



Sheetlines

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

This edition of *Sheetlines* was published in 1995 and the articles may have been superseded by later research.

Please check the index at
<http://www.charlesclosesociety.org/sheetlinesindex>
for the most up-to-date references

*This article is provided for personal, non-commercial use only.
Please contact the Society regarding any other use of this work.*

Published by
THE CHARLES CLOSE SOCIETY
for the Study of Ordnance Survey Maps
www.CharlesCloseSociety.org

The Charles Close Society was founded in 1980 to bring together all those with an interest in the maps and history of the Ordnance Survey of Great Britain and its counterparts in the island of Ireland. The Society takes its name from Colonel Sir Charles Arden-Close, OS Director General from 1911 to 1922, and initiator of many of the maps now sought after by collectors.

The Society publishes a wide range of books and booklets on historic OS map series and its journal, *Sheetlines*, is recognised internationally for its specialist articles on Ordnance Survey-related topics.



SHEETLINES

Number 43

August 1995

Editorial		1
Marginalia		1
1995 Annual General Meeting Report		3
Sheet lines: some notes on GSGS 3917 and other one-inch large sheet maps of Ireland	<i>Roger Hellyer</i>	4
Rockall	<i>Donald Binns</i>	24
The evolution of the Ordnance Survey National Grid	<i>Richard Oliver</i>	25
Four colour printing	<i>Richard Oliver</i>	46
The Three-Inch Map of London and its predecessors of 1926	<i>Chris Board</i>	48
The One-inch Second Edition colour-printed map	<i>Tim Nicholson</i>	50
Meeting Reports		53
New Maps		55
Book Reviews		56
A Map in My Collection		58
Letters		59

Future meetings

Midlands Evening Meeting, Branston, Wednesday, 4th October, 1995

The next Midlands meeting will be held at the St Saviour's Church Meeting Hall, Branston, near Burton-on-Trent on Wednesday, 4th October, 1995, at 7.30 p.m. Richard Oliver will be the group's first guest speaker, 'perhaps something to do with railways'.

Branston village is about two miles south of Burton-on-Trent, best approached from the A38 interchange along the former A5121. The church is on the south side of the road at grid ref. SK 225212 (*Landranger* map 128). The Meeting Room is the new extension to the church. Car parking is preferred in the front garden of the new vicarage. Further details from Lez Watson, 54, King Street, Burton-on-Trent, DE14 3AF (tel: 01283 541303)

Visit to the Hydrographic Office, Taunton in its Bicentenary Year Friday, 29 September, 1995

This visit to the Hydrographic Office at Taunton will run from 1100 until 1500. Numbers will be limited but there are still 10 places available; please let the Hon. Secretary (address and telephone number on rear cover) know as soon as possible if you wish to attend. Full details will be sent to members who indicate their interest nearer the date of the visit.

Meeting at Shap Wells Hotel, Shap Saturday, 21 October, 1995

The autumn Society meeting will be held at the Shap Wells Hotel. The topics for the day will be: morning: *The mysteries of the Quarter-inch map, 2nd to 4th editions* by Chris Board, afternoon: *The Quarter-inch Aviation maps* by Tim Nicholson. The day will commence with coffee being served from 1000, a buffet lunch will be served at 1300, and the afternoon session will end about 1630 with tea. Because many members will be travelling from afar and might wish to make a full weekend of the meeting, additional informal activities are being arranged:

Friday 1930 meet in the bar; 2000, dinner or bar snack according to personal preference followed by informal talk/discussion on some map related subject.

Saturday Late afternoon, walk if weather is suitable; 1930, meet in the bar; 2000 dinner/bar snack and as above.

Sunday 0800-0930 Breakfast; 1000, visit to Clifton Battle site, the site of the last battle on *English* soil in 1745. Geoff Goodhind, a local historian, will conduct a walk.

Continued inside rear cover

Sheetlines

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

Sheetlines 43

August, 1995

Editorial

At the Annual General Meeting held in Nuneaton on the first weekend in May, I intimated that one aspect of *Sheetlines* at which the Publications Committee would look would be the possibility of including colour in *Sheetlines*. Having sought a number of quotations from reputable printers, it is apparent that the cost of introducing colour would double the cost of this publication; the current cost of *Sheetlines* is approximately £1.50 per copy and thus at the current subscription the inclusion of colour is not feasible.

Regardless of the question of colour, we must also ask how can the standard of black and white illustrations be improved? Currently, most of the illustrations are photocopy reproductions of the originals, although in some cases, with the best will in the world, an author can only obtain photocopies of photocopies. Those members who are railway devotees, and who take the magazine *British Railways Illustrated* will have seen in the July edition the article on the Wisbech and Upwell Railway, illustrated with maps of the line from the appropriate six-inch maps, admittedly reduced which always sharpens the final result. However, in that case the originals are black and white, but, of course, most Ordnance Survey maps were printed in colour. Black and white photocopying of coloured originals often loses some of the detail printed either in yellow, green or blue, and as for photocopying the quarter-inch layered maps...

The reason for pursuing this topic is because *Sheetlines* is seen as an authoritative publication on Ordnance Survey maps by virtue of the quality of the articles which are published. As an example of this esteem, our Publications Manager David Watt was requested by Dr Andrew Tatham of the Royal Geographical Society for examples of Charles Close Society publications to be included in the UK exhibit at the International Cartographic Association Congress at Barcelona, to be held 3–9 September, 1995.

Providing that your editor can control the typing gremlins which creep in, then the quality of illustrations must be addressed. But I must add to potential contributors — please do not let the quality of illustrations prevent you from submitting an article, as I am always willing to discuss how the quality of an illustration might be improved, or where an alternative source of the illustration might be found.

Marginalia

NLS acquires lithographic stone

In the late 1980s, the late Mike Miller and his friends Neil and Patricia Powers, in the course of one of their many trips to Dublin, and amidst other more predictable activities, purchased six lithographic stones from a Dublin bookseller, Andrew Bonar Law. All six had originated from Ordnance Survey, Phoenix Park,

and were inked from map sheets of the Second Edition 1:63,360 maps of Ireland. After a somewhat epic journey in an overloaded, suspension-bruised Transit van, they finally made their way, via road and ferry, back to Edinburgh, where each kept possession of three stones.

This year (1995), given the National Library of Scotland's interest in obtaining examples of artefacts relating to map production, the Map Library has purchased one of these stones.

Description: Lithographic printing stone, size: 52 x 77 x 8 cm (and 'X' Kg!)

There is a surficial crack on the polished surface of the stone, but not on the actual map area.

The stone is inked for the black printing of:—*Ordnance Survey of Ireland. Cos. Galway and Roscommon. Scale 1:63,360. One-inch to a Statute Mile. Sheet 107: Ballinsloe. "Surveyed 1837–39. Revised in 1899. Published in 1902. "Printed from transfers to stone, 1904. Print number "8.08".*

Viewing is by appointment only.

Congratulations

It is with pleasure that I can record that the Chairman of the Charles Close Society, Yolande Hodson, has been awarded her Doctorate for her thesis "The Ordnance Survey Popular Edition One-inch Map of England and Wales, 1919–1942; a cartographic anatomy." Many congratulations from the members of the Society.

It is understood that the thesis will be the basis of a Charles Close Society Monograph on the Popular Edition.

We also congratulate Francis Herbert, Curator of Maps at the Royal Geographical

Society, who has been awarded the IMCoS-R.V.Tooley Award for 1995,

'...in recognition of his outstanding performance as a map librarian, and his encyclopaedic knowledge of the literature on cartography from early times right up to the present.'

Francis was one of the founder-members of the Charles Close Society, and contributed greatly to its success in its early days. Those who have encountered Francis at the R.G.S. and benefited from his help will heartily second the award.

OS Amphibians

Michael Holroyd has pointed out to Richard Oliver *apropos* of 'Ordnance Survey amphibians', (*Sheetlines* 42, p.9) that whilst 'Hendre-gwen-llyfaint' was correctly spelt in the

caricature of Merionethshire 6-inch 11 NE, it is misspelt ('llyfiant') in the accompanying text and caption!! (*At least the editor can disclaim responsibility for this particular error!*)

Publications Manager

Dave Watt has written to thank all members at the AGM who signed his Get Well card; he did miss being at the gathering at Nuneaton. However, Dave is now glad to report that he has

fully recovered and has returned to work, as well as picking up the strings as Publications Manager.

New Membership List

Enclosed with this issue of *Sheetlines* is the 1995 Membership List, Minutes of the 1995 AGM and the Society Statement of Accounts. The observant will notice that this year the name

has reverted to "The Charles Close Society"! (Only one member brought the error on the cover of last year's List, etc., to the editor's attention — at this year's AGM.)

Photograph opposite ☞

The accompanying photograph shows the committee members of the Charles Close Society in the Council Chamber of the Town Hall, Nuneaton at the conclusion of the Annual General Meeting. Reading from left to right are

Gerry Jarvis, Lionel Hooper, Bill Batchelor, Rob Wheeler, David Archer, Yolande Hodson (*Chairman*), Roger Hellyer, Chris Board, Nick Krebs and Steve Simpson.

(*Photo: David Webb*)

The Annual General Meeting, Nuneaton, 12th May, 1995

The Annual General Meeting this year was held at the Town Hall, Nuneaton, attended by some sixty members of the Society. The venue was considered to be very successful with refreshments and lunch being available on the premises. The day followed the now traditional format of a pre AGM presentation, this year given by Richard Oliver, the AGM at noon (the minutes are enclosed separately with this issue of *Sheetlines*), lunch and the afternoon Map Market.

Richard Oliver spoke on 'Getting there in the end: the National Grid and the New Popular Edition'. His description of the development of the national grid is included in this issue of *Sheetlines*, and it is hoped that a companion paper describing how the One-inch Fifth Edition metamorphosed into first the 'Metric Fifth Edition' and then into the New Popular Edition will appear in *Sheetlines* 44. The real purpose of the talk (according to Richard, and with tongue firmly in cheek) was to argue that the New Popular Edition was originally planned with systematic 1-kilometre overlaps, which the speaker wished to see reintroduced onto the modern 1:50,000. With no disrespect to Richard, with his usual wish to share all his knowledge with his compatriots he spoke with great rapidity in order to fit his talk into the time available. The

absence of a blackout rendered his slides somewhat less effective than they might have been, although he had been assured by the professional producer that they would be visible in normal daylight. The most important ones will appear as illustrations in *Sheetlines*.

The Annual General Meeting proper started pretty well on time (just after noon), and, of course, in the best tradition of AGMs, overran into the lunch hour, but only by a little bit.

Lunch, as the morning coffee and afternoon tea, was provided by the in house Catering Group; it was a fine variety of cold meats and salads, followed by some delicious fattening cream cakes!

The Map Market was very popular with some twenty sellers offering a wide range of maps to tempt the members into spending their pounds. Most people, whichever side of the table they were, seemed to depart with a smile on their faces, having enjoyed the afternoon.

May I take the opportunity to thank the staff of the Nuneaton and Bedworth Borough Council for their courtesy and assistance, and Keith Read-Bone who, whilst not a member of the Society, assisted in the arranging the venue and did some of the fetching and carrying on the day.

Lionel Hooper

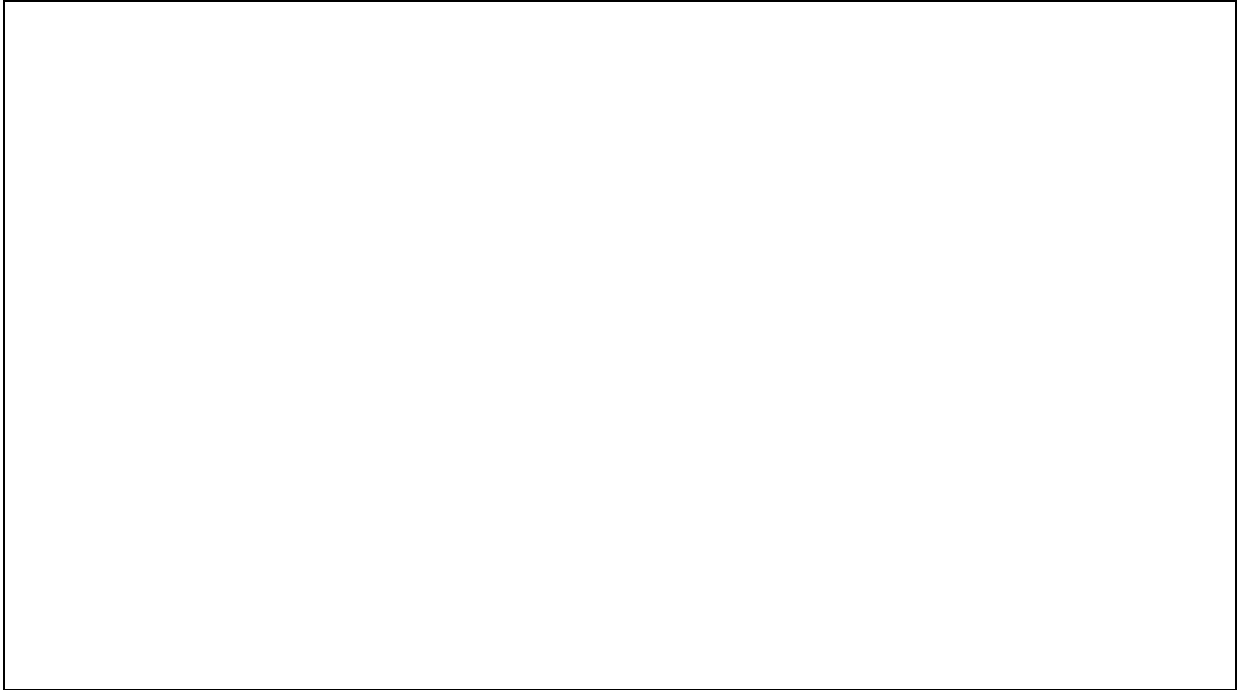


Figure 1.

The original layout of the one-inch map of Ireland
in 59 full sheets, overlaid on the small sheet series.
(Index by courtesy of the Royal Geographical Society).

Sheet lines: some notes on GSGS 3917 and other one–inch large sheet maps of Ireland.

By Roger Hellyer

The Ordnance Survey one–inch map in the Republic of Ireland has for nearly a century and a half been essentially a small sheet affair, and only now that the scale itself is being superseded by the metric 1:50,000 is there any optimism that at last a civilian map covering the whole island will be completed in “large” sheets. There were earlier attempts, there has been a string of district maps some of which are inextricably interlinked with those attempts, and it seemed that a subject so full of fascinating byways, experiments and unfulfilled ambitions was ripe for a discussion which focused particularly on the sheet line relationships between these various maps. We will begin, therefore, at the beginning. When the Ordnance Survey was first authorised by the Treasury in 1851 to make a one–inch map of Ireland, coverage of the island was plotted in 59 large, or full, sheets each of 36 by 24 inches (see figure 1). But rather than delay the appearance of these sheets more than was necessary, publication was hastened by issuing each quarter of a sheet as it was completed. Nearly one hundred outline “quarters” of full sheets (a handful of them also in the geological and hachured editions) had so appeared before the Ordnance Survey in 1858 recognised the inevitable, that the quarter sheets were unlikely in the near future to be reunited. They never have been (see figure 3a). They therefore renumbered the entire sequence of 18 by 12 inch quarter, or small, sheets from 1 to 205, 31 blank quarters obviously being omitted¹.

A further attempt at publishing at least some large one–inch sheets came with the authorisation of district maps of Dublin in 1862, then Belfast, Cork, Galway and Killarney in 1871, but there is no evidence that any of them were produced². The earliest known is an engraved district map with black hachures entitled *Dublin (Large Sheet)* published in 1891 in which the four local small sheets 111, 112,

120 and 121 were united by electrotype³. Other than this, the engraved outline map has always remained stubbornly small, and the only other adjustment ever made was when the minuscule land area of sheet 72 was added in the Third Edition as an extrusion on sheet 71. Combined and large sheets were in practice almost entirely products of coloured mapping. Several coastal areas were combined to avoid publication of unnecessarily small areas of land in the national coloured edition, based on the revision of 1898–1901, from 1902 onwards. The process of combining sheets in this edition was further extended when coastal sheets were due for reprinting. These matters are well documented by Brian Adams in *Sheetlines* 30⁴, and need no recapitulation here, except to point out, for reasons of clarity later, that combined sheet 1 & 2 was replaced on reprint by two others, 1 & 5 and 2 & 6.

Coloured district maps

In Great Britain a new generation of district maps was initiated in 1899, based on “second edition” (or New Series First Revision) outline editions, with the main roads enhanced by colouring them. Four Irish areas were also treated in this way: *Belfast*, *Cork* and *Killarney* appeared in 1902, and *Wicklow* in 1903. The latter three were quickly “republished” (that is to say reprinted with a new publication date), *Cork* in 1904 and the other two in 1906. *Wicklow* was a rarity in being an Irish coloured sheet first published in Dublin, though the second version carried the usual Southampton imprint. It was also the only one of the four not to be superseded before partition by a coloured district map. But at that point the map was a mere stripling. A decade later it had seen off *Torquay*, the last British map of its type, and it had reached the venerable age of 45 before finally being laid to rest in 1948. And the sheet lines survived

¹ Andrews 1993, 34.

² Andrews 1975, 231.

³ There are copies in the British Library Map Library at 11805(8) and the Bodleian Library, Oxford at C19(24).

⁴ Adams 1991.

virtually unscathed even longer than the map, since those used on the 1948 layered district map which replaced it were almost identical, give or take a millimetre. The one reprint of the 1903 *Wicklow* by the independent Ordnance Survey of Ireland so far identified is dated 1938. The marginalia has been rewritten, railway names updated, spot heights recalculated, and black contours added to the map.

Fully coloured districts maps were introduced to Ireland with one of *The Curragh* in 1903. It is similar in specification to the One-inch "second edition" coloured sheets in England and Wales, with black outline, brown hachures, blue water, sienna roads, and has in addition green for woodland. There are no contours. It also displays the new reference system of numbers in two-inch blocks in the north and south borders of the map, and letters in the east and west. In 1904 it was the turn of *Dublin* again, probably because it was the army's choice for manoeuvres. Not just one, but two manoeuvre maps were to be printed that year for the area, both without military overprint. One, of the same specification as the 1903 *The Curragh*, measures 24 by 24 inches. Contours were added to the second⁵, and it was extended two inches further in the north, which rather deranged the tidy alpha-numeric system of the first (rows "A" to "M", without "I") by adding an "X" row at the top. The smaller sheet also appeared that same year as a civilian district map with no reference to its military origins. This was reprinted at least three times within a decade. Similar in style to *The Curragh* and the first 1904 *Dublin* sheet was a district map of *Maryborough-Carlow* in 1905⁶. The area covered is close to the Curragh, and though it breaks ranks with predecessors in having no alpha-numeric system, the likelihood is that the map, like them, is military in origin. Its existence is unrecorded in Ordnance Survey catalogues. Next to appear was a sheet unique in Ireland in that it looked for all the world like a map in the England and Wales Third Edition (Large Sheet Series) - *Belfast District*, in 1912.

⁵ This map cannot at present be traced, but see Nicholson 1988, 124.

⁶ The only copy I know is in a private collection.

Though still relying on the first revision, this map has the sheet lines of sheet 17 in the Third Edition (Large Sheet Series), proposed in 1906 though still unborn. Sheet 17 was one which in the event would never be published. It measures 28 by 18 inches, its width an inch more than was conventional. This was in order to place the eastern sheet line one inch beyond that of small sheet 37, and thereby encompass the total land area of sheet 38.

Ireland's Third Edition

The *Killarney District* sheet of 1913 came next, of which much has been written elsewhere. It was the first of the new generation large sheet coloured "Third Edition" maps, and it always remained a district map. A new field revision had begun in Ireland in 1908 and was abandoned in 1914 with much of the central band of the country unfinished. At least 127 small outline sheets⁷ followed before publication ceased in 1917, and three or more coloured sheets, 36, 129 and 187. Of the three, only 187 specifies "Third Edition" in its top margin. Remarkably, sheet 36 has not been recorded in the outline edition. The coloured Third Edition in small sheets was quickly discontinued (as Richard Oliver suggests, it may anyway only have been a stop-gap policy that produced any at all⁸), and, following the successful implementation of the practice in England and Wales, publication began of the large sheet one-inch system for Ireland that had been laid out as quarter sheets of the half-inch map, initially in 88 sheets, and by 1920 in 85 (see figure 2)⁹. The standard sheet size was to be the same as in England at 27 by 18 inches, or four large sheets covering the same area as nine small ones. Not that any such sheets were ever to be

⁷ The 127 sheets are: 1-31, 34, 35, 37, 38, 46-50, 57-61, 70, 71/72, 125, 127-205. In addition sheet 36 is listed in OS PR 3/15 and sheets 33, 45 are in OS PR 5/15 but copies have not yet been located. Sheet 101 is shaded in the sheet diagram in OSI catalogue, 1927, et seq.

⁸ Oliver 1991, 12.

⁹ To understand how this relates to the half-inch map, compare figure 2 to the half-inch index in the 1912 Ordnance Survey Catalogue.

Figure 2.

The layout of the one-inch Third Edition (Large Sheet Series) map of Ireland, overlaid on the small sheet series. (Index by courtesy of the Royal Geographical Society).

Figure 3a.

The adjoining sheet diagram of a sheet numbered by full sheet number.

Figure 3b.

The adjoining sheet diagram of sheet 80 in the one-inch Third Edition (Large Sheet Series).

published in Ireland, and only two series sheets ever appeared as large sheet “Thirds”. These were a portrait shaped sheet 80, *Cork*, measuring 24 by 34 inches (see figure 3b), and a combined sheet 16 & 17 for *Belfast*, both dated 1918 (see figure 4). Even these two sheets fail to share a common specification, since on *Cork* the alpha-numeric system remains in the border whereas on *Belfast* it is extended as a grid across the face of the map. I should add a little more about *Belfast*. As originally plotted “large” sheets 16 and 17 were to have been 18 inches tall, and sheet 16, at 27 inches wide, was to have overlapped both sheets 15 and 17 by nine inches (as appears on figure 2). As finally issued, the combined 16 & 17 discarded the overlap with sheet 15. Its total width of 36 inches gives it the same eastern sheet line as small sheet 37, and thus leaves it one inch short of the 1912 *Belfast* sheet. This means that the excess land area covered there within the neat line requires an extrusion here into the margin. An additional three inches were added to the map in the north which comfortably takes in Antrim and Carrickfergus, giving a north-south measurement of 21 inches (see the pecked line on figure 2).

Also in 1918 appeared another district map entitled *Dublin District*. This fascinating map has many peculiarities. It calls itself “Third Edition” in the top left hand corner, yet admits only to first revision (1898) in the bottom right. Dublin was, of course, deep within that area of the country where the second national revision was never completed. This map should not be

considered the intended sheet 51 of the Large Sheet Series, since however close the vertical borders may be to that, the horizontal borders are misfits. There is an excess of some five inches at the top, more than the plotted overlap, while at the bottom a gap of about an inch between this and the sheet below would be the more serious consequence. It is a district map with no sheet number, nor adjoining sheet diagram. In fact *Dublin District*’s origins are betrayed by the values of its alpha-numeric grid, now drawn across the face of the map. At “1” to “12”, and “A” to “M” with “X” still above the “A” row, it is probable that the sheet lines are identical to the larger of the two 1904 manoeuvre maps, but confirmation of this must await inspection of a copy of the earlier map.

Ordnance Survey of Northern Ireland

These large sheet coloured maps all remained in print after partition in 1922. *Belfast* became the responsibility of the Ordnance Survey of Northern Ireland, who reprinted it in 1927 and 1931¹⁰. It took its place in GSGS 3917, of which more anon, and finally emerged in 1937 as the focal sheet in the Popular Edition of Northern Ireland - focal in the sense that all the others sheets were arranged to fit around it (see figure 4). The Popular Edition had begun in 1935 with a district map of *The Mourne Mountains* measuring 22 by 21 inches, and its evolution

¹⁰ The responsibility may lain in Belfast, but the printing was still done in Southampton.

Figure 4. Various adjoining sheet diagrams of Belfast.

a: in the Third Edition (Large Sheet Series).

b: in the 12-sheet layout of the Popular Edition.

c: in the 11-sheet layout of the Popular Edition.

d: as it relates to the one-inch small sheet series.
For its position in GSGS 3917, see figure 5.

continued in 1937 with the adoption of the *Belfast* map as series sheet 7. The intention was a twelve-sheet provincial map, sheet 12 of which would have been *The Mourne Mountains* district map. Any consistency in sheet size was limited to the three sheets 5, 6 and 7 that shared *Belfast*'s dimensions, and sheets 8 and 9 each of which was the size of four of the small sheet series. Any consistency in specification was absent from the start as the brown contours of *The Mourne Mountains* were overtaken by the black dotted contours that *Belfast* retained from its parent. But at least these two had an alpha-numeric grid in common. This was banished to the border on the third sheet produced, sheet 10, in 1939. These two numbered sheets were all that had appeared before the decision was taken in 1939 to reorganise the sheet layout in the south. The original sheet 11 was abandoned, and sheet 12, now renumbered 11, was to be extended fourteen inches west. A further three sheets, none of them in the south, were produced in 1939-40, still with the grid limited to the border. In the later war years, most of these sheets were reprinted, remarkably in full colour.

Publication resumed after the war with a reprint of *The Mourne Mountains*. Having missed its opportunity of becoming "sheet 12" it remained an unnumbered district map. Then in 1950 the alpha-numeric grid gave way to the new Irish Transverse Mercator Grid. At the one-inch scale this first appeared on the outstanding six series sheets, all of which were published as Provisional Editions. The last of these was the newly designed sheet 11, confusingly also called *The Mourne Mountains*, into which the original district sheet was subsumed in 1951. The new grid as first printed only divided the border. Later it was drawn across the map first in 10 km squares, and finally in 1 km squares as in Great Britain. Three versions of the Popular Edition were printed: coloured with layers, outline with water, and a Land Utilisation edition. For a map series that comprises only twelve sheets, it is remarkably troublesome to classify! Other than the six post-war Provisional Edition sheets, it is difficult to find three issues that share a common specification. And the difficulties hardly ceased with the completion of initial publication,

because replacement of the provisional editions began in 1953 with maps carrying 1951-55 revision. Only three such sheets had appeared (need I add in three different formats) before replacement of the layered and outline editions began by those of the One-inch Third Series, in nine sheets on metric grid sheet lines. These had a standard sheet size of 60 by 40 km, only sheet 1 excepted. Publication began in 1960¹¹ and it was in its turn displaced by the current 1:50,000.

Ordnance Survey of Ireland

South of the border, the *Cork* sheet was retained by the newly independent Ordnance Survey of Ireland as a district map without sheet number or reference to "Third Edition" (even though it was), with known reprints in 1946 and 1949. The *Dublin District* map also remained in print, retaining its claim to "Third Edition" (even though it was not). There are known reprints in 1929, 1944, 1947 and 1948, the last two with a redesigned border. *Killarney District* also survived, and three postwar reprints are known, all with marked deterioration in its colours. In 1948 the Ordnance Survey of Ireland embarked upon a new policy of publishing layered district maps. *Wicklow District* appeared first, finally replacing the last of the outline with roads coloured district maps, with which its sheet lines were virtually identical. It was followed by *Dublin District* in 1950, remarkably still with "X" at the top of its alpha-numeric system, even though it was now a new map on recast sheet lines. The 1948 *Wicklow District* was replaced in 1954 by a map two inches narrower. These were the last to be published with alpha-numeric grids. All subsequent new maps would carry the new Irish Transverse Mercator Grid. *Killarney District* and *Cork District* appeared in 1956 and 1957, though neither had sheet lines compatible with the new grid. Possibly when they were laid out, the policy was still that they would carry alpha-numeric grids. On the first printing of *Killarney District*, the grid was overprinted in magenta, the procedure with the contemporary half-inch map. Before *Cork District* was published the following year, grid colour

¹¹ Oliver 1985, 14-18 (with index as figure 6 on p.12) and 1990, 2-4, 8-10.

specification had been changed to black, with red or magenta co-ordinates.

The four layered district maps were maintained in print until the publication of a new generation of district maps with sheet lines adjusted to conform with the metric grid. A small pilot sheet entitled *Cork Harbour* was published in 1965, with a map coverage of only 24 by 16 km. Replacement large sheets began in March 1966 with one of *Dublin District*. By 1968 the programme was complete, with new maps of *Cork District*, *Wicklow District* and *Killarney District*, these three with a standard sheet coverage of 44 by 33 km. They remain in print today.

Maps for the military

My knowledge of military mapping in Ireland at any scale smaller than 1:25,000 is limited for the most part to mere glimpses at a fascinatingly complex subject. Here I will limit myself to some remarks on maps at the one-inch scale, and leave comment on the half-inch, quarter-inch and ten-mile, and the larger scale 1:20,000 to another occasion. Two lines of inquiry need to be pursued: British military mapping in Ireland, largely the work of the Ordnance Survey on behalf of the War Office, and that done for the military authorities of the Irish Free State or the Republic of Ireland, usually by the Ordnance Survey of Ireland. At present I have to admit almost total ignorance of the latter beyond the fact that the district maps were overprinted with the 5000 yard grid introduced in the 1940s. As to British military mapping, Tim Nicholson has summarised the situation until 1914¹², that at the one-inch scale activity was limited to special military area or manoeuvre maps usually in the vicinities of Cork, The Curragh, Kilworth or Dublin.

There was no need for a national military map of Great Britain until the 1920's since the army found the standard topographical maps adequate for its purposes. The need then was brought about by its decision to use its new military grid, which of course did not appear on the civilian map. In Ireland a national military map was deemed vital earlier probably because

practical experience of fighting on the Western Front had taught the army the necessity in modern warfare of using a map that carried contours. The depiction of hills by hachures was next to useless for artillery if the more accurate information that contours conveyed was not also present. At this time the one-inch map in Ireland still did not carry contours systematically throughout the island. As a result preparation of a 1" *Provisional Edition for Military Purposes Only* which did carry them was under way by 1915¹³. There is a copy of sheet 187 in Trinity College Library, Dublin¹⁴. It is a Third Edition outline sheet, overprinted with red contours (continuous lines, not pecks), with the above in the top margin, a magnetic variation date of 1915, and the additional imprint information "Printed and Contours added 1915." Curiously, the sheet is priced — 6d. An alpha-numeric system has also been added, restricted to the border. Such is the rarity of this map that it is unlikely that many sheets were produced, though the contour plates themselves seem to have been made for the whole of what was to become Northern Ireland.

After partition in 1922, continued coverage outside the borders of the newly created province of Northern Ireland by British military mapping is explained by the retention by Great Britain of naval bases in the Irish Free State until 1938¹⁵. The *Cork* sheet was printed twice for this reason, once in 1925 (not yet seen), and again in 1934 in GSGS 3943¹⁶. In its GSGS 3943 version, the black outline plate was used without the support even of the water plate. It was overprinted in purple with the War Office Irish Grid. *Cork* shared this GSGS number with another large sheet map entitled *Bantry Bay* or *Bantry* especially created from outline small sheet 199 and parts of 191, 192, 198, 203 and 204. Again I have so far not located a copy of this.

¹² Nicholson 1988, 123-126.

¹³ Hall 1979, 1.

¹⁴ It came from the estate of the late Mike Miller.

¹⁵ Oliver 1985, 14.

¹⁶ There is a copy in the Bodleian Library, Oxford at C19:15(65). See Oliver 1985, 12, figure 2 for index.

GSGS 3917

What maps served the British army in Northern Ireland throughout the 1920's also remain unknown to me. For reasons that will soon become clear I have a suspicion that certain special one-inch maps were made, and in particular one of Londonderry, but I write this with no real evidence, cartographic or documentary. But in 1932 the first sheets of a new map of Northern Ireland were issued, GSGS 3917. The only commentary I can locate on this fascinating series was written by Susan Hall in 1979¹⁷, as prefatory remarks in her internal paper for the Ministry of Defence on another Irish one-inch military series, GSGS 4136, when she had access to both maps, presumably in the map library at Tolworth. Since he only had the opportunity of an in-depth study of one map in the set, together with a minute's acquaintance of a second, I know Richard Oliver will not object to my repeating what he himself admitted in *Sheetlines* 13¹⁸, that his remarks there were largely based on what Susan Hall wrote.

On 9 September 1981 20 of the 21 maps that constitute GSGS 3917 were transferred from Tolworth to the Bodleian Library in Oxford, to join the *Belfast* sheet that had been located there since 5 July 1949. Or rather not to join it, because such is the difficulty of identifying maps in this series, except by GSGS number which is not a device the Bodleian Library use at present for referencing, that the second acquisition was logically catalogued under "Northern Ireland", whereas *Belfast* (equally logically at the time) was catalogued under "Belfast"¹⁹. It is therefore quite possible that no-one else has had the opportunity before the writer on 20 April 1995, when he first chanced upon the additional twenty, of examining GSGS 3917 complete since Susan Hall sixteen years before.

It is quite a rag-bag of a map series²⁰. All are overprinted in purple with the War Office Irish Grid. Five sheets are in colour, and sixteen outline. The coloured sheets have water in blue, contours in red (using the plates made for the military Provisional Edition of 1915), and roads in yellow. In common with British military maps between 1931 and 1934 a green plate was not used for woodland. The outline sheets are in black, including contours. The known copies of the coloured sheets are on Place's waterproof paper. All sheets are identified by name

and not number, the name appearing top centre on the black plate and top right in purple with the grid overprint. Insofar as there is a regular sheet size, it is 18 by 24 inches, or that of two one-inch small sheet maps, one above another. But none of the coloured and only nine of the outline maps are so laid out, and one of those has an extended extrusion. Quite clearly the coloured five preceded the outline sixteen, and, thanks to a change in policy between the issue of the two sets, the systematic sheet lines of a provincial map had to be superimposed upon the scattering of district maps already issued. The result was that two areas, *Londonderry* and *Armagh*, appeared a second time on different sheet lines. These two coloured maps would either have been cancelled, or survived in effect as district maps.

The sheet lines of the original five appear in figure 5a, which is the "adjoining" sheet diagram that appears on all the coloured sheets. Let us deal with *Belfast* first. This was one of the two areas in Ireland, it will be recalled, that had appeared in the One-inch Third Edition (Large Sheet Series), as Sheets 16 & 17: it had already been reprinted in 1927 and 1931, and provided an ideal source map for the area. Its sheet number 16 & 17 is excluded, which is perhaps just as well since its presence could only have caused confusion. It carries a War Office publication date of 1931. Thanks to its source it is unique in several ways: it is the only one to have a map frame beyond the neat line, it is the only map in the series to have solid blue sea rather than waterlining, it alone has an overprinted January 1927 magnetic variation date (the others have January 1931), in addition to its original 1918. The presence of this singular magnetic variation date on the purple plate is highly suggestive of an earlier military printing, perhaps as a run-on printing of the civilian reprint that year.

¹⁷ Hall 1979, 1.

¹⁸ Oliver 1985, 11.

¹⁹ *Belfast* is at C19:10(4), the remainder at C19:1(73).

²⁰ See Oliver 1985, 12, figure 1 for index set against one-inch sheet lines.

Figure 5a.
The sheet lines of coloured maps
in GSGS 3917.

Figure 5b.
The sheet lines of GSGS 3917.

Before continuing, I should note a few characteristics that apply generally to the remaining twenty maps. They evolved from the one-inch outline engraved map of Ireland, and their revision statements reveal that they proceeded from the second revision of Ireland (though in the case of sheets 32, 44, 56, 81, 82 this is questionable since the second revision was discontinued before they had been covered). All have waterlining, be it blue or black, and the usual chequered railway symbol. All have only a neat line border, War Office Irish Grid values given beyond. Marginalia is standard, and in all cases the copyright statement reads "Crown Copyright Reserved". No sheet is priced. In two important respects, the outline sheets add information not given on the coloured ones: with the statement "Ordnance Survey of Ireland" in the top left hand corner they have "(Third Edition)", and added top right to the purple overprint plate below the sheet name are the numbers of the one-inch small sheets from which each sheet is derived.

We can now return to the four remaining coloured sheets. Two of them conform neatly with small sheet series sheet lines. *Armagh* is just sheet 47, and *Lough Swilly*, a combination of sheets 1 and 5, uses the same combined sheet lines as 1 & 5 in the "second edition" coloured edition. The presence of this area, by then wholly within the Irish Free State, is again probably explained by the survival of a British naval base on the lough. But the sheet lines of the two other coloured sheets, *County Down S.E.* and *Londonderry*, almost confound explanation. The *Belfast* sheet extended west as far as *Armagh* extended east, in the row above it. Any logical planning would have designed *County Down S.E.*, immediately to the

south of *Belfast*, to extend far enough west to meet *Armagh*. But no, the map created covered two small sheets north to south, but only approximately one and a half east to west, leaving a gap of about half a (small) sheet between it and *Armagh*.

It is difficult to visualise how this situation could have arisen. We do not even know which of the two was planned or made first, though a clue may lie in the War Office publication dates. *County Down S.E.*, like the *Belfast* sheet, is dated 1931, while *Armagh*, as with the remaining eighteen, is dated 1932. *County Down S.E.*, indeed, may have been a manoeuvre area, one possible explanation of its larger than usual print run. The decision to make the two 1931 sheets may therefore have been taken ahead of the other coloured maps, even though they seem only to have been issued together with them in 1932. But it certainly looks as though in 1931 or 1932 there was no thought of complete coverage of the province, but just a group of district maps. *Armagh* and *County Down S.E.* therefore did not have to meet. But whatever the case, the location of the western sheet line of *County Down S.E.* is in fact highly revealing, and provides startling evidence that this was the first sheet of the series constructed from the start as a military map married to the War Office Irish Grid, in that it lies precisely on grid easting 319 km. This coincidence with the metric grid is a feature of the sheet lines of all but two GSGS 3917 maps, where they were not a product of the original small sheet series. In essence, we thus have here a map series with sheet lines that are the products of two sources: the Irish small sheet series and the new metric grid. The two exceptional sheets are *Belfast*, already discussed above, and *Londonderry*.

Let us examine next the *Londonderry* sheet, which in almost every respect is unique. In terms of colour it conforms, but (other than *Belfast* which for reasons already given is equally atypical) it is the only one of twenty sheets that excludes from the bottom right hand corner the usual Irish source references to survey, revision and publication history, and offers instead the single statement "Printed at the Ordnance Survey Office, Southampton in 1924". This is evidence

indeed that such a sheet was printed for military reasons in 1924, quite possibly related to the known printing of the *Cork* sheet mentioned above, in 1925. Its sheet lines are striking in that they for the most part ignore both the one-inch small sheet series and the metric grid, and this in itself is evidence that this sheet had an earlier existence. Only to the east does it coincide with anything else: the eastern sheet line of the one-inch small sheet 12. The *Londonderry* sheet extends three inches above sheet 12, four inches below it, and ten inches further to the west. Thus we have here a sheet measuring 28 by 19 inches. A cartographer might reasonably view this as a normal large sheet measuring 27 by 18 inches, with one-inch overlaps, not that the sheet lines relate in any way to the planned large sheet Third Edition. In fact the geographer's view is probably the more logical, in that the extension north includes Magilligan Point, and that to the west Buncrana and the upper reaches of the River Foyle.

GSGS 3917 outline sheets

All five coloured sheets were issued in 1932, but before the end of the year an outline proof copy of sheet 8 *Ballycastle*²¹ was sent to the GSGS map library. Like *Armagh*, this was of course another single small sheet series map. Whether the coloured sheets had similarly been preceded by outline proofs, or whether this was the pioneer of the new outline map cannot at this distance be confirmed. But it is certain that no further sheets in the series were issued for more than a year, during which time the decision had apparently been taken that coverage of the whole of Northern Ireland with gridded maps was now a necessity, and that outline maps produced quickly, if possible as large sheets, would satisfy the army's demand. One possible scenario is that continued supply of the occasional gridded district map in Northern Ireland was no longer adequate. If complete military coverage already existed of the province, it could only be the small sheet Provisional Military Edition of 1915-16. This was not overprinted with the War

²¹ This copy is now in at C19:1(73) in the Bodleian Library, Oxford.

Office Irish Grid, so by 1934 its replacement could well have been viewed as essential.

Whatever the truth, the outline sheets in GSGS 3917 were issued in 1934, and the complete layout for the series, coloured and outline sheets, appears in figure 5b. Sheet line changes were obviously necessary, but existing sheets were accommodated where possible in ways that did not involve duplication. Thus sheet 1 & 5 was joined by its old partner of the “second edition” coloured map, sheet 2 & 6. In the south and the west of the province a standard sheet size of 18 by 24 inches on the sheet lines of the original small sheet series was employed, with extensions to metric grid lines where necessary to complete coverage to the borders of the province. The 13 & 19 pair was extended north to the coast, so filling the gap between sheets 2 & 6, and 8. Rather than deal with fragmentary pieces, it was considered easier to replace the *Londonderry* sheet with two of the new standard size. *Armagh* similarly had to go, to be replaced by a sheet the standard 24 inches tall and extended east to meet the *County Down S.E.* sheet at the 319 km easting. This leaves *Cushendall*, which had to be shaped especially to fill the area below sheet 8, and above *Belfast*. The index diagram at figure 5b is not quite accurate, in that this sheet overlapped *Belfast*, extending south to the 391 km northing.

It was noted above that all the sheets derived from the small sheet series, other than *Londonderry*, have full revision and publication details in the bottom margin. The revision dates given range from 1910 to 1913 and the publication dates 1912 to 1914, some in agreement but most contrary to the publication date given on the engraved one-inch maps. On *Dundalk* and *Monaghan* the publication date is left incomplete at “191 ”, while on two others, *Buncrana* and *Enniskillen*, it is left blank and a further line “Ordnance Survey Office, Southampton, 1924” added. As regards *Buncrana*, which in any other circumstances but the peculiar ones prevailing here would itself have been named *Londonderry*, this date is probably transferred from the original *Londonderry* sheet. For *Enniskillen*, it may imply yet another area with military coverage in the

mid-1920’s. It would be good to see this confirmed.

GSGS 4136

In 1940, with war again a reality, the War Office requirement expanded from a map confined to the province of Northern Ireland to a metric gridded map of the whole of Ireland. Thus was GSGS 3917 superseded by GSGS 4136²², a large sheet map of Ireland with a standard sheet coverage of 50 by 30 km. The 76 sheets were numbered 301-376, presumably in order to avoid confusion with small sheet series numbering to 205. The map carried the War Office Irish Grid in black with red co-ordinate values. Sheet lines fell on grid lines so bore no relation to those of the contoured outline small sheet series from which it derived. A black first edition was replaced in 1941 with one that coloured the roads and woods. A diagram of grid reference letters was added in the margin. 51 sheets of this Second Edition were later overprinted with orange layers, prepared by the Survey Unit attached to the British Troops in Northern Ireland, in versions both without, then with the green woods plate.

In 1942 a Third Edition followed, with in addition coloured inland water and the contours overprinted in orange. Interpolated contours at 125 feet that divided the 250 foot contour interval used at altitudes over 1000 feet were added in pecked orange lines, guided where it existed by the engraved one-inch map with brown hachures. A simpler road classification for the whole island was completed on 1 January 1942, categorising roads according to their suitability for military convoy traffic. The legend was altered to reflect this, while militarily insignificant features were dropped. A diagram of adjacent sheet lines was added to the diagram of grid reference letters in the margin. Copies of the same 51 sheets were again overprinted with layers. This Third Edition was used as the base for two overprints. In 1942 United States armoured forces were stationed in Northern Ireland, and for their training purposes bog areas were overprinted. This was extended throughout

²² This map was the subject of Hall 1979. See also Oliver 1985, 13-15, which includes a sheet index at figure 5.

Ireland in 1943. Some border sheets were thus apparently overprinted twice. The overprint information was gathered from six-inch geological field sheets dated 1860-1900, and one-inch geological information provided by Queen's University, Belfast. The second overprint showed training areas in Northern Ireland. The map obviously remained very popular with the army, and some areas, including parts of the Republic of Ireland, were reprinted long after the end of the war. The known reprints came in three instalments. The first was in 1952-54 when sheets 301-316 and 318-321 and 327 were reprinted. In 1959 sheets covering coastal areas of the Republic of Ireland were reprinted: 322, 323, 328, 329 and 351 in the west, and 333, 339, 345, 350 and 355 in the east. Finally sheets 313 and 314 covering the Belfast area were reprinted as late as 1962. In Northern Ireland GSGS 4136 would have been superseded by M723, the military version of the One-inch Third Series, in 1965. And there I must abruptly finish this piece, in the hope that someone with knowledge of any mapping at the one-inch scale used by the Republic of Ireland military authorities will round off the subject for me in a future issue of *Sheetlines*.

Postscript

At least, that is where I planned to end, until, opportunely, I received from Trinity College Dublin photocopies of a companion to an Irish half-inch map that has recently come into my possession, overprinted in red with the 5000 yard grid used by the Irish military authorities from the 1940's. In the border of half-inch sheet 23 is the sheet diagram appearing as figure 6, members of the "Combined One Inch




Figure 6: Taken from the margin of Half-inch sheet 23, *South Wexford*, 1943, shown in addition to the index of the One-inch Small Sheet series covered.

Map". This is the first indication I have found of a one-inch large sheet series that an initial assessment judges was once again to cover Ireland in full sheets measuring 36 by 24 inches, in a layout 12 inches to the south of the previous attempt in 1851. 54 sheets only would have sufficed (see figure 7), assuming the excess areas on small sheets 21, 72, 189, 197 and 202 could be accommodated on extrusions or insets. Was this to be a civilian series, or was it merely military? Were any such maps issued? The quest continues!

Listing of One-inch district maps, GSGS 3917 and 3943

NB This list is provisional, and it would be appreciated if anyone with knowledge of further issues would contact the author or the editor.

One-inch district maps.

A. Engraved with black hachures, without contours: four local plates united by electrotpe.

Dublin (Large Sheet). 36 by 24 inches. Superseded 1904.

Published no date [1891] in Dublin, 2/6.

Figure 7.
A hypothetical layout by Richard Oliver
for the *Combined One-inch Map*.

B. Outline with coloured roads.

- Belfast.* Revised 1900-01. 27½ by 16 inches. Superseded 1912.
Published 1902, printed in Southampton, 1902, 1/-, ARRR.
Reprinted 1903: 400/1903, 1/-, ARRR.
- Cork.* Revised 1898-99. 28 by 20 inches. Superseded 1918.
Published 1902, printed in Southampton, 1902, 1/6, ARRR.
Published 1904, 1/6, ARRR.
Reprinted 1904: 6.04, 1/6, ARRR.
- Killarney.* Revised 1899. 23¼ by 26 inches. Superseded 1913.
Published 1902, printed in Southampton, 1902, 1/6, ARRR.
Published 1906, 1/6, ARRR.
Reprinted 1906: 3.06, 1/6, ARRR.
- Wicklow.* Revised 1898. 30 by 20 inches. Superseded 1948.
Published 1902, printed in Dublin, 1903, 1/6, ARRR.
Published in Southampton, 1906, 1/6, ARRR.
Printed in Dublin, 1938, 1/6, CR. Partially revised 1911. With contours.
?Irish military use with 5000 yard grid: no further information.
Virtually the same sheet lines were used for the 1948 district map.

C. Coloured with hachures, without contours. Similar in style to the England & Wales “second edition”, but with green woods.

- The Curragh District.* Revised 1898. 24 by 24 inches. ANb. Not replaced.
Published in Southampton, 1903, 2/-, ARRR, MV 1903.
- Dublin District.* Revised 1898. 24 by 24 inches. ANb. Superseded 1918.
Published in Southampton, 1904, 2/-, ARRR, MV 1904.
Reprinted 1906: 2.06, 2/-, ARRR.
Reprinted 1910: 8.10, 2/-, ARRR.
Reprinted 1912: 4.12, 2/-, CCR.
Also issued with *Manoeuvre Map, 1904* heading.
- Dublin District Manoeuvre Map, 1904.* Revised 1898. 24 by 26 inches. ANb.
Published in Southampton, 1904, ?price, ARRR, MV 1904.
A second manoeuvre map with sheet lines identical to the 1918 district map (subject to confirmation). With contours.
- Maryborough-Carlow.* Revised 1898, 25 by 17 inches. No grid. Not replaced.
Published in Southampton, 1905, 2/-, ARRR.

D. Coloured with hachures and contours. In the style of the England & Wales Third Edition.

- Belfast District.* Revised 1900-01. 28 by 18 inches. ANb. Superseded 1918.
Published in Southampton, 1912, 2/6, ARRR, MV 1912.

E. Coloured with layers, hachures, contours and hill-shading.

Killarney District. Revised 1908. 20 by 27¼ inches. ANb. Superseded 1956.

Published in Southampton, 1913, 2/6, CCR, MV 1913.

Published in Dublin, 1946, 2/-, CR, MV 1946. Railways revised 1946, road classification 1942.

Published 1946, 2/-, CR, MV 1949.

Published no date [c.1951], 2/-, CR, MV 1949. Partly revised 1951, railways revised 1949, road classification 1942.

Irish military use with 5000 yard grid: no further information.

F. Coloured with layers, hachures and contours.

Belfast: Third Edition (Large Sheet Series) Sheet 16 & 17. Revised 1910-12. 36 by 21 inches.

AN. Superseded by Popular Edition sheet 7, 1937.

Published in Southampton, 1918, 3/-, CCR, MV 1918.

Reprinted 1927: 500/27, 3/-, CCR, MV 1918.

Reprinted 1931: 1000/31, 3/-, CCR, MV 1918.

Possible British military use in 1927.

British military use in GSGS 3917: WO 3000/32: see below.

Sheet lines were reused by Popular Edition sheet 7.

Cork: Third Edition (Large Sheet Series) Sheet 80. Revised 1908-10. 24 by 34 inches.

ANb. Superseded 1957.

Published in Southampton, 1918, 2/6, CCR, MV 1918.

Reprinted in Dublin, 1946, 2/-, CR, MV 1946. Sheet number, "Third Edition" cleared.

Reprinted 1949: no further details.

British military use in 1925: 3.25.

British military use in GSGS 3943: WO 1400/34: see below.

?Irish military use with 5000 yard grid: no further information.

Dublin District: Third Edition. Revised 1898. 24 by 26 inches. AN. Superseded 1950.

Published in Southampton, 1918, 3/-, CCR, MV 1918.

Reprinted in Dublin, 1929, 4/-, CR, MV 1918.

Reprinted 1944, 4/-, CR, MV 1944. Railways revised 1944.

Published 1947, 2/-, CR, MV 1947. Railways revised 1947, road classification 1942.

Published 1948, 2/-, CR, MV 1948.

Irish military use with 5000 yard grid: no further information.

With sheet lines as the larger 1904 manoeuvre map (subject to confirmation).

G. Layered district maps, published in Dublin by the Ordnance Survey of Ireland, on sheet lines incompatible with the Irish Transverse Mercator Grid.

Cork District. Partly revised 1957. 28½ by 21½ inches. IG. Superseded 1967.

Published 1957: 1-57, CR, MV 1957.

Dublin District. Railways revised 1949, road classification 1942. 20½ by 26 inches. AN (X-M, 1-10).

Superseded 1966.

Published 1950, CR, MV 1950.

Published 1954: 77-54, CR, MV 1954. Partly revised 1952.

Published 1960: 6-60 6000, CR, MV 1954.

Killarney District. Partly revised 1954. 22¼ by 28 inches. IG. Superseded 1968.

Published 1956, CR, MV 1956. With magenta grid.
Published 1960: 7-60 6000, CR, MV 1962. With black grid.

Wicklow District. Railways revised 1947, road classification 1942. 30 by 20 inches. AN.
Superseded 1954.

Published 1948, 2/-, CR, MV 1948.

Published 1950: no further details.

With sheet lines virtually identical to the 1903 map.

Wicklow District. Partly revised 1952. 28 by 20 inches. AN. Superseded 1966.

Published 1954: 2-55, CR, MV 1954.

Reprinted 1960: 5-60 5000, CR, MV 1960.

H. Layered district maps, published in Dublin by the Ordnance Survey of Ireland, on sheet lines compatible with the Irish Transverse Mercator Grid.

Cork District. Partially revised 1964, railways revised 1967, road classification 1964. 44 by 33 km.
IG Still in print.

Published 1967: 5-67 10000, MV 1967.

Published 1967: 10000, MV 1967.

to Published 1978: 4/78 8000, MV 1978. Road classification 1977, railways revised 1978.

Published 1987, MV 1985. Road classification 1986, railways revised to 1986.

Cork Harbour. 24 by 16 km. IG. Superseded 1967.

Published 1965: 20,000 12/65, MV 1965.

Dublin District. Road classification 1962, railways revised 1966. 33 by 42 km. IG. Still in print.

Published 1966: 3-66 10000, MV 1966.

Published 1966: 3-66, MV 1966.

Published 1973: 6-73 15000, MV 1973. Road classification 1970, railways revised 1973.

Published 1987, MV 1985. Road classification 1978, railways revised 1978.

Killarney District. Road classification 1963-64, railways revised 1967. 33 by 44 km. IG. Still in print.

Published 1968: 3-68 10000, MV 1968.

Published 1970: 12-70 15000, MV 1970.

revised Published 1974: 10-74 15000, MV 1974. Road classification 1973, railways 1974.

Published 1982, MV 1980. Road classification 1979, railways revised 1980.

Wicklow District. Road classification 1962, partially revised July 1966, railways revised 1966. 44 by 33 km. IG. Still in print.

Published 1966: 9/66 10000, MV 1966.

revised Published 1970: 8-70 15000, MV 1970. Partially revised April 1970, railways 1970.

revised Published 1973: 6-73 20000, MV 1973. Partially revised June 1973, railways 1970.

Published 1986, MV 1980. Road classification 1976, railways revised 1976.

Wicklow Way. 1:50,000. 35 by 43 km. IG. ?Still in print. Published 1981, MV 1980.

J. Popular Edition layered district map, published in Belfast by the Ordnance Survey of Northern Ireland.

The Mourne Mountains. Revised 1912, partially revised 1935. 22 by 21 inches. AN. Superseded by Popular Edition sheet 11, 1951.
 Published 1935: 750/35, 2/6, ARRR, MV 1.35.
 Reprinted 1935: 2500/35, 2/6, ARRR, MV 1.35.
 Reprinted ?1947: 3224, 2/6, ARRR, MV 1.35.

The intention to number the map sheet 12 within the Popular Edition was never fulfilled.

For a cartobibliography of the complete Popular Edition, as well as the one-inch Third Series in Northern Ireland, see Oliver 1985.

GSGS 3917: Coloured sheets

Print code	Revised	SSS Revised	Publ	SSS Publ	MV	Accession by GSGS	Note
<i>Lough Swilly</i> [1/5]							
1000/32	1911	1911 1911	1913	1913 1913	1.31	17.10.1932	CSS
<i>Belfast</i> [36/37/28pt/29pt/38pt = Third Edition (Large Sheet Series) 16/17]							
W.O. 3000/32	1910-12		1918		1.27		LSS
With civilian reprint codes 500/27, 1000/31.							
<i>Armagh</i> [47]							
W.O. 1000/32	1911	1911	1913	1913	1.31	17.10.1932	SSS
<i>County Down S.E.</i> [49/61/48pt/60pt]							
W.O. 2000/32	1912	1912 1912	1914	1914 1914	1.31	4.5.1934	SSM
The western sheet line is on grid easting 319 km.							
<i>Londonderry</i> [12/11pt/17pt/18pt]							
W.O. 1000/32			1924		1.31	17.10.1932	SSE
Publication information reads: Printed at the Ordnance Survey Office, Southampton in 1924.							

GSGS 3917: Outline sheets

<i>Moville</i> 2/6							
500/34	1912	1910 1910	1914	1912 1912	1.32	19.7.1934	CSS
<i>Ballymoney</i> 13/19/7pt							
500/34	1912	1910 1911	1914	1913 1913	1.32	24.7.1934	SSM
The northern sheet line is on grid northing 446 km.							

Print code	Revised	SSS Revised	Publ	SSS Publ	MV	Accession by GSGS	Note
<i>Ballycastle 8</i>							
proof, no code	1912	1910	1914	1912	1.32	6.12.1932	SSS
With stamp: Zinc Printing Dept O.S.O., Southampton: CR 288 / 30 Nov 1932 / 1st Proof							
<i>Buncrana 11/17</i>							
500/34	1910	1911 1913	1924	1913 1916	1.32	19.7.1934	SSP
Further publication information: Ordnance Survey Office, Southampton, 1924.							
<i>Dungiven 12/18</i>							
500/34	1912	1910 1911	1914	1912 1913	1.32	19.7.1934	SSP
<i>Cushendall 14/20/21/28pt/29pt</i>							
500/34	1912	1910 1911 1911	1914	1912 1913 1913	1.32	24.7.1934	SSM
The eastern sheet line is on grid easting 351 km. The southern sheet line is on grid northing 391 km, overlapping <i>Belfast</i> .							
<i>Donegal 24/32/23pt/31pt</i>							
500/34	1912	1913 —	1914	1916 —	1.32	24.7.1934	SSM
The western sheet line is on grid easting 179 km.							
<i>Newtown Stewart 25/33</i>							
500/34	1912	1913 1912	1914	1915 —	1.32	11.6.1934	SSP
<i>Six Mile Cross 26/34</i>							
500/34	1912	1912 1912-13	1914	1914 1914	1.32	11.6.1934	SSP
<i>Cookstown 27/35</i>							
500/34	1912	1912 1912	1914	1914 1914	1.32	11.6.1934	SSP
<i>Swanlinbar 44/56/43pt</i>							
500/34	1912	— —	1914	— —	1.32	24.7.1934	SSM
The western sheet line of sheet 43 extension is on grid easting 188 km.							
<i>Enniskillen 45/57</i>							
500/34	1910	1913 1910	1924	— 1915	1.32	19.7.1934	SSP
Further publication information: Ordnance Survey Office, Southampton, 1924.							

Print code	Revised	SSS Revised	Publ	SSS Publ	MV	Accession by GSGS	Note
<i>Monaghan 46/58</i>							
500/34	1912	1911 1912	191–	1913 1915	1.32	19.7.1934	SSP
<i>Newry 47/59/48pt/60pt</i>							
500/34	1912	1911 1910	1914	1913 1914	1.32	24.7.1934	SSM
The eastern sheet line is on grid easting 319 km.							
<i>Dundalk 70/81</i>							
500/34	1912	1912 –	191–	1914 –	1.32	19.7.1934	SSP
<i>Clogher 71/72/82</i>							
500/34	1910	1912 –	1912	1914 –	1.32	11.6.1934	SSP

GSGS 3943: Outline sheets*Cork* [Third Edition (Large Sheet Series) 80]

1400/34	1908–10		1918		1.33		LSS
With earlier print code: W.O. 3.25. The price statement is removed. Published at the War Office, 1933.							

Bantry ?Bay [SSS 199/191pt/192pt/198pt/203pt/204pt]. Not found.

SSE

Abbreviations

CSS	combined small sheet
LSS	large sheet series
SSE	small sheet with extensions
SSM	small sheet extended to metric grid sheet lines
SSP	small sheet pair
SSS	small sheet series
ARRR	All rights of reproduction reserved
CCR	Crown Copyright reserved
CR	Copyright reserved
AN	Alpha-numeric grid
ANb	Alpha-numeric map border
IG	Irish Transverse Mercator Grid
MV	Magnetic Variation

Prices: only the last price of a sequence is quoted here.

Thanks are due to the staff in the map rooms of the Bodleian Library, Oxford, the Royal Geographical Society, London and Trinity College, Dublin, to David Archer, Tim Nicholson, John Taylor, and especially to Richard Oliver for some most useful suggestions and many essential corrections, and well as his generosity in permitting me to plunder his previous writings on Ordnance Survey maps of Ireland.

Bibliography

- Adams, Brian, 1991. An Irish Miscellany II: Combined sheets of the Irish One-inch coloured edition, *Sheetlines* 30, pp15,19.
- Andrews, John H., 1975. *A paper landscape: the Ordnance Survey in nineteenth century Ireland*, Oxford University Press.
- Andrews, John H., 1980. Chapters 7, 13, 20 in Seymour, W.A.(ed.), *A history of the Ordnance Survey*, Folkestone, Dawson.
- Andrews, John H., 1993. *History in the Ordnance map. An introduction for Irish readers*, Kerry, David Archer.
- Hall, Susan, 1979. *A history of series GSGS 4136 Ireland 1:63,360 1940–1943*, unpublished paper for the Ministry of Defence.
- Nicholson, Tim, 1988. The Ordnance Survey and smaller scale military maps of Britain 1854–1914, *Cartographic Journal* 25, 109–127.
- Oliver, Richard R., 1984. The Ordnance Survey of Ireland — some recent experiences, *Sheetlines* 11, pp2–9.
- Oliver, Richard R., 1985. British-produced 1:63,360 mapping in Ireland, 1922–1985, *Sheetlines* 13, pp11–18.
- Oliver, Richard R., 1990 (unpublished). *A preliminary list of Ordnance Survey of Northern Ireland maps published at 1:50,000, 1:63,360, 1:126,720 and 1:253,440*.
- Oliver, Richard R., 1991. The one-inch maps of Ireland to 1922: a summary, *Sheetlines* 30, pp10–12. Ordnance Survey publication reports.
- Ordnance Survey of Ireland publication reports.
- Ordnance Survey of Ireland Catalogues, 1927, 1933, 1946, 1949, 1956, 1968.
- Ordnance Survey of Northern Ireland Catalogue, 1935.

Rockall

I remember reading somewhere that membership of the Society is made up of dedicated professionals and enthusiastic amateurs, and count myself among the latter. Hence the strange basis for some of my collection, in that I am fascinated by the likes of the “furthest north”, “furthest west”, and so forth.

I have the furthest north sheet of the OS 1:25,000 (HP 51/61 Haroldswick, Edition A 1976) – nearer to Norway than to London etc.. I thought I had the most westerly part of the UK on NA 00/10 St Kilda (Edition A 1973), which I bought to go with a book I was reading on St Kilda. But no — on perusal of the catalogue sent to us with a recent edition of *Sheetlines*, I noticed that Rockall appears on Pathfinder Sheet 125 Vallay, (NF 67/77, Edition A 1977).

Rockall is a piece of rock which sticks out of the Atlantic some 370km west of Manish Point (NF7173). Rockall itself has no grid reference, and is identified by a grid of latitude and longitude at 1' intervals. It is much smaller even than I had imagined — in fact nothing can be

seen at the 1:25,000 scale, other than the symbol for a beacon. About 250 metres north of Rockall is a dot called “Hasselwood Rock”.

I read that Rockall was formally annexed to the UK in 1955, in order to protect fishery and oil interests; this was done, I seem to remember, by a party of sailors landing by helicopter. To reinforce the message, the rocks are therefore shown on maps published by the UK's National Mapping Agency, and Pathfinder Sheet 125 has the added information that “All islands on this sheet are detached parts of WESTERN ISLES ISLANDS AREA and, except for Rockall, detached parts of WESTERN ISLES CO CONST”. So there you are — if you live on Rockall, you will have your refuse removed, and your street lighting provided, by the WESTERN ISLES ISLANDS AREA (perhaps!), but it not clear in which constituency you would be entitled to vote!

Donald Binns

The evolution of the Ordnance Survey National Grid

by Richard Oliver

There are two National Grids in Great Britain, the visible National Grid, that is, the electricity distribution system of the country, and the invisible National Grid, which appears on Ordnance Survey maps. The electricity grid is probably the one better known to the general public, but the term 'National Grid' appears to have been invented by the Ordnance Survey, more particularly by its Director-General in 1930-35, Brigadier H.S.L. Winterbotham. He used the phrase at least as early as 17 March 1924¹.

Although the name 'National Grid' seems to be of Ordnance Survey invention, the concept is much older. The earliest example known to the writer which at least resembles a 'national grid' is a map in thirteen sections covering the whole of England and Wales, drawn by Laurence Nowell in the mid-16th century². It remains for investigation whether the 'grid' is indeed a reference grid, or is only to facilitate copying. No doubt it is coincidence rather than anticipation that the 'grid lines' are at roughly 10 kilometre intervals, as the metre was only invented in the 1790s. The numbers run from 1 to 61 northwards, and 0 to 61 eastwards. 'National referencing' on the Nowell maps is thus possible: for example, Exeter is at 271060 and Lincoln at 430342.

Before proceeding it is as well to define what a 'grid' is. Whilst any system of squares drawn over a map is an embryonic 'grid', it needs some numbering or other identifying system before it can function as a reference system. A grid has to start somewhere, and its 'origin' may or may not bear much resemblance to the form in which one gives a 'grid reference'. One method is to work outwards from a roughly central point, and indicate this by giving the co-ordinates, in

metres, yards or whatever other unit is chosen, at map sheet corners. An early example, if not the earliest, appears on the Cassini *Carte de France*, published between 1744 and 1793. On each sheet the co-ordinates of the sheet corners are given, in toises calculated outwards from an origin at the Paris Observatory. As a result of this the co-ordinates for much of the country are given to the west and south of the origin. A refinement is to adopt a 'false origin' to the south-west of the area to be covered by the grid, as is the invariable practice nowadays, and all references can be given in terms of east and north of the false origin. It is then possible to refer to any point inside the map in terms of either full co-ordinates - which may be unwieldy, and which may well involve careful measurement on the face of the map — or of some agreed shortened method. Thus the central trig. station on Spurn Head lighthouse can be referred to either as 540346 east, 411238 north, which is to an accuracy of 1 metre, or TA 403112, which is to an accuracy of 100 metres. The full co-ordinate method was used on the yard-gridded maps of the nineteenth-thirties, notably the One-inch Fifth Edition, but it is very much older: a number of Ordnance Survey computation books of the nineteenth century survive which give the sheet corner co-ordinates in feet for large-scale county mapping, relative to one of the 152 local origins, in order that the sheets could be related to latitude and longitude³. These co-ordinates could also be used, in theory anyway, for full co-ordinate referencing; but presumably they never were, as they were not given on the published maps.

Although the basis for gridding was therefore available to the Ordnance Survey at least from the time of the Irish six-inch survey onwards, in practice there would have been difficulties in devising a single national grid, because of the multitude of local origins. A grid system which was perpendicular and parallel to the sheet lines for one series, say the one-inch, would be inapplicable for any of the others, and

¹ See *Geographical Journal* (*GJ*) 63 (1924), 491-2. I am indebted to Dr Yolande Hodson for drawing my attention to this.

² One is illustrated in Paul Harvey's *Maps in Tudor England*, (London, Public Record Office and British Library, 1993,) p.22, by which means it came to my attention.

³ In Public Record Office (PRO) class OS 2.

would lie at an angle to the sheet lines. In practice, any call for a reference system was answered, for much of the nineteenth century, by the provision of latitude and longitude markings in map margins.

Early squaring systems

The Ordnance Survey's first move towards a 'grid' was the introduction of alpha-numeric referencing on some small-scale military-orientated maps. Squares overprinted in red were tried in the early 1890s on one version of the *Berkshire Downs* manoeuvre map, but were apparently not a success: the Cannock Chase Manoeuvre Map of 1894 carried marginal letters and numbers only, as did the coloured one-inch map which began to appear in 1896⁴. The coloured one-inch map owed its inception wholly to military rather than to civil wants. There was nothing original in alpha-numeric referencing, as the first one-inch county map, Joel Gascoyne's of Cornwall, published in 1699, had been furnished with squares and an alphabetical reference system to a gazetteer at the foot of the map, and similar systems are sometimes found on other maps of the period 1500-1900. Such a reference system enabled the user 'to track down a town, a river or a mountain into a particular square, and thereby to render unnecessary a vain search over the rest of the map'⁵, but could not be applied to unnamed features such as road junctions.

Such a reference system was perhaps not regarded as essential even for a military map, as the half-inch map, also produced at military behest, and of which publication started in 1903, carried only latitude and longitude. This changed in 1910, when the half-inch started to carry not only marginal letters and numbers, but also two-inch squares on the map face. It is possible that the greater density of detail on the half-inch made it more desirable to provide these squares to facilitate giving and recovering references: they were tried on the Oxford and Cambridge one-

inch district sheets of 1910, which seem to have been prepared with at least half an eye to use by the Officers Training Corps, but, again, do not seem to have been regarded as essential for one-inch maps, as the group of redesigned one-inch maps produced in 1913-16 which eventually developed as the Popular Edition still only used marginal letters and numbers.

One of the disadvantages of the alpha-numeric system was that any reference had to specify scale and sheet, thus for example, 'One-inch England, Sheet 87, 5E.' This may not have mattered very much when the main use of the system was in the course of military manoeuvres, where only one or two sheets were used, but in about 1911 there came the first small move away from a scale-and-sheet-bound system. This was on the two-and-a-half-inch map of East Anglia, which seems to have been prepared initially in 1911 on a contingency basis, and as a 'operational' rather than a 'training' map. It was laid out as quarter-sheets of the one-inch Third Edition Large Sheet Series, and retained the same alpha-numeric system as the parent one-inch sheets, so that, for example 'Sheet 85, 9C' would be equally applicable at both scales.

Although the East Anglia map made a small gesture towards a more universal system of reference, the system still did not allow for 'pinpoint' referencing of the sort familiar today. As Peter Chasseaud has explained, since 1904 the Japanese and French had made moves in that direction, but initially there was no British enthusiasm for the idea⁶. The first British map to afford something more precise than two-mile squares seems to have been the half-inch manoeuvre map of East Anglia issued in 1912, on which it was possible to identify points more precisely, by subdividing the two-inch squares by the letters *a*, *b*, *c*, or *d*. The instructions for improved referencing were contained on a slip pasted inside the cover⁷. (Fig. 1) This system was

⁴ Strictly, a special sheet covering Aldershot was published, or at any rate issued for military use, in 1896 and publication of regular series mapping in the same style commenced in September 1897: I am indebted to Tim Nicholson for information on these.

⁵ H.S.L. Winterbotham, *Geographical Journal*, 63 (1924), 492.

⁶ Peter Chasseaud, 'The development of artillery squares and artillery training maps of the U.K. 1914-1918', part I, *Sheetlines* 10 (1984), 2-8, and part II, *Sheetlines* 11 (1984), 12-14.

⁷ The '1912' manuvre maps had been prepared in 1911, but the manoeuvres intended for 1911 were cancelled, ostensibly because of international tensions, but in fact in

refined the same year, 1912, on the first printing of a one-inch manoeuvre map of Kilworth, in Ireland, on which a reference to an accuracy of 587 yards — one-third of a mile — could be given in the form ‘A.1.five’. (Fig. 2)

Though the Kilworth map may have provided useful experience for a few in the use of squaring reference systems, the British Expeditionary Force went to war in August 1914 with a mixture of maps at scales of 1:80,000 and smaller, which had been produced some time

order that the troops could be used to counter industrial unrest, if necessary. (Information from Peter Clark.) Copies of the ‘1912’ manoeuvre map are found both with and without the instructions for subdividing the squares.

earlier on a contingency basis, with a view to a war of rapid movement, and which carried only latitude and longitude. Experience in the South African War of 1899-1902 had produced the British half-inch map, and so, with this experience in mind, the War Office had provided comparable mapping of north-west Europe. By mid-autumn 1914 ‘the British Army... came to an enforced stop’, ‘the halts were sufficiently prolonged to make it necessary to issue large-scale maps’⁸, and war mapping took a different turn.

⁸ Winterbotham, *GJ* 63, 492.

Western Front artillery squaring

The basic sheet unit on the Western Front

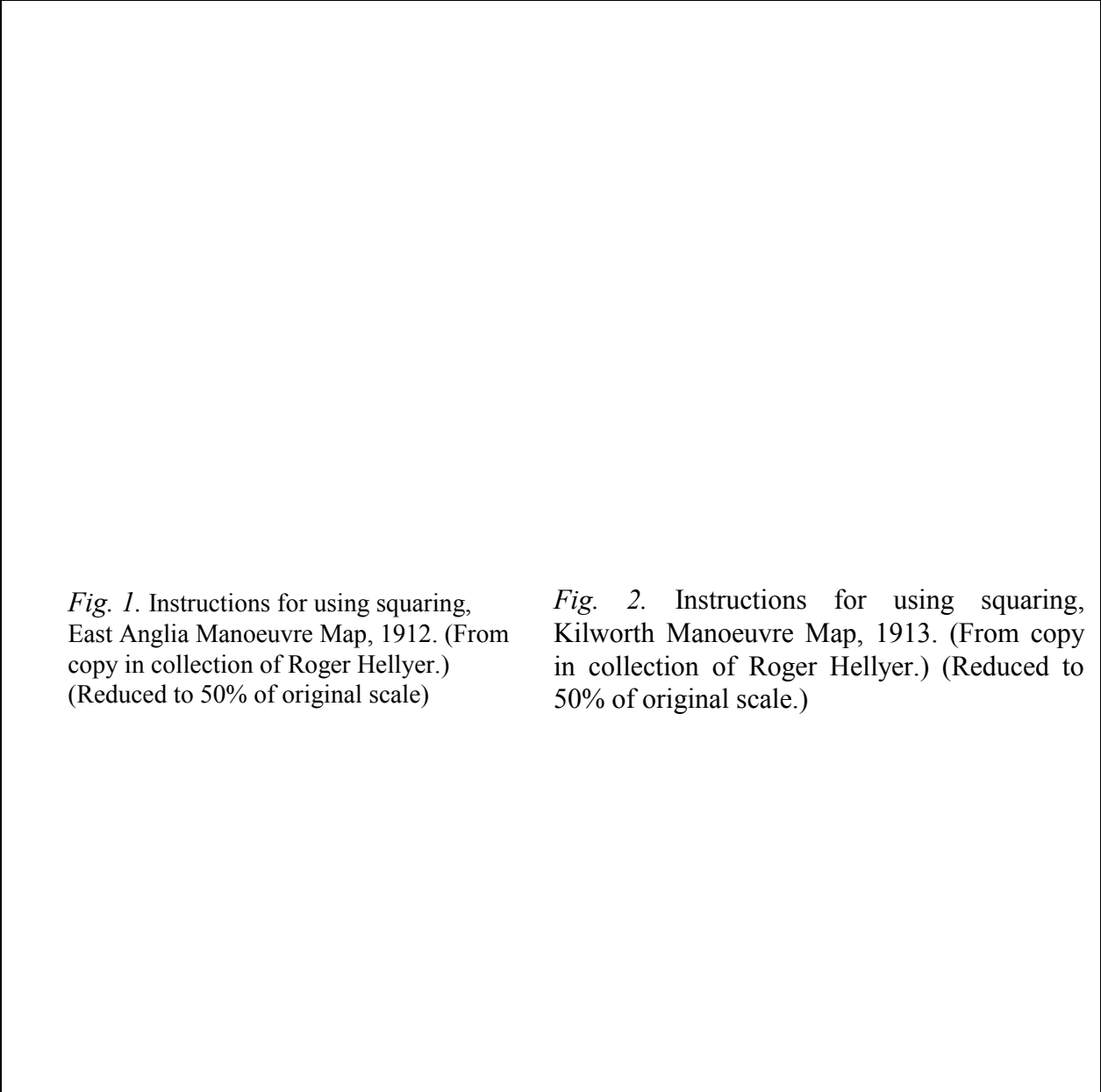


Fig. 1. Instructions for using squaring, East Anglia Manoeuvre Map, 1912. (From copy in collection of Roger Hellyer.) (Reduced to 50% of original scale)

Fig. 2. Instructions for using squaring, Kilworth Manoeuvre Map, 1913. (From copy in collection of Roger Hellyer.) (Reduced to 50% of original scale.)

was the Belgian 1:40,000 series, which used metric sheet lines, and which was extended into France to cover operations there: according to Winterbotham, ‘as we always felt that we were on the point of driving the Germans before us into Belgium, we desired to use Belgian *Sheetlines*.’⁹ The 1:40,000 was quartered to provide a 1:20,000 series, which in turn was quartered for a 1:10,000 series. Although in due course all these series were based on British redrawing, initial British issues were a straight reprint of the Belgian map, which included corner co-ordinates

⁹ Winterbotham, *GJ* 63, 492.

Fig. 3. Sheet corner co-ordinates, GSGS 2743, Belgium 1:40,000, Sheet 38, First Edition, O.S.O. 1915. (Reduced to 70% of original scale.)

Fig. 4. Instructions for using squaring, GSGS 2743, Belgium 1:40,000, Sheet 38, First Edition, O.S.O. 1915. (Much Reduced.)

in metres, as on the Cassini map of France. (Fig. 3) A British innovation, at first only on copies for artillery use, was a squaring system. Large squares of 5000 or 6000 yards side (the original system was soon changed) were described by a letter, 1000-yards squares by a number, and the four quarters of these smaller squares by the letters *a*, *b*, *c*, or *d*: the further division of these small squares into tenth parts of each side was suggested by Brigadier-General Fanshawe, of the Royal Artillery. Thus a resulting reference might be Sheet 28, G.17.a.43, but it was possible also to subdivide into hundreds.(Fig. 4) The explanation for the working of the system was rather wordy,

Fig. 5. Squaring overprinted on Aldershot North, 1914. (Reduced to 70% of original scale.)

but in practice the system was easy to operate¹⁰. For the first time a British map, in which the Ordnance Survey had a hand, had a reference system which allowed for pinpoint references. It was also a reference system which was, to a limited extent, independent, as the 1:20,000 and 1:10,000 carried the same squares as the 1:40,000, so it was merely necessary to append the sheet number. Superficially this was the same as the common reference system of the one-inch and two-and-a-half-inch in East Anglia, but, of course, in East Anglia nothing like a pinpoint reference had hitherto been possible. Later sheets of the East Anglia 1:25,344 map used a modified system, in which the basic square could be divided into tens, giving a reference in the form 'Sheet 99, 7F83', which was accurate to 352 yards¹¹.

The squaring system used on the Western Front maps did not fit the sheet lines comfortably, this being particularly noticeable on the northern and southern edges. The Belgian sheet lines used were based on the metre, whereas the British squaring was in yards; as the British gunners calculated their ranges in yards, it was thought that the reference system, which was

primarily to facilitate artillery work, needed to be in yards as well. Apparently all the officers consulted were quite insistent on the point¹². It is not fundamentally necessary for a grid system to use any particular unit, though some units may prove to be more convenient than others. Although intended purely for artillery use, the reference system was soon found to be so useful by other arms that in mid 1915 the printing of separate and non-gridded editions, with the grid printed in a distinct colour, was replaced by a single gridded edition, with the grid on the black detail plate¹³. Not least because of the sheet-number-related system, it probably never appeared on a map at smaller than 1:40,000 scale on the Western Front.

The Western Front artillery squaring system also appeared on some 1:20,000 and 1:10,000 scale training maps of parts of Britain, which were straightforward photographic adaptations of the six-inch¹⁴. In its full form (Fig. 5) it also appeared on four overprinted one-inch sheets: *Aldershot North* and *Aldershot South*, which seem to have been overprinted in late 1914¹⁵, and

¹⁰ The writer checked this on sundry GSGS 2748 maps, and is fully convinced of the fundamental efficiency of the system.

¹¹ As so few examples of these maps have been seen, it is not possible to say yet whether such squaring appeared on all of them.

¹² *Report on survey on the Western Front*, (London, HMSO, 1920), p.156. [This was 'For official use only', but there are copies in the British Library, Map Library, and library of the Royal Geographical Society.]

¹³ Chasseaud, *Sheetlines* 10, 4.

¹⁴ These were listed by Peter Chasseaud in *Sheetlines* 11.

¹⁵ Peter Chasseaud, 'Postscript', in *Sheetlines* 11-14, (London, Charles Close Society, 1991), 16-17.

Sheets 107 and 115 of the Third Edition Large Sheet Series, which were possibly overprinted in 1918 for the Royal Veterinary Corps¹⁶. A copy of the *Maidenhead, Windsor and Henley District* sheet of 1913 is known with Western Front type squaring added neatly in manuscript¹⁷. All these squared one-inch maps appear to be exceptional.

Although the system was designed for military use, there were at least two instances of its use on civil mapping. One was the 1:25,000 *Malvern District* map of 1919, published by the Malvern Geographical Society, (Fig. 6) and the other was a half-inch map of roads maintained by the Lindsey County Council, which is perhaps a

little later. The Lindsey map was still current at least as late as 1969, though it may be doubted whether the squaring system was still being used, or even understood¹⁸.

The British System grid

Though in its early days the Western Front artillery squaring must have seemed a great advance, it was not perfect. The map references were independent of positions established by precise survey, and it was continually necessary to convert from the one to the other, often by plotting the position on the map and measuring it visually, rather than by straight calculation from

¹⁶ Guy Messenger, *The Ordnance Survey one-inch map of England and Wales, Third Edition (Large Sheet Series)*, (London, Charles Close Society, 1988), 159, 170.

¹⁷ Private collection.

¹⁸ Copy in the possession of Ben Duncan.

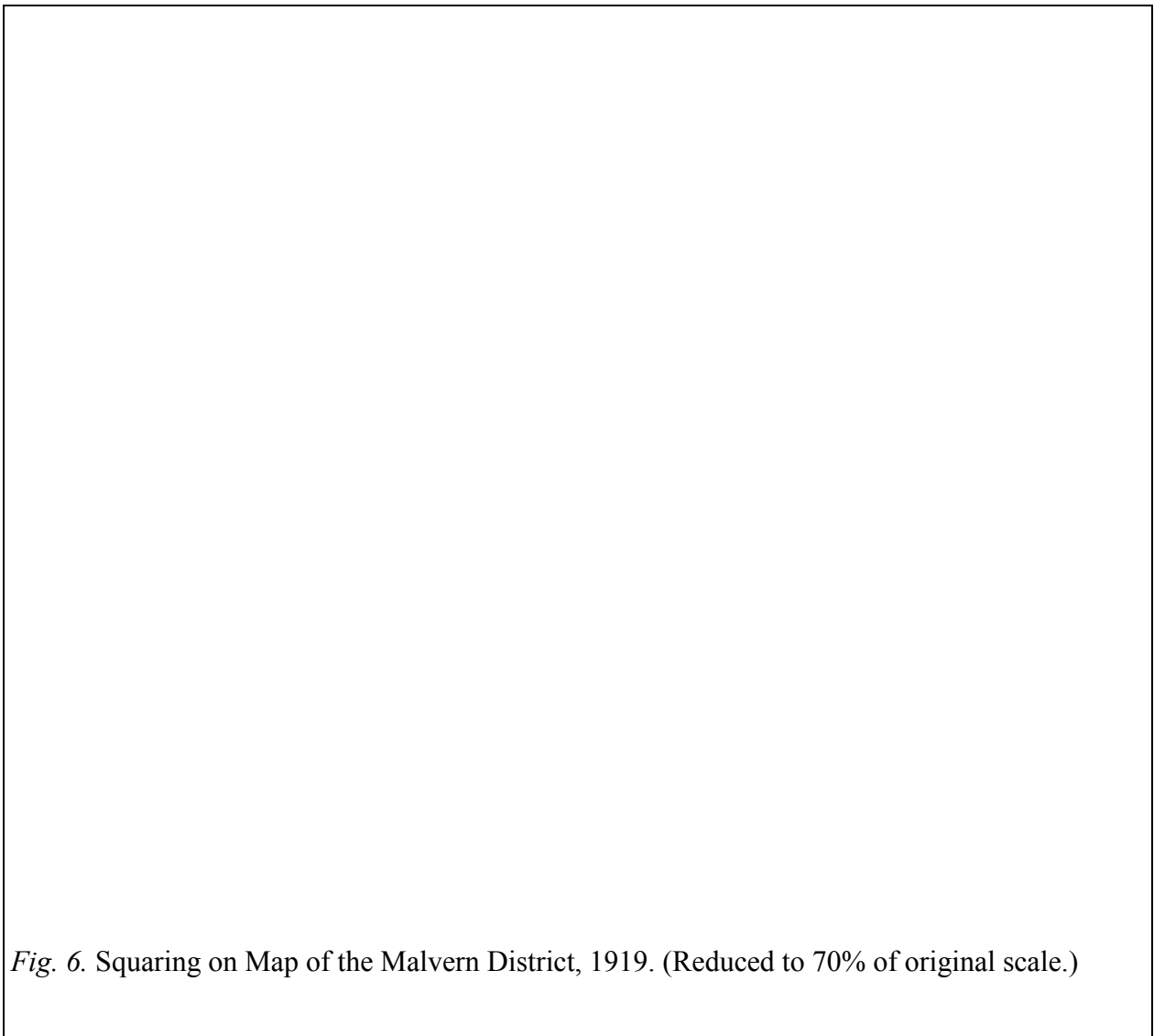


Fig. 6. Squaring on Map of the Malvern District, 1919. (Reduced to 70% of original scale.)

one to the other¹⁹: analogue rather than digital mapping. The French used a reference system based on the metre, which had an origin well to the south-west of the Western Front and was independent of sheet numbering systems. Its main drawback was that references repeated once every 10 kilometres: it says a great deal about the static nature of the Western Front that this was not considered much of a drawback. In 1918, apparently at the insistence of Marshal Foch, the French C-in-C²⁰, the British agreed to adopt what was in all essentials the French system, but with the addition of letters so that references only repeated once every 50 kilometres. A few of the later British training maps were indeed prepared with the *Quadrillage Kilometrique Systeme Lambert*, as the French called their system, and in the official report on survey on the Western Front it is called ‘the Allied System’, in contradistinction to the French System and the British System, the latter being the old artillery-squaring system²¹. The Allied System appeared on maps used by British forces in Italy, and was to be introduced on Western Front mapping on 1 January 1919, but the armistice seven weeks earlier rendered the change unnecessary. Even in mid-1918 it was regarded in high circles as a distinct possibility that the war would last well into 1919 or even into 1920²², and so in 1918

preparations were made for introducing the new grid into Britain as well. It was a national grid, based on the metre, and used the meridian of Dunnose, in the Isle of Wight, as its origin. Dunnose was the origin of the largest continuous block of county series large-scale mapping, and this may have influenced the choice, as facilitating the computation of sheet corner positions, but confirmation of this is lacking²³. Work was also started on a national 1:20,000 series, which was laid out on the new grid, with sheet numbering running south to north, which suggests that sheets for central southern England were needed before the precise positions of those further north had been calculated.

On its arrival in Britain, the new metric grid was (rather confusingly) dubbed the British System, which term will be used here in conformity to later practice. The British System was devised with a view to use over limited areas, as on the Western Front. A reference correct to 100 metres, which would repeat once every 50 kilometres, was given using a letter and four figures. In addition, full co-ordinates in metres were given in the map margins (Fig. 7). The British System functioned at its best on the

²³ See Brian Adams, ‘198 years and 153 meridians, 152 defunct’, *Sheetlines* 25 (August 1989), 2-7, esp. p.7.

¹⁹ *Report ... Western Front*, 159-60.

²⁰ Chasseaud, *Sheetlines* 10, 5.

²¹ *Report ... Western Front*, 161.

²² cf. Max Beloff, *Britain's Liberal Empire*, (London, Methuen, 1969), p.271: ‘In mid-August [1918] Smuts still could not see the war ending before 1920.’, (citing PRO

Fig. 7. Full co-ordinates GSGS 2748, England 1:20,000, Sheet XIII.O (Ordnance Survey, 1920, (Reduced to 70% of original scale.)

new 1:20,000 artillery training map, series GSGS 2748. The other standard British training map at this time was the half-inch, and in 1921 a sheet at this scale covering Salisbury Plain was printed. It was not a success: in the words of a later DGOS, Brigadier M.N. MacLeod,

‘...the attempt was made to apply the kilometre grid on the ½-inch map... The result was that the grid square was so small that the map was practically buried in squares, and something had to be done about it. Curiously enough the Army instead of scrapping this new fangled foreign grid, decided to scrap its training map... and to adopt the 1-inch.’²⁴

(As the one-inch had been the standard training map before the half-inch’s advent in 1903, ‘re-adopt’ would have been more correct!) In 1923 a military version of the one-inch Popular Edition started to appear, overprinted in purple with the British System grid: 10-km square letters were given on the face of the map, and full co-ordinate values every 10 km in the margins. Though changing to the one-inch made the grid more legible, it did not dispose of the problem that grid references repeated every 50 kilometres, making the British System useless as a ‘theatre grid’.

By 1923 the usual practice on civil small-scale maps was to provide two-inch squares. These were occasionally used for reference purposes: by about 1930 the English Place-Name Society was using them to locate place-names in its county volumes²⁵, and they would be useful in school teaching, but that was probably about the limit.

The British System grid had one other drawback: it was laid out on the Cassini projection, on the meridian of Dunnose. The Cassini was the standard OS projection in the 19th century: it had the advantage that it was

straightforward to calculate and construct, but it distorted angles, and the distortion increased the further one moved away from the origin adopted for the map. For this reason, the county series large-scale surveys were plotted on a large number of separate origins, and whilst some progress was made in rationalising these, there were limits to how far this could have been carried, even had the programme not been effectively knocked on the head by post-1918 economies. Such angular distortion was tolerable in the 19th century, when warfare was conducted by wholly visible means, but not in the 20th, when artillery firing was often at ‘invisible’ targets; a bearing calculated from a Cassini map would be at variance from the actual bearing on the ground. The use of Cassini and the Dunnose meridian in 1918 for the new British System grid was probably a wartime expedient: Dunnose was really too far east to be suitable for an origin for a grid to cover the whole of Britain. Adopting a new projection which did not distort angles and which used a more central origin would have been a better long-term policy, but the needs of the moment dictated using what was available rather than waiting for the necessary decision as to what new projection to use, and then carrying out the necessary geodetic calculations.

The emergence of a civil grid

If the practical origins of British military gridding lie in the experiments of 1912-13, then the birth of civil gridding can be traced to 17 March 1924, when a meeting was held at the Royal Geographical Society to discuss the subject²⁶. What prompted the meeting remains to be discovered, but by 1924 gridding was appearing, or was policy, on topographic mapping of France, Germany, Switzerland and the United States²⁷. Papers were given by Colonel H.S.L. Winterbotham, then head of the Geographical Section, General Staff, Brigadier E.M. Jack, then Director-General of the Ord-

²⁴ MacLeod, *GJ* 82, 49.

²⁵ See e.g. J.E.B. Gover, A. Mawer and F.M. Stenton, *The place-names of Devon* (Parts I & II, Cambridge University Press, 1931-2).

²⁶ ‘The choice of a grid for British maps’, *GJ* 63 (1924), 491-508.

²⁷ *GJ* 63, 491-2; interestingly, there is no mention of Switzerland there, though the pattern of surviving examples suggests that Swiss gridded maps would have been the ones most likely to come to the attention of British map-users at this time.

nance Survey, and A.R. Hinks, Secretary to the R.G.S. The nub of the discussion is in Winterbotham's words: 'is it not possible to [have] a grid, suitable at once for civil and military purposes?' Jack observed that

'It is ... uneconomical and for many reasons inconvenient to have separate civil and military editions. It is therefore of importance to devise if possible a form of grid which will satisfy military requirements, and at the same time will not affect the public demand for the map.'

One possibility was a grid based on 10,000-foot squares, but Jack confessed himself very uncertain and made a strong plea for half a century or more later would be termed 'feedback'. Winterbotham tentatively suggested a foot-based grid; Jack confessed to a personal predilection for yards, it being both the unit for expressing distances generally, and the one in which the Army expressed ranges²⁸; and Hinks favoured a grid based on the mile, which Winterbotham and Jack didn't. Nor did Sir Charles Close, who favoured a yard grid, and suggested in addition the Transverse Mercator projection, as having the necessary angle-preserving, or conformal, property. Mr Laird Clowes of the Survey of Egypt also suggested the yard, although the Egyptian Survey used metres, which seem to have been the one measure definitely not favoured by anyone that day²⁹. A yard grid seemed to be unobjectionable and to be the direction to follow. Incidentally, it may have been at this meeting that Winterbotham first made his suggestion that grid references be added to sign posts and the like³⁰, though he was verbally outdone by Hinks, who suggested that 'every signpost, bridge, railway station, post-office, church, police-station, and letter-box throughout the country, every lamp-post and street corner in town [should have] an

abbreviated map reference painted upon it'³¹. The initial credit for this suggestion lay neither with Winterbotham nor Hinks, according to the latter, but with the then Savilian Professor of Astronomy at Oxford in the later 1900s³². Perhaps the Professor was thinking of latitude and longitude, as that was the only visible reference system on British maps at that time.

The Modified British System grid

There was a delay of some years before the R.G.S. meeting had any practical results. The next two developments took place simultaneously between about 1927 and 1933. They were the adoption of the metric Modified British System grid for military purposes, and the adoption by the Ordnance Survey of a yard-based full co-ordinate reference system, as a result of an agreement with the military. The Modified British System was officially adopted in 1927, though Winterbotham had briefly referred to it, not by name, at the R.G.S. meeting three years earlier³³.

The Modified British System was substantially the system used today; six figures enabled one to give a reference correct to 100 metres which repeated once every 100 kilometres, and the addition of a letter enabled a reference which repeated every 500 kilometres. Although it was possible to supply a reference which would only repeat every 5000 kilometres, by adding two letters to a British System reference, thus for example CSV 4981, or one letter to a Modified British System reference, for example SV 549381, and the extra letters duly appeared on quarter-inch mapping, the official War Office manuals on map-reading of the period are silent on this point. It is, however, to be borne in mind in view of developments with the Ordnance Survey grid around 1940, described below. Between 1931 and 1933 all military mapping of the British Isles was republished with the Modified British System grid, with the refinement of adding grid figures on the face of the map, at

²⁸ *GJ* 63, 499.

²⁹ *GJ* 63, 505-7.

³⁰ *Ibid.*, 496.

³¹ *Ibid.*, 502-3

³² Hinks, *GJ* 82, 1933, 51.

³³ *GJ* 63, 495.

first at 5km but soon at 1 km intervals³⁴. (Figs 8–10) The opportunity was taken to convert the

1:20,000, GSGS 2748, to the 1:25,000, GSGS 3906. On the 1:25,000, but not the one-inch, full co-ordinates were provided at sheet corners, no doubt because, whereas the one-inch was a general map, the 1:25,000 was an artillery map. The opportunity was taken to use a grid-related sheet-numbering system for GSGS 3906. This

³⁴ It would appear that the decision to change was made some time in 1931 or 1932, before drawing grid plates for GSGS 3907 was complete, but the change was apparently not regarded as a very important one, as GSGS 3907 grid plates with 5 km figures were still being used in 1940.

Fig. 8. Instructions for using Modified British System: GSGS 3907, Sheet 124, (Ordnance Survey/War Office 1931, printed 1938). (Reduced to 50% of original scale.)

Fig. 9. Modified British System: earlier style on 1–inch, with grid figures at 5 km intervals. From GSGS 3907, Sheet 124, (Ordnance Survey/War Office 1931, printed 1938). (Reduced to 50% of original scale.)

Fig. 10. Modified British System: later style on 1–inch, with grid figures at 1 km intervals. From GSGS 3907, Sheet 22, Second War Revision 1940, OS/War Office 1940, printed 1943. (Reduced to 70% of original scale.)

was based on notional parent sheets 30 by 20 kilometres divided into quarter sheets. It was not completely 'rational', in that the existing 1:20,000, GSGS 2748, did not fit a neat division of the Dunnose grid by 30 and 20, so that, for example, instead of the row east of Southampton going 48, 51, 54, 57, 60, 63, it went 47, 50 (the Dunnose meridian), 53, 56, 59, 62. The south-north numbering was 'logical', going 10, 12, 14, 16, etc, except when the series was extended to Ireland in 1940, when it went 11, 13, 15, etc., thereby avoiding duplicating sheet numbers between the two countries.

The reuse of the Cassini Dunnose metric-oriented mapping as a basis for the Modified British System was almost certainly another makeshift, so as to reuse existing materials as far as possible, and intended to last only until Britain had been furnished with new mapping employing the Transverse Mercator projection and based on the yard. From about 1920 until 1933 it was official policy to assume that there would be no major war for at least ten years, and consequently military expenditure was kept down. The adapting of the Dunnose grid to the new Modified British System is symptomatic of this. It would have been perfectly possible to have substituted the yard grid, with one thousand yard squares, on the one-inch and smaller-scale military maps, the sheet lines of which were laid out with reference to the meridian of Delamere, so that neither the Dunnose nor the Transverse Mercator grids would be parallel or perpendicular to the sheet lines, but it would have meant recomputing and redrawing all the grid plates.

The advent of the Transverse Mercator projection

The development of artillery firing at remote targets had made apparent the weakness of a map projection which distorted angles, such as Cassini. A change to a projection which had the property of preserving angles, and distorting something of little or no relevance to artillery work, such as the relative size of areas, was implied. The Transverse Mercator, sometimes known as the Gauss Conformal, was just such a projection. It was used by the Germans during the First War, although this apparent advantage was

offset by defects elsewhere in their map and survey work³⁵.

The Transverse Mercator was invented in 1772 by Johann Heinrich Lambert, but even in 1911 the *Encyclopaedia Britannica* article on map projections, in which Colonel Charles Close had a hand, described it as 'little used'³⁶. It was referred to in the official report on British survey and mapping on the Western Front, printed in November 1920³⁷, but it would seem that its properties and possibilities were not as yet completely appreciated in military circles in this country. This may possibly have owed something to that conservatism in high places which Peter Collier has recently noted as affecting the development of air survey for a time after 1918³⁸. This attitude changed during the 1920s, and, probably in 1928, the Ordnance Survey adopted the projection. A new projection implied a new grid and, whilst it would have been possible to reuse the Dunnose origin, the opportunity was taken to adopt a new origin, at 49 degrees north and 2 degrees west, which is reasonably central for Britain as a whole, and a further refinement was to reduce the scale slightly (by one part in 2500) at the central meridian, and to have true scale 200,000 yards — about 180 kilometres — to the west and east of the meridian of 2 degrees west. This got round the problem of any projection designed to cover Great Britain, which is that Scotland is substantially to the west of England, so that a north-south meridian central to the one, such as Dunnose, is far less central to the other. The projection was also known in the OS until at least as late as 1935-6 by one of its alternative names, the Gauss Conformal³⁹.

It is as yet unclear whether the decision to adopt the Transverse Mercator was wholly due to Close's suggestion, or whether others had the

³⁵ *Report ... Western Front* 151-2.

³⁶ Quoted by John P. Snyder, *Flattening the earth: two thousand years of map projections*, (Chicago and London, Chicago University Press, 1993), 82.

³⁷ *Report ... Western Front*, 149.

³⁸ P. Collier, 'Innovative military mapping using aerial photography in the First World War: Sinai, Palestine and Mesopotamia 1914-1919', *Cartographic Journal* 31 (1994), 100-104.

³⁹ See, e.g., the index to One-inch Fifth Edition, with print code 10,000/36: I owe this reference to Richard Dean.

idea too. It was officially adopted by the Ordnance Survey in 1928.

The 'yard grid'

The adoption of the new grid gave an opportunity to reconsider the unit on which the grid should be based, and the choice fell on the yard. This appears to have been wholly due to a cosy arrangement between Winterbotham and Jack. The only other person consulted was the

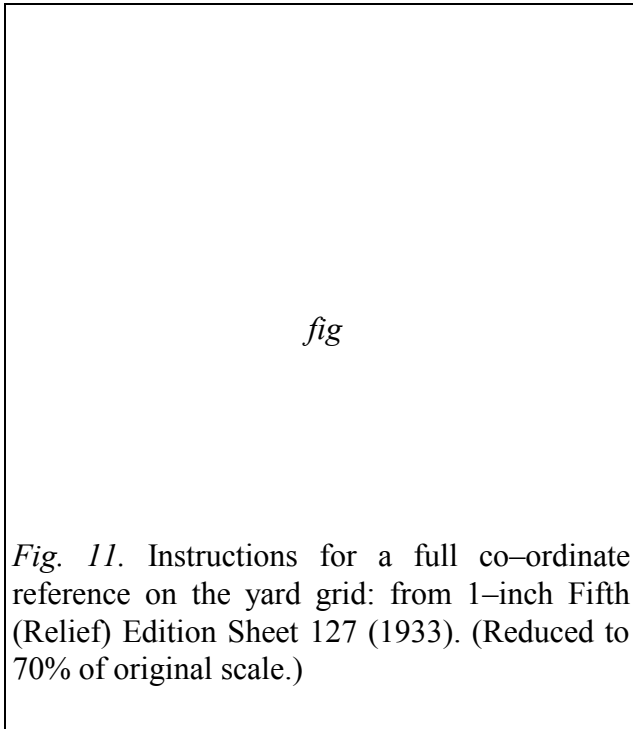


Fig. 11. Instructions for a full co-ordinate reference on the yard grid: from 1-inch Fifth (Relief) Edition Sheet 127 (1933). (Reduced to 70% of original scale.)

Commandant of the School of Artillery, who was later described by MacLeod as 'an individual notorious for the emptiness of his head'. In the same private letter MacLeod described Winterbotham's choice of the yard as 'insufficiently considered'⁴⁰. Winterbotham was fervently anti-metric, Jack was still disposed more towards the yard than the metre⁴¹, and the feeling at the RGS meeting in 1924 had favoured the yard.

This explains how the yard came to be adopted, but it does not explain why a full co-ordinate reference system was adopted, rather than the Modified British System. After all, Jack had said at the RGS meeting that it was desirable to avoid separate civil and military editions, yet

here were completely separate methods of referencing, even if one set aside the unit used. Whilst one can accept that it could be aesthetically undesirable to cover such a map as the one-inch Fifth Relief Edition with 1000-yard squares, and that military needs could be met by overprinting any grid, it does not explain why civilians were asked to give a reference which involved thirteen or fourteen figures, whereas soldiers were to be allowed to get away with one letter and six figures. The new yard grid made its debut on the Fifth Edition in 1931, with lines at 5000 yard intervals. The instructions for using the grid (Fig. 11) said that the necessary distance from the line should be directly estimated or measured. Measurement is not particularly easy, as the yard does not readily accommodate itself to scales referred to inches and miles: one has to measure the distance, and then lay the ruler against a scale on the map. Alternatively, one can use a romer, or the scales on the map itself, but all these methods are fiddly. It is much easier to estimate tenths of closely-printed squares. But, the yard grid was adopted, officially anyway, for civil purposes, and an experiment with it on soldiers in 1933 indicated that even drummer-boys were capable of using it⁴². However, another discussion on grids at the R.G.S., on 10th April 1933⁴³, which started with a paper from Winterbotham, suggests some official uncertainty as to what method of 'grid referencing' to use, as evidenced by the illustrations accompanying the published report of the meeting, which include full co-ordinate references for an extract from a one-inch gazetteer, but MBS-style six figure references for the gazetteer accompanying the three-inch map of London. The participants in the meeting seem to have been more interested in the principles of a grid than the practicalities of how to use it. Winterbotham listed a considerable variety of gridded maps, and went so far as to say that the national grid (as it was starting to be called) 'appears on many of our small scale maps'.⁴⁴ This must be amongst the most gross

⁴² PRO OS 1/111.

⁴³ H.S.L. Winterbotham, 'The use of the new grid on Ordnance Survey maps', *GJ* 82 (1933), 42-54.

⁴⁴ *GJ* 82, 42.

⁴⁰ MacLeod to Craster, 10 December 1934, item 46A in PRO OS 1/84B.

⁴¹ *GJ* 87 (1936), 313.

exaggerations uttered in the history of the Ordnance Survey. Whilst there was plenty of range, including a botanical survey of the Studland peninsula in Dorset using specially yard-gridded six-inch maps, and a ten-mile road map of mainland Britain at the opposite extreme, there was very little depth.

The Davidson Committee and the Transverse Mercator metric grid

The British military were not the only ones going through a lean time in the early nineteen-thirties. So was the Ordnance Survey. Indeed, it was getting to the point where it was producing fewer and fewer revised maps and was reprinting more and more maps which were badly out of date. Early in 1935 a Departmental Committee was appointed, under the chairmanship of J.C.C. (later Viscount) Davidson. At almost exactly the same time MacLeod succeeded Winterbotham as DGOS. The Davidson Committee was charged with both considering measures to accelerate OS large-scales revision, and to consider arrangements for the future. Although MacLeod's tends to be the name associated with the Davidson Committee, Winterbotham can take at least some credit for its appointment. Had the Davidson Committee been appointed a little earlier, and had Winterbotham retired from office a little later, the outcome might have been rather different: though the Ordnance Survey would no doubt have got more money, it is questionable whether it would have got a completely new basis for its sheet lines.

That said, what may be called 'the Davidson maps' did not come into being overnight. From the beginning MacLeod seems to have thought in terms of a single national series of sheet lines, related to the grid, but it is clear that in the summer of 1935 he was still thinking in terms of oblong 1:2500 sheets, and, in public anyway, had not completely forsaken the yard. One of his junior officers on the Survey was Captain (later Brigadier) Martin Hotine, who in addition to doing most of the organisation of the re-triangulation of Britain, which was getting under way at this time, did a good deal of work on the evolving grid-related mapping. Early suggestions were for sheets perhaps 2700 by 1800 yards, or even 3000 by 2000 yards, but after it was found

that these were inconveniently large both for OS printing presses and for standard sizes of plan-chest, 2500 by 1500 and 2400 by 1600 yards were considered. The whole issue was complicated by the desirability of finding a standard sheet size suitable for all scales, coupled with the possibility of adopting new 'metric' scales bearing a binary or decimal relationship to each other. Whilst a good deal of this backroom work was Hotine's rather than MacLeod's⁴⁵, the credit for introducing the metric dimension seems to lie firmly with MacLeod⁴⁶. At the R.G.S. meeting in 1933 he had suggested that the metre might be adopted with advantage — the suggestion had not gone down well with the fanatically anti-metric Winterbotham — and he now had a unique opportunity to introduce it to civil OS work. His essential argument at this time, which he put to a meeting at the RGS on 9 December 1935 was that for grid referencing the unit was immaterial, but that adopting a unit other than the metre would certainly create difficulties were Britain, at some time in the future, to adopt the metric system. He made some converts, including Jack⁴⁷, though he failed to convert Winterbotham⁴⁸.

By the end of 1935 MacLeod's thoughts were moving away from landscape-shaped evolution from the imperial County Series towards a new departure for British mapping: the systematic use of square sheets⁴⁹. Square, or nearly square, sheets were common enough elsewhere, partly because of the extensive use of graticule-related sheet lines with numbering systems related to the International Map of the World, but were unusual in Britain; the OS restricted their use to tourist and district sheets, and a few small-scale sheets of coastal areas. The only extensive use of the shape for whole map series in Britain by commercial publishers seems to have been by W. and A.K. Johnston for its

⁴⁵ See minutes 3 to 11 in PRO OS 1/84B⁻

⁴⁶ MacLeod to E.O., 28 August 1935: minute 12 in PRO OS 1/84B.

⁴⁷ See memorandum by Jack, 29 December 1935, minute 64 1/2 A in PRO OS 1/84B.

⁴⁸ See Winterbotham's remarks in PRO OS 1/111.

⁴⁹ MacLeod to E.O., 28 December 1935: minute 56 in PRO OS 1/84B.

three-mile maps and by Gall and Inglis for its incomplete series of half-inch ‘Graded road maps’⁵⁰. MacLeod eventually managed to ‘sell’ the idea of metric-grid-related square 1:25,000 and larger scale maps to the Davidson Committee, (though he failed to persuade them to recommend wholesale metrication of OS mapping), and, following Davidson’s *Final Report*, published in November 1938, square sheets were adopted, with standards of 1 kilometre square at 1:2500, 5 kilometres square at six-inch and 10 kilometres square at 1:25,000. The Davidson Committee recommended that the existing OS small scales be retained, but that the maps be published in alternative gridded and non-gridded forms⁵¹. The Committee’s *Final Report* was only signed on 3 February 1938; its completion was delayed by exploring the possibility of wholesale metrication of OS mapping, which MacLeod thought might be a sound long-term move (he lived just long enough to be vindicated in this)⁵², and by doubts as to the wisdom of imposing the grid on small-scale maps; whereas the large-scale maps would be gridded and the public could like it or lump it, there seems to have been a fear that, presented with a take-it-or-leave-it policy as regards issuing only gridded versions of the small-scale maps, they would leave them⁵³. Though MacLeod disliked the idea, the dual-format publication, gridded and non-gridded, proposal was formally embedded in the *Final Report*. Otherwise, there was nothing in the *Final Report* to suggest that one-inch and smaller-scale sheet lines need be

changed, but the opportunity was taken in 1938 to produce completely new sheet lines, using nearly square portrait-shaped sheets, for both the one-inch Fifth Edition, the new metric-gridded version of which was soon named the New Popular Edition, and a wholly new half-inch map of Great Britain, which had been in contemplation for some time, but which was only fragmentarily realised much later⁵⁴.

The redesigned marginalia for the one-inch map omitted any explanation of the grid, which was to be explained by a note inside the cover of folded copies⁵⁵. Though this lack of information about the grid may seem odd to those used to the fairly comprehensive information on later gridded one-inch and 1:50,000 maps, yet the great majority of 1:25,000 sheets published by the OS since 1948 have also omitted grid-working instructions, notwithstanding that until about 1986 the sheet numbering system depended wholly on the grid. As there was as yet no formal ministerial authority to publish metric-gridded maps, the first ‘metric Fifth Edition’, a *New Forest* special sheet published in September 1938, carried the obsolescent yard grid; the explanation of the grid inside the cover of folded copies (Fig. 12) called it the ‘National Survey Grid’, the only known use of this term⁵⁶. There does not appear to be a record of when the OS was formally authorised to adopt the metric grid, but it does not seem to have been before about July or August 1939, and it may have been later, around 1944.

The earliest known New Popular, a proof copy of Sheet 162, printed in or before July 1939, with outline, water and contours only, used the same marginalia as *New Forest*. Clearly it was still the intention at this time to confine any explanation of the grid to map covers rather than map footnotes. Rather more interesting is the

⁵⁰ Square or portrait shaped sheets had been used in the eighteenth and nineteenth centuries by publishers of large-scale multi-sheet county maps, such as Christopher Greenwood, but as these sheets were usually mounted together to make a single county map, this does not really affect the argument.

⁵¹ Davidson, *Final Report of the Departmental Committee on the Ordnance Survey*, (London, HMSO, 1938), 4.

⁵² In 1965 the then government adopted a policy of encouraging a substantial move to metrication by 1976; MacLeod died in 1969, nearly simultaneously with the adoption of a metrication policy by the OS. For metrication and the Davidson Committee see W.A. Seymour (ed.), *A history of the Ordnance Survey* (Folkestone, Dawson, 1980), 257-67.

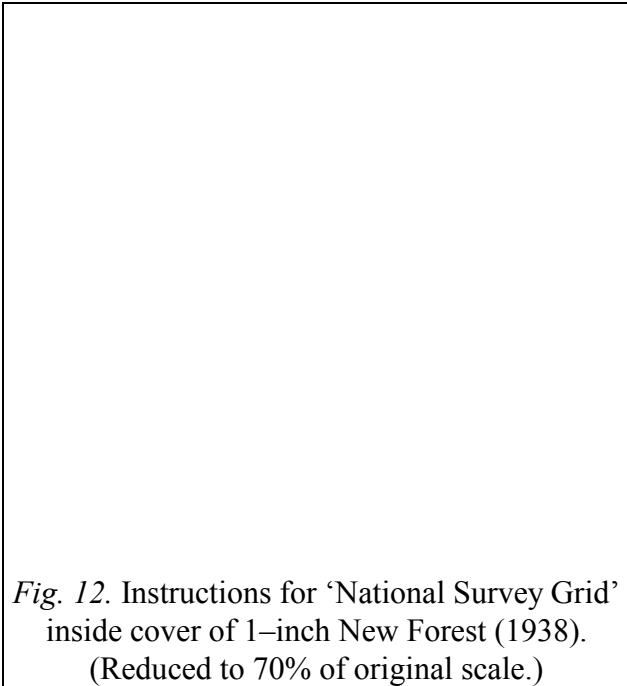
⁵³ *Final Report* 4.

⁵⁴ See Bill Batchelor, ‘The Ordnance Survey Half-inch map – Second Series 1956–1961’, *Sheetlines* 16 (1986), 7-12, and Richard Oliver, ‘The Half-inch Second Series: further revelations and reflections’, *Sheetlines* 17 (1986), 12-14.

⁵⁵ O.Maps to DDG, 5 April 1939, minute 37 in PRO OS 1/111. O.Maps to DDG, 5 April 1939, minute 37 in PRO OS 1/111.

⁵⁶ It may be due to Col. J.C. Craster: see item 32/1A in PRO OS 1/111.

handling of the grid itself. There are no grid lines across the map face, which is not in itself necessarily significant on a pre-publication proof at a certain production stage, and the only indication of the grid is in the border, where it is *in exactly the same style as on the yard Fifth Edition, with kilometre numbering every 5000 metres, but no other marginal figures.*



So, what was the means of referencing to be adopted on the New Popular Edition? Was it to be by full co-ordinates, or by some shortened form? The answer may be provided by the specimens in the Davidson Report, and by the numbering adopted for the six civil 1:25,000 sheets which were put in hand about this time. These 1:25,000 sheets had a four-figure number related to the south-west corner, so that sheet 4014 was 400 kilometres east and 140 kilometres north of the origin⁵⁷. The Davidson Specimen six-inch is 5612 N.W., (Fig. 13), and clearly uses the same principle, and the Davidson 1:2500 specimen is 562126, i.e. 562 kilometres east and 126 kilometres north of the origin (Fig. 14). The Davidson specimens carry a 'false' grid, with a south-west origin too far north and too far west

⁵⁷ See minute 9 in PRO OS 1/355.

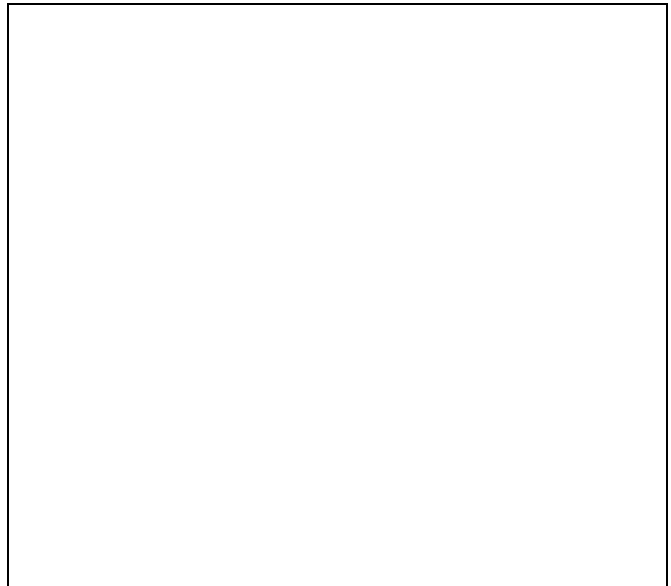


Fig. 13. Specimen 1:2500 map: Specimen 1 in the Davidson Committee's Final Report (1938). (From a copy in the collection of Roger Hellyer.) (Reduced to 70% of original scale.)

Fig. 14. Specimen 6-inch map: Specimen 2 in the Davidson Committee's Final Report (1938). (From a copy in the collection of Roger Hellyer.) (Reduced to 70% of original scale.)

to be adopted for practical purposes, but the numbering system used is consistent with that of the 1:25,000 sheets, and it can be seen as a development of that used for the military 1:25,000, GSGS 3906, though without the stroke. It follows from this that a 100-metre reference would involve eight figures, say 5403 4112 for Spurn lighthouse, rather than TA 540 112. Indeed, on the unpublished 1:625,000 *Physical Map of Great Britain* of 1942, the specimen reference is of this type, being a six-figure reference, correct to 1 kilometre (Fig. 15). This would involve difficulties in Orkney and Shetland, which are over 1000 kilometres north of the origin: there is at present no evidence that this problem was addressed in 1938-9. The Davidson specimens of the quarter-inch (Fig. 16), half-inch (Fig. 17), and one-inch (Fig. 18), show how the numbering might have appeared in the margins. On the one-inch specimen most of the figures are single figures. This is in contrast to both the Modified British System at this scale (Fig. 19) and to yard grid practice (Fig. 20). The section of the Davidson Committee report which discusses grid references is not very much help, and manages to point to both the full co-ordinate system, and to an abbreviated method⁵⁸.

This eight figure system was of course at odds with the Modified British System used by the military, with its optional letter and compulsory six figures, and, whatever Jack may have hoped back in 1924, it would presumably have been necessary to continue to print separate civil and military editions. The main reason for adopting it must have been in order to facilitate a grid-related numbering system for the 1:25,000 and larger scales. Though separate civil and military editions would thus continue to be necessary, MacLeod and his subordinates were not enamoured of producing alternative gridded and non-gridded civil editions, and in January 1939, at a meeting at the RGS to discuss the Davidson Committee *Final Report*, he produced a one-inch sheet with a fine rouletted grid, and

hoped that this would obviate the need to produce a non-gridded edition⁵⁹.

Work on the New Popular during 1939 was directed to getting a block of sheets covering south-east England published by March 1940. Early in May 1939 MacLeod sent proof copies of New Popular sheets 160 and 169 to the War Office for comment, and he made proposals for a phased changeover from the War Office Cassini grid to the Transverse Mercator metric grid, but the War Office did not react very positively. MacLeod was anxious to change over to the new grid and New Popular-based military mapping as soon as practicable, as the alternative was the renewal of the reproduction materials for much of the Popular-Edition-based War Office one-inch, which meant carrying out work on obsolescent mapping. The War Office actually preferred the obsolescent mapping, as in training it was useful to discourage over-reliance on the map, and operations overseas might well involve using maps of questionable reliability. MacLeod continued to pursue the question with the War Office into the autumn and winter of 1939, without success. In one way the question was eventually resolved in the Ordnance Survey's favour, as in August 1940, with the threat of invasion changing the military one-inch overnight from a 'training' to an 'operational' map, work began on converting as much as possible of the military one-inch to Fifth/New Popular base mapping, but in another way it was not, as the War Office Cassini grid was retained⁶⁰.

MacLeod was unwilling to give up, and at some time, possibly in the autumn of 1939, the method of OS grid referencing was modified, so that, on the one-inch and quarter-inch anyway, it followed that of the Modified British System, of one optional letter and six compulsory figures. Hitherto the grid had not had a name on the maps — the nearest approach was the 'National Survey Grid' inside the cover of *New Forest* — but now it was boldly called The Ordnance Survey Grid (Fig. 21), no doubt to distinguish it from the War

⁵⁹ 'Discussion on the *Final Report* of the Departmental Committee on the Ordnance Survey', *GJ*, 99 (1939), 314-32, esp. p.316.

⁶⁰ The discussions between OS and WO will be found in PRO OS 1/219.

⁵⁸ *Final Report*, 3-4.

Fig. 15. Grid working instructions from 1:625,000 Physical map (?1942). From a copy in the collection of Roger Hellyer.) (Reduced to 50% of the original scale)

Fig. 16 Grid figures in margin of specimen gridded Quarter–inch map: Specimen 1 in the Davidson Committee’s *Final Report* (1938). (From a copy in the collection of Roger Hellyer.)

Fig. 17 Grid figures in margin of specimen gridded Half–inch map: Specimen 4 in the Davidson Committee’s *Final Report* (1938). (From a copy in the collection of Roger Hellyer.)

Fig. 18. Grid figures in margin of specimen One–inch map: Specimen 3 in the Davidson Committee’s *Final Report* (1938). (From a copy in the collection of Roger Hellyer.)

Fig. 19. Grid figures in margin of 1–inch map with Modified British System: GSGS 3907, Sheet 22, Second War Revision 1940, OS/War Office 1940, printed 1943.

Fig. 20. Grid figures in margin of 1–inch map with yard grid: from 1–inch Fifth (Relief) Edition Sheet 127 (1933).

(All figures 16–20 reduced to 70% of the original scale.)

Office grid, and so avoid confusion between the two. Ordnance Survey Grid references would repeat once every 500 kilometres, and in the grid letter diagram letters were only given for those squares which lie on land, which may be intended to reassure potential thoughtful users that the difficulty of repeating letters was not as great in practice as it might seem in theory. Of course, this broke the intimate connection between the grid and wholly numeric grid-related large-scale sheet numbering. It is not known if this was even considered at the time, or whether the OS would have been content to allow a difference which was rather similar to that between the sheet numbering and grid referencing on the 1:25,000, GSGS 3906. Perhaps the best answer is that the early 1:625,000 maps of 1942 carried 'the Ordnance Survey Grid' but retained the system apparently envisaged in 1938–9, and described above.

The War Office thought that there was great danger of confusion were both Cassini and Transverse Mercator metric-gridded maps to be

in circulation at once, and it was not to be bought off either by the use of the term 'Ordnance Survey Grid', or by the OS's offer to black out the grid figures⁶¹. As a result of this, although eleven New Popular Edition sheets were printed in 1940-41, none were then placed on sale. Whilst MacLeod generally played an astute game in introducing the metric Transverse Mercator grid to civil mapping, he may have slipped up here: the War Office raised no objection to the sale of mapping with the old yard grid with its full co-ordinate references, and the system implied by the Davidson Report specimens would have given results far closer to the yard grid than to the Modified British system.

Though there were now instructions how to use it, the grid itself was still not standardised, either as regards the method of identifying hundred-kilometre-squares, or of giving a reference. At some time between 1941 and 1943 —

⁶¹ See PRO OS 1/219, which contains two copies of New Popular Edition Sheet 159 with blacked-out grid figures.

Fig. 21. Grid working instructions for 'The Ordnance Survey Grid', from New Popular Edition Sheet 172 (1940). (Copy in the writer's collection: restoration work by John Beer) (Reduced to 70% of the original scale.) (Crown Copyright)

Fig. 22. Slip for converting Ordnance Survey Grid to National Grid. (Copy in the writer's collection: restoration work by John Beer) (Reduced to 70% of the original scale.) (Crown Copyright)

Fig. 23. Information about the grid inside the cover of a One-inch New Popular Edition, 1945
(Greatly reduced.) (Crown Copyright)

possibly after MacLeod was succeeded as DGOS by Major-General Geoffrey Cheetham, in 1943 — it was decided to identify the hundred kilometre squares by numbers, derived from the grid reference for their south-west corner, so that the square 500 kilometres east and 400 kilometres north of the origin, was 54. There was of course a difficulty in Scotland beyond 1000 kilometres north, which was got round by prefixing N, so that, for example, Lerwick was in N41, which may have saved a few map users from seeking it in north-west Hampshire. It is possible that the 'N' designation may have been thought of in the late 1930s at the time of the Davidson report, when an otherwise all-numeric reference was to be used: it is difficult otherwise to see how Orkney and Shetland could have been treated satisfactorily. It may be noted that whereas under the 'Davidson era' system four easting figures, 5403, were followed by four northing figures, 4112, under the 'Cheetham system' an easting figure, 5, was followed by a northing figure, 4, followed by three easting figures, 403, followed by three northing figures,

112. The Ordnance Survey grid sheets already printed were modified using overpasted slips. (Fig. 22) These sheets officially went on sale to the public on 1 September 1945.

For the six-inch and smaller scales there was now something called a 'Normal National Grid Reference', which was six figures, and a 'Full National Grid Reference', which added the 100-kilometre square designation. Four-figure references, correct to 1 kilometre, were officially termed 'normal' and 'full' kilometre references respectively. This terminology was explained at length inside the covers of National-Gridded one-inch and quarter-inch maps, and the fearsome sight of this explanation, on opening the map, must have discouraged a good many potential grid users. (Fig. 23) Even so, what this verbiage failed to explain was how to give references correct to 10 metres on 1:2500 and 1:1250 mapping. A 'Large Scale Grid Reference' consisted of three parts, first the 100-kilometre square designation, 54, then the kilometre square, 4012, which gave the parent 1:2500 sheet number, then a four-figure reference, 3823, to the

Fig. 24. Overprinting to convert the civil National Grid to National Grid MILITARY SYSTEM: from GSGS 4620, Sheet 185 (Ordnance Survey/War Office, 1949). (Reduced to 50% of original scale.) (Crown Copyright)

Fig. 25. Modified grid working instructions, 1951 onwards: from GSGS 4620, Sheet 150, 'First Edition', (OS/War Office, 1954). (Reduced to 70% of original scale.) (Crown Copyright)

nearest 10 metres. The procedure was thus east-north, east-north, east-north, i.e. five changes of direction as compared with one with the system apparently intended in 1938-9⁶².

Although the 'Large Scale Grid Reference' was explained in a pamphlet, the first 'production' 1:1250 and 1:2500 sheets had minimal footnotes and omitted any explanation of the grid. By the time that these large-scale maps had acquired extended footnotes, from about 1953 onwards, the grid system had changed, yet again.

In 1944 the War Office had agreed with the Ordnance Survey to accept the Transverse Mercator National Grid for military purposes⁶³, but in order to retain the Modified British System of designating 100-kilometre squares by letters, it was necessary to resort to overprinting and the addition of the words MILITARY SYSTEM to the grid instruction box. (Fig. 24) The grid letters were printed on the face of the map. Printing of the military version of the New Popular began in October 1947 and was completed in December 1949, and it was only early in 1950 that it was taken into military use. Almost immediately the War Office noticed that there were both The National Grid and The National Grid Military System, and it made strong representations that it was absolutely imperative that the civil and military systems be brought into harmony. The OS reaction, expressed in its internal papers, was that this ought to have been agreed at the outset, but it fell to, and duly changed over to a system of designating 100-kilometre squares by letters⁶⁴.

⁶² Ordnance Survey, *A brief description of the National Grid and reference system*, (London, HMSO, 1946).

⁶³ Information from Ian Mumford. I can find no record of this important transaction in OS records at the PRO.

⁶⁴ PRO OS 1/111.

To suit the military, there was the option of identifying 100-kilometre squares either by one letter or two (Fig. 25).

The change in 1950-51 in the method of referring to 100-kilometre squares at least implied a change in the method of 1:25,000 and larger-scale sheet numbering, so that, for example, 54/41 became TA 41, and this was duly effected. That done, the National Grid settled down, though the military continued to have their maps printed with single letters on the map face. The military system of single letters finally ended with the adoption in 1981 of the dual civil-military specification for the 1:50,000 map, and whereas it had been imperative in 1950 for the Ordnance Survey to adopt letters, it became imperative thirty years later for the military to have maps bearing two letters rather than one.

Although it would seem that the National Grid has now reached a state of development and perfection which continues to elude other aspects of Ordnance Survey work, this may prove not to be so. A recent Ordnance Survey information paper raised the question of Co-ordinate shift, and of the possibility that a change in spheroids — that is to say, in the assumed dimensions of the earth — necessitated by the adoption of Global Positioning Systems, might eventually entail either the modification or the replacement of the National Grid⁶⁵. It therefore remains to be seen how permanent the National Grid adopted in the late 1930s will prove to be.

⁶⁵ OS Information Paper 1/1994.

Acknowledgements

I am greatly indebted to Brian Adams, John Beer, Peter Chasseaud, Peter Clark, Roger Hellyer, Yolande Hodson Ian Mumford and Rob Wheeler for assistance, discussion and information over the years: which is not to say that any of them will agree with anything that I have written here!

Appendix 1

Summary of maps published with Transverse Mercator Yard Grid, 1931–9

1:10,560: *South Haven Peninsula, Studland Heath*, in *Geographical Journal*, 75 (1933), after p.480. [This is the only known yard-gridded map not published by the OS, or using an OS base, though it was based on OS data.]

1:21,120: *London* (1933).

1:31,680: *Isles of Scilly* (1933).

1:63,360: One-inch Fifth Edition, sheets 93-6, 102, 106-8, 111-115, 118-9, 123-5, 127-32, 136-46, also *Aldershot North, Aldershot South, Dartmoor, Exmoor, London, New Forest* and *St Albans* special sheets (1931-9); One-inch tourist maps, *Cairngorms, Oban* (1936).

1:126,720: *Birmingham, Cotswolds, Greater London, Peak District* special sheets (1932-6); *Greater London* population map (1935); of London, accompanying Bressey and Lutyens's *Highway Development Survey* (1938).

1:253,440: Quarter-inch Fourth Edition: 18 sheets, covering the whole of Britain (1934-7); South Wales megalithic map.

1:633,600: Ministry of Transport road map (1932, republished on new sheet lines 1937); general topographic map (1937); Land Utilisation (1940); Types of Farming (1941).

Appendix 2

Summary of known sheets printed with 'Ordnance Survey Grid', circa 1940-43

1:63,360: New Popular Edition, Sheets 156-9, 167, 169, 171-2, 179, 182-4. [156, 159 not published].

1:253,440: Fourth Edition: England & Wales Sheets 6-9, Scotland Sheets 2, 4-7 [none published]

1:625,000: Outline base map (1942); Land Utilisation map (1943); proofs of Physical map.

Four-colour printing

Richard Oliver

Ian O'Brien raises an interesting point in *Sheetlines* 40 (p.45) when he writes that a disadvantage of four colour process printing is that the separate elements of the map are not to be found on separate sheets of reproduction material, and that this is a disadvantage for those maps which may be printed by other agencies. This assumes, however, that the printing plates are prepared by direct contact with the reproduction material (which for the purposes of this discussion may be assumed to be photographic negatives). From various surviving Ordnance Survey small-scale job files held by the Society, it is apparent that until the adoption of four-colour printing in the late 1970s OS printing plates were indeed prepared by direct contact with the

negatives. Since then a more sophisticated method has been employed, whereby film positives for each of the four process colours (black, magenta, cyan and yellow) are prepared by contact with the negatives, and these film positives are then used to prepare the printing plates, so that the negatives and the printing plates no longer come into direct contact with each other. So long as the negatives are not revised, the delicate and precise operation of combining many separate negatives (about two dozen for the 1:50,000) to produce the four printing plates only has to be done once, and if it is desired to produce extra sets of film positives in order that other agencies can produce plates, that can be done simply and quickly by contact duplication. Until the adoption of this 'film

positive' method it was usual for printing plates which were still usable to be stored on completion of a job, in order to minimise the work in making up new plates from combinations of negatives; since 1978 there has been no point in retaining plates in case of need, as fresh ones can be made up readily from the film positives. A further advantage of printing in four compared with six or more colours is that smaller print-runs are more economic; it is therefore possible for OS to carry less stock (some 1:50,000 sheets are reprinted annually whereas in the early 1950s it was customary to print five years' stock even of the most popular ten-colour One-inch Seventh Series sheets), taking up less room, and it also gives the flexibility to produce more frequent revised reprints, as there is less unrevised stock to scrap.

The ability to supply printing materials to other agencies is important for any organisation such as the OS, the Directorate of Military Survey (DMS), or the erstwhile Directorate of Overseas Surveys (DOS). The DMS has printed some 'OS' mapping, usually military editions, occasionally by units based overseas (e.g. British Army of the Rhine), but presumably from printing plates supplied by OS. During World War II much 'OS' printing was undertaken by commercial firms, invariably using plates supplied by OS. A difficulty for DOS might be that metal printing plates are bulky things, and that it would be much easier to send plastic reproduction material to its various Commonwealth clients, so that they could do their own plate-making. Of course, with hindsight, one might suggest that DOS would have done better to produce combined film positives, but as OS only adopted this method at a late stage, the suggestion is perhaps rather unfair!

Of course, all this does not answer the question as to why OS did not adopt four-colour printing far sooner than it did. Between 1897 and 1904 the commercially unsuccessful 1:63,360 indexes to 6-inch and 1:2500 mapping, which were coloured by parish, had synthetic green and orange, produced by combining solid yellow with ruled blue and ruled red respectively, but this example was not followed. In 1934-5 the 'non-relief' One-inch Fifth Edition was being printed very successfully in five colours, reddish-brown, dull yellow, blue, green and black. It ought to have been feasible to produce a synthetic green for woods by combining blue and yellow; perhaps the reason why this economy was not made was that only some of the elements were on 'permanent' photographic negatives, the rest (including the woods) being drawn directly onto 'impermanent' lithographic offsets. By 1952, with all the one-inch elements now on negatives, experiments were made to reduce the number of printings for the Seventh Series from ten to six. The results were apparently adequate for the military edition, which went over to six-colour printing forthwith, but not for the civil edition, which only adopted six-colour printing in 1961. It would seem that one difficulty was the rather coarse effect which the available screening gave; one is left in no doubt that the water infill on the 1950s six-colour printings is an aggregation of dots! In 1958 a successful four-colour 1:25,000 experiment was made, and in the light of this it is surprising that, as far as I know, no attempt was made to produce a four-colour rather than a six-colour civil Seventh Series in 1961. A partial explanation may perhaps be that the senior OS officers initiating these experiments were usually military men who were on short-term postings to the Survey, so that the 'collective memory' could have suffered.

But perhaps those closer to these events, or presumed non-events, will tell me otherwise!

The Three-inch Map of London, and its predecessors of 1926

Christopher Board

I have set out the origins of the Ordnance Survey's Three-inch Map of London in the London Topographical Record, published in July 1995¹. A coloured illustration of part of that map was included in the paper, but originals may be consulted in the British Library and the Royal Geographical Society. I noted in that paper that the existence of a highly secret and sensitive version had been produced for the authorities in the General Strike of 1926. The Public Record Office files contain originally secret correspondence between the War Office and the Ordnance Survey, who printed the map, conveying the decision "to destroy existing stocks of G.S.G.S. 3786A, Secret Edition of the 1:20,000 map of London", and asked that the "secret overprint to this map showing the vulnerable points" be wiped off the plates². At the time of writing the paper and until a few days after its publication, I believed that no copies of the map with the secret overprint showing the location of vulnerable points had survived³. However a copy of it has recently been presented to the Map Library of the British Library⁴. It is identical to the County of London Map already in their collection, except for the addition of geometrical symbols in rather dingy colours to indicate so-called vulnerable points. It also adds the tell-tale A after the 3786 on both sheets. Examination of the legend panels reveals the reason for a blank space on the less secret map

was to provide what was called "Secret Information", the explanation of the symbols on the secret overprint. The word SECRET appears on the top margin of the sheets, but has since been cancelled. A red rubber stamped note in the margin reads "Geographical Sec., Gen., Staff/MAP ROOM/Recd. 11 MAR 1926/CONFIDENTIAL/CATALOGUE REFERENCE U.K. 309 310" (sic) in a box.

This secret information includes:	
Military District Boundaries	thick brown solid line
Electric Power Stations	brown circle with central dot
Vulnerable points, Magazines, etc., Barracks	brown triangle
Territorial Units inside	blue circle
Police Stations	blue circle with a cross
Fire Stations Headquarters and Superintendent	green square
Fire Stations Other	green square with cross inside and flag above
	green square with cross inside

The symbols on the face of the map vary in size and seem to have been hastily prepared in manuscript. Sometimes the symbols fall almost on top of one another and are therefore hard to distinguish. One green symbol in a yellowish shade, unlike the other green ones, is located on the junction of the railway line from Blackfriars to Borough Market just north of Union Street in Southwark. It is not explained in the legend and may have been added in error. There was a Post Office Sorting Office in Union Street, but there were others elsewhere without such a symbol. The Military Districts are named in brown capital letters.

When the distribution of the secret symbols is examined in detail, many seem superfluous in that the base map already identifies some police stations and barracks. Where this does not occur, the base map usually plots the building which is the police station. In some cases however, symbols for electric power stations appear where there is no other indication of their presence and the same applies to fire stations. Vulnerable

¹ C. Board, "The Secret Map of the County of London, 1926, and its sequels." *London Topographical Record*, Volume 27, 1995 pp 257–280.

² P.R.O. OS1/538. 131A 22 M.I.4/A/42. D. Mily. Ops. & Intel., War Office to D.G., O.S. 30 August 1933.

³ Board, 1995, *ibid.* P258.

⁴ The copy in the British Library is Ansell folded and is catalogued BL Maps 60.d.52. Another copy has been seen which contains the words "FOR OFFICIAL USE ONLY" in the top margins, also cancelled.

points are few, being located at the Bank of England, north of the bridge over the Serpentine, the Tower of London, Twyford Abbey near Park Royal, and the Royal Victoria Yard at Rotherhithe. The secret overprint also places several symbols in the margin where knowledge of how to reach them would have been relevant. On the western margin of Sheet 1 a symbol for electric power station is shown with the inscription Waterloo Road UXBRIDGE (8½ Miles West). Many of these seem to be connected with the tram or electric railway system, but not all are so shown. Police stations just beyond the neat-line are occasionally shown as are a few barracks. Intriguingly the less secret map still shows the text accompanying the symbol for Kneller Hall, Twickenham. We must assume that it was sufficiently well known to have survived the official version. The selection of vulnerable points of all kinds may yet reveal

some of the military thinking behind the methods adopted by the authorities to deal with civil disturbance⁵. I can certainly recall my father, who was in the Honourable Artillery Company as a territorial in the 1920s, referring to the guards provided by the H.A.C. at the Bank of England. Further analysis must, however, be left for others to examine in more detail. At least the map can be examined in connection with surviving documentation about the government's plans for dealing with the emergency as it developed in 1925–26.

⁵ Peter Barber has pointed out the parallel with an annotated copy of one of John Rocque's plans of London at a scale of 1:48,000 British Library Add. MS 15533, f, 39. In *Tales from the Map Room* (Barber and Board, 1993, pp118–9) he reproduces a part of this map showing the disposition of troops at the time of the Gordon Riots in 1780.

The One-inch second edition colour-printed map

Tim Nicholson

I am preparing a study of the One-inch second edition colour-printed map, and would be grateful for a note of any printing states other than those listed below.

Notes:

- * Many are combined sheets. For ease of reference, the lowest sheet number is given first, irrespective of the order in which they appear in the top right hand margin of the map.
- * After each sheet number printing states are given, beginning with the initial publication date spelled out (e.g. 1902), followed by reprints in spelled out form (e.g. 1000/1903) or coded form (e.g. 4.07).
- * Coded reprints in brackets after a spelled out reprint (e.g. 1000/1903(4.03)) may or may not refer to the same printing. *They do refer to different states.*
- * Occasionally only a printing date is given on the map. For ease of reference, this date is given even if it is known to be wrong for the initial publication date. A wrong initial publication date may also be given on the map; the same applies for the same reason. Two initial publication dates (e.g. 1899, 1902) may be given on different states; if so, both are given here.
- * The second edition colour-printed map is readily distinguishable from the Third Edition by the absence of the words *Third Edition* from the top left margin. Also, the sheets south of the Hull–Preston line do not have green woods.

My address is: 187, Russell Court, Woburn Place, London, WC1H 0LR, and telephone number is 0171 837 6319. If you are willing to be telephoned, please give your telephone number.

- 1** 1901
2 1901
3 1901
4 1901
5 1901
6 1901
7 1901
8 1901
9 1901
10 1901
11 1901
12 1901
13 1901, 3.07
14 1903
15 1901
16/17 1901
18 1903
19 1903
20 1901
21 1903, 1.07
22 1903
23 1901
24 1904
25 1904
26 1904
27 1904, 12.06
28 1904
29 1904, 12.06
30 1904
31 1904, 1.07
32 1904
33 1904, 12.06
34 1903, 12.06
35/44 1903, 11.05
37 1903
38 1904, 10.06
39 1904, 10.06
40 1903, 12.06
41 1904
42 1904
43 1904
47/48/58 1904, 1.07
49 1903
50 1903
51 1904
52 1904, 12.06
53 1903, 1.07
54/55 1904, 1.06
59 1904, 3.06
60 1903, 3.06
61 1904, 1.06
62 1903, 7.05, 2.07
63 1903, 5.05
64/65 1903, 12.06
66/67 1903, 1.06
68 1903, 4.06
69 1903, 7.05, 2.07
70 1903, 7.05, 1.07
71 1903, 9.05
72 1903, 6.07
73 1903
74/83 1903, 2.05
75 1903, 9.05
76 1903, 9.05
77 1903, 7.05, 1.07
78 1903, 6.05, 1.07
79 1903
80 1903
81/82 1903, 1.06
83/96 1902, 8.04
84 1903, 2.05, 1.07
85 1903, 2.05
86 1903, 8.04
87 1903, 8.05, 1.07
88 1903, 1.07
89 1903
90/91 1903
92/93 1903
94/106 1903, 8.04
95/107 1902
97 1903, 2.05, 1.07
98 1903, 7.04, 6.05, 2.07,
 railways to Aug 1910
99 1903, 1000/1903(9.03),
 4.05, 6.07
100 1903, 9.05
101 1903, 2.06
102 1903, 9.06
103/104 1903, 1.07
105/118 1903
108 1902
109 1902
110 1902, 4.05
111 1902, 7.05, 3.06
112 1902, 8.05, 1.07
113 1902, 3.06
114 1903, 1.07
115 1902, 1.07
116/129 1902
117/133/134/118 1903
119 1903
120 1903
121 1902, 8.05, 6.07
122 1902, 7.07
123 1902
124 1902, 12.05, 4.07
125 1902, 1.06, 1.07
126 1902, 1.06
127 1903, 3.06
128 1902
129/145 1901, 1.07
130/146 1901, 1.07
131/147 1902, 8.05
132/148 1901, 9.05, 9.07
135 1903
136 1902
137 1902
138 1902
139 1902, 8.07
140 1902, 9.05, 1.07
141 1902, 9.05, 1.07
142 1902, 1903, 3.06
143 1902
144 1902
149 1903
150 1903
151 1902, 8.06
152 1902
153 1902, 6.04
154 1902, 6.04
155 1902, 9.05, 1.07
156 1902
157 1901, 12.06
158 1901
159 1901, 6.07
160 1901, 1.07
161 1901, 2.06, 6.07
162 1902, 9.04, 3.06
163 1903, 1.06
164 1902
165 1903, 1905
166 1902, 9.02, 6.05, 1.07
167 1902, 2.06, 2.07
168 1898, 2.05, 7.06
169 1901
170 1901
171 1901
172 1901
173 1901, 1.07
174 1901, 10.06
175 1901, 11.06
176 1901, 2.06, 1.07
177/194 1901
178 1902
179 1902
180 1901
181 1901, 2.06
182 1901, 10.06
183 1901, 8.05, 10.06

- 184** 1901, 11.05, 11.06
185 1901
186 1901, 7.07
187 1901
188 1901, 8.06, 1.07
189 1901
190 1901, 11.06, 7.07
191 1901, 11.07
192/209 1901
193/210 1901, 5.07
195 1901
196 1901, 10.06
197 1900, 12.06
198 1900, 10.06
199 1899, 5.05, 1.06, 5.07
200 1899, 8.05, 7.06
201 1899, 7.06, 2.07
202 1898
203 1898
204 1899
205 1899
206 1899, 7.06, 2.07
207 1900, 11.04, 7.06, 1.07
208 1898
211 1901
212 1901
213 1901, 9.06
214 1900
215 1900, 2.06, 1.07
216 1900
217 1899
218 1899
219 1898
220 1898
221 1898
222 1898
223 1898
224/225 1898, 4.04, 11.04, 12.06
226/227/244 1901, 8.06
228/245 1901, 2.05, 8.06
229/246 1901, 3.07
230/247 1901, 3.06
231 1900, 12.06
232 1901, 1.06
233 1900
234 1899
235 1899
236 1896, 1898, 200/1903, 200/1904
237 1898
238 1898
239 1898
240 1898
241 1898
242 1898
248/261/262 1900, 9.06, 8.07
249 1900
250 1899
251 1899
252 1898
252 1898
253 1898
254 1898, 150/1902
255 1897, 1898
256 1898, 250/1903
257 1898, 5.04
258 1898
258/272 1898
259/273 1898
263/279 1899
264/280 1899(5.99), 400/1903(5.03), 1.06
265 1899
266 1899
267 1898
268 1897, 400/1902
269 1897, 400/1901
270 1897, 400/1903, 5.04
271 1898, 500/1901, 900/1901, 1000/1903
273/289 1898
273/274/289/290 1898
273/274/289/290/305/306 1899, 4.01, 10.02, 7.04, 5.05, 4.07
275/276/291/292 1900, 12.06
277/293 1898, 1900, 400/1903, 7.06
278/294 1900, 500/1902(10.02), 8.04, 8.06
279/295 1899, 1.06, 8.07
280/296 1899, 5.06
281 1899
281/282 1899
281/282/297/298 1900
283 1897
284 1897, 1900
285 1897, 500/1902, 100/1904
286 1898, 1902, 400/1902
287 1898, 6.04
288 1897
289/290/305/306 1898
289/305/321 1897, 1898, 650/1903
295/311 1900
297 1899
297/298/313/314 1898
299 1897
300 1897, 1900
301 1898
302 1898
303 1898, 400/1902
304 1898, 8.04
304/320 1898
307/308 1900, 1.07
309 1899, 1900, 4.07
310 1900, 9.06
311 1899, 1900, 9.07
312 1899, 3.07
313 1899
314 1897
315 1897
316 1897
317/322 1897, 1898, 300/1902
318/333 1897, 1898, 200/1903
319/334 1897, 1898, 400/1902, 400/1903(7.03), 7.04
322/336 1900, 11.04, 9.06
323 1900, 12.07
324/338 1900, 400/1900(10.01), 9.03, 8.04, 12.05, 4.07
325/339 1899, 1902(1.02), 8.04, 1.06
326/340 1899, 9.03, 6.05, 2.07
327/341 1899
328/342 1899
329/343 1897
330/344 1898
331/345 1898
335/346 1900, 5.06
337 1900, 3.05, 9.06
347/353 1900, 2.07
348/354 1900, 400/1904(3.04), 4.06, 7.09
349/355 1899, 6.04, 7.04, 9.05, 6.07
350/356 1899, 8.06
351/358 1900, 11.04, 5.07
352/359 1900, 8.05, 5.07

Meetings

Branston, near Burton-on-Trent, 7th June, 1995

Seven members of the Society assembled at Branston Church Hall for the third Midlands evening meeting. Lez Watson chaired the formal part of the proceedings, and three proposals were agreed:

1. that the meetings held so far have been sufficiently successful to justify arranging a further three meetings over the next year; they will be held in October, February and June. One is to have a guest speaker, another to be an informal get-together, and the third will be a thematic session,

2. that since Branston is easily accessible from most parts of the Midlands, meetings will continue to be held there, although alternative venues will be explored for the longer term,

3. that each meeting will commence with a short formal session on business matters.

The possibility of hosting a full day event on a topic to be determined, and encouraging attendance at this from further afield, will receive further consideration.

After refreshment, each member present then spoke briefly on a couple of maps they had

brought to the meeting. An interesting series of discussions followed, though more questions were raised than answers: why is the Popular Edition Special District *Derby* sheet not centred on Derby? Why are the railway stations so erratically portrayed on the new Edition A of the extended *South Pennines* 1:25,000 Outdoor Leisure map? Why does the Scottish One-inch Third Edition sheet 26 leave most of the English, and yet show Berwick upon Tweed and Tweedmouth? Why, in 1906, did the London Borough of Camberwell sponsor a map showing polling stations and all manner of electoral boundaries on an O.S. six-inch base? Why do the 1995 crop of 1:25,000 Explorer maps so closely resemble Outdoor Leisure maps in specification as to make the separate identity almost superfluous?

Perhaps the answers to these and other queries will be provided at the next Midlands meeting (details of which are included in *Forthcoming Meetings* inside the front cover). In the meantime many thanks are due to Lez Watson for conceiving the Midlands gatherings, and for having nurtured them so ably through their first year.

Bill Henwood

Visit to the Royal Geographical Society and Science Museum

On 7th July 1995, a party of five members, somewhat depleted in numbers through illness and other causes, was received at the Royal Geographical Society by Dr A.F. Tatham, the Head of Information Resources. Dr Tatham described the current activities of the RGS as well as its history, noting that the public has had access to its Map room since 1854. It originated from a wartime agreement with a government concerned that its electorate had no clearer knowledge of the whereabouts of Moldavia and Wallachia than generations of school children have had since. In contrast to the Map room, the

Library is open only to the Fellows of the Society.

Dr Tatham showed the group various Ordnance Survey publications from the library, including nineteenth century progress reports and later Professional Papers. What excited most interest, however, was the selection he showed from the OS Specimen Drawer in the Map Room. This included numerous OS proofs: for example, a pair of sheets printed respectively from a copper plate and from the electrotpe of the same plate; a pair to compare engraved tree-ornament with the die-stamp variety; and a

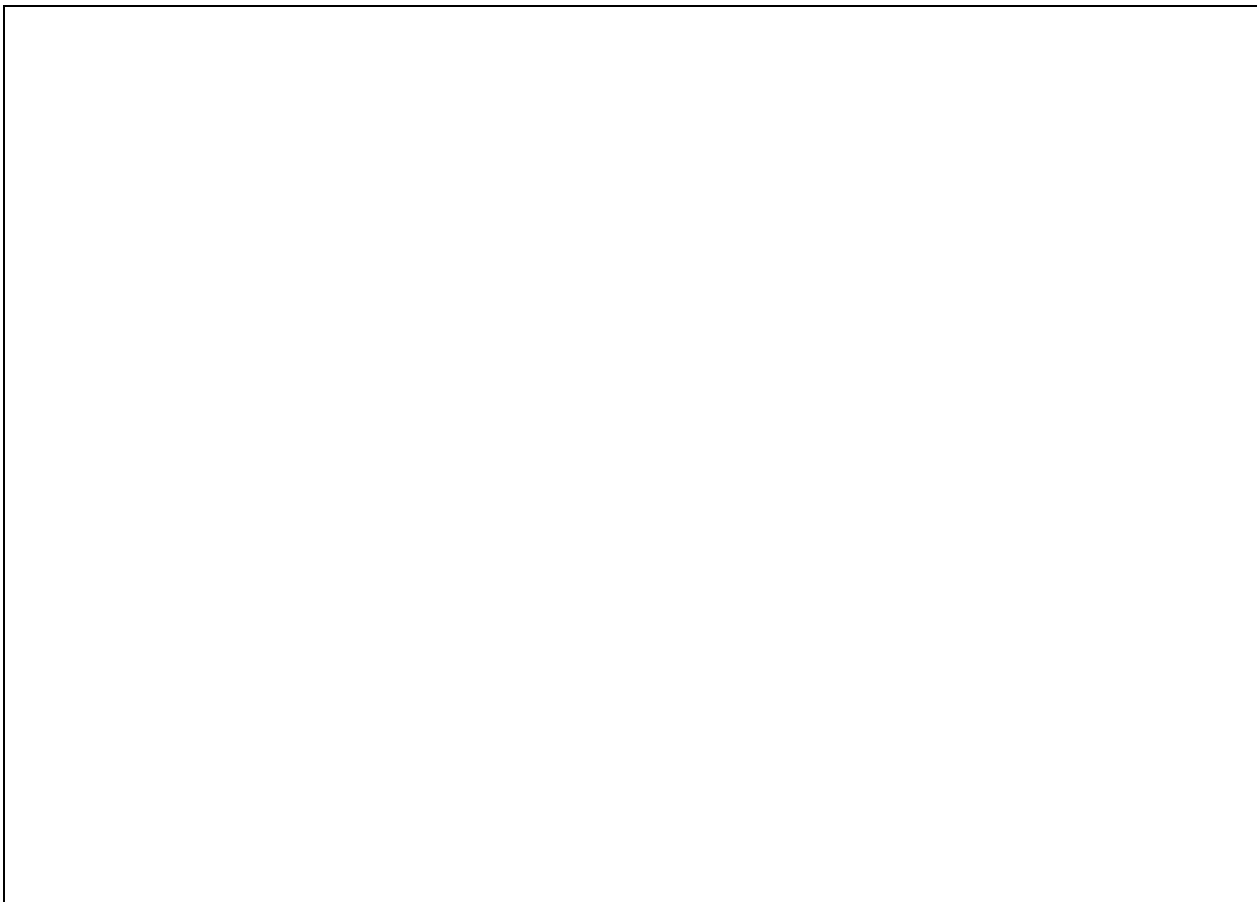
couple of modern 1:50,000 experiments leading up to the experimental sheet 124. Most interesting, perhaps, were the experiments in the depiction of relief. The Edinburgh one-inch sheet of 1857 with hand drawn “illuminated” or “shaded” contours had been shown at the Bicentenary exhibition, whereas the North Wales sheet of 1869 employing Bate’s Patent Anaglyph was, for your correspondent, a total surprise. This method depicts relief by continuous lines, generally horizontally but shifted further and further down the page as the height being depicted increased. The system is similar to the surface plotting packages on personal computers but the sensitivity decreases with height, enabling the defences of Conway to stand out as clearly as the Carneddau to the south. The system is not suited to overlaying other detail and it is not surprising that it never appeared on published maps.

The visit concluded with lunch in the tea-room, another facility open only to Fellows (and their guests) and a strong inducement to CCS members to consider applying to join the RGS.

After lunch a short walk brought the group to the Science Museum, to be met by Jane Insley, Curator of Environmental Sciences. We were first taken to see the two Ordnance Survey related exhibits displayed away from the surveying gallery — the Ramsden 3-foot theodolite and General Roy’s 42-inch rule — before seeing the 2-foot theodolite and the other exhibits in the Surveying Gallery itself. Having seen at the RGS the engravings of the structures erected for the principal triangulation, it became clear from its size and weight of these theodolites why such massive structures were needed. Left to explore by ourselves, I noted a drawing on glass of 1:2500 sheet SZ 3487, apparently dating from the early years of the National Grid series, but with corrections to 1971. Is this the only example of post-war OS drawing techniques which is publicly accessible?

Overall, the double visit was most stimulating, and we are indebted to our hosts for the time they took from their other duties to show us their treasures.

Rob Wheeler



New maps

Ordnance Survey of Great Britain

New publications between 1 February and 30 April 1995 included:

Conventional paper maps:

1:50,000 *Landranger* (Second Series):

45, A2 (2/95);	96, B1 (3/95);	170, B1 (3/95);	190, B (3/95;
64, B3 (2/95);	98, A2 (2/95);	178, B1 (2/95);	revised 1994).
65, B3 (2/95);	104, B1 (3/95);	185, B1 (2/95);	
77, A2 (3/95);	157, A3 (2/95);	189, B1 (3/95);	

1:25,000 *Explorer* (Second Series):

7 *Land's End*, A (4/95); 8 *The Lizard*, A (4/95); 9 *Bodmin Moor*, A (4/95).

Though announced in the April publication report, only numbers 7 and 9 had reached Exeter by late June! They differ from the first five, which were accorded a somewhat unenthusiastic reception in *Sheetlines* 40 (August 1994, pp 22–3), in that the ‘image quality’ is of a good sharp standard, and a modified colour scheme has been adopted, being similar to that of the Outdoor Leisure Maps, save that there is no ground tint, and the borders are infilled orange. As a result, *Pathfinders* 1325, 1338, 1364, 1368–70 and 1372 have been withdrawn from publication. Survey dates are still omitted: those for the constituent *Pathfinders* suggest 1961–76 for number 7, 1961–82 for number 8, and 1952–83 for number 9.

1:25,000 *Outdoor Leisure Maps* (Second Series):

1 *Dark Peak*, A (3/95); 10 *Yorkshire Dales — South*, A (3/95); 21 *South Pennines* (4/95);
31 *North Pennines*, A (3/95).

Though described officially as ‘first publications’, they are in fact republications of existing sheets on new extended sheet lines, which will enable a number of *Pathfinders* to be withdrawn in due course. *Dark Peak* is now a double-sided sheet, covering the country from the fringes of Manchester to those of Sheffield; *South Pennines* (a curious name, by the by) is also now double-sided, and the whole of the southern two-thirds of the Pennine Way is now covered by Outdoor Leisure Maps.

Historical maps and guides: Roman Britain (edition B).

Digital mapping:

The official completion of large-scale digitising was announced in April, but the Superplan Availability Diagram updated to 24 April shows extensive gaps in cover, admittedly mostly in areas where much of the basic cover is at 1:10,000 scale.

Two improvements to the Superplan service were announced in April: plots will in future be available on clear film, suitable for overlays and overhead projection, as well as on matt film or paper; and the Superplan Area Measurement Service is what it says, giving plot areas and numbers.

Ordnance Survey of Ireland

The following 1:50,000 *Discovery* series sheets have recently been published:

‘First edition’: Sheet 78. This replaces the *Rambler* version, reviewed in *Sheetlines* 31 (1991), p.37. Only Sheets 71 and 79 now remain to be replaced in the ‘standard’ style. The only noticeable design change on Sheet 78 is the use of very bold, squat writing for county names in the border.

The Godfrey Edition:

Between 18 April 1994 and 19 June 1994 coverage was extended to the following places:

Athlone	Monaghan	Warlingham
Fraserburgh	Scarborough	Widnes
Haywards Heath	Stroud	Worthing.

Richard Oliver

New Books

Roger J.P. Kain and Richard R. Oliver, *The tithe maps of England and Wales: a cartographic analysis and county-by-county catalogue*, Cambridge University Press, 1995, pp xxiv, 873, hardback, 20 x 27 cm, £35:00, ISBN 0-521-44191-9.

This substantial volume, in both price and *avoirdufois*, includes entries for all 11,785 tithe maps, and analysis of their characteristics. 42 tithe maps were made by the Ordnance Survey, and whilst they are atypical, the following (for Linton, in the West Riding of Yorkshire) gives a flavour of the catalogue entries:

43/263 Linton (township in parish of Linton) SD 987623

Apt 09.07.1846; 1202a (1201); Map 1843, 3 chns, 1st cl, by Ordnance Survey; construction lines, foot/b'way, waterbodies, houses, gardens, rock outcrops, field gates, building names, worsted mill, trigs (named), steps, footbridge, stepping stones, limestone quarries, limekilns, quarries, coal hole, water troughs, graveyard, hospital [almshouses], rectories, well, gasometer, sluice, draw well; streams named.

Potential purchasers and readers are reassured that there is an ten page 'explanatory key' to the mysteries of 'Apt', 'waterbodies' (ponds, not Remains floating in them), and 'chns'! There are about a hundred photographs, and tithe map coverage diagrams for each of the 55 tithe counties.

Richard Oliver

Mary Lynette Larsgaard, *Topographic Mapping of Africa, Antarctica and Eurasia*. Illustrations by Nancy Pearson. (Western Association of Map Libraries Occasional Paper No. 14), Provo, UT (USA), 1993. ISBN 0-939112-29-9. pp i-xv, 1-264. \$45 (post free).

In recent years three informative surveys have appeared, R.B. Parry and C.R. Perkin's *World Mapping Today*, 1987 (reviewed in *Sheetlines* 21), the International Cartographic association's *Inventory of World Topographic Mapping*, compiled and edited by Rolf Böhme and Roger Anson (Third and final volume published by Elsevier, 1993) and Miss Larsgaard's two volumes, the first of which *Topographic Mapping of the Americas, Australia and New Zealand* appeared in 1984, albeit from another publisher. One of her objectives has been to produce a reference work for the smaller library with a modest budget. (The complete ICA survey has been offered at the "reduced" price of £300!)

Why should this book be of interest to CCS members? Well, apart from presenting a succinct

account of what the Irish sometimes prefer to call "These Islands", it discusses and describes the work of British led mapping institutions in Africa and Asia during the colonial, and immediate post-colonial, periods. (For some reason, though, all references to Cyprus are omitted.) It is well written and contains a very extensive bibliography (with clear cross references between it and the main text). Unfortunately, like many reference works compiled from secondary sources, it does need to be used with care. For example, we are told: "in 1912 the layered Fully Coloured Popular Edition of the Quarter-inch series was

issued.” The relationships between the Ordnance Surveys of Great Britain, Ireland and Northern Ireland seem to have caused the author some confusion (and could cause uninitiated readers more?) There are also some slips in the bibliography (though I felt less than those in the ICA survey). “A History of the Ordnance Survey” appears to be the posthumous work of A.R. Hinks, poor Bill Seymour not even appearing in the index. The only CCS item cited

appears to be Guy Messenger’s *One-inch Map of England and Wales, Third Edition (Large Sheet Series)* of 1988.

Nevertheless, despite shortcomings, this is a valuable addition to the literature of the recent history of topographic cartography which should be made accessible to all interested in its development world wide. This reviewer will remain particularly grateful to the author for her extensive bibliography.

Ian O’Brien

Christopher Board “The secret Map of the County of London, 1926, and its Sequels”, *London Topographical Record*, Vol. XXVII (Publication No 149 of the London Topographical Society, 1995), pp257–280

For more than a century the London Topographical Society has rewarded members with an annual publication (or, exceptionally, as in 1995, two!). In most years this has been a reproduction of a map, plan or view of a part of Greater London, sometimes accompanied by a monograph. (Publication No 144, “Facsimile of the Ordnance Surveyors’ Drawings of the London area” was reviewed in *Sheetlines* 31.) Every five years or so, the diet is varied by issuing a new volume of the London Topographical Record containing essays on topics relating to the growth of the capital and its suburbs.

In his paper, Chris Board describes from fragmentary evidence the origins and form of the so-called “Secret Map” of the County of London produced at a scale of 1:20,000 in anticipation of the 1926 General Strike. (Unfortunately, one version was evidently considered so secret that no copy was preserved.¹ Subsequently the

original material for this map was used by Ordnance Survey, with War Office agreement, as a base for the better known Three-inch Map of London, published, with a separate gazetteer, in 1933. He goes on to describe two important derivatives of the OS publication, the “Lightning Plan” published by an associate of Waterlows in 1934, and the German 1:20,000 “Stadtplan von London”, updated by aerial reconnaissance in 1940 and 1941. The Lightning Plan incorporated corrections and revision to the earlier OS publication, but, surprisingly, for a map freely on sale never reached German hands. Nevertheless, Chris Board concludes that “the German map is probably the best single source for depicting the suburban extensions of London after that on the Lightning Plan of 1934.”

A particularly helpful feature of this paper is the reproduction of extracts from six maps covering the same area of south east London (Kidbrooke, Eltham and Mottingham) reduced to a common scale. The author’s acknowledgements include “numerous individuals in the Charles Close Society.”

¹ In his article *The Three-inch Map of London and its predecessors of 1926* in this issue of *Sheetlines*, Chris Board states that a copy of the map had recently been presented to the Map Library of the British Library.

Small Advert

For Sale — Several hundred OS Six-inch composite maps prepared in the early part of this century for civil engineering purposes. They have been professionally mounted and dissected with hard covers, neatly covered and or annotated. Although not yet catalogued but sorted into counties, enquiries are welcome. I am prepared to dispose of the collection as a single lot.

Alan Mais, 17 Copthorne Gardens, Hornchurch, RM11 3DL. Tel: 017084 50658

A Map in my Collection

7—1:50,000 paper covers

Richard Hillier reports that the Peterborough Central Library of Cambridge County Council has a copy of *Landranger* sheet 142, *Peterborough and surrounding area*, which appears to be the same as

that of Dr. Roberts (*Sheetlines* 42, p58), but seems to have been printed on a wider sheet of paper, the extra width being used to contain the cover details.

8—Manual map amendments

David Archer writes of a number of hand amendments of which he is aware:

— that the 1921 printing of the ¼" 3rd edition, England and Wales, Sheet 3, usually has the road running from Sedbury Hall (square B4) to Bowes (square B2) neatly hand coloured in red. Roger Hellyer and Chris Board confirm this from their collections. Chris also has a copy without the amendment, and notes that the road casing was widened on reprint.

— on his copy of the Half-inch Ministry of Transport road map, England and Wales, Sheet 10 (Reprint 2550/23), David Archer notes that there is

an oblong piece of paper with the word 'Amendment' printed on it, and obviously cut out by hand, stuck over a printed word above a list of seven road number changes. The printed word appears to be 'Amendment' mis-spelt. Can any member confirm this as David is not yet curious enough to remove the assumed correction.

— on page 8 of the *Description of Ordnance Survey small scale maps*, 1957, the words 'Igneous and Metamorphic Rocks' are usually crossed through by hand in black. Reference to Roger Hellyer's Ten Mile book shows this map not to have progressed beyond proof stage, and should not have been listed for sale.

13—1:50,000 Landranger: Spot height typographic anomalies

Dave Watt has examined the following Landranger sheets recently:

sheet 104 edition A (1979)

sheet 105 edition A* (1979)

sheet 170 edition A (1979)

and found that the type face of the spot heights varies.

On the first two sheets almost all the spot height type is Univers and conforms with the type specification for the Landranger Series, but in the cases of 20 and 13 heights respectively the type remains the old Gill Sans. He would have assumed

that when the specification changed from Gill Sans to Univers the entire spot height component would have been redone, yet this does not appear to have been the case. The geographic distribution of these anomalies on sheets 104 and 105 appears to be completely random.

On the third sheet (170) the entire spot height component has remained in Gill Sans whilst all other type on the sheet is in Univers.

Are there any other of half done sheets? Can anyone explain this apparent oversight?

14—Kent Six-inch map

John King has recently acquired two copies of a 6" sheet covering Eynsford and Farningham. The first has the reprint code 600/35 and 'For Official Use'. The second has the reprint code 200/37 and 'Not to be published'. Neither has a sheet number nor GSGS number, only O.S. 1935; both maps are printed on linen. With some research John has discovered that the two maps are a combination of parts of Sheet 17,

NW, NE, SW and SE, i.e. covering 1:2500 plans 6, 7, 10, and 11 of Sheet 17.

The second map has pencil annotations clearly suggesting a military use.

Were many maps produced at this scale for military use? Did the OS produce any other non-standard format 6" sheets of this type?

15—Irish One-inch maps

John King has purchased two Irish One-inch maps, Sheets 162(1882) and 199(1881) described in the auctioneer's catalogue as printed on silk. It does appear that both maps have been printed on a

material akin to silk; they are rolled but can be crumpled without damage.

Did the Ordnance Survey produce maps on silk, and for what purpose?

Letters

Mirrors of History — (1) a Nice Irony; from Ian O'Brien (014)

The example quoted by Tim Nicholson of an allied map printed on the back of one produced by the Germans is far from unique. Indeed, the Germans did this sort of thing too, for example, printing maps needed for home defence, in the last months of the war, on the backs of maps of France no longer required after the Liberation. Unfortunately for present day collectors, because of the relatively large size of German maps of the United Kingdom, enlarged as they were from one inch to 1:50,000 or half inch to 1:100,000 scales, they are apt to be cut in half before re-use by American, British or Canadian field printing units. A homesick Scot must have hung on to a particularly tatty 1:25,000 sheet of Germany, reprinted by the Royal Canadian Engineers in March,

1945, for the sake of a fragment of *Schottland 1:50,000 Kilmarnock*; while a British unit reprinted an American produced sheet of the Netherlands on half of *England 1:50,000 Weald of Kent*. (A marginal note refers to the adjacent sheet, *Regate und Turnbridge Wells* [sic]!) Re-reading the sections of Clough's *Maps and Survey* (War Office 1952), which describe the generous assistance rendered to allied survey units on arrival in Paris and Brussels in 1944, I was reminded how wartime experience had created and cemented the "mafia" that dominated the British mapping community during the 1950s and early 1960s, and linked it to similar groups in its former allies.

Recording our Changing Landscape — some biased thoughts; from Dave Watt (181)

Full marks to Richard Oliver for his commentary on the Royal Geographical Society on the future of Ordnance Survey digital data, and for keeping members informed of current developments.

Viewing cartography from a standpoint within a government cartographic organisation and given the amount of money expended in the field, I think that I can assure Dr Oliver that the future of cartography is digital, no more so than at the OS. The OS appears now almost totally customer oriented and those with influence (government departments, local authorities, utilities, etc.) have either abandoned paper maps already, or are actively attempting to accommodate digital technology.

Almost as a by-product, the OS is creating a digital archive, but this archive is not of prime concern to these customers (yet?) despite the warning signals from libraries, record offices and academia. OS seem to see no commercial gain in pursuing or developing an archive; so they aren't.

Where the digital archive is held will not, I think, be a trivial detail since whoever houses the archive will presumably have to fund its maintenance and staff to allow public access. The OS have the data and the hardware and software to run it, but see it as a financial drain. The other organisations either do not recognise the need for an archive at all, or see the need but are not financially geared to purchasing data as they are used to receiving it via copyright. In any event they currently have neither the software nor hardware to support digital data (funds from the

Millennium Fund, perhaps?) and are reluctant to move until standards on digital data archiving are agreed.

Microfilm aperture cards seem an anachronism in a digital environment, which the OS will surely try to discontinue as soon as possible. Yet in any case, aperture cards of what? Superplan has neither 'sheets' nor 'editions'. It is a constantly updated seamless, national digital database and as such is 'published' (if that is the right word) nationally at a frequency dependent on the downloading of new survey data, minute by minute.

Mr Perkin's view of digital map libraries seems entirely realistic, and existing libraries of whatever standing either move quickly or risk being side tracked as large scale paper OS maps cease production.

In the view of quite a few multinational companies, and the OS, digital mapping is not transitory. Today's children are more at home with a computer screen than a pen and will expect their 'maps' to be parts of geographic information systems, the layers of which they can manipulate at will. The researchers of 30 years hence will at least expect to be able to access annual snapshots of Britain, something which is impossible to do presently, and all this probably on the Internet. They will view paper maps (and maybe even the libraries that will house them) much as we view copper plates and the private libraries of aristocrats, at the forefront of the technology of the day, now superseded.

The ‘Southampton Circulars’; from Richard Porter (107)

Following Richard Oliver’s note in *Sheetlines* 42, I have had a look in the Ordnance Survey Library holdings in Southampton.

The photocopies at OS run from 1880 to 1922, in three folders, but the library also holds three foolscap-size ledgers of original Circulars, 1913–

and from Ian Mumford (012)

With reference to the note by Richard Oliver in *Sheetlines* 42, the so-called ‘Dublin’ Southampton Circulars were, I believe, copied in 1949 from an original three volumes. The photocopies were held in the Ordnance Survey Southampton Library as Book No.1, Book No.2 and Book No.3 (G3962, G3963, G3964). The actual Irish identities, taken from the covers, were:–

- G3962 Book No.1 Southampton Circulars from 11.2.80 to 3.9.12
- G3963 Circulars 1892 to 1902 [contains in fact some related OSI material up to 1946 and was apparently the copy held by OSI Section D]
- G3964 Southampton Circulars 1 [earliest 1894 but mainly 1901 to 1921]

When we started the communal project for the OS History in the early 1960s, one of the first things that Peter Skelton did after taking on the Editorship at Chessington and viewing the pitifully few items which had survived the bombing of the Library, was to get the DG to authorise a notice intended to gather in all old books, reports and manuals which would have been quite properly held in the possession of Superintendents and others in 1940. After the setting up of the new Library in 1968 at Crabwood under Ron Thornton, there were piles of this material which gradually got worked over. Amongst this uncatalogued material I found three guard books — 2J, 2K, 2L, — which had apparently originated in D.O.8 in Bristol, and which contained mainly Circulars from 1914 to 1931. I think they were as catalogued G7094, G7095, G7096. Presumably all Division Offices had their own sets of Circulars. The

1931, and two A5-size binders of original Circulars 1920–1941. The A5 binders contain mostly printed circulars, numbered CC xxx; they do not seem to duplicate the contents of the two ledgers which overlap them in date. Although the occasional CC is in the ledger rather than the A5 binder.

three volumes from Dublin imply a similar situation in the offices in Ireland.

Inter-War Circulars were printed in a smaller format, and a bound volume of these which may have been held by the Adjutant or the Quartermaster of the Survey Battalion, runs from Circular number 692 (1920) to Circular number 1118 (1936), but with enormous gaps. The selection deals mainly with staff administration and Whitley type matters such as rates of pay and conditions of service. This volume was held by the Library under 354.87(0443) when Yolande Hodson drew it to my attention only in recent years. I missed it, and perhaps similar items hiding under UDC numbers when I was using the Library 20 years before, in the heady days of discovery during the OS History project that not everything at Southampton of historical interest had been destroyed by bombs.

The earliest Circulars, dating from the days when the original circulated and was copied for promulgation locally, are to be found in the manuscript volume of the Division Orders of the Edinburgh Office running from August 1870 to December 1879. This was formerly in the Library as G3484, and is now, I believe, in the PRO.

Perhaps Paul Ferguson could round out this story by letting us know what sets of Southampton Circulars survive in OSI and in the National Archives, and whether they have been listed in detail.

Somebody with time on their hands might like to index the variegated collections. The indexes in the photocopies of the ‘Dublin’ volumes are defective and there is certainly more in them than Richard remembers.

Meeting

At the Schola Astromiæ et Rhetoricæ, Scols Triangle, Bodleian Library, Oxford,
Tuesday 17 October at 5pm

Native American Maps of the Cloumbian Encounter

by Louis de Vorsey, Jr., Professor Emeritus, University of Georgia

Further details from Dr Elizabeth Baigent, St. Hugh’s College . Oxford . OX2 6LE