	6	6
	60	3		1
	63		1	
3.8	61	3	1	
	62	3		
	63		13	

KA 3.4 is the first of the cover variants that has the small circle for Bristol. This is a design feature and it is universal on these covers. The implication is that a new replication took place at the start of KA 3.4. The Foula and Appleby defects must have occurred in the transfer process or shortly after and lasted until the end of 3.8 when the Bristol circle returns to normal, implying that another set of replicates was produced. In contrast, '5°2' arose roughly as 3.4 was being superseded by 3.5 and must have been corrected as 3.7 was giving way to 3.8.

Where there is only one instance of a particular variant of 126 I am prepared to discount it. This analysis was based on the catalogue alone: the map may have been mis-categorised, or there may be a one-off anomaly in the printing that has caused confusion. But where a variant is confirmed by a second or third instance, I have to regard it as real. Thus I would describe the histories of the individual strands as follows:

'Foula' was converted from '30' to '60' during the currency of 3.6/3.7; it was then altered to '61' and then again to '62' (or vice-versa), which is rather odd.

'Appleby' was converted from '30' to '63' during the latter part of 3.6/3.7.

'5°2' was converted from '30' to '60' during the latter part of 3.6/3.7.

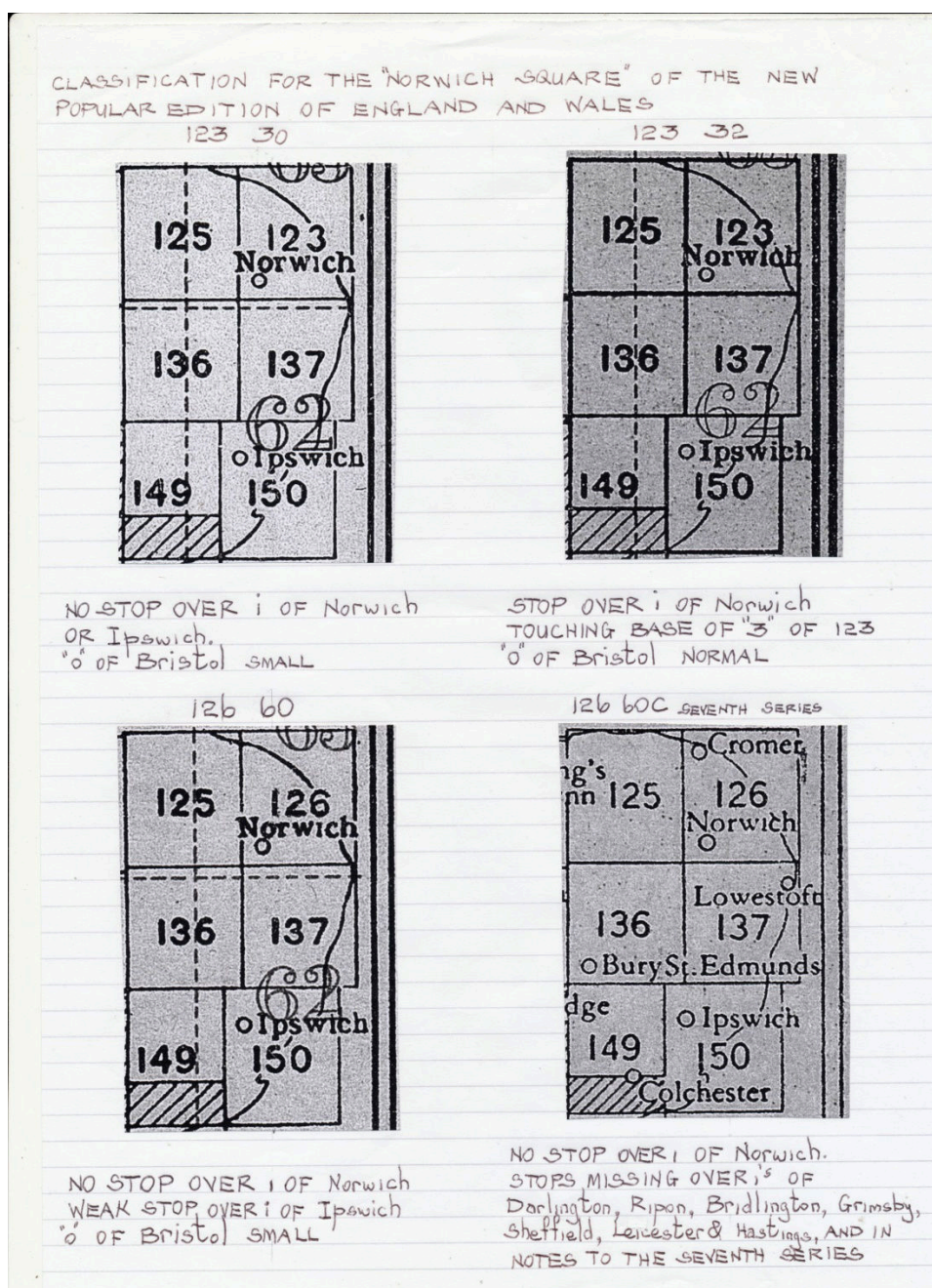
There is a fair measure of commonality here. For all three strands the '123' problem was addressed at about the same time; but exactly what the litho-writer did varied from strand to strand. This variation is perhaps unsurprising: it was not necessary that the litho-writer should produce exactly the same result each time, and with so tricky an alteration it would be unreasonable to expect him to.

Thus, while each strand does have its own distinct history, their alignment is sufficiently close to allow the conclusions set out in *Sheetlines* 87 to stand.

Undoubtedly there is scope for a great deal more work on this topic. One might ask how often and when this 8-fold replication took place and whether we can use other print defects to identify other strands within each replication ‘era’. Pat’s collection has been donated to Cambridge University Library where it complements their existing holdings of New Popular sheets (notably Keith Andrews’ collection). And I have no intention of doing any more on New Popular covers; so the field is wide open.

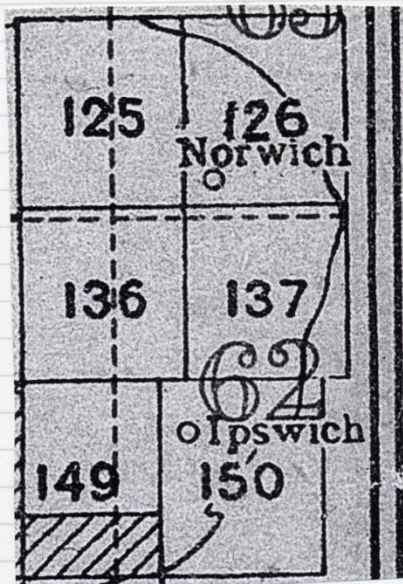
Appendix

The illustrations that follow provide definitions for the ‘Norwich square’ numbers and the various rear-cover print defects. They are taken from the short catalogue or, where they survived, from the master copies from which these were produced.

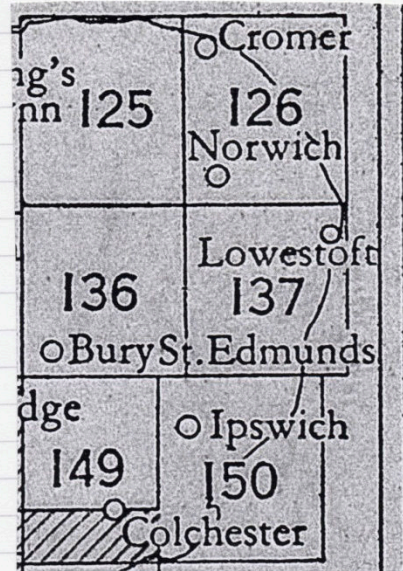


CLASSIFICATION FOR THE "NORWICH SQUARE" OF THE NEW
POPULAR EDITION OF ENGLAND AND WALES.

126 b1



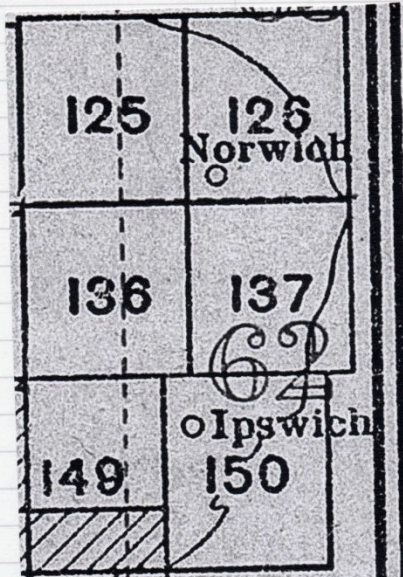
126 b1C SEVENTH SERIES



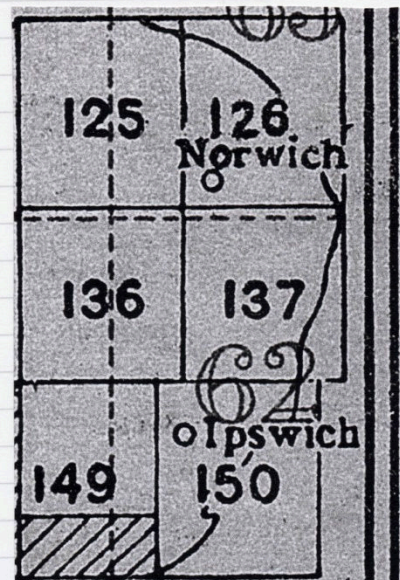
STOP OVER i OF Norwich BETWEEN
TOP OF i AND BASE OF "b" OF 126.
"o" OF Bristol SMALL

STOP OVER i OF Norwich BETWEEN
TOP OF i AND BASE OF "b" OF 126
N.B. MANY STOPS ARE FEINT

126 b2



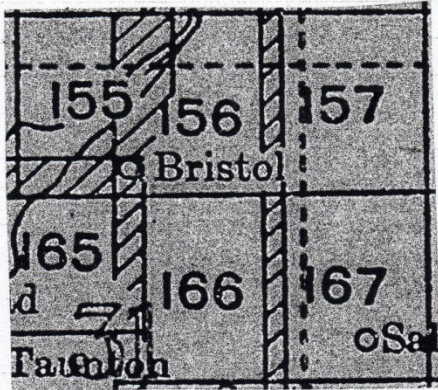
126 b3



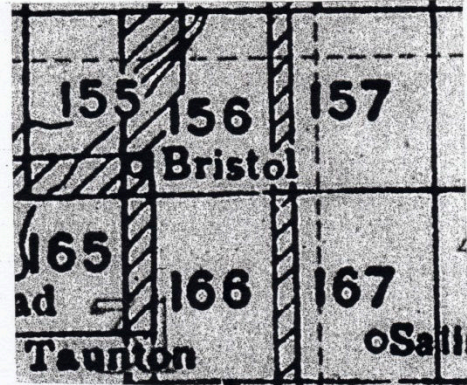
STOP OVER i OF Norwich TOUCHING
"b" OF 126.
"o" OF Bristol NORMAL.

STOP OVER i OF Norwich TO
THE RIGHT OF 126.
"o" OF Bristol SMALL

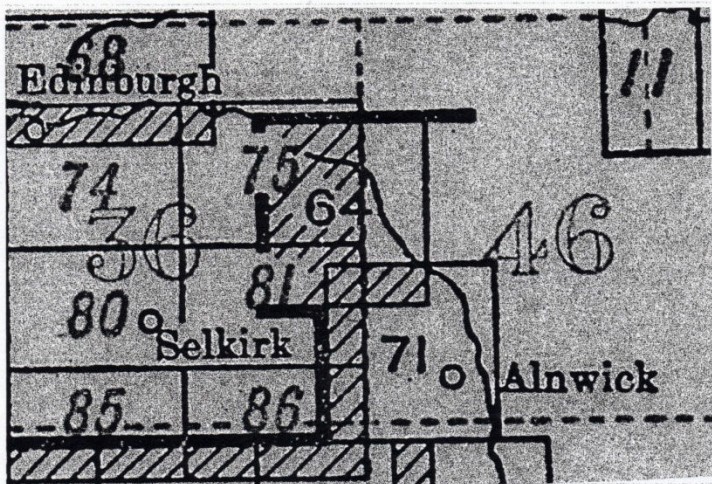
MINOR VARIATIONS TO THE REAR COVERS OF THE NEW POPULAR EDITION
OF ENGLAND & WALES.



"o" OF Bristol NORMAL 3N

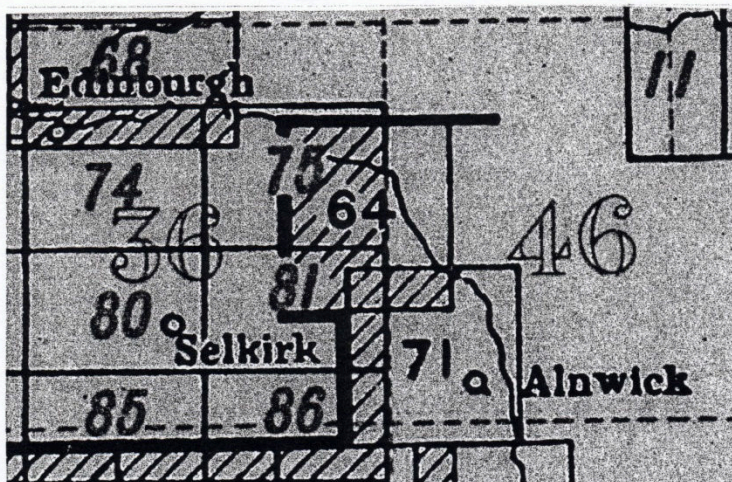


"o" OF Bristol SMALL 3S



Alnwick CIRCLE O
20

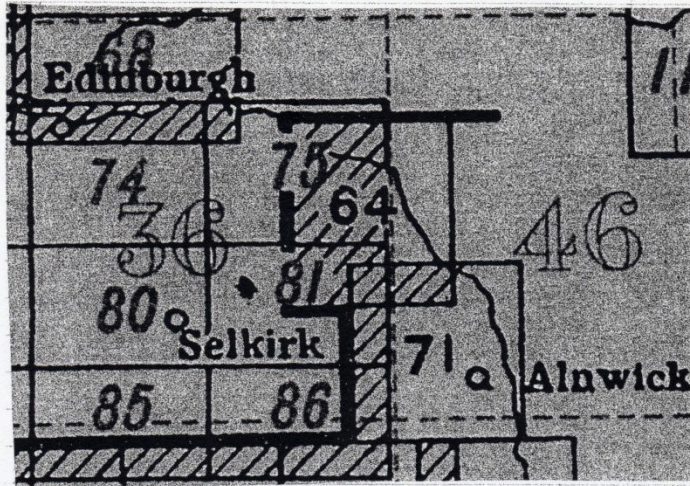
Selkirk UNDA MAGED
(NOT REPORTED)



Alnwick CIRCLE Q
AQ

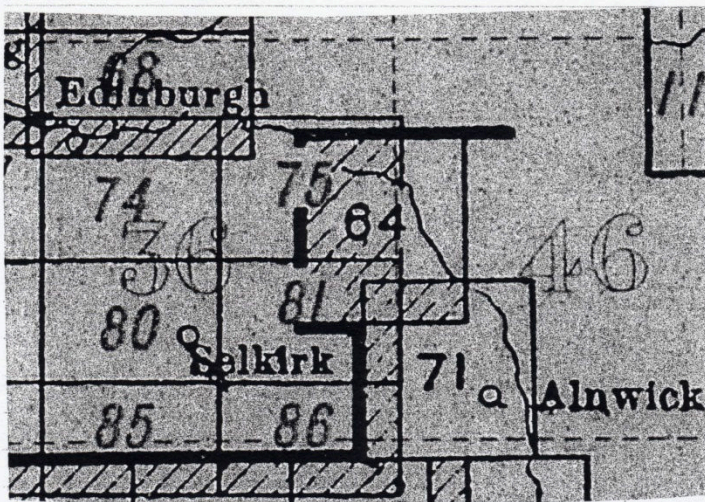
Selkirk UNDA MAGED
(NOT REPORTED)

MINOR VARIATIONS TO THE REAR COVERS OF THE NEW POPULAR EDITION
OF ENGLAND & WALES.



SMUDGE ABOVE Selkirk

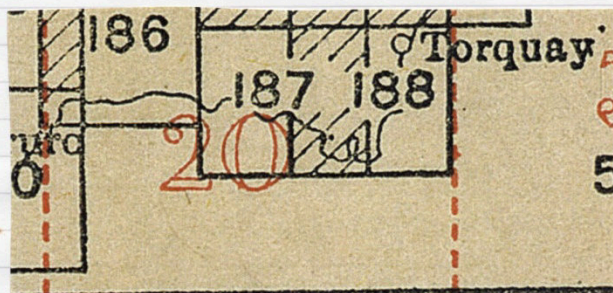
SA



SMUDGE BELOW Selkirk

SB

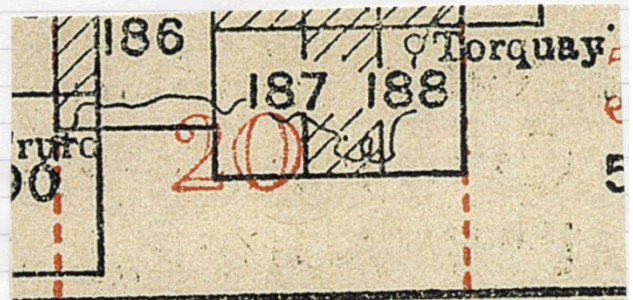
MINOR VARIATIONS TO THE REAR COVERS OF THE NEW POPULAR EDITION
OF ENGLAND & WALES



RED represent the
Authority of the M

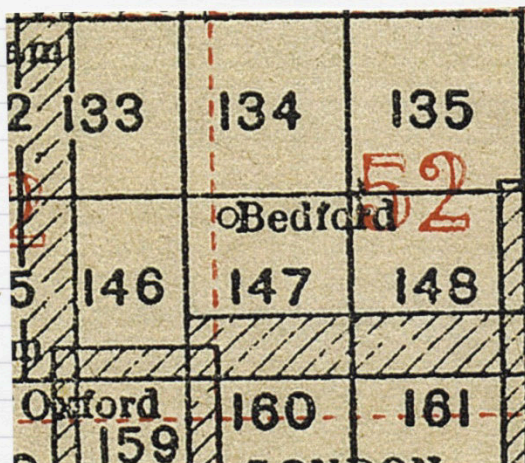
RED

BREAK IN "D" OF RED

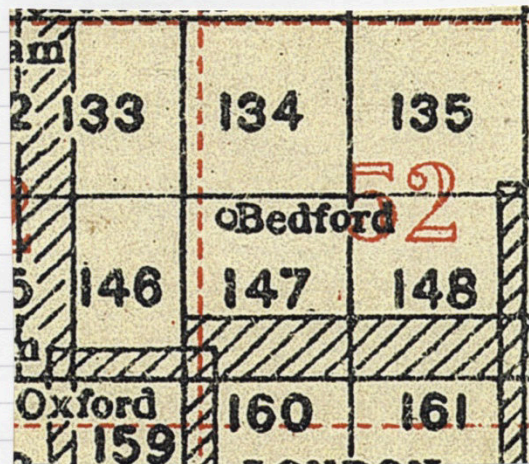


RED represent the
Authority of the M

NO BREAK IN "D" OF RED
(NOT REPORTED)



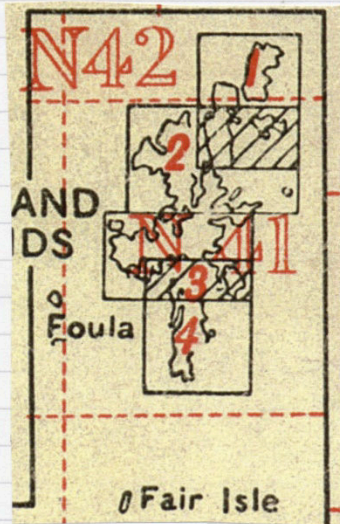
FT VERTICAL BAR THROUGH
"r" OF Bedford GRID 52



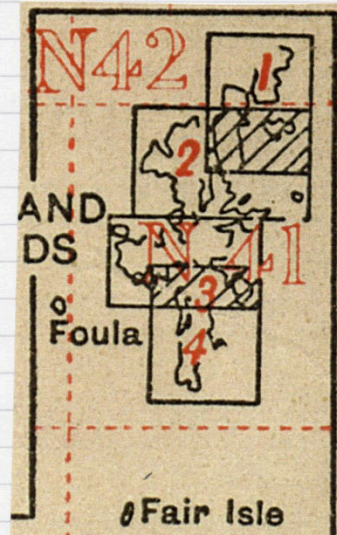
NO DAMAGE TO Bedford
(NOT REPORTED)

GENERAL TIDYING OF HACHURES,
NOTICEABLY "s" OF Leeds
"x" OF Oxford.

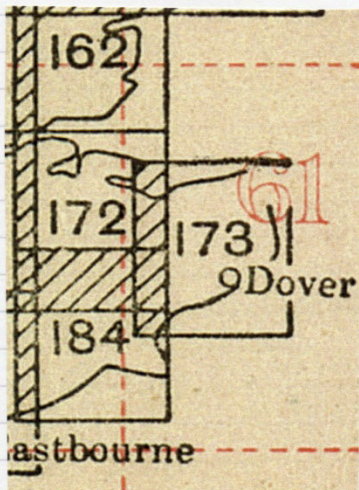
MINOR VARIATIONS TO THE REAR COVERS OF THE NEW POPULAR EDITION
OF ENGLAND & WALES



Foula
SMALL BLEMISH BELOW "F" OF
Foula

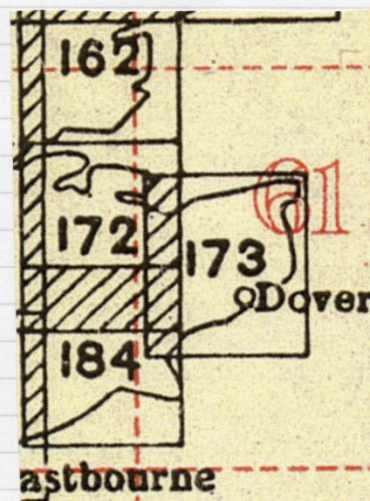


NO BLEMISH BELOW "F" OF
Foula (NOT REPORTED)



KENT COAST KC

BREAK IN SHEETLINE AND
COASTLINE.



NO BREAK IN SHEETLINE AND
COASTLINE (NOT REPORTED)

MINOR VARIATIONS TO THE REAR COVERS OF THE NEW POPULAR EDITION
OF ENGLAND & WALES.

d & Wales" or "Scotland."

f the Ordnance Survey,
Agriculture and Fisheries.

its and from most booksellers.

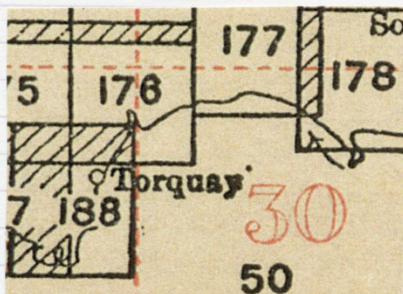
OX
BLEMISH BELOW "r"
OF OT

d & Wales" or "Scotland."

f the Ordnance Survey,
Agriculture and Fisheries.

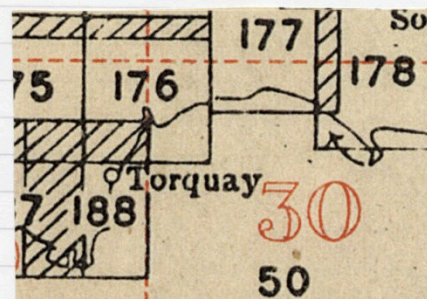
its and from most booksellers.

OR
NO BLEMISH BELOW
"r" OF OT



Torquay' Y

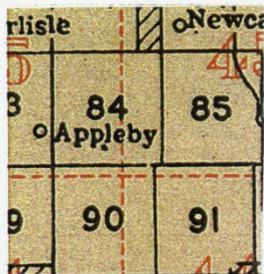
BLEMISH TO NE OF RIGHT
HAND FORK OF Y'
(VARIOUS MARKS CAN OCCUR
IN THE LYME BAY AREA)



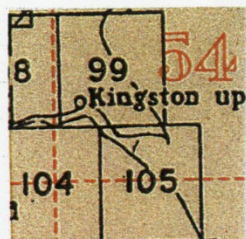
Torquay

NO BLEMISH
(NOT REPORTED)

MINOR VARIATIONS TO THE REAR COVERS OF THE NEW POPULAR EDITION
OF ENGLAND & WALES.



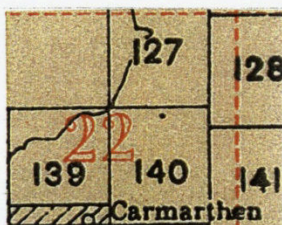
Blemish BELOW
Appleby, Appleby



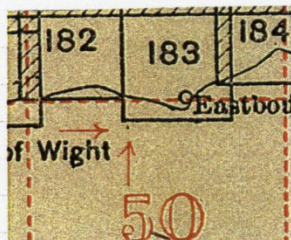
Blemish ABOVE 105
HUMBER



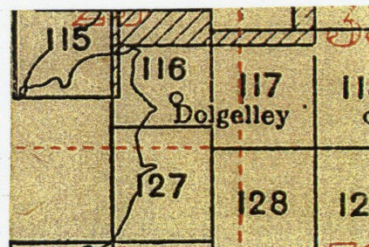
Blemish BESIDE .111
111



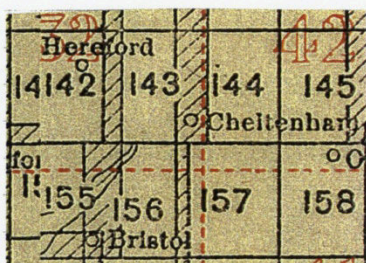
Blemish ABOVE 140
140



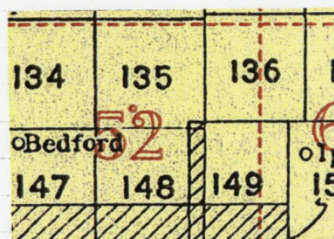
MINOR Blemish Eastbourne
Eastb.



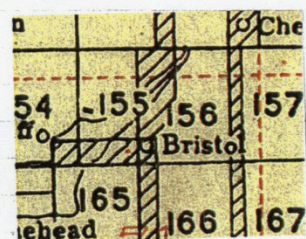
MINOR Blemish 117
Dolg.



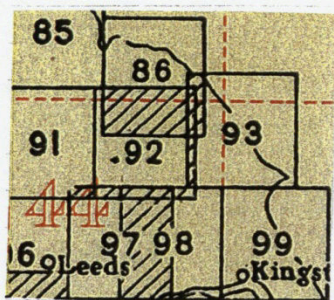
Blemish ABOVE 1 OF 144
144



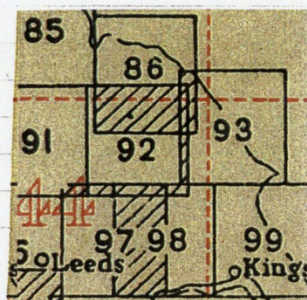
Blemish ABOVE 52
52



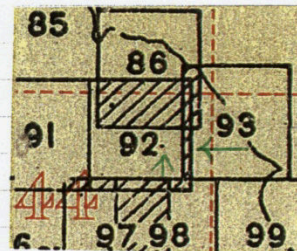
Blemish TO LEFT OF 155
155



Blemish TO LEFT OF 92
L92

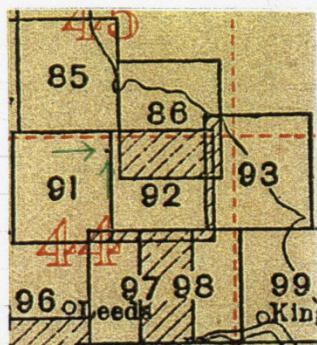


Blemish AMONGST HACHURES
92H

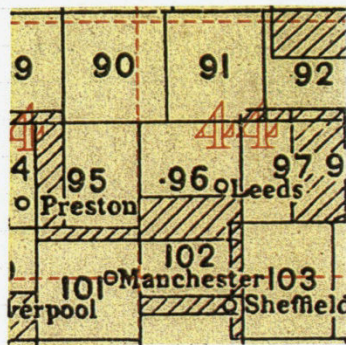


Blemish TO RIGHT OF 92
+ 92H 92R

MINOR VARIATIONS TO THE REAR COVERS OF THE NEW POPULAR EDITION OF ENGLAND & WALES



Blemish BY SHEET LINE 91/92
91'



Blemish TO LEFT OF 96
96



Blemish 165
165



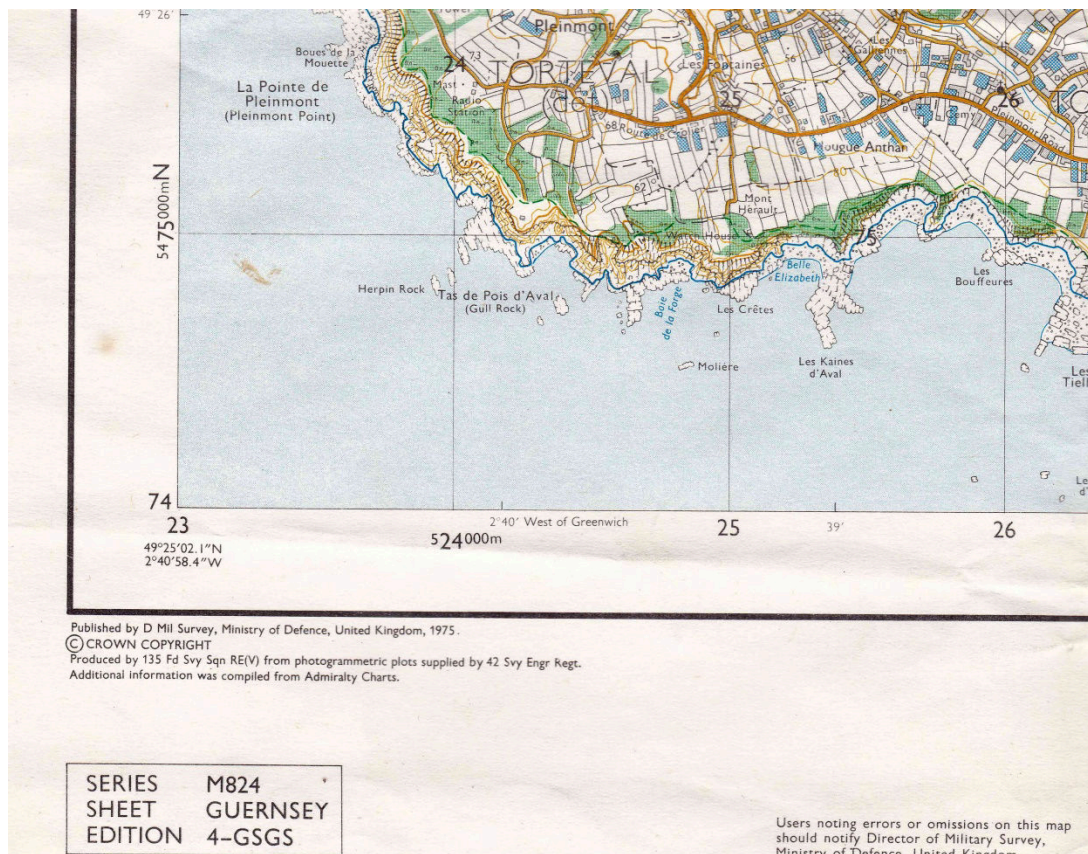
Blemish IN HACHURES OF 184
184 H

Island surveys

Stephen Miller's account of the activities of the OS on the Isle of Man in the nineteenth century¹ led to an interesting exchange in the online discussion forum ordnancemaps@groups.io.

CCS member **Roger Ash**, a former member of 135 Fd Svy Sqn (RE)V (the unit responsible for a 1:25,000 map of Guernsey in 1975) wrote: Stephen Miller's article caused me to revisit my map collection of UK island maps. It seems to me that the OS did/does not have responsibility for mapping all the islands. OS mapping of Ireland stopped in 1921 for obvious reasons but why does the OS continue to map the IoM and not the Channel Islands?

The Scilly Isles is administratively part of Cornwall and as one would expect is mapped by the OS. Similarly, all the Scottish Islands are mapped by the OS. The IoM and the Channel Islands (Jersey and Guernsey) are all self-governing British Crown Dependencies but are treated differently. The IoM is still mapped by the OS whereas various agencies seem to have been involved in Channel Island mapping. I was a member of the Royal Engineers in 1975 when a 1:25,000 map was produced for Guernsey using RAF flown photography. Previous mapping seems to have been a mixture of OS (Surveyed 1898-99, revised 1934 and 1955) plus further revision by a private company (BKS) in 1963. Alderney was mapped by the OS in 1956; I have an MOD map at 1:10,560 dated 1966 but with no revision data. I do not have any Jersey mapping and am not sure of the history there.



¹ Stephen Miller, 'The Ordnance Survey in the Isle of Man (1864-68)', *Sheetlines* 123, 26-30.

David Andrews wrote: In 1965 I was one of eight OS surveyors resurveying Douglas and Onchan, (Isle of Man), at 1:1250 scale from Air Machine control. If I recall correctly it was done on a repayment basis for the IoM government, so it was done as economically as possible, with the result being that the Air Machine control left a lot to be desired.

Alan Bowring wrote: I seem to have acquired multiple maps of Jersey over the years, despite never having visited any of the Channel Islands. Oldest are a couple at a scale of two inches to one mile surveyed by 'No2 Field Survey Section R.E., accompanied by a Special Levelling Party in 1913' - mine are a printing of 1934, revised in 1933, one on cloth, one on paper and both appearing in dull green Ordnance Survey card covers. I've another at the same scale in a red cover which is broadly similar but bearing the seal of (Les) Etats de Jersey rather than anything OS. Inside it is revealed as having been revised by BKS. Survey Ltd from aerial photography dated April 1958 and printed by George Philip Printers Ltd. It is 'reproduced from the Ordnance Survey map' with the addition of a 'new approach road' and an airport extension in 1960. This later map does not possess the subtle hill shading of the earlier maps.

I also have two sheets at 1:25,000 scale, both 'Official Leisure Maps', the covers of which are printed with the States of Jersey design but only the earlier one (1982) has an Ordnance Survey identification. The later one is dated 2017 and is 'a printout of the States of Jersey Digital map' featuring a detailed street map of St Helier on the reverse.

I have a further 1:25,000 scale sheet in a garish orange cover published in 1968 from air photos dated August 1965 - this work carried out for the States of Jersey by Hunting Surveys Ltd. It bears no references to Ordnance Survey so presumably does not draw upon that earlier source. It bears distinct typefaces and elevational colour banding.

Jeremy Harrison wrote: While smaller scale mapping of the IoM is produced by the OS, down to 1:50,000 *Landranger*, it's not on their 1:25,000 *Explorer* mapping (both paper and online versions - scrolling the online app at 1:25k, there is visible change in NG lines and figures when you move from GB 1:25k to IoM 1:50k at the same magnification/zoom level).

I have a pair of 1:25,000 sheets ('Outdoor Leisure Map') covering the IoM, published by the Isle of Man Survey, part of the IoM Government Department of Local Government and the Environment, from their large scale digital map database, with acknowledgements to some commercial companies. The only reference I can see to OS is regarding GPS, and its transformation to the OSGB3 map reference system.

So for the IoM, it would seem small scale mapping is down to the OS, as part of the British Isles, while larger scale is a local, IoM Govt. responsibility.

Richard Oliver wrote: The Isle of Man has been fiscally independent of the United Kingdom since 1866, although it has continued to pay a subvention for defence. Since then the Ordnance Survey has mapped the island at one-inch and 1:50,000, as these are 'military' scales, and can be treated as part of defence infrastructure and defence spending for which the island pays its subvention, but larger scales have been the island's responsibility, and any work undertaken there by Ordnance Survey of Great Britain has been of the sort that David Andrews describes, as a repayment service. The island has a large-scale database which will include the 'repayment' 1:1250s described by David Andrews, but it certainly includes other later work in which OSGB is not known to have had a hand.

Some of the 'Ordnance Survey' mapping of the Channel Islands can be explained as 'defence', but most of that at 4-inch and larger scales has been undertaken by OS on a repayment basis. The autonomy of the islands in these matters explains the involvement of private-sector firms such as BKS, and a 'hybrid' 2-inch 'Official map of Jersey', combining 1914 basic cartography with 1958 air revision by BKS - sold in a pastiche OS cover!

(The 2-inch maps of Jersey described by Alan, though dated 1933, are post-war reprints, in 'authentic OS covers', pastiched in the BKS-revised version).



Detail, OS Jersey, 1914

Milestones and other distance markers and the Ordnance Survey

Richard Oliver

The Milestone Society was formed in October 2000, to study and facilitate the upkeep of milestones and other waymarkers.¹ Its activities have gradually widened to embrace not only distance markers, but also boundary markers and guide posts. Maps are essential for historical investigations, particularly of ‘lost’ distance markers. I have published two articles for the Society, one in 2002 on Ordnance Survey maps as sources for milestone study, and another in 2017, in which maps, mostly OS, were used to trace the pattern of mile marker provision in Lincolnshire, and to demonstrate how judicious use of maps might enable text on ‘lost’ mile markers to be reconstructed.² To date, mile markers, whether on roads, canals or railways, have had rather summary treatment in Charles Close Society publications: some recent researches make further publication opportune.

I am concerned here with mile markers along roads, railways and canals, rather than indications of direction and distance at road junctions – colloquially ‘sign posts’, ‘direction posts’ or ‘finger posts’, though the standard OS term has been ‘guide post’ – which are for exploration on another occasion, as is a wider consideration of boundary markers.³ It also concentrates on Britain: when the six-inch Townland Survey of Ireland began in the mid 1820s it was decided that distance markers would not be shown, as they often used Irish miles of 2240 yards, rather than statute miles of 1760 yards.⁴ However, distance markers were shown along railways, no doubt because they used statute rather than Irish miles.⁵

Some definitions and context⁶

The term ‘mile marker’ is used in preference to ‘milestone’, as there are two basic types of distance marker, though colloquially they are referred to as ‘milestones’. These are the milestone in the strict sense of the word, fashioned from living rock (*Figure 1*), and the milepost, usually cast iron, though there are wooden, concrete and plastic examples (*Figure 2*), which are produced by manufacture of some sort. A variation is the ‘plated stone’, where the text is on a metal plate attached to the stone (*Figure 3*). Late examples of the ‘plated stone’ are the so-called

¹ www.milestonesociety.co.uk

² Richard Oliver, ‘Ordnance Survey maps as sources for milestone study’, *Milestone Society Newsletter* 3 (July 2002), 16-21; Richard Oliver, ‘Lincolnshire mile markers: maps, metal and the missing’, *Milestones and Waymarkers* 10 (2017), 25-33.

³ ‘Finger post’ and ‘direction post’ were both used on six-inch mapping of the 1840s in Lancashire and Yorkshire: ‘guide post’ seems to have been standardised by the late 1850s.

⁴ I think the source for this is somewhere in the writings by J.H. Andrews, but have been unable to locate it.

⁵ Irish practice differed from that in Britain: thus, for example, on County Dublin sheet 18, the railway added in 1849 has *1st. Mile post, 1¼*, etc: styles unknown on OS mapping in Britain.

⁶ The best introduction to mile markers remains Carol Haines, *Marking the miles: a history of English milestones*, [Norwich:] the author, 2000; it stands up quite well to two further decades of mile marker research.

'Bradley stones', erected in Worcestershire in the early 1930s, which are in fact concrete, and therefore technically 'mileposts'.



Figure 1 (left) Milestone, Daljarvock, Ayrshire, NX 196883, with angled faces, 2004. Figure 2 (centre) Milepost, Navenby, Lincolnshire, SK 988583, 1994. Figure 3 (right) 'Plated stone', Clarencefield, Dumfriesshire, NY 09406805, with bench-mark, 2004.

Milestones were erected by the Romans, but their main object appears to have been the political one of glorifying the current emperor, with information for travellers distinctly secondary. Milestones seem to have reappeared in Britain from the sixteenth century, though very few survive from before the early eighteenth century. Today milestones tend to preponderate over mileposts in counties with good supplies of suitable stone, such as Cornwall and Devon, though significant numbers also survive in counties not so endowed, for example Norfolk and Suffolk. Wooden mileposts had the advantage of the relative ubiquity of wood, and any inscription could be painted on rather than incised, but they were prone to rot, and by the later eighteenth century cast iron came to be preferred. The set



of wooden posts installed between Bushey Heath and Aylesbury in 1764 were a late use of wood; some lasted until 1826, when they were replaced by iron posts.⁷ The so-called 'Bow bells' mileposts between East Grinstead and Lewes in Sussex have been dated to the 1780s or 1790s⁸ (Figure 4). After about 1800 milestones were sometimes replaced by mileposts; on stones all text had to be incised, and there were no short cuts when a run of stones was required, whereas cast iron could use some basic moulding, enabling an element of mass production. A common arrangement after 1800 was to provide two angled faces (see Figures 1 and 2),

Figure 4 (left) 'Bow bells' milepost, south of Isfield, Sussex, TQ 450156, 1985.

⁷ Peter Gulland, 'Wooden mileposts', *Milestone Society Newsletter* 27 (July 2014), 33-5.

⁸ Lionel Joseph, "Bow bells" mileposts', *Milestone Society Newsletter* 15 (July 2008), 14-15.

so that distances to places ahead were more easily visible at (relative) speed. Material may also have affected survival: in May 1940 the removal or rendering illegible of mile markers and guide posts was ordered as an anti-invasion measure, and whilst this was rescinded in 1942-3, many mileposts and boundary posts, in particular, were never reinstated: it is suspected that they were victims of the scrap metal drive. Consequently there is a great difference in survival between counties where stones predominated, such as Cornwall and Devon, and those where most markers were posts, such as Lincolnshire. Guide posts were presumably seen as essential adjuncts of road travel, whereas mile markers were expendable relics of a bygone age.

From 1697 Justices of the Peace had powers to order erection of mile markers and guide posts, to show the distance to the next market town.⁹ Some of the earliest surviving 'mile markers' are really 'guidestones', in the Pennines (*Figure*



Figure 5 Guide stone (dated 1740 on another face), Smallfield, Yorkshire West Riding, SK 245947, 2004.

roads, and the county councils formed in 1888-9 had powers to adopt other roads similarly. In the 1890s and 1900s there was both considerable renewal of mile markers in some counties, for example Cheshire, Lancashire and the West Riding of Yorkshire, and also additions. The milepost at Navenby (*Figure 2*) seems to

5), and are as much direction markers as distance markers. From 1744 most turnpike acts required the setting up of stones or posts giving distances, and Acts of 1766 and 1773 effectively made this universal. A General Turnpike Act of 1822 added an obligation to erect boards at the entrances to towns and villages giving the name of the place (none seem to survive), and markers where parish boundaries crossed roads; such markers were also provided on many non-turnpike roads.¹⁰ Mile markers also appeared alongside canals and railways, and were made compulsory for the latter in 1845.

After 1878 former turnpike roads were designated 'main'

⁹ For more on legal requirements see Keith Lawrence, 'Milestones, guideposts and other street furniture in legislation and statute', *Milestones and Waymarkers* 1 (2004), 38-44.

¹⁰ Boundary markers of various types were also erected away from roads, particularly on open moorland; such markers are outside the scope of the present article.

have been installed between 1906 and 1908, as part of a run on the direct route between Lincoln and Grantham, that was never turnpiked.¹¹

Boundary markers also continued to be erected in the late nineteenth century, and indeed well into the new one. They were often very similar in general appearance to mile markers (*Figure 6*), but were distinguished by omitting mention of distances; conversely, mile markers often indicated the parish or township in which they were situated (*Figures 2, 17 and 19*).

Two types of distance marker appear along motorways and some 'primary routes': discreet posts every 200 metres and, from about 2005, much more conspicuous boards on posts, usually at half-kilometre intervals, but varied in the vicinity of junctions and bridges (*Figure 7*). Neither have been mapped by the OS. The total number of these markers probably comfortably exceeds the number of surviving 'milestones' along other roads.



Figure 6 (left) Boundary stone, Blacko-Barrowford, Lancashire, SD 86254085, 2005. The slanting text is unusual, but the general resemblance to an 'angled' milestone is obvious. Figure 7 (right) Metric motorway distance marker, on M3 near Basingstoke, 2021.

Mile stones and posts also appeared along canals and railways. In the late nineteenth and earlier twentieth centuries there was extensive reordering of railway mile markers and, as few such earlier markers survive, older OS maps can be valuable guides to earlier usage.¹² Again, the total number of these probably considerably exceeds the total number of all extant markers along roads, motorway and other.

Methods of indicating markers on the ground and on maps

There are three basic methods of showing distance on markers:

- (1) By place and distance (see *Figures 1, 2, 3*)
- (2) By abbreviation and distance (see *Figure 14*)
- (3) By distance only (see *Figure 4*)

(2) is met with more in 'upland' Britain, for example Cornwall, parts of the Pennines and Galloway; (3) is most often met with on canals and railways. This has not always been so: method (2) might have been more common at one time on roads in 'lowland' Britain, perhaps on wooden posts long since replaced, and

¹¹ This post is absent from the OS large-scale mapping revised in 1904 and the one-inch mapping revised in 1906, but was illustrated in *The Bystander* in 1908: I am indebted to the late John V. Nicholls for drawing my attention to this.

¹² I owe this point to the late David Milbank Challis. There seems to be very little literature on railway mile markets, apart from D.W. Winkworth, 'Milepost variety', *Railway magazine*, May 1971, 236-9. (I am indebted to John Minnis for this); see also Richard Oliver, 'Railway mileposts', *Milestone Society Newsletter* 19 (July 2010), 28-30.

type (1) was certainly used on earlier railways, as attested by some unusual surviving examples from the Edinburgh and Glasgow Railway.¹³

Three basic methods have been used by the OS to depict mile markers:

- (1) Implied, by distance figures (see *Figures 8, 9 and 10*);
- (2) Explicitly, by abbreviation (*MS* or *MP*), with distances (see *Figures 11, 15, 16, 18 and 20*);
- (3) By abbreviation only.

Only the third method has been used for boundary markers along highways (*BS, BP*).

Generally the six-inch scale is adequate for those seeking mile markers, but they may be omitted at this scale in urban areas in order to reduce 'clutter', and reference may be necessary to larger scales, when available. Mile markers have never been shown by the OS at smaller than the one-inch (1:63,360) scale.

The OS has used mile stones and posts for siting benchmarks (*Figures 3, 17*), but the burial and resiting of many mile stones during and after World War II mean that earlier levelling to them, being to 0.1 or 0.01 feet, was invalidated. Others, such as that indicated in *Figure 11*, were lost.

The one-inch Old Series map

(This is defined as sheets 1-90, south of the 'Preston-Hull line'.) Indications at present are that the earlier sheets of the one-inch Old Series, 'the original Ordnance Survey map', published up to about 1820 are not to be relied on as a record of what mile markers were in existence at the time of survey. Some may be shown on the parent Ordnance Surveyors Drawings that do not appear on the published maps. Where distances are shown, one is given; there seems to be a preference for showing them on routes radiating from London, though this has yet to be thoroughly investigated, and there are certainly exceptions.

The tightening up in procedures associated with the Lincolnshire survey in the early 1820s seems to have led to the more comprehensive indication of mile markers, though there was still a preference for distances from London, where they were shown on the markers, rather than to nearby towns. From 1834 multiple distances were sometimes shown, usually two (one often being that for London), in the style 6.15, 7.14, 8.13, etc, though there are a few instances of three being shown (*Figure 8*).



Figure 8 Three-distance mile marker, and also a two-distance marker and an unusual depiction of a half-mile marker, near Chelmerston, Derbyshire, on one-inch Old Series sheet 81 NE, published 1840.

¹³ See *Milestone Society Newsletter* 23 (July 2012), 28-9 and 34 (February 2018), 21-2. A four-distance milepost is indicated east of Brechin on Forfarshire six-inch sheet 27.

Mileages appear along the Leicester and Swannington Railway, opened in 1832, and shown on sheet 63 as first published in 1835. Thereafter mileages were usually shown along railways, though after about 1860 they are sometimes omitted; it is unclear why. Sometimes lines were equipped with two sets of



markers, or the markers showed two distances, and both are shown.

Mileages along roads were very rarely revised after publication: there is an odd exception on sheet 84 at Louth, where a mileage '149', reckoned from London, has been added, apparently as a by-product of railway revision c. 1851 (*Figure 9*).

Figure 9 Mileage '149' added to one-inch Old Series sheet 84 at Louth, c.1851.

The derived one-inch and 1:50,000

All newly-published one-inch mapping issued from 1847 was derived from six-inch and larger-scale surveys. A few scattered road mileages appear, but these appear to be experimental, and as a rule up to the early 1880s no mileages were shown. They then began to appear along turnpike and main roads and their equivalents in Scotland: it was usual to show them on newly-published sheets, and they were added retrospectively to most of the sheets of England and Wales published from 1847, but not to previously-published mapping of Scotland.¹⁴ Mileages were usually shown reckoning from the larger of two towns, and so, except in the vicinity of the capital itself, mileages from London rarely appeared. No railway or canal mileages appeared on this derived mapping.

The revision of the one-inch undertaken between 1893 and 1898 enabled the mileage information to be regularised between sheets and across Britain. One-inch revisers were instructed to record milestones, and the Third Edition (revised 1901-12) and Popular Edition (revised 1912-30) record additions, made by county councils. Mileages are usually given in whole miles between towns, running from the larger to the smaller; fractions are uncommon, and the eighths of miles, representing furlongs on the mile posts, on what was later A16 either side of Louth in Lincolnshire, are especially so. (*Figures 10, 11, 12*) However, mileages were only shown on the highest class of road: mile markers on lesser roads were almost invariably omitted. The treatment of mileages on 'first class' roads can also be inconsistent, particularly where there was an incomplete run of mile markers. Thus the incomplete series between Grimsby and Caistor was omitted from New Series sheet 90 as first published in 1890, but was added to the revised edition in 1898. The incomplete set from Louth to Alford was similarly omitted from sheet 103: it was evidently completed after 1906, and the complete run appears on the Popular Edition, giving the misleading impression, if only the one-inch is consulted, that the whole run dates from after 1906.

¹⁴ The figure '4' added near Christmas Farm, south-east of Redhill, on sheet 286 is shown on six-inch Surrey sheet 34 as a 'G.Post' with mileages: an unusual if not unique example.



Figure 10 (left)
Figure 11 (below)
Figure 12 (right)

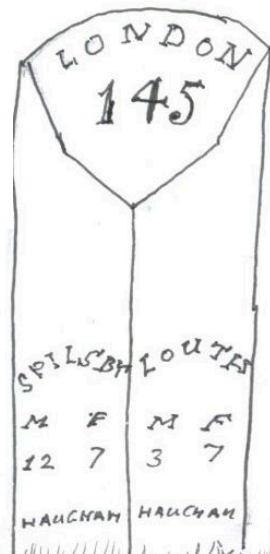
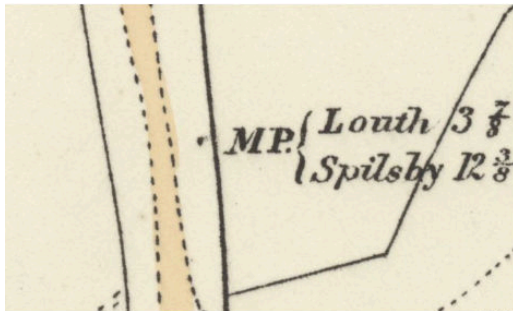


Figure 10 Mileage on one-inch New Series sheet 103, published 1891: the 'eighths' denote furlongs.

Figure 11 The milestone shown in Figure 10 with fuller text, on Lincolnshire 1:2500 sheet 56.10, surveyed 1888. (NLS).

Figure 12 A reconstruction of the milestone shown in Figures 10 and 11.

On the one-inch Fifth Edition and those New Popular Edition sheets in the same style, revised 1928 - c.1938, mileages were omitted. The other New Popular sheets, and post-war issues of the Popular of Scotland, were based on unrevised material, and are similarly of no use as records. On the One-inch Seventh Series, revised from 1944 onwards, mile markers on roads classified 'A' or 'B' by the Ministry of Transport were indicated by *MS* and *MP*, with no indications of mileages. As with the earlier concentration on 'first class' roads, this meant that a number of other extant mile markers were omitted. Nonetheless, the mile markers shown on the Seventh Series are a broad indication both of what was restored after 1942, and of post-war losses. There are also occasional additions, for example of posts and stones along B1165 on sheets 123 and 124, which had been shown as second-class on earlier mapping.¹⁵ The policy of showing mile markers only on 'A' and 'B' roads was continued on the 1:50,000 *Landranger* series, but those on sections of road which were downgraded below 'B' were omitted when sheets underwent full revision, and thus, for example, the rerouting of the A17 in 1982-3 resulted in the mile stones on the former route between Sutton Bridge and Kings Lynn being omitted from sheet 131 when it was republished in 1992.

Whilst the one-inch is thus an incomplete record, it is nonetheless still a useful one, particularly over the large parts of Britain where there was no revision of the six-inch and 1:2500 between the 1900s and National Grid rural resurvey in the 1960s and 1970s.

The large scales

Very limited areas of Devon and Kent were surveyed at the six-inch (1:10,560) scale in the 1780s, but were only published at one-inch, on the Old Series. Nonetheless, the example of this mapping inspired the adoption of the six-inch for the Townland Survey of Ireland begun in 1824, and this in turn helped bring about the adoption of this scale for northern Britain in 1840. The episode of 'the

¹⁵ The evidence of the six-inch is that these were only installed after 1903-4, which seems very late for using stones.

Battle of the Scales' in turn established 1:2500 as the standard rural scale from 1854, with the six-inch continuing to be published as a derivative, and continuing as the basic scale in areas judged too open to justify the 1:2500. Larger urban areas were covered at 1:1056, 1:528 or 1:500. This mapping was on county sheet lines and is now known as the County Series; after 1945 it was gradually replaced by resurveyed or revised mapping on National Grid sheet lines, with 1:1250 as the 'urban' scale.

The principle followed with both the six-inch and the 1:2500 during the initial survey phase, up to the early 1890s, was to show everything that could be fitted in, and this included mile markers on roads, canals and railways, and guide posts and stones. The situation, type – *MS* or *MP*, and occasional variations – and mileages were shown.¹⁶ Terminology in the 1840s and early 1850s seems to have been somewhat loose: there is evidence that guide stones in the West Riding of Yorkshire were treated as 'mile stones', with that shown in *Figure 5* described as 'Stone (G.P.)' on the six-inch revised' in 1892.¹⁷ Up to 1883, all mileages were listed, but then it was ordered that only those to the two nearest towns be shown: this was symptomatic of seeking production economies wherever possible, in order to balance the pressure on funding with that to complete the survey.¹⁸ The effects of this, and some apparent exceptions, are discussed in a separate section later. Further economies, effected in 1893 as the first revision of the 1:2500 got under way, led to the distances on railway and canal mile markers not being recorded, but road mileages continued to be, with the maximum of two, up to November 1959. Thereafter only abbreviations were used. Post-1914 funding restrictions meant that many areas of Britain were not revised at 1:2500 between the mid 1900s and the 1960s or 1970s: the resurvey on National Grid sheet lines begun in 1943 at first concentrated largely on urban areas. However, the six-inch was issued in two Provisional Editions, one on county sheet lines in 1944-53, and another on National Grid sheet lines in 1948-65: the latter included revised mile marker data. From 1954 redrawn six-inch mapping based on post-1943 National Grid resurvey was published; from 1969 the scale was changed to 1:10,000. The six-inch National Grid series continued to show all mile markers outside built-up areas; the 1:10,000 showed them only on 'A' and 'B' roads.

Markers at closer than one-mile intervals on roads have been unusual – a series at third of a mile intervals going south-west from Manchester is exceptional – but they have been usual in railway and canal practice. Early six-inch mapping in Britain shows mileposts with distances and terminals in whole miles, and

¹⁶ For example, *M.Tab.* – presumably 'mile tablet' – on a Leicestershire 1:2500 of c.1883. Steve Chilton and Ifan Shepherd draw my attention to 'M.S.' on a railway on the manuscript drawing Yorkshire 283B, at British Library Maps C.C.1.a.2 being changed to 'M.P.' on the published sheet: it is for investigation whether this is an example of a surveyor using the colloquial 'milestone', and it being corrected by an examiner. 283B seems to be one of only three such manuscript fair drawings surviving for the British survey.

¹⁷ Other examples are reserved for a 'guide post' article.

¹⁸ Southampton Circular, 31 May 1883: copy in Charles Close Society Archive (CCSA), IM_401_5.

others only as *M.P.*, with no further detail. It is unclear what practice was after 1854, and whether an absence of half- or quarter-mile posts denotes absence on the ground, or suppression from the map specification. Also, post-1893 reprintings of 1:2500 mapping that involved redrawing followed current practice in their treatment of mile markers, and thus whereas the original printings of such sheets will record the distances, these reprints will only show *M.P.* (and occasionally *M.S.*). This caveat does not apply to the six-inch first edition mapping, which was based on either copper plates or photographic negatives, and did not entail redrawing for reprinting.

From the 1890s the County Series 1:2500 only recorded whole-mile railway mile posts, but the post-1943 National Grid 1:2500 and 1:1250 also recorded quarter-mile posts. Whole-mile railway posts appeared on the six-inch Provisional Editions, but were not shown on the redrawn Regular Edition and 1:10,000 successor.

The '1:25,000 family'

This includes six groups of maps, the first four being military in nature. Three only covered limited areas of military interest: the 1:25,344 series, GSGS 3036, which covered part of eastern and south-east England; the 1:20,000 series, GSGS 2748, originally produced by direct photo-reduction from the six-inch, and later by redrawing; and a 1:25,000 series, GSGS 3906. In 1940-41 all these were replaced by a fourth group: a new version of GSGS 3906, based on direct photo-reduction from the six-inch. On this the indications for mile and boundary markers were practically illegible. Between 1945 and 1956 a civil 1:25,000 was produced, still based on the six-inch, but completely redrawn, and known as first the Provisional Edition and then as the First Series; the earlier sheets included much detail that was obsolete by 1945, and therefore show an anachronistic situation with regard to mile markers. (Distances shown in eighths, *i.e.* furlongs, on the six-inch are occasionally rendered as quarters.) All these earlier sheets were later republished incorporating revision made primarily for the one-inch Seventh Series, and this included mile markers on roads; those on railways and canals were not shown. This mapping was replaced between 1965 and 1992 by a 'Second Series', the linework of which was derived from the six-inch or 1:10,000.

On all these series, mile markers on roads were shown similarly to the contemporary six-inch, with up to two distances shown on sheets prepared up to 1960, and by *MS* or *MP* alone thereafter. In principle all road mile markers should be shown, though there may be some exceptions on the Second Series, particularly away from 'A' and 'B' roads. The First Series sheets using one-inch revision of 1947-58 are a more complete record of what mile markers survived or were reinstated after World War II than is the one-inch Seventh Series.

Text on mile markers

As was mentioned above, in 1883 it was ordered that, when more than two distances were recorded on a mile marker, only those to the two nearest towns were to be recorded; it might be inferred from this that, where only one distance was recorded, only one would be recorded and published on the map. This was

indeed the practice on the first edition of the six-inch and 1:2500, but it also appears to have been the practice with whole-mile markers that, where only a distance but no origin was given – which has certainly been the practice with railway mileposts in the twentieth century (*Figure 13*) – the origin was supplied. This is illustrated by the treatment of the milestones on the ‘coast road’ from Kings Lynn to Burnham Market, some of which survive, and some of which, for example the 10-mile stone at Ingoldisthorpe, show only a distance.¹⁹ Nonetheless, the six-inch and 1:2500 supply the origin. Full text for places was also supplied where the stone showed only initial letters (*Figures 14 and 15*).



Figure 13 (far left) Railway mileposts at Chard Junction, Somerset, ST 34000470, 2009: a London & South-Western Railway half-mile marker, and a recent supplement, showing the mileage from Waterloo.

Figure 14 (left) Milestone with initial letters of places, Monreith, Wigtownshire, NX 35854105: 2004. ‘P’ is Port William, ‘W’ is Whitbourn.

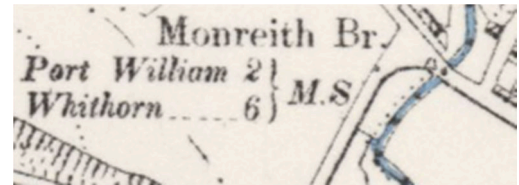


Figure 15 The milestone at Monreith on Wigtownshire six-inch sheet 30 SE, revised 1894.(NLS)

This principle was taken further on revised mapping produced after 1893, where two distances were often supplied for single-distance markers, where the terminal not mentioned on the marker could be clearly inferred; some single-distance runs, such as the ‘Bow bells’, defeated this (*Figures 4 and 16*). Such ‘supplied’ distances seem to be in whole miles, and where a now lost marker has one distance in whole miles and another in fractions of a mile, it can probably be accepted safely as having shown two or possibly more distances, but it does not necessarily follow that the style of name on the map will follow that on the marker, as evidenced by the treatment of milestone 22 at Brancaster (*Figures 17 and 18*). Further east, milestone 29 has two distances, both in whole miles, but is treated in exactly the same way as milestone 22 (*Figures 19 and 20*) – or perhaps it would be better to say that milestone 22 is treated exactly as is milestone 29.

This poses the question whether it is possible to reconstruct lost mile-markers on the basis of map evidence. *Figure 12* shows a reconstruction of the milepost between Louth and Spilsby shown in *Figures 10 and 11*: the shape and

¹⁹ This is illustrated in Haines, *Marking the miles*, 121.

layout of the post, with the parish name at the bottom on each face, is based on a surviving one at Wold Newton, the distances to Louth and Spilsby are supplied by the 1:2500 first edition (*Figure 11*), and the distance from London is conjectured from the mileage '149' shown in *Figure 9*, a mileage '145' at this point on Andrew Bryant's one-inch map of Lincolnshire of 1828, which appears a reliable source for milemarkers, and the unlikelihood, based on practice elsewhere, that a two-distance marker would have both distances in fractions of a mile.

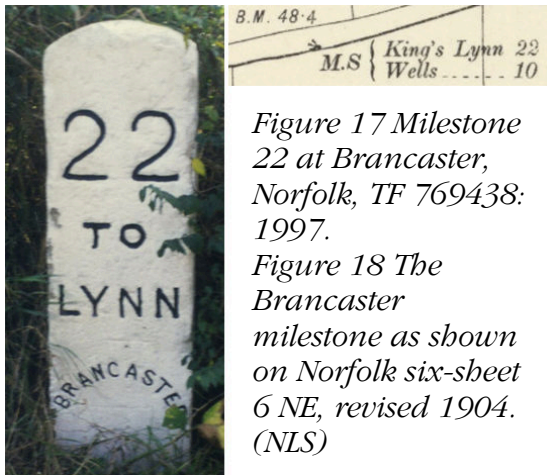


Figure 17 Milestone 22 at Brancaster, Norfolk, TF 769438: 1997.

Figure 18 The Brancaster milestone as shown on Norfolk six-sheet 6 NE, revised 1904. (NLS)



Figure 19 Milestone west of Holkham, Norfolk, TF 872432: 1992.

Figure 20 The Holkham milestone on Norfolk six-inch sheet 8 NW, revised 1904. (NLS)

Mile marker recording: dilution

Two OS information papers issued in the summer of 2002 together indicated that lesser details such as new mile markers would no longer be recorded, but would only be deleted from the large-scale digital database when they no longer appeared on the ground.²⁰ It is possible that this was a codification or restatement of a general OS policy reaching back many years, as in a study of Somerset turnpike roads published in 1985-7 it is noted that 'the OS no longer aims to check thoroughly' minor detail such as milestones'.²¹ It is possible that the decision was at least partly influenced by the OS never having recorded traffic signs, and by the distance markers along motorways and primary routes (*Figure 7*) being treated as a species of 'traffic sign'.

Appendix: The text of some relevant instructions

Instructions to Field Examiners (1905): 'The distances recorded on mile stones or mile posts along roads are given ... in full; if they have become obliterated, the word "defaced" will be written, when one of a series is defaced, but if the distances are known they should be given to complete the series.' 'Names and distances are not to be written to mile-stones or mile-posts on canals and railways. The initials M.S. or M.P. are to be written.'²²

²⁰ Ordnance Survey Information Paper, 'Improvements to detailed data content', July 2002, and 'Revision policy for basic scale products', August 2002, formerly on OS website, but since removed: printouts at CCSA 627_1_14, 627_1_15.

²¹ J.B. Bentley and B.J. Murless, *Somerset roads: the legacy of the turnpikes*, Somerset Industrial Archaeological Society, 'Phase 1', 1985, 'Phase 2', 1987, pp 105, 113 respectively.

²² *Instructions to Field Examiners* (1905), p.18, s.50, p.20, s.107: there appears to be a copy at The National Archives (TNA) OS 45/3, but dated 1906.

Instructions to Draftsmen & Plan Examiners (1906): 'Final dot to be omitted in "M.S.", "M.P.", "P.", "W." and in all similar cases where the object is represented ... by a dot.' 'The distance to the nearest town on either side of the stone or post should be typed on the plan. – The rule is to type the westward town on the top[,] the town lying east underneath.'²³

Instructions for the Revision of the Small Scale Maps (1914): 'Mile distances are shown along all main routes between towns, and should as a rule correspond with milestones on the ground. Where milestones do not exist, or where the sequence is broken, (as sometimes occurs at boundaries, and at places where two roads converge), the distances are inserted by measurement.'²⁴

Instructions to 1/2500 Scale Plan Examiners, Area Revisers and Draftsmen of the Drawing Division (1937): Similar to 1906, with '... type the direct westward or northward town on the top, the town lying South or direct East underneath.'²⁵

Instructions for Detail Survey, Revision and Examination of Large Scale Plans (The Red Book) 1952: [re railways:] 'All mile, $\frac{3}{4}$ mile, $\frac{1}{2}$ mile, and $\frac{1}{4}$ mile posts will be shown by a dot. The mileage will only be quoted on the field document if it appears on the post or stone in the form of figures and/or a convention of dots. They will be annotated MP or MS as the case may be.' [On roads:] 'Mile posts and mile stones will be shown by a dot and annotated "MP" or "MS". *The destinations and distances recorded will be given in full. If all the information has become obliterated, the word "defaced" will be written.*' [On canals:] '... milestones are treated similarly to those on railways.'²⁶

Instructions for Small Scales Revision (The Green Book 1961): 'Mile Stones or Posts. Show on Class I and Class II roads only. Do not show on railways or canals. – Distances will not be recorded.'²⁷

Instructions for Detail Survey and Revision of Maps and Plans (The Red Book 1963): generally as for *The Red Book 1952*, as amended, with the intriguing addition of 'kilometre posts' on railways.²⁸

The Blue Book[:] *Instructions to Draughtsmen, Examiners and Area Revisers*, Fourth Edition, 1969: Generally as earlier instructions: 'Distance posts and stones on disused canals will be annotated "Post" or "Stone"; distances will not be shown.'²⁹

²³ *Instructions to Draftsmen & Plan Examiners* (1906), p.9, s.25, p.17, s.65: copy at TNA OS 45/4.

²⁴ *Instructions for the Revision of the Small Scale Maps (Provisional)[:]* *Section dealing with drawing and examination (1" Scale)* (1914) pp 9-10, s.47: copy at TNA OS 45/12.

²⁵ *Instructions to 1/2500 Scale Plan Examiners, Area Revisers and Draftsmen of the Drawing Division* (1937), p.16, s.108: copy at TNA OS 45/28. The corresponding instructions of 1949 (*The Blue Book*: copy at TNA OS 45/46) are to similar effect.

²⁶ *Instructions for Detail Survey, Revision and Examination of Large Scale Plans (The Red Book) 1952* (n.p.), Section C, ss 44, 61, 95: the words between "* *" were deleted by Amendment 19, November 1959. (Copy with at least some amendments at TNA OS 45/54).

²⁷ *Instructions for Small Scales Revision (The Green Book 1961)*, Appendix 'A' (n.p.): copy at TNA OS 45/75.

²⁸ *Instructions for Detail Survey and Revision of Maps and Plans (The Red Book 1963)* (n.p.), Section B, ss 64, 110, 138 (railways).

²⁹ *The Blue Book[:]* *Instructions to Draughtsmen, Examiners and Area Revisers*, Fourth Edition, 1969 (n.p.), Section B, ss 14 (quote), 53: copies at TNA OS 45/87, OS 45/108.

In the steps of the Principal Triangulators

Dave Watt

A retirement project that got a bit out of hand – attempting to recreate the wanderings of the Principal Triangulators, 1792-1852, by way of Elms Hill and the Stirlings.

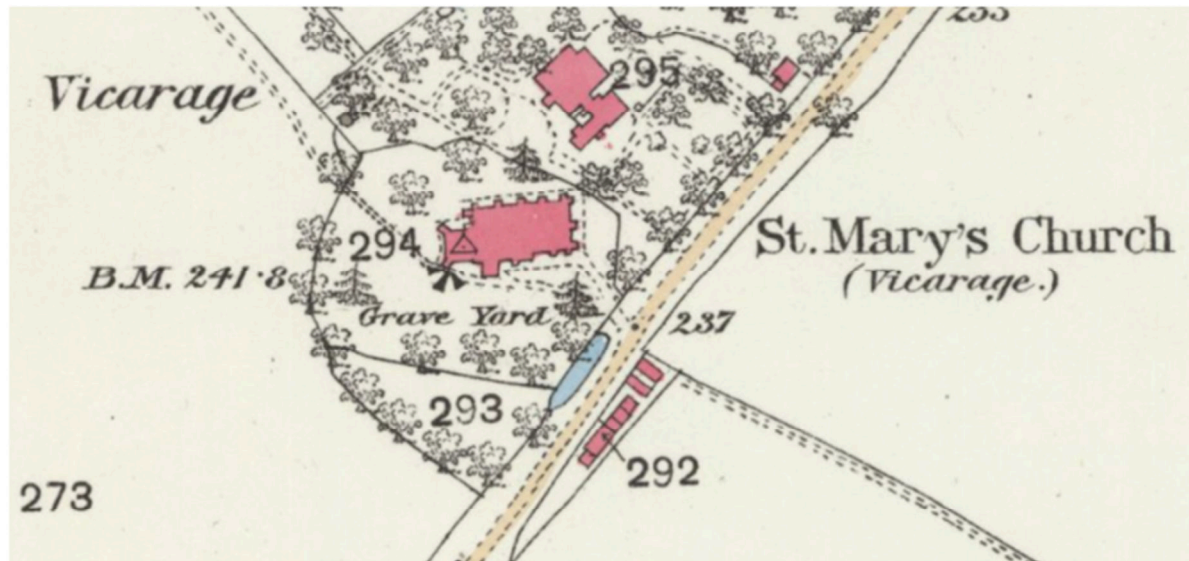
Knowing I had an interest in the Hounslow Heath Base Line and had visited its terminals, in 1997 Ian Mumford gave me both volumes of the ‘*Account of the observations and calculations, of the Principal Triangulation; and of the figure, dimensions and mean specific gravity, of the Earth as derived therefrom*’, compiled by Captain Alexander Ross Clarke RE, FRAS under the direction of Lt. Colonel Henry James RE, FRS, MRIA &c, Southampton, Ordnance Survey, 1858 (hereafter referred to as ‘Clarke, 1858’). He gave me the plates volume in good order on condition I rebind in matching buckram the much sadder text volume. Both have been referred to occasionally, mostly for the accounts of the Hounslow and Salisbury baselines, over the twenty-five years since. I thought, as the descriptions of each trigonometrical station included the names and dates of the surveyors and the instruments they had used, it should be possible to plot where each surveyor had gone and how quickly across the British Isles, all before a national railway network.

One evening last October I decided to have a go, (although how?): I hadn’t worked out how or how long it would take. The task almost certainly had been done before either in whole or part, but this was purely for personal use. If it took a while to do ... fine, and I was bound to learn something along the way. Little did I realise where the idea would lead me; but this account (and David L Walker’s paper which follows) give a flavour. I have encountered previous articles in *Sheetlines* by David L Walker on early 19th century Scottish triangulation and, in discussing submarine contours and rock drawing on the Swiss National Map Nevis Hulme introduced me to the OS Name Books and Gaelic places names on 19th century OS maps.

The first task was to transcribe each station description (*Clarke 1858, Section 1, p1-41*) to the laptop to manipulate the text as required and reduce the potential handling of the volume, the 19th century paper of which had become fragile over the years. The descriptions being somewhat dry I added the earliest, largest scale and nicest looking OS map extracts as illustrations from the superb National Library of Scotland website. The result of this process, (complete with the autospell queries generated by my laptop), is seen in this example for Keysoe Spire:

Keysoe spire, 1843. This station is coincident with the centre of Keysoe Church Spire, in a small village near Kimbolton, in Huntingdonshire.

The spire is tall and slender, and to obtain a bearing for the instrument, about 20 feet of the top was removed, and a simple frame of joisting was laid on the base of the soundholes below, on which the feet of the instrument stood, just high enough to give a clear view over the wall top, and with barely sufficient room for the observer, also inside of the spire, to move round the instrument.



OS, 25inch, Bedfordshire V.13, surveyed 1883, published 1884.

Reproduced with permission of the National Library of Scotland

Next, using the *‘Extracts from the general abstracts of observations’* (Clarke, 1858 p74-166), I created a spreadsheet for each station listed, an extract of which is shown here:

	A	B	C	D	E	F	G	H	I
	Where	From	To	Who by	What instrument	No. of observations	Lat	Long	How located
229	High Wilhays	1845-06-09	1845-07-20	Donelan, Sergeant, RSM	3ft theodolite B.O.	193	50°41'07"N	4°00'41"W	Station description and National Library of Scotland maps website.
230	Hill of Stake	1816-10-11	1816-10-18	Colby, Maj Gen	3ft theodolite B.O.	70	55°49'46"N	4°45'29"W	National Library of Scotland maps website.
231	Hill of Stake	1816-10-11	1816-10-18	Gardner, Mr	3ft theodolite B.O.		55°49'46"N	4°45'29"W	National Library of Scotland maps website.
232	Hingham Church Tower	1843-05-17	1843-07-03	Steel, Corporal, RSM	18in theodolite	50	52°34'46"N	0°58'56"E	Station description and National Library of Scotland maps website.
233	Holme Moss	1841-08-24	1841-11-11	Steel, Corporal, RSM	18in theodolite	68	53°32'21"N	1°53'10"W	Station description and National Library of Scotland maps website.
234	Howth	1829-11-29	1829-12-19	Portlock, Lieutenant	3ft theodolite B.O.	240	53°22'23"N	6°04'10"W	Station description and Google Earth digital terrain model.
235	Howth	1844-08-28	1844-09-10	Gordon, Mr	7in theodolite		53°22'23"N	6°04'10"W	Station description and Google Earth digital terrain model.
236	Hungry Hill	1832-07-11	1832-07-16	Portlock, Captain	3ft theodolite B.O.	92	51°41'14"N	9°47'29"W	Station description and Google Earth digital terrain model.
237	Inkpen	1844-05-02	1844-06-24	Stewart, Corporal, RSM	3ft theodolite R.S.	261	51°21'10"N	1°27'55"W	Station description and National Library of Scotland maps website.
238	Inkpen	1844-05-02	1844-06-24	Cosgrove, Corporal, RSM	3ft theodolite R.S.		51°21'10"N	1°27'55"W	Station description and National Library of Scotland maps website.
239	Jura	1847-07-30	1847-11-12	Donelan, Sergeant, RSM	3ft theodolite B.O.	275	55°54'09"N	6°00'16"W	Station description and National Library of Scotland maps website.
240	Karnbonellis	1796		Mudge, Gen	3ft theodolite B.O.	24	50°10'57"N	5°13'45"W	Station description and National Library of Scotland maps website.
241	Karnminnis	1845-10-07	1845-10-27	Donelan, Sergeant, RSM	3ft theodolite B.O.	136	50°11'42"N	5°32'03"W	Location, though named 'Trendine Hill', confirmed by https://www.b
242	Keeper	1830-09-16	1830-12-29	Portlock, Captain	3ft theodolite B.O.	361	52°45'04"N	8°15'43"W	Station description and Google Earth digital terrain model.
243	Keeper	1831-05-29	1831-07-10	Portlock, Captain	3ft theodolite R.O.		52°45'04"N	8°15'43"W	Station description and Google Earth digital terrain model.
244	Kellie Law	1846-12-15	1847-03-06	Winzer, Corporal, RSM	3ft theodolite R.S.	234	56°14'54"N	2°46'51"W	Station description and National Library of Scotland maps website.
245	Keysoe Church Spire	1843-03-09	1843-05-08	Steel, Corporal, RSM	18in theodolite	62	52°15'01"N	0°25'43"W	Station description and National Library of Scotland maps website.
246	Keysoe Church Spire	1843-03-09	1843-05-08	McNally, Private, RSM	18in theodolite		52°15'01"N	0°25'43"W	Station description and National Library of Scotland maps website.
247	King's Arbour	1792-05		Mudge, Gen	3ft theodolite B.O.	13	51°28'47"N	0°27'00"W	Local knowledge and National Library of Scotland maps website (we
248	Kingstown Observatory	1844-10-01	1844-10-02	Gordon H, Mr	7in theodolite	24	53°17'39"N	6°17'55"W	No observatory located. Resectioning from Poolbeg Lighthouse and
249	Kippure	1829-06-10	1829-07-16	Portlock, Lieutenant	3ft theodolite B.O.	224	53°10'41"N	6°19'53"W	Station description and Google Earth digital terrain model.
250	Knock	1814-08-04	1814-08-14	Colby, Maj Gen	3ft theodolite B.O.	107	57°35'02"N	2°46'32"W	Triangulation diagram in Plates volume and National Library of Scotl
251	Knock	1814-08-04	1814-08-14	Gardner, Mr	3ft theodolite B.O.		57°35'02"N	2°46'32"W	Triangulation diagram in Plates volume and National Library of Scotl
252	Knockalongy	1828-09-08	1828-09-15	Murphy, Lieutenant	18in theodolite	52	54°11'37"N	8°45'35"W	Station description and Google Earth digital terrain model.
253	Knockanaffrin	1828-08-03	1828-08-04	Portlock, Lieutenant	3ft theodolite B.O.	296	52°17'18"N	7°34'54"W	Station description and Google Earth digital terrain model.
254	Knockastia	1836-09-21	1836-09-24	Portlock, Captain	3ft theodolite B.O.	18	53°26'24"N	7°37'53"W	Mountainviews.ie website and Google Earth digital terrain model.

Master sheet

Sorted by date

Occasional observers

Wotherspoon, Cpl

Woolcot, Mr

Winzer, Cpl

Vetch, Cpt

Stewart, Pvt. Cpl.

Steel, Cpl., Sgt.

Robinson, Lt.

Robe, Lt. ...

As the plan was to create a mastersheet of all the entries and then another for each surveyor, each station needed an entry for each surveyor of that station (so the station at Divis near Belfast has entries for the five surveyors who occupied the station) and repeating the information so that I could then 'chop out' complete entries for each. The brief explanation as to how I determined the coordinates was included so if I had made mistakes in determining coordinates at least I knew the potential source and where I might have gone wrong. This became something of a master stroke especially in Ireland!

The '*Extracts*' turned out to be for considerably more stations than the descriptions. Where I had a description, I linked it into the table (hence the blue underscores for some entries), otherwise they remained black.

Over the next near two months I slowly filled the table with coordinates using the NLS website mostly to find early trig points, the Google Earth digital terrain model to determine 'highest points' of hills, the Mountainviews.ie website for stations in the island of Ireland, the Account of the Trigonometrical Survey of 1811 available online at <https://archives.org> to confirm the older stations - and if all else failed a very rough version of resectioning from known stations. The coordinates are only to provide approximate positions so that the final map would give a flavour of where each surveyor had been; they are not, and are not meant to be, geodetically accurate, but as the various websites provided coordinates to the nearest second of arc, I regard them as sufficient.

Some stations were easy. Church spires tend not to be knocked down, although the surveyors themselves were not averse to dismantling their tops to create a base for their surveying platform and replacing them before moving on. Norwich Cathedral spire must have been a local talking point with an 81ft high scaffold wrapped around its top and the little tent with Corporal Steel and Private McNally perched inside taking readings in November and December 1843. Local knowledge roughly identified Saxavord, Docking Church Tower, Cheviot, Goonhilly, Cross Fell. The NLS mapping gave the precise position of the obvious triangulation mark. Others were not so easy. And so began the wider search for clues and the reaching out to experts.

Balnaskerrish. My first foray into resectioning and the bearings seemed to be the wrong way round with 'south' at the top. All the bearings were oriented south for every station. I consulted the oracle, Dr Oliver, and as ever a very gentle but precise answer almost by return referring me to a single line in *Clarke 1858 p71*, "The bearings are referred to an approximate South Meridian Line". Schoolboy error on my part, sorry for wasting your time Richard!

All mountain stations on the island of Ireland were not easy either. The NLS large scale OS mapping does not cover this area so, searching for a free alternative (being retired you understand), I discovered Mountainviews.ie. Everything you ever wanted to know about walking hills and mountains and lat/long - in decimals, to boot. Even better, names which I thought could well have disappeared, (for instance, *Bessy Bell*), were still extant. Find the mountain, convert the coordinates, use the NLS' Ireland One Inch maps (GSGS 4136) for an extract to add to the station description: job done. Or so I thought.

Some Scottish mountain names were a different matter. It seemed that the surveyors, not being native Gaelic speakers, had in some cases recorded what they'd heard from the locals and converted this into English. These were not on any OS mapping on the NLS site, but again with resectioning and identifying the highest point in the approximate area of the confluence of the lines created, solutions were found, although three stubbornly refused to yield.

Elms Hill. It sounded as though it should be in Sussex or Wiltshire but its eighty-eight observations of four rays radiated to Eaval on North Uist, Ben More on South Uist, Ben More on Mull and Ben Nevis. The likelihood of there being an 'Elms Hill' probably somewhere on south Skye were next to nothing and I had a look anyway and nothing, so try the resectioning. Bringing the rays from Eaval and Ben More South Uist together suggested the mountain known now as Gulvain near Loch Arkaig. When I then tried to resection Ben More Mull and Ben Nevis, their rays coincided on the Sleat peninsula on Skye roughly 20 miles north by west of Gulvain so something wasn't right.

Little and Great Stirling. In short, a similar situation; station description, if provided, somewhat vague; no obvious trig markers in the potential area; resectioning didn't work.

External assistance was required and in Googling Little and Great Stirling I rediscovered David L Walker's superb articles on the Scottish triangulation up to 1852 (*Sheetlines* 98 and 104). Correspondence with David introduced me to Slater's beautiful draft hydrographic chart '*Scotland, Sheet XI, Slain's Old Castle to the River Ugie by Lieuts Slater, Sheringham and Otter RN*' of 1834 which corrected my locations for both, and I corrected the map extract on my Great Stirling station description - although since the OS 25inch, Aberdeenshire XXXII.3 of 1869, the station has disappeared due to granite quarrying.

And for Elms Hill, I readily accepted David's suggestion of the location being the present-day trig. pillar on Sgurr nan Caorach, south-west of Armadale on Skye, although we were agreed that the line of sight to Eaval was probably only possible under certain atmospheric conditions. However, read on.

The final task, making maps for each surveyor

Armed with my coordinates I settled on Google Earth Projects. I created a spreadsheet for each surveyor and arranged the entries in chronological order. Then I created each Project, for example 'Principal Triangulation – Winzer'. My workflow subsequently proved to be about as tortuous as was humanly possible! Open Winzer's spreadsheet, note the coordinates for point number 1, go over to the project, find station coordinate manually on the ground, create a pin, call it '1'. Repeat for 'n' points. Later Nevis Hulme provided the tech savvy for a far more efficient process. Nevertheless, finding each one provided a useful checking process. Each pin was colour coded for year of survey and a speech-bubble with the station name, dates of survey and instrument attached.

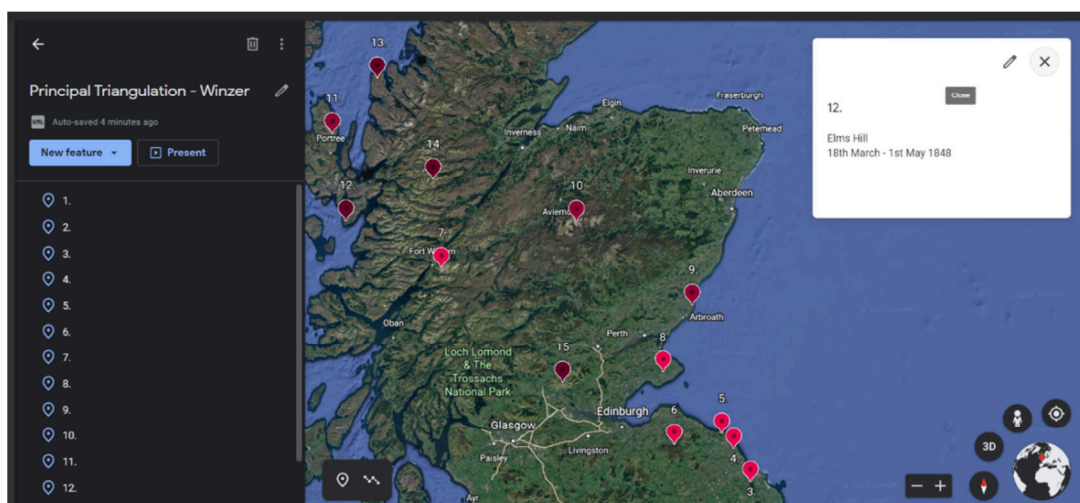
Surveyor by surveyor, station by station I created pins. They looked really colourful. It was going really well until...Ireland.

First *Mountainviews.ie* coordinate...pin misses mountain top...and by hundreds of metres. I must have miscalculated lat/longs from decimals to imperial! Check. Same result. Check again. Same result. Hmm. Let's try another *Mountainviews* coordinate. Pin misses the mountain top again, by a different length and direction than the first 'error'. Something's amiss! I don't know what and it seems to be random, not a systematic block-shift. Rather than investigate, as I knew roughly where these places are, I'd find them approximately from *Mountainviews* and use Google Earth's digital terrain model to find the highest point and use that instead. But it means changing all the coordinates both in each individual surveyors sheet and the original full sheet and amending the 'How I calculated the coordinates' descriptions too. Great. Ah well, I have the time. Head down. Do it.

Another tiny issue seemed to be that the NLS and Google Earth coordinates tend to be around one minute of arc different. However, as I said earlier, the coordinates aren't supposed to be geodetically accurate and may have something to do with different spheroids and datums of coordinates.

Meanwhile Elms Hill re-emerged following Nevis' query about submarine contours and rock drawing on the Swiss National Map following my CCS/BCS talk on Terrain Cartography. I idly mentioned I'd be trying to find Elms Hill and had a solution, but was fascinated to discover his expertise in Gaelic names and the 19th century OS Name Books. Did he know, was there a 'hill of the Elms' anywhere on southern Skye? I thought he'd confirm, from an entirely separate source, the hill which David had identified. In fact the Name Books threw up an initial name Sgòrr an Leamhainn (the peak of the elm) which became Sgùrr an Leth-bheinn (the peak of the half-mountain). So, my position was corrected again.

So, the finished product and an extract the final project for Cpl Winzer with the 'speech-bubble' open for Elms Hill:



I'm very pleased with the result although animating the pins to replicate the surveyor's journey across the country has eluded me. I've learned about Google Earth and some of the amazing history behind the Principal Triangulation, an astonishing piece of British science which I suspect 99.9 percent of the population has no idea about.

An 1840 diagram of the Secondary Triangulation of N. Scotland

David L Walker

An apparently un-noticed diagram signed off by Lt Col Colby in March 1840 sheds new light on the secondary triangulation of Northern Scotland. As this '1840 diagram', measuring 100 cm by 75 cm, is on tightly folded tracing paper, and was photographed with minimum disturbance, the writer's montage of photographs (figure 1) is disjointed. Nevertheless, as The National Archives advised that the diagram's condition precluded making an electronic copy, the detail is preserved in figures 3 to 6 (below).

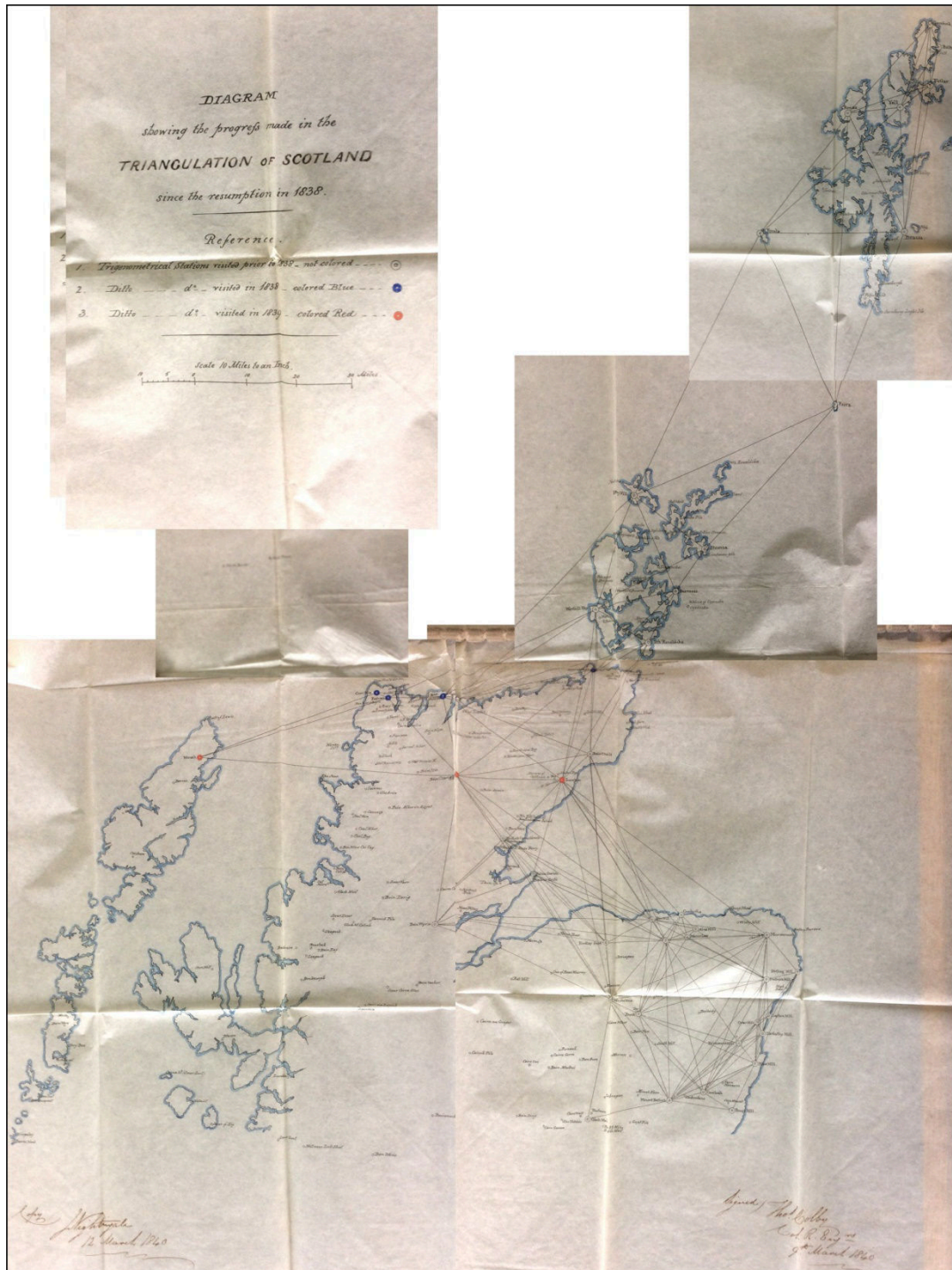


Figure 1 The National Archives (TNA), WO 55/961, Engineer Papers, Surveys, 1831-41, diagram filed at 9 March 1840.

Previous information

A previous *Sheetlines* article ¹ on ‘the initial triangulation of Scotland’ referred only to the principal triangulation, *ie* that made between stations occupied by one of the 36-inch theodolites. Consistent with Seymour’s history, which states that ‘a complete list of stations does not exist’, and the unimpressive ‘sketch diagram’ prepared at the Ordnance in 1834 ² (figure 2) it found no evidence of the secondary triangulation of Northern Scotland.

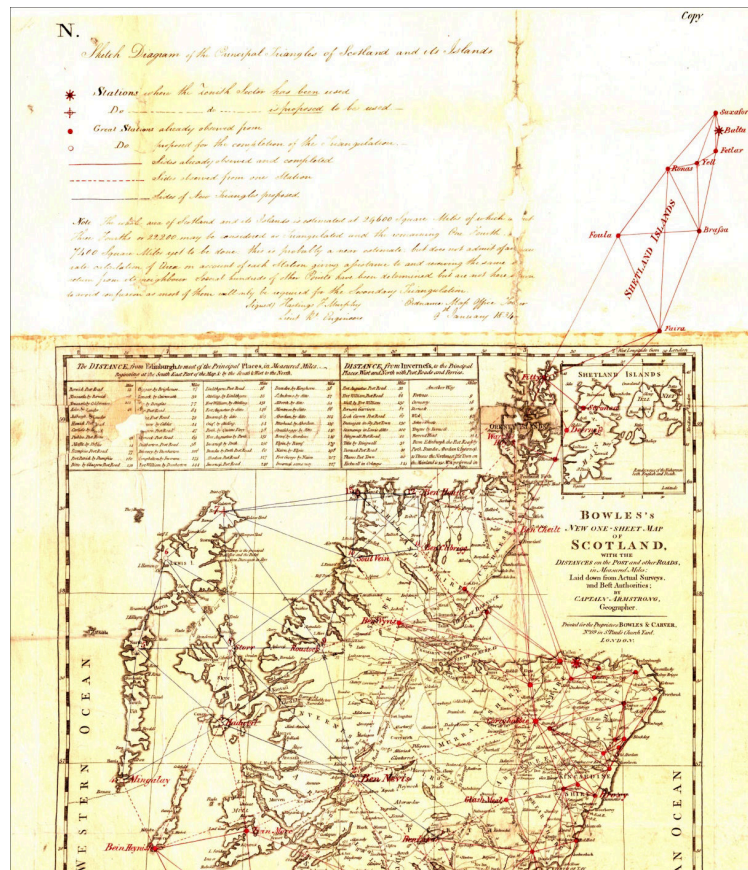


Figure 2 Part of a Sketch Diagram of the Principal Triangles of Scotland and its Islands, 1834.

A subsequent article ³ on ‘the troubled progress of the Scottish triangulation’ mentioned the use by other surveyors of other triangulation points attributed to the Ordnance. Most of these have now been found on the ‘1840 diagram’. After identifying considerable improvements in the 1840 diagram compared with 1834, this update reviews these other surveys and considers when these points would have been observed by the Ordnance.

¹ David L Walker, ‘The initial triangulation of Scotland from 1809 until 1822’, *Sheetlines* 98 (2013), 5-15.

² Lt Hastings Murphy, ‘Sketch Diagram of the Principal Triangles of Scotland and its Islands’, The National Archives (TNA), MFQ 1/269/13, 9 January 1834 (extracted from Maps illustrating ‘Precis of the progress of the Ordnance Survey of England and Wales 1783-1834’ by Thos Colby Lt Col RE).

³ David L Walker, ‘The troubled progress of the Scottish triangulation 1823-1858’, *Sheetlines* 104 (2015), 5-18.



Figure 3 South west quarter of Diagram showing progress made in the triangulation of Scotland (the 1840 Diagram) from TNA, OS 55/961, as above.

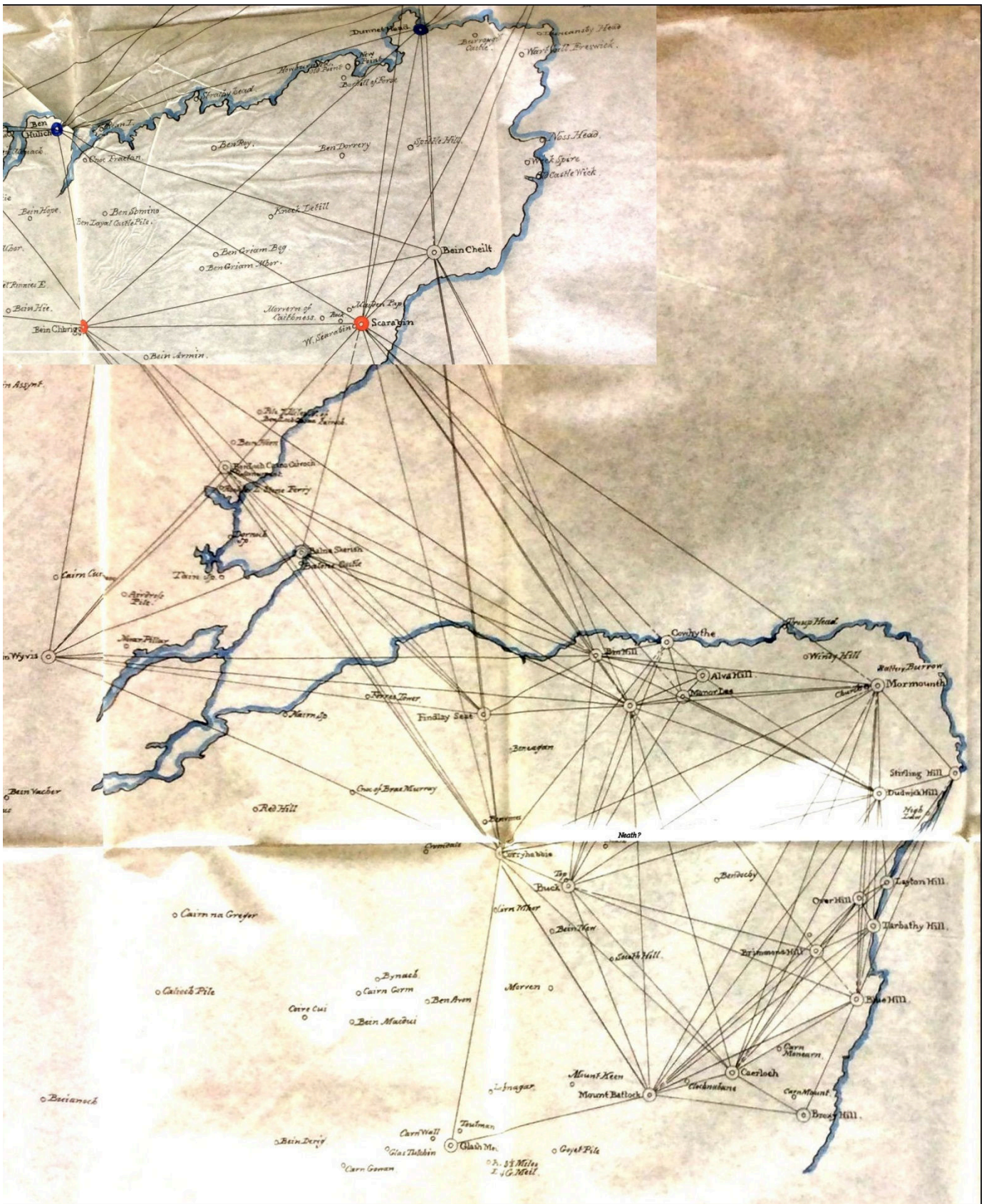
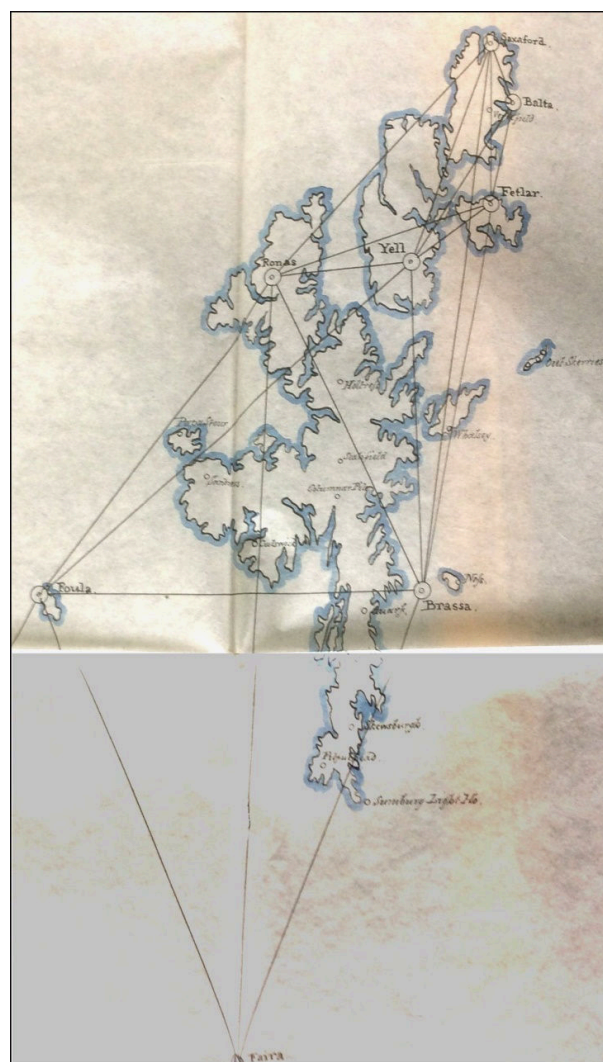
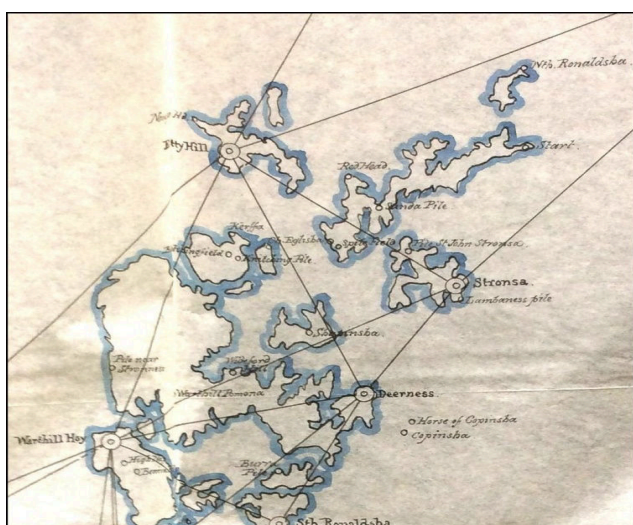


Figure 4 South east quarter of Diagram showing progress made in the triangulation of Scotland (the 1840 Diagram) from TNA, OS 55/961, as above.

*Figure 5 (below) Part of 1840
diagram:
Orkney Islands and coast of
Caithness.*

Figure 6 (right) Part of 1840 diagram:
Shetland Islands, Foula and Fair Isle.



Provenance of the 1840 diagram

A covering letter with the 1840 diagram, dated 9 March 1840 from Lt Col Thos Colby, Superintendent of the Ordnance Survey, addressed to 'my dear Fanshaw', states:⁴

'I send you the diagram you asked for, shewing the progress of the triangulation in Scotland during the two last seasons. These diagrams take some time in preparation, and if this diagram is preserved, the additional progress during the next season may be added on it much more readily than a completely new diagram can be prepared. We have no record of the diagram furnished by Lt Murphy.'

Skempton's *Biographical Dictionary of Civil Engineers* (2002) describes Edward Fanshaw(e) as First Assistant Inspector of Fortifications from 1830 until 1850 and active on various Ordnance committees. Lt Col Fanshawe was a member (with Lt Col Colby) of the Ordnance committee appointed in 1834 to examine the progress of the survey and apparently retained the better memory of 'the diagram furnished by Lt Murphy'.

⁴ TNA, WO 55/961, Engineer Papers, Surveys, 1831-41, letter from Lt Col Colby dated 9 March 1840.

In 1837 an impressive coalition of Scottish societies had memorialized Parliament seeking '*resumption of the triangulation and completion of the trigonometric survey of Scotland which has been so long and unaccountably suspended after it had been auspiciously commenced.*'⁵ Perhaps they would have been reassured by sight of the in-house diagram prepared in 1840. But Colby after 1840 was under increasing pressure from the Treasury, his health was deteriorating, and he was disheartened by his relationships with his superiors.⁶

In 1843 his response to Parliament chose to refer only to progress with the principal triangulation and argued defensively that '*secondary triangulation, survey and engraving may be put in course of progress as soon as sufficient funds are available*' and that premature effort before sufficient funds were granted would lead to ultimate disappointment.⁷ In fairness to Colby, he probably continued to regard points defined by only one side and two angles as insufficiently reliable as a basis for 'his' survey (even those provided to other surveyors).

Recording a new triangulation on a map is difficult when the topographical survey lags many years behind the triangulation, as it did in Scotland. Whereas the 1834 'sketch diagram' tackled this problem very inadequately, the 1840 diagram was much better as:

1. For the first time, it showed an accurate diagram of the nearly-completed principal triangulation of Northern Scotland.
2. It included a large number of previously unidentified secondary points, probably observed only by an intersection and calculated from one side and only two angles.
3. The coastline is relatively accurate, much of it apparently taken from the 1807 map by Aaron Arrowsmith (whose superb documentation is in the Society archives).⁸
4. Unusually, it seems that the Ordnance copied an accurate coastline of the Shetland Islands from the Admiralty chart by Mr George Thomas published in 1838⁹ (and continued to use this for its trigonometrical diagrams made in the 1850s).
5. It is one of the few maps of Scotland that meet the requirement of the Islands (Scotland) Act 2018 that '*the Shetland Islands must be displayed in a manner that accurately and proportionately represents their geographical location in relation to the rest of Scotland.*'

⁵ *Memorials from Public Bodies in Scotland*, British Parliamentary Papers (HC), 1837(525), XXXIX, 507.

⁶ Richard Oliver, *The Ordnance Survey in the Nineteenth Century*, Charles Close Society, 2014. 153.

⁷ Paper by Thomas Colby Col RE, British Parliamentary Papers (HC), 1843 (246) XLIX. 137- 139.

⁸ *Memoir relative to the construction of the map of Scotland*, publ Aaron Arrowsmith, 1809, CCS/OS/379/7.

⁹ The Shetland Isles, surveyed by George Thomas, 1833, Admiralty chart 1118, NLS maps website.

one trigonometrical observation of any of these points in Clarke's 1858 account of the principal triangulation.¹²

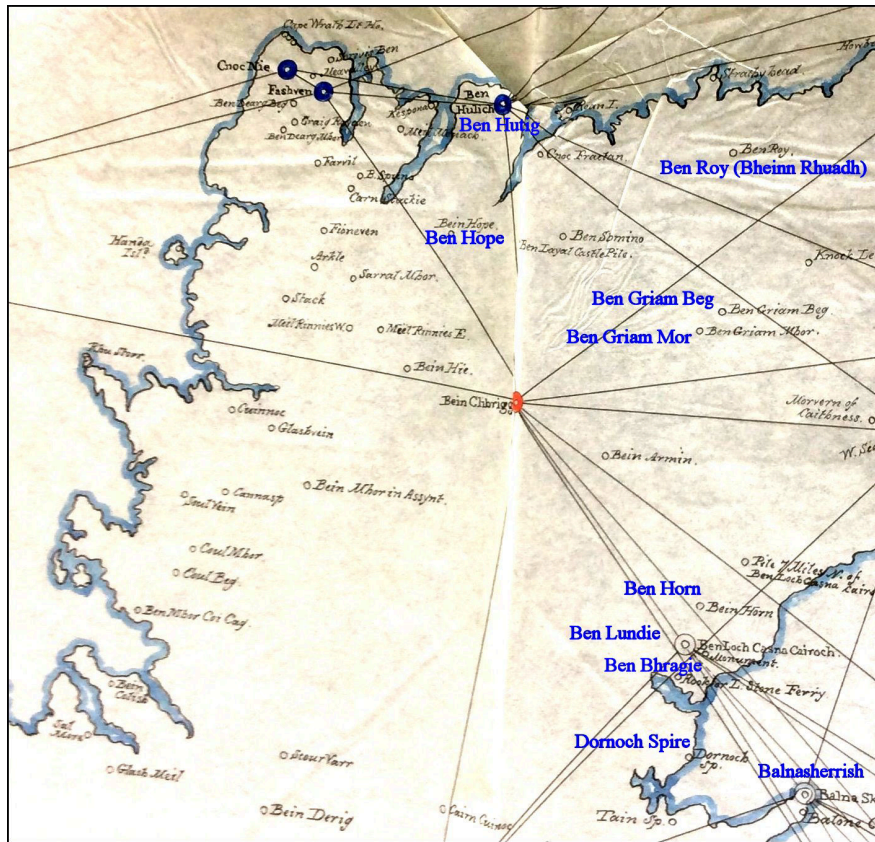


Figure 8 Part of 1840 diagram with trig points shown by Burnett and Scott named in blue.

Dawson's contemporaneous account of Colby's survey season in Scotland in 1819 describes his breath-taking treks, first to the North Coast and then to Skye, each there and back from Corriehabbie and together covering 1,099 miles in 44 days. It is hard to imagine that they could have carried any theodolite at this rate of progress. This is confirmed by Dawson, on trek, recording the construction of piles (or cairns) but not mentioning any observations,¹³ and by the account of Colby 'ready to come shooting or fishing [with the laird of Gairloch] while his men carried on routine work.'¹⁴

It follows that the secondary points in eastern Sutherland, although unrecorded in Clarke's account, appear to have been observed by intersections from the principal stations in eastern Sutherland that were occupied by Colby's team later in 1819.

¹² *Account of the Observations and Calculations of the Principal Triangulation etc* , Drawn up by Captain Alexander Ross Clarke under the direction of Lt Col H James etc, Ordnance Survey; London, 1858.

¹³ Portlock J E, *Memoir of the Life of Major-General Colby*, London, 1869, 131-155.

¹⁴ Nevis Hulme helpfully reminded the writer of this report of Dr John Mackenzie's recollections in *A Hundred Years in the Highlands*, as reviewed in Cairngorm Club Journal No 58, January 1922, 190.

George Thomas's survey of the Orkney and Shetland Islands

~~D. 4~~ D. 4

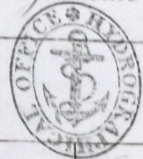
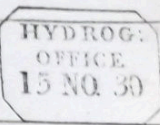
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No. 19

Triangles for the Survey of the Orkney, and Shetland Islands, and part of the Coast of Caithness.

Base from Ben Wyvis, to Ben Cheilt 330524, 2 feet. Logarithm 5, 5192083.

Principal Triangles

Objects observed.	Angles observed.	Spherical Excess.	Angles for Computation.	Distances in Feet.	Logarithmic Distance.	Bearings from the Parallel to the Meridian of Batten Island.
1. Ben Cheilt...	36-10-31 $\frac{1}{2}$	1.16	36-10-30 $\frac{1}{2}$	201116.5	5,3034476	S. 83-42-26 W.
Ben Wyvis...	35-13-0 $\frac{1}{2}$	1.26	35-12-59 $\frac{1}{4}$	205855.5	5,3135625	N. 12-18-56 $\frac{3}{4}$ E.
Ben Clibreg...	108-36-37	6.75	108-36-30 $\frac{1}{2}$			
2. Ben Cheilt...	45-16-7 $\frac{1}{2}$	0.37	45-16-7	126906.2	5,1034829	N. 87-11-57 W.
Ben Wyvis...	20-29-39 $\frac{1}{2}$	0.98	20-29-38 $\frac{1}{2}$	257507.7	5,4107902	N. 27-2-17 $\frac{1}{4}$ E.
Ben Grams Shore			114-14-14 $\frac{1}{2}$			
3. Ben Cheilt...	53-21-0 $\frac{1}{4}$	4.25	53-20-57	238301.1	5,3771360	N. 79-7-7 W.
Ben Wyvis...	45-26-27 $\frac{1}{4}$	4.14	45-26-23 $\frac{1}{2}$	205855.5	5,3135625	N. 2-5-32 $\frac{1}{2}$ E.
Ben Hope...	81-12-45 $\frac{1}{2}$	6.41	81-12-39 $\frac{1}{2}$			

Figure 9 Part of the first page of Mr Thomas's calculations book, UKHO, MP 98, 107.

Mr George Thomas, Admiralty surveyor in home waters from 1811 until 1847, was a much-respected hydrographer¹⁵ whose meticulous records survive at the UK Hydrographic Office and The National Archives. His charts of the Orkney and Shetland Islands were based on calculations lodged at the Hydrographic Office in 1830.¹⁶ Starting from a baseline between Ben Cheilt and Ben Wyvis, Thomas recorded 105 triangles reaching as far as Saxavord in the north of Unst.

Thomas's triangles were plotted on his well-preserved triangulation diagram that extends from Duncansby Head on the mainland to Out Stack, the northernmost rock of the Shetlands.¹⁷ For the Orkney and Shetland Islands, this shows all of the principal stations listed by Clarke in 1858, most of the secondary points shown in the 1840 diagram and some additional points defined and mapped by Thomas. Figure 10 provides examples.

¹⁵ David L Walker and Dr Adrian Webb, *The making of Mr George Thomas RN, Admiralty Surveyor in Home Waters*, *The Mariner's Mirror*, 104:2, May 2018

¹⁶ G Thomas, *Triangles for the survey of the Orkney and Shetland Islands*, UKHO, MP 98, 107-116.

¹⁷ G Thomas, *Projection of triangles for the survey*, UKHO, plan 530a Dr, 1827.

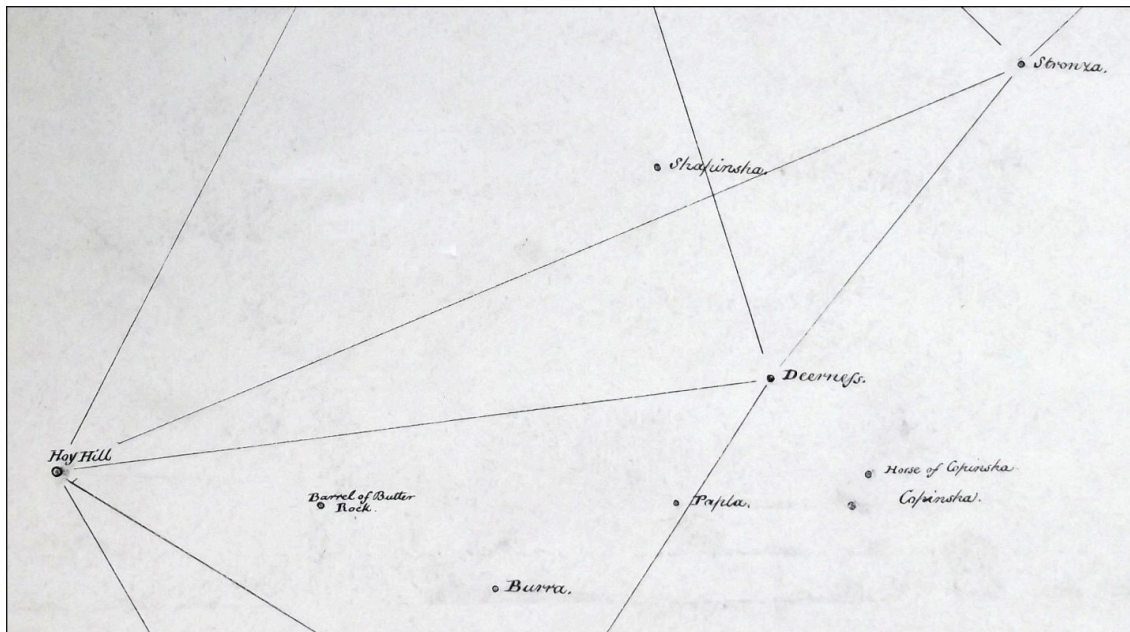


Figure 10 Part of Mr Thomas's triangulation diagram
(covering part of the Orkney mainland).

But to what extent was this triangulation Thomas's own work? His surveys of, for example, the shoals off the Essex coast, demonstrate that he made good use of the published Ordnance triangulation to establish a baseline, but also recorded a rigorous check of the under-lying Ordnance calculations.¹⁸ As it is unlikely that the Ordnance added Thomas's observations into its 1840 diagram, it seems that the secondary as well as the primary points were observed by the Ordnance during its 1821 expedition. When Thomas wintered in Woolwich between his northern surveys, his reputation at The Tower was such that he would have had no difficulty in procuring a copy of the Ordnance observations and in checking, tabulating and plotting the triangulation in his own rigorous manner.

However an interesting question remains. When the meticulous Thomas tabulated the triangles, he distinguished between 'angles observed' and angles deduced from the other two angles of a triangle. For example, at Ben Hope, a key point in north west Sutherland, Thomas shows the angle there between Ben Wyvis and Ben Cheilt as 'observed', but the Ordnance does not record Ben Hope as a principal station. So did he or anyone else make observations from Ben Hoy before his calculations were completed, prior to 1830?

Ordnance data provided for hydrographic surveys of the northern coasts

The nineteenth century Admiralty surveys of the northern coasts of Scotland were commenced by Commander Slater, from the Firth of Tay in 1832 until his death near Thurso in 1842.¹⁹ Commander Otter then took his place, working from Caithness as far as Loch Inver on the west coast by 1849. They each made good

¹⁸ G Thomas, *Relative positions of the Gabbard Shoals from the nearest coast*, UKHO, plan D808 Dg, 1824.

¹⁹ David L Walker, *Slater's Loup and Monument – and his successor , Henry Otter*, Cairt, Issue 40, NLS, January 2022.

use of data provided by the Ordnance to construct their own more detailed triangulations between a series of staging points towards the ends of each survey sheet, about ten to fifteen miles apart. These staging points were mainly at an Ordnance principal station, where available, or at one of the secondary points that now appear on the 1840 diagram. Alternatively, Slater or Otter himself would have to triangulate an intermediate point.

Slater's survey from Stonehaven to the Moray Firth relied upon Ordnance positions supplied by Captain Robe RE in 1835 of the principal stations occupied between 1814 and 1817. Slater also used the secondary points at Rattray Burrow and Troup Head, shown in the 1840 diagram, that could have been intersected only in those years. In 1841, finding an inconsistent longitude at the secondary point of Dornoch Spire, Slater secured confirmation of his own figures and a handsome apology from Captain Yolland RE for an error in the Ordnance calculations.²⁰

For Caithness, detailed triangulations (*figure 11*) were made by Slater's lieutenant Kortright²¹ between Dunnet Head, Duncansby Head, Freswick Hill, Noss Head and Ben Cheilt., all of these being points shown in the 1840 diagram:

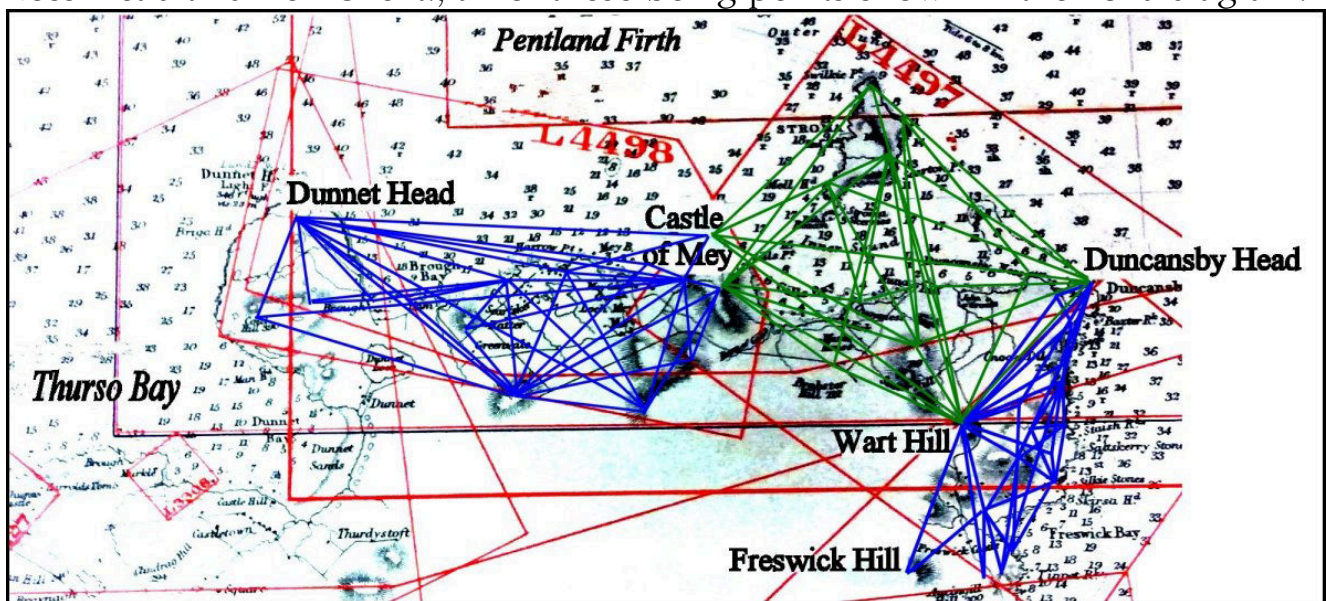


Figure 11 Diagram of Kortright's triangulations plotted on a UKHO index diagram.

For the north coast of Scotland, Otter's triangulation book²² records his observations of a series of triangles measured from a baseline between Roan Island and Ben Hutig, using positions provided by the Ordnance in July 1843 (*figure 12*). His records show that this triangulation extended eastwards as far as the Ordnance points shown on the 1840 diagram at Strathie, Forss and Dunnet Head.

²⁰ UKHO, SL 6b, 20 July 1841 and LP1857 Y, f37, 26 July 1841.

²¹ Kortright, Lt A, *Angle Book for the Coast from Noss Head to Bruen Stations*, UKHO, Miscellaneous (Triangulation) Books, SFD 9/28/1.

²² Otter, Cmdr H C, *Misc 35 Ledger No 1*, UKHO, Miscellaneous (Triangulation) Books, SFD 9/27/1.

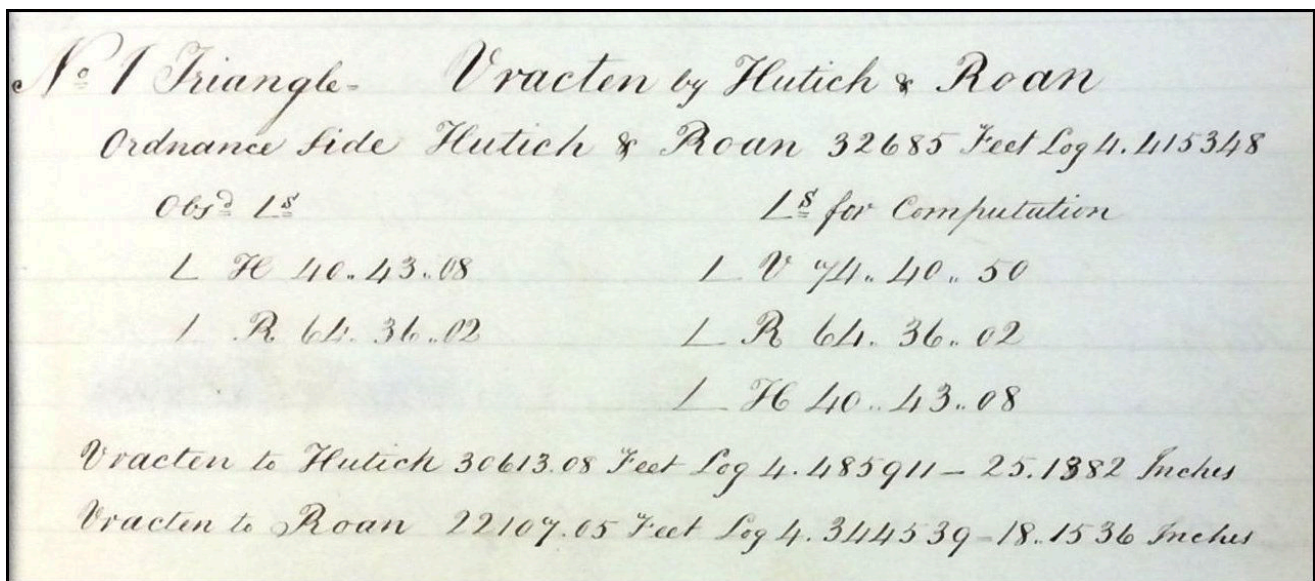


Figure 12 Part of the first page of Otter's triangulation book

For the north west coast, Otter again used Ordnance points shown in the 1840 diagram as staging points for his own triangulations. The copy on the NLS website of Otter's fair copy chart of Handa Island to Rhu Stoir²³ provides a good example (figure 13).



Figure 13 Compilation of parts of Otter's fair copy chart UKHO, L5760 14e and positions from copy on NLS website.

Accuracy of the 1840 diagram

Nevis Hulme, from his knowledge of the place-names of Wester Ross, contributed a nice comparison showing the 1840 diagram superimposed on Google Earth, co-located on a baseline between Ben Wyvis and Carn Chuinneag (figure 14). In most cases the location of the peaks marked by unfilled black circles on the 1840 diagram compares well with their present-day locations, marked with a black dot in a circle on the Google map. While the 1840 coastline is imperfect, it is good enough to make sense of the diagram.

²³ Otter, Cmdr H C, *Handa Island to Rhu Stoir*, UKHO, L5760 14e, and NLS, Dep.313/3623/17, 1846.

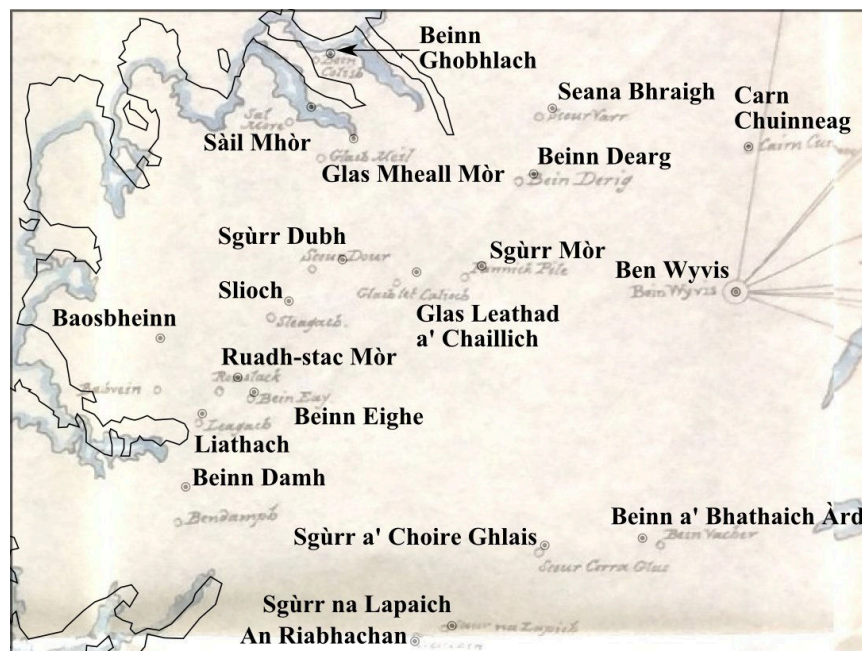


Figure 14 Nevis Hulme, 2022, Comparison (for Wester Ross) of the 1840 diagram with Google Earth

Conclusions

The 1840 diagram is of interest in confirming progress in the secondary triangulation of Northern Scotland that can only be inferred from other sources. It demonstrates a nice example of collaboration between the Ordnance and the Admiralty in defining an accurate coastline of the Shetland Islands that was used for Ordnance diagrams from 1840 onwards.

From the title of the 1840 diagram, it might be assumed that all of the secondary points were observed in 1838 and 1839. However, this article suggests that those in the north east were observed in 1817 or 1819, those in the Orkney and Shetland Islands in 1821, and those in Uist and the Inner Hebrides in 1822. Other points in the north west, including Harris and Lewis, and North Rona and Sula Sgeir, presumably were observed in 1838 and 1839.

Lt Col Colby has been criticized, in his time as Superintendent of the Ordnance Survey and subsequently, for his reluctance to publish information on its progress. Failing, consciously or unconsciously, to share the 1840 diagram outside the Ordnance may be regarded as part of this pattern of behaviour. Yet the 1840 diagram may also be regarded as a tribute to Colby's achievement in observing sufficient secondary points to provide the basis for the hydrographic survey of most of the Scottish coast and the topographical survey of a number of Scottish counties.

Acknowledgements

The writer has appreciated helpful advice from Dr Richard Oliver and Nevis Hulme. He wishes to acknowledge our collective debt to the staff, past and present, of The National Archives, the UK Hydrographic Office Archive and the National Library of Scotland.

Chimneys: when to show?

Richard Oliver

Reference was made in *Sheetlines* 122 to the depiction, or otherwise, of factory chimneys on Ordnance Survey small-scale mapping.¹ The 1:50,000 *Landranger* legend suggests provision for these as landmarks, but in practice very few seem to be recorded, even when over about 60 metres or 200 feet in height, and therefore likely to be visible from some way off. For large-scale mapping, the practice since the 1890s has been to show chimneys only when an obstruction at ground level, and it would seem in practice that this is happening on smaller-scale mapping too.

I recently encountered an interesting instance of this at Ubley, Somerset. A 'Chy' is shown on both *Landranger* sheets 172 and 182 and 1:25,000 *Explorer* sheet 141 at ST 53165898, and an isolated, 'mysterious', chimney duly appears on the ground. (*Figures 1, 2 and 3*).

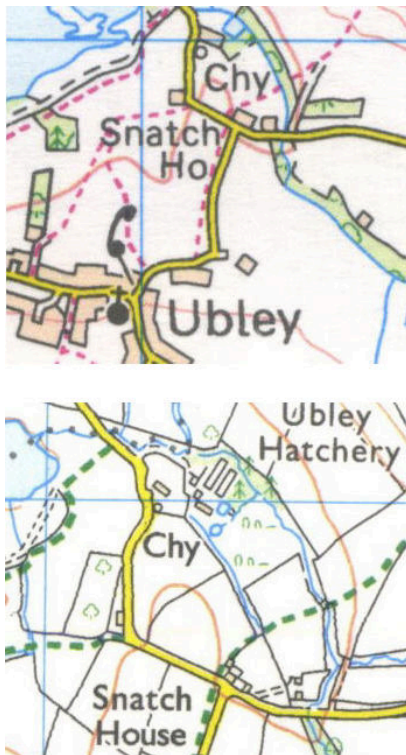


Figure 1 (top) 'Chy' on Landranger sheet 182 (2012)

Figure 2 (above) 'Chy' on Explorer sheet 141 (2013)

Figure 3 (right) the Ubley chimney in December 2021



Reference to the National Library of Scotland on-line 1:2500s shows that at the time of the initial survey in the early 1880s it was part of the buildings of Ubley Flour Mill (*Figure 4*). By the time of the 1902 revision the mill had been

¹ 'A clashing of symbols', *Sheetlines* 122, 29-42, esp.p.34.

demolished, leaving only the unnamed ‘footprint’ of the chimney (*Figure 5*), which is what one sees today. However, if the 1929 revision is to be believed (*Figure 6*), by then the chimney had vanished, being presumably carefully reconstructed in time for the National Grid remapping some time after 1960! Perhaps the reviser in 1929 thought that, whatever its height, the building fell below a minimum size threshold.²



Figure 4 Ubley Flour Mill on 1:2500 Somerset 18.08, surveyed 1883

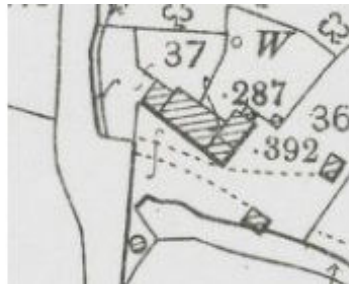


Figure 5 Footprint of chimney on 1:2500 Somerset 18.08, revised 1902

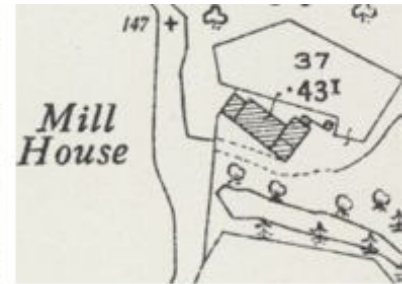


Figure 6 Apparent site of chimney on 1:2500 Somerset 18.08, revised 1929

It was common from the mid-nineteenth century onwards to supplement wind and water power at mills by steam engines, which needed chimneys: examples of this are illustrated at Scopwick in Lincolnshire (TF 058577) (*Figure 7*) and Lelley in Yorkshire, East Riding (TA 219326) (*Figure 8*): as the chimneys were not obstructions at ground level, they were not distinguished at 1:2500. However, it was the practice to indicate mill towers, because they represented a structural division, which chimneys did not.

Moral: students of mills cannot take the easy way out by using maps to search for supplementary chimneys!



Figure 7 (left) Scopwick mill with chimney, from west, October 1994, and Scopwick mill on 1:2500 Lincolnshire sheet 87.10, revised 1904: no chimney shown.

Figure 8 (right) Lelley mill with chimney, from north-east, April 1993, and Lelley mill on 1:2500 Yorkshire sheet 227.12, revised 1925: no chimney shown.

All 1:2500 map extracts courtesy NLS.

² A ‘literal explanation’ is that the chimney was indeed demolished and later reerected, though one asks ‘why’? An internet search on 1 January 2022 failed to reveal any answer.

A Victorian Map-Maker?

Michael Beckensall

I have been researching the life and times of an ancestor named William Evans who conducted a map dealing business from his home at 55, Wharf Street, Burslem, in the Potteries, in the mid-nineteenth century. An advertisement in the *Staffordshire Advertiser* in March 1859 read “Gratuitous Engravings, presented by the Penny Press, Coloured, Varnished, and Framed by William Evans Maps Mounted”.¹

William wrote extensively of technical matters relating to pottery, including the use of printing and photography in decorating ware, in his articles in the *Pottery Gazette*. In one article he included a reference to his time as an Ordnance Survey agent, writing “another process to be named is that perfected by Colonel De C. Scott R.E., and Sir Henry James, late director of the Ordnance Survey of Great Britain, of which I was one of the agents. This process goes under the name of ‘photo-lithographic transfers’ and is dependent on the insolubility of gelatine when treated with a dichromate and exposed to the light. It is capable of producing prints in printers’ ink, as well as ink suitable to give a transfer on to zinc, stone, &c. From such transferred prints the original drawing can be reproduced by ordinary surface-printing”.²

Selling maps became William’s main occupation, and in the 1861 census he was recorded as an “Ordnance Map Agent”. But he was doing more than merely selling as agent. This is evident from the wording of later advertisements, and the fact that his eldest daughters, Julia, and Margaret, are both recorded in the 1861 census as “Employed in Making Maps”. By June 1861 William’s adverts were headed with the royal crest and V.R., and worded:

On Her Majesty’s Service – The Rifle Volunteer Corps. can procure any of the Ordnance Documents from William Evans, on her Majesty’s Service, Burslem. Plans of Batteries and Rifle Ranges. Sectional maps of every county. Full maps of counties, geologically coloured or otherwise. A splendid Map of Europe, showing the most recent treaty boundaries. Two Circular Maps, or projections of two-thirds of the sphere, showing the lines of magnetic variation throughout the globe. Four maps of the Celestial Sphere, displaying all the constellations, with every star from the first to the fifth magnitude. – Also a fac-simile of Domesday Book, copied and printed by photo-zincography. Maps mounted. Any maps to order. Specimens forwarded wherever required. A neat map of the Potteries with copious letter-press reference. Small Sectional Maps of every village in the county of Stafford, one inch to the mile.³

In May 1862 William inserted another advertisement in the *Advertiser*, and at about the same time there were similar adverts, with slightly differing wording, in other newspapers placed by different agents. William’s wording was:

¹ *The Staffordshire Advertiser*, 12 March 1859.

² *Pottery Gazette* December 1884.

³ *The Staffordshire Advertiser* 22 June 1861 and 29 June 1861.

EXCURSIONISTS!!! – Ordnance Map of London, and Guide to Great Exhibition.

This splendid map, mounted for the pocket, is on a scale of six inches to the mile, and names every Crescent, Square, Street and Public Building in the great metropolis, accompanied with a plan of the International Exhibition, with compartments numbered and named; and a Guide to the Sights of London, showing those that are free of admission and those which are not, with the conditions and prices attached to each sectionally.

The price was just 2s 6d in postage stamps. The advert ended “Any Map to order. A liberal allowance to the Trade”.⁴

It should be noted that William’s references to “photo-lithographic transfers” and “photo-zincography” were to the same process.

I am intrigued by the fact that William’s daughters were recorded as employed in making maps in the 1861 census. I suspect that they were just helping their father in his business as a map dealer, but if anyone has any comments about whether they might have been doing work for the Ordnance Survey, or perhaps making bespoke maps using the Survey under license, I would be interested to receive them.

ON HER MAJESTY’S SERVICE.—The RIFLE VOLUNTEER CORPS can PROCURE any of the ORDNANCE DOCUMENTS from WILLIAM EVANS, on her Majesty’s Service, BURSLEM.

Plans of Batteries and Rifle Ranges. Sectional maps of every county. Full maps of counties, geologically coloured or otherwise. A splendid Map of Europe, showing the most recent treaty boundaries. Two Circular Maps, or projections of two-thirds of the sphere, showing the lines of magnetic variation throughout the globe. Four Maps of the Celestial Sphere, displaying all the constellations, with every star from the first to the fifth magnitude.—Also a fac-simile of Doomsday Book, copied and printed by photo-zincography. Maps mounted. Any Maps to order. Specimens forwarded wherever required.

A neat Map of the Potteries with copious letter-press reference. Small Sectional Maps of every village in the county of Stafford, one inch to the mile.

⁴ *The Staffordshire Advertiser* 10 May 1862.

Who owned my map?

John Marjoram

Inspired by David Archer's Musings (*Sheetlines* 122, 61-64) I thought I would look into the social history behind one of the earlier maps in my collection. Most collectors will want a 'clean' map but I find signatures and other annotations on covers and on the map itself of particular interest as they can tell something about who owned the map and perhaps why it was bought and how it was used.

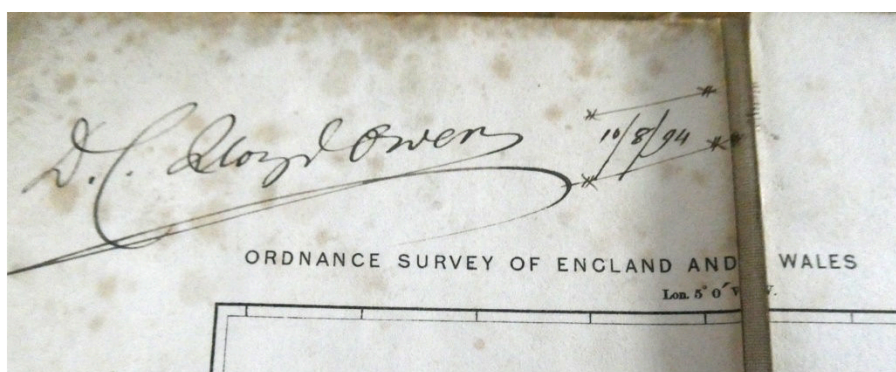
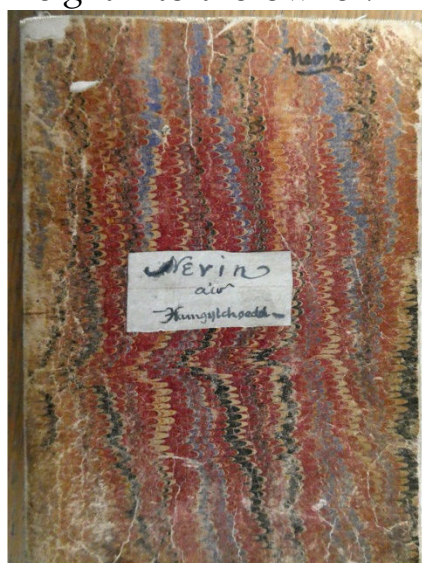


New Series combined sheet of the Llyn Peninsula owned by DC Lloyd Owen. Border of map showing poor skill in dissection.

The map is a composite of New Series (advance edition) outline sheets dated 1892 of 118 (Nevin), 117/133 (Bardsey) and 134 (Pwllheli). The sheets have been mounted on cloth in sections and folded within, now well worn, marbled paper covers. A small oval stamp at bottom right of the map identifies the seller: 'J. Wilkinson, late F. Blackett, Ordnance Maps, Birmingham'. This one-off map is of interest in itself as it highlights the value of a map of the whole of the Llyn Peninsula on one sheet and thus is a forerunner of the One-inch Third Edition small sheet series combined sheet of Pwllheli of 1907, and the large sheet series sheet 49 both of which cover a similar, but slightly smaller, area.¹ Whoever mounted this particular sheet made a bit of a mess of the border adjacent to Bardsey island – using a piece of border from elsewhere on sheet 133 but upside down, and also managing to lose the merest sliver of land that was nominally on sheet 117!

There is a small label affixed to the front cover with a manuscript title (in Welsh), 'Nevin a'i Hamgylchoedd', and in pencil on the reverse of one of the sections 'Nevin and District'. The main interest is in the ownership signature - '*D.C. Lloyd Owen 10/8/94*' – which is in ink on the map face top left in a bold, clear hand. In the same handwriting on the reverse of another section is inscribed '*D.C. Lloyd Owen, Clermont, Edgbaston*'.

With such evidence, and a little help from genealogy websites, we can get an insight into the owner.



Left : Cover of New Series map compilation.

Above : D.C. Lloyd Owen signature at top left of map.

David Charles Lloyd Owen was born in Smethwick in September 1843. Although he spent most of his life in the English West Midlands, he had Welsh roots and we know (from 1891 census data) that he was able to speak Welsh as well as English. This may explain the title in Welsh on the map. His father, John Absalom Owen, a Presbyterian minister, was born in Llanboidy, Carmarthenshire in 1808, and was presumably a first language Welsh speaker. He spent most of

¹ This compilation is made from the three new series sheets but with the blank areas of sea to the west removed. The later OS versions omit a small portion of sheet 118 at its northern edge. The sheet lines of the Pwllheli and Criccieth District map based on third series mapping are again different.

his ministry in Staffordshire. As David's mother was from Carlisle, his father's influence on David's linguistic ability is obvious.

By 1861 David Owen was a medical student and was admitted to the Medical Register in 1865. Through his career he was variously described as a surgeon, surgeon/oculist, surgeon ophthalmic, and an oculist. As well as private practice he held various positions with Birmingham Hospitals – he was the first ophthalmic surgeon at the Birmingham Children's Hospital, and was consulting surgeon at the Birmingham Eye Hospital for instance – and was prominent in the British Medical Association. As a member of the Company of Spectaclemakers he was admitted to the Freedom of the City of London in 1898 – significantly the admission document contains his signature which matches that on the map.

He married Anna Greene, the daughter of a surgeon, in 1868 and they had three children – a son (who died in infancy) and two daughters. In 1881 he is recorded living in Rolla Park Road, Edgbaston.² This part of Edgbaston rapidly developed from the 1870s as upper middle-class housing with neighbours being merchants, metal manufacturers, accountants etc. At the time it was still surrounded by fields but was easily accessible to Birmingham city centre – the Harborne branch railway which opened in 1874 being a catalyst to development.

The 1891 census – the nearest to the date on the map – is of some interest as David and his wife, Anna, (plus one servant) were not recorded in Birmingham but were living at Fron Deg, Meifod, Montgomeryshire (now Powys). His two, as yet unmarried, daughters remained at Clermont, Woodbourne Road, Edgbaston with two servants. Was this an early example of a second home? From census and map evidence it seems Clermont, a large detached house, was built in the late 1880s and presumably the Owens were the first occupants. Their previous house was very close by. Woodbourne Road then, and now, is a very desirable address. Fron Deg also appears to have been built at a similar period. Perhaps it is significant that there are no residents at Fron Deg when the 1901 census was taken and the Owens were shown as living in Birmingham.

His eldest daughter, Lilian, married George W D Bowen Lloyd, born in Carmarthenshire and a career soldier,³ who after World War One lived in Dyffryn Ardudwy, and then Harlech on the Welsh coast. David's youngest daughter, Blanche, married Herbert Winterbotham, a cloth manufacturer in Gloucestershire.

We can speculate on the use of the map. It has obviously been very well used so perhaps it has been taken on holiday to the Llyn Peninsula on a number of occasions, and then for reference once the family moved closer. Being a specially prepared map, the August date suggests it was thought about well in advance of a holiday visit, and Pwllheli was relatively accessible by rail from Birmingham. There are no markings on the map to indicate any special places of interest but the concentration on Nevin in the naming of the map perhaps gives an idea of where they may have gone. With David's roots, and connections through his

² Actually, Rotten Park Road as recorded on contemporary OS maps but the census enumerator seems to have 'gentrified' the name!

³ Lieut. Colonel Royal Welch Fusiliers and who commanded 11th Battalion RWF during World War One in France and Salonika but was invalided out in 1916.

eldest daughter, visits to the Welsh coast and countryside would have had some significance.

From the early 1870s David's business occupied various premises in Newhall Street in the centre of Birmingham close to the Eye Hospital. By the late 1890's⁴ he had moved from Clermont to 41, Newhall Street – the 1901 census and a 1901 rate book show he was not only working from there but also living there with his wife and two servants. Most other buildings in the area were business premises with no permanent residents other than caretakers. Perhaps with a view to retirement he moved house again (but retained the business premises) sometime before 1910⁵ to Four Oaks, Sutton Coldfield – again a developing outer suburb. Significantly the house there was named 'Vron Deg' (there is actually no V in Welsh) which may indicate that Fron Deg in Meifod had been given up by that time (it certainly had different – and non-local - occupants in 1911). In 1911 David was sixty-seven years old and although by now living with his younger married daughter in Cam, Gloucestershire, he still described himself as an 'oculist'.

By 1921 David and his wife Anna were living in Harlech with daughter Lilian and son in law Bowen Lloyd in a house called Bron y Graig. Anna died in 1923 and then David died on Christmas Day 1925 aged seventy-two. Probate was given to his two married daughters. He died a wealthy man - leaving £20, 000 in his will (approx. £1.3 million at current values). His son in law Bowen Lloyd died the following year, also at Bron y Graig, and both were buried at Caio (near Dolaucothi) Carmarthenshire, close to where Bowen Lloyd was born and brought up.

Lilian continued to live at Bron y Graig until after 1939 and died in Llandudno in 1963. From Bron y Graig there would have been ⁶ a magnificent view across Cardigan Bay to the Llyn Peninsular - so David could well have made use of the map in the short time he was there.

The map must have been passed on in the family and/or retained locally as it was bought from a Welsh bookseller 30 years ago.

David Charles Lloyd Owen is an interesting person in his own right but connecting him to this map can tell another story with links to 19th century tourism to Wales, and the type of person able to afford a specific map such as this. Perhaps I also detect a hint of *hiraeth* - that particular Welsh concept of longing for Wales which may have been a particularly pertinent to Owen.

⁴ He is listed as living at Clermont in a local directory of 1895.

⁵ *The Medical Directory*, 1910 p 871

⁶ Sadly, Bron y Graig, as well as Clermont and 41 Newhall Street have all been replaced by more modern buildings.

Letter

I found Richard Oliver's article in *Sheetlines* 121 on the basic content of maps very thought-provoking; despite a life-time's close association with maps, I had not really questioned what appeared on them.

I feel a need to comment on Richard's further comments on the representation of rock outcrops and cliffs in *Sheetlines* 122. He states, 'In my view cliffs or dangerously steep slopes are sufficiently indicated by closed or fused contours.' He goes on to report that OS investigation between 1947 and 1965, 'elicited that climbing clubs ... did not use mapping for clambering.' At that time, climbing clubs included climbers, referring to those who ascend rock usually using ropes and other protection, and what we would now term hill-walkers. In modern usage, the former would climb while the latter would walk and possibly, at times, scramble; clambering is not a term generally associated with the activities of such clubs!

Climbers often do not explore widely, going to known sites and, from familiarity with the area, rarely need to make use of maps. In contrast, hillwalkers rely on maps for navigation. One element of this is the selection of a safe route across steep ground. In daylight and from below, it is often possible to pick a way through rocks. In contrast, at night or from above at any time, this is not usually possible. Even a four-foot-high crag can be a major barrier to progress. Anything of this size would not be indicated by contours.

I can think of many occasions in Wester Ross, with which as a former Mountain Rescue Team member and leader I am most familiar, where the omission of rock outcrops would have made for difficulties. We often found ourselves in less well-known locations in poor weather searching for a lost or injured soul. A very steep heather or grass slope can be traversed safely with care whereas one with crags would necessitate ropes and considerable delay; we tended to select routes using a map, usually 1:50,000, that avoided such obstructions.

The attached view, to the east of Gairloch village shows the nature of the terrain, a mix of heather slopes, rock outcrops and cliffs. The contours, shown on the accompanying map (at 1:10,560 for clarity), do suggest very steep slopes in places but were the rock symbols to be removed, walkers descending the slopes would be unaware of the dangers. Scree does not play a big part in Wester Ross topography but its depiction is important for navigational purposes where it exists.

I would hope any consideration of a change to the depiction of rock on OS maps would take cognisance of a wider range of users than those consulted by the OS so many years ago.

Nevis Hulme



View of hills above Gairloch, Ross and Cromarty



Reduced OS 1:10,560 NG87NW (1969)

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Why can one be so easily distracted when it comes to maps? Somewhere, Richard Oliver has noted that when working in the British Library or an archive office, maps and plans taken out for another user are invariably more interesting than those he has in front of him. Richard is easily distracted by maps and represents the typical Charles Close Society member. Maps never fail to divert us from other things, even other maps.

Perhaps the most common distraction is when we open a map to check something, and having done so, or frequently not having done so, we are distracted by something we spot on the sheet in hand. It might be a word, the spelling of the word, the position of the word, or the type used. And having spotted it, we cannot resist looking for more examples on the same sheet and if not found, then the search continues on other sheets in the same series. And unless we are distracted by something else, we might continue our investigations on the previous or following editions, just out of curiosity. I defy anyone to even suggest that any of our members lack curiosity when it comes to maps. Look through any five numbers of *Sheetlines* and you are bound to find a piece written by a reader who saw something and then followed it up, meaning, they were distracted from whatever they were doing and started an investigation of some sort. I am sure that the Ordnance Survey have always tried to produce maps that have nothing that might jar the eye, nothing that stands out as being rather unusual. Whether a depiction of highland or lowland areas, a map should be of a uniform texture, something which most series do accomplish.

Those new to collecting Ordnance Survey maps are often naïve in thinking it a simple easy-going hobby where one only has to tick a new acquisition on a list. Poor souls. Such innocence does not last very long. Pretty quickly distractions appear. Covers of almost all series have had minor or more substantial modifications during their lifetimes. At the very least, prices differ, or the type used might change, or a small sticker with the new price might appear on a cover. The large sheet one-inch Third edition and 1:50,000 scale maps have had quite drastic transformations during their lives. The Thirds began with white waxy covers, then buff designs, whilst the 1:50,000 was born with plain pink covers, followed by a whole host of photographic styles, which continue. Anyone with the collecting gene will respond to such differences and be seduced from seeking a single copy of each sheet. Most of these simple souls, me included, spent at least the first few weeks of collecting by hunting maps within the first series to attract their attention, and were then distracted by seeing another series, and then another and another. Forgetting the numerous differences on their original series they then expanded searches to include these other series, and it is at this fairly early stage that people seem to go off in all directions with regard to what interests them.

Quite early on I was distracted by the non-map productions of the Ordnance Survey: paperwork of all sorts, especially ephemera, catalogues, and index sheets.

The small semi-glossy post-war OS catalogues were often put into the map box in bookshops and a small collection soon built up. The first real find along these lines was the 1924 catalogue with the wonderful Ellis Martin crest filling the whole of the front cover.¹ This was magic, without even opening it, and when I did, I discovered a list of Ordnance Survey publications that were a 'must have' list : *Measurement of the Loch Foyle base line, Notes on the parallel roads of Lochaber ... , Plans and photographs of Stonehenge*. I am positive that I am not alone in having wanted these not for their content, but because they were an OS production, with the magic 'Ordnance Survey' on the title pages. Besides such monographs, the 1924 catalogue also introduced me to the bewildering world of large scale maps, with lists of 1:2500 and 1:1250 maps available for each county. Such strange looking entries and sheet numbers :

Staffordshire. *Surveyed in 1875-86. Revised 1897-1902. Second Revision 1912-23.*

1:2,500 SCALE.

Plans too open for publication **1.-7.**

Partially filled plans priced at 4s. **22.-2**, (13 & 9). **27.-4**. **28.-**(7 & 5) ... What did it all mean? Thankfully there were two pages of explanation with the numbering system shown as a *Diagram of 6" Full Sheet showing 6" Quarter Sheet and 25" Sheet Lines* followed by another for 1:1250 sheet lines, and the intriguing note listing obsolete scales : 1:1056, 1:528 and 1:500. What were these like when they were at home? Where could one see them or might one ever find any? Such distractions were bliss.

And so it has gone on, for about forty-five years, distractions, discoveries, diversions, or tangents, *anything* bearing those two immortal words 'Ordnance Survey' attracts me and requires attention, maps and non-map productions. A favourite group of distractions, produced during the actual production process has claimed many hours of my time. Such things are not of a cartographic nature and seemingly have nothing to do with what appears within the neat line. If you have a piece of hand-painted china, even fairly cheap stuff, turn it over and you will probably see some sort of marking, a dab of colour, a squiggle or initials indicating who worked on that piece, information considered necessary in the production process, placed where it would pass unnoticed by most people. Semi-secret things have always been fun to delve into and OS maps provide for more delving.

Print codes were the first of such distractions to be of interest. I was already familiar with these from having briefly collected London Transport underground diagrams when much younger. From these, one could make out quantities printed and dates in a rough and ready way. But the important thing was that they were different; exactly the same underground diagrams, differing only in the print codes, sometimes by only two digits. Such things were sought because they were different, and the transition to seeking them on the lower margins of OS maps was painless : 6.12, 2700/34, 2538, 3046/Cr, 25,000/7/46 Wa. Even if a


¹ *Catalogue of maps and other publications of the Ordnance Survey*, Southampton, 1924.

person has never noticed such things, 6.12 or 25,000/7/46 Wa cannot fail to suggest something. When I found different codes on what seemed to be the same map, I assumed this to be a good way of identifying the various states of a sheet, four codes, four states. And then Guy Messenger informed us that for the large sheets of the one-inch Third edition, one could have the same print code with different prices or copyright statements in the lower margin. Endless hours were spent looking into such things, and I eventually joined those who already knew that lots of maps were reprinted with minor changes within the neat line, whilst leaving the margins unaltered. Only last week I was flicking through a pile of 1:2500 county series sheets and 'Liable to flooding' caught my eye on one sheet but was absent on the following copy of the same sheet, with identical margins.² Another unacknowledged reprint was a 1961 map where the price details in the lower margin had been moved about 3mm to the right if compared with a second copy. Otherwise identical in all respects, and without the job files we will never know which was the earlier printing. Not that it matters. Well, does it? Surely this really would be labelled a distraction rather than cartographic research? But having noticed it, I now frequently compare two seemingly identical sheets for such minor changes. That they went on, and were so trivial fascinates me. My current theory is that this was a form of someone putting their own mark on a map unnoticed.

Maps usually have to be trimmed during production, the paper trimmed to the correct size and to remove things not intended for public viewing. Many older maps can be found with thin lines at the sheet edge, possibly showing trimming lines, or sometimes there are very small 2mm ticks at the edges which I take to be folding guides. Not uncommon are strips of colour blocks which need to be seen by the printers, but which are usually removed at a later stage. Of far more interest is a copy of the Irish coloured one-inch sheets 41 and 53 combined, 1906, on which *These Maps to be reserved for Special Mounting* is preserved in the lower right corner. A similar note, *These maps are for Special Mounting* appears on a copy of the coloured one-inch Third edition sheet 18, Barrow in Furness, 1907, which is dissected in Edward Stanford covers. So many questions come to mind. Why 'These maps' and not 'This map'? Were all such maps intended for sale to OS agents? Why was the Third not fully trimmed? One can find a long thin cross in many margins, usually black, but sometimes of various overlapping colours, indicating, I assume registration marks; however, the right margin of the Irish sheet has the usual long vertical line, but with two cross bars, and a single line cross in the left margin, both in black. Why two? Why different crosses left and right? What was their exact purpose? I cannot recall seeing two horizontal lines before. Hours must have been spent looking for other examples. On a similar theme, I once took a 1916 map to a meeting to be identified, and Peter Clark noted that it had very small crosses cut at the four corners of the neat line, which

² Huntingdonshire 1:2500 5.3, revised 1924 lacking print codes, exists with two states having significantly different detail within the neat line, whilst a second state of one of these, has 20/34. 20/40. 50/41 added.

were probably used as registration marks on a proving press. All features not meant to be observed by users. Similarly, sections of maps, often 1:2500 sheets, were laminated between two pieces of card to form many early white hinged covers. Again, it was Guy Messenger who told us such things were visible by holding these covers close to, almost touching, a bright table lamp,³ whereas Tim Nicholson noted that production codes were hidden away on the inside edges of red and cream Seventh Series covers, where they could easily be referred to by OS staff, yet remain hidden from the map buying public. What else have others spotted, I wonder?

Nobody reading this should be under the impression that I spend all of my time indoors studying map margins for the smallest of small differences. No, other outdoor distractions are frequent. A good few years ago I bought a copy of *Abstracts of the principal lines of spirit levelling in England and Wales*.⁴ This “contains the principal lines of levels taken in England and Wales ... the levels ... marked  upon permanent objects on the ground...”. So, all bench marks on the principal lines of levelling, e.g. Liverpool to Spurn Head or London to Dover are listed together with their location, “Mark on corner of garden wall at Ivy-Place; 5.01 ft. above surface”. This sounded fun. How many were still there? In an early musing I discussed bench marks in Newtown,⁵ but what made this list different was that it included bolts, standard bench marks with a lead plug in the centre of the cross bar.⁶ Bolts, sounding superior and less common must merit being a distraction from boring old maps and a pleasant excuse to get out and about.

Obviously, if I was in the area, I looked for everything listed, but in the intervening 161 years a lot had changed, and locations such as “Bolt in South-west angle of Joseph Risdon’s out-house at junction of roads...” were less than helpful.⁷ The first bolt found was in the wall of the church in Llangurig, which we pass on our way to Aberystwyth. Having stopped and wandered around the church, there it was, just as listed, sitting waiting to be re-discovered after all these years. All CCS members should take visitors to see their nearest bench mark or flush bracket. I am sure they will be more than thrilled, the bench marks I mean.

³ Irish maps of the period in Survey of Ireland covers are often found, with the maps having been pasted over sections of cloth backed trench maps with the trench map text showing on the backing.

⁴ Sir Henry James, *Abstracts of the principal lines of spirit levelling in England and Wales*, London: Eyre and Spottiswoode, 1861. Available on-line at <http://www.deformedweb.co.uk/trigs/1gl.cgi> where page 556 Llanidloes to Llangurig can be seen at http://www.deformedweb.co.uk/trigs/data/1GL/1GLA_556.png

⁵ *Sheetlines* 68, (2003), 51-52.

⁶ See Owen, T. and Pilbeam, E., *Ordnance Survey : map makers to Britain since 1791*, Southampton, 1992, 43.

⁷ Fortunately, distances between bench marks are given, in links.