



Sheetlines

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

This edition of *Sheetlines* was published
in 1998 and the articles may have been
superseded by later research.

Please check the index at
<http://www.charlescloseociety.org/sheetlinesindex>
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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 51

April 1998

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Landranger Study Day in Derby, Saturday 4 July 1998

A study day has been arranged in Derby on the subject of 1:50 000 Landranger maps. Speakers include Richard Oliver, Bill Henwood and Lez Watson, while subjects to be covered include The Pre-History of the 1:50 000 map; Errors on Landranger Maps; and Airfields and the Purple Map.

There will be also plenty of opportunity for display and examination of interesting 1:50 000 related items. The room booked has suitable surfaces for displaying items, and tables are available. The room has curtains so slide presentations should be possible!

The meeting will take place at the Friends' Meeting House, St.Helens Street, Derby (SK349367). The room is booked from 10.00, but the formal part of the meeting will not start until 11.00, to allow time for arrivals from distant parts of the country. Coffee and tea will be available at intervals throughout the day, but no formal arrangements have been made for lunch - bring a packed lunch, or go out to nearby pubs and restaurants.

There is limited parking close to the Meeting House, and a multi-storey car park within 2 minutes walk. The venue is about 10 minutes walk from Derby town centre, or 25 minutes walk from the Railway Station.

The day will cover the whole gamut of OS 1:50 000 maps, their progenitors, and their derivatives - military overprints, Power Line and Obstruction Overprints, privately sponsored overprints, and anything else that participants would like to see covered. There will be plenty of opportunity for impromptu presentations, but contact Rod Sladen (see below) if there are any specific subjects you would like to see covered or if there is a subject on which you would like to talk for a few minutes.

All are welcome. Please bring any unusual 1:50 000-related items for display.

Further details, including a map of how to get to the venue from Rod Sladen, 25 Linden Grove, Beeston, Nottingham NG9 2AD (Tel 0115 922 7162).

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Sheetlines 51

April 1998

Editorial

Firstly we would like to thank readers for the helpful feedback we have had on *Sheetlines* 50, our first proper 'solo' effort. Please continue to submit your thoughts to us - whether they be on Ordnance Survey matters generally or about *Sheetlines* and its format and content, we will be pleased to hear from you. You can send items to either Jim or myself - there is no need to send them to both of us. We would particularly welcome articles with pictures, whether they are illustrations or maps. The source material needs to be of as good a quality as possible and if it is helpful send us the source material, and we will arrange professional copying, then return the original to you.

Amongst the articles in this edition of *Sheetlines* we have an article from Richard Oliver about maps for cyclists, a paper from Rob Wheeler on Ordnance Surveyors Drawings, the latest from Gerry Jarvis, the Society's representative on the RGS/OS Education/Consultative Committee, and the usual list of recent and forthcoming new maps.

JC/JR

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## Printing Historical Society

Members may be interested to know about the Printing Historical Society. This was founded in 1964 and now has a world-wide membership. It fosters interest in the history of printing and encourages both the study and the preservation of printing of printing machinery, records and equipment of historical value. Representing all aspects of the printing arts and industry, members include printers, graphic designers, typographers, publishers, librarians, collectors, booksellers and historians of all relevant fields. In pursuit of its aims, the Society holds meetings and arranges lectures, and, since its inception, has produced a series of publications which are available to members.

The Society issues an annual Journal which maintained a high standard of scholarship and distinction in production, publishing the results of original research in the history of printing, including histories of the machinery and equipment, of the industry and its personnel, of the printing processes, and the design of its artefacts. Members receive the Journal as part of their subscription, as well as the Bulletin, issued twice a year, which contains shorter articles, book reviews, and notices and reports of meetings and other activities of interest to members.

For further details, write to The Hon. Secretary, The Printing Historical Society, St Bride Printing Library, Bride Lane, Fleet Street, London EC4Y 8EE.

## Notice

We understand that the books and maps of our late member Mr Patterson Rutherford will form part of an auction on 15<sup>th</sup> August. Further details can be obtained nearer the time from Mr R. Burrows on 01386 881432.

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## The Channel Tunnel

Donald Binns

Editors' note: Since this article was prepared we were very sad to learn that Donald unexpectedly passed away, and we pass on the Society's condolences to his family

It seemed an interesting idea to compare the two terminals of the Channel Tunnel as portrayed on the 1:25000 series of the OS and the IGN. The immediate impression is one of the spacious area of the French terminal as compared with the English one confined between the North Downs and the built-up area of Folkestone. Since the French map was published, the Cite Europe shopping centre has been built and opened - the roads, with roundabouts leading to it can be seen to the west of the 'Terminal Tourisme'. It's almost difficult to believe that the two maps are on the same scale.

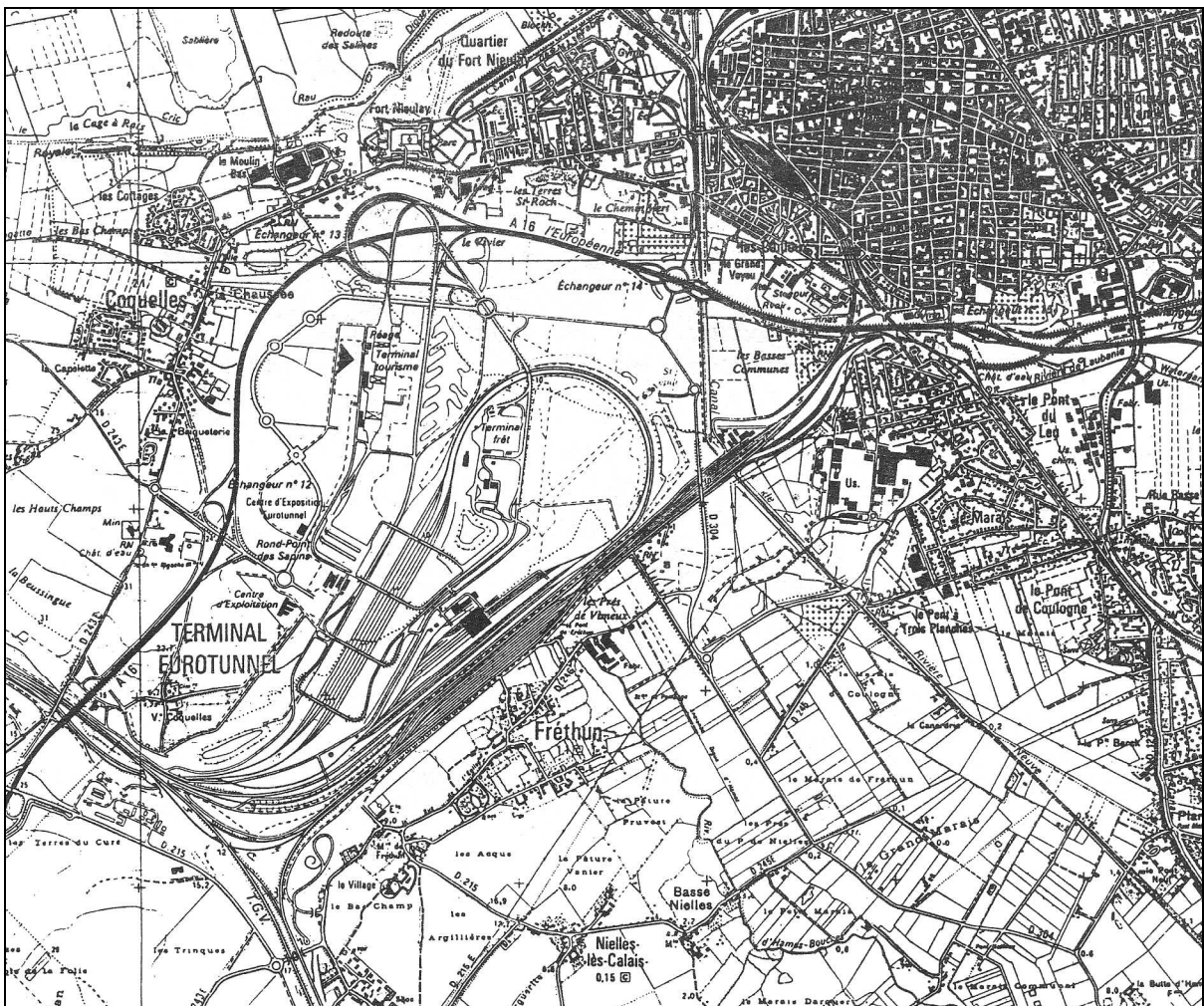
It's not realistic to make too much comment on the difference between the two maps - seen, as they are here, only in black and white - but there is a noticeably greater range of type sizes on the French map. The terminal names themselves are not only in very different type sizes, but, even allowing for language differences, don't use the same title - the OS preferring the geographic description against the French use of the company name.

There are differences too, when the tunnel passes under the sea. The French map has quite detailed representation of the submarine topography complete with submarine contours, buoys and even wrecks, but the pecked lines showing the tunnel's course cease about two kilometres away from the coast. The OS has the tunnel right up to the sheet edge, but it passes under a perfectly plain blue sea. The way the tunnel stops abruptly out in the Channel on the French sheet is especially odd given the sea-bed detail which is shown - somehow the curtailment would have seemed more natural on the OS with its reluctance to show any marine detail. The French sheet shows ferry services heading for England, but again the line stops out at sea. It's arguable that such a line would only approximate the route taken by individual craft, and is therefore merely pointing towards England - against this the Tunnel is a fixed link, whose precise course could be plotted. Following this logic the OS do not show the ships' courses, but merely indicate the presence of a service in boxes placed by the harbours at Dover and Folkestone.

The maps referred to are:-

OS 1:25,000 *Explorer* sheet 138 - Dover, Folkestone & Hythe, Edition A. revised 1997.

IGN 1:25,000 Series *TOP25* sheet 2103ET - Calais, Edition 1, 1994



## New maps

### Ordnance Survey of Great Britain

The following were issued between 1 October 1997 and 31 March 1998 (plus a few that have appeared in the shops in April):

1:250,000 *Travelmaster*

7 B/ *Wales and West Midlands* (10/97)

1:50,000 *Landranger* (Second Series) ('new specification' sheets showing Access Land, cycle routes, etc. are annotated '[AC]'):

- |                                                                                                                                  |                     |                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------|
| 19                                                                                                                               | B (revised 1996)    | <i>Gairloch &amp; Ullapool, Loch Maree</i> (1/98)                           |
| 21                                                                                                                               | B (revised 1997)    | <i>Dornoch &amp; Alness, Invergordon &amp; Tain</i> (3/98) [AC]             |
| 23                                                                                                                               | C (revised 199?)    | <i>North Skye</i> (2/98) [AC]                                               |
| 24                                                                                                                               | B (revised 1996-7)  | <i>Raasay &amp; Applecross, Loch Torridon &amp; Plockton</i> (2/98) [AC]    |
| 55                                                                                                                               | B (revised 1996)    | <i>Lochgilphead &amp; Loch Awe</i> (1/98) [AC]                              |
| 62                                                                                                                               | B (revised 199?)    | <i>North Kintyre &amp; Tarbet</i> (2/98) [AC]                               |
| 72                                                                                                                               | B (revised 1996)    | <i>Upper Clyde Valley, Biggar &amp; Lanark</i> (1/98) [AC]                  |
| 85                                                                                                                               | C (revised 1996)    | <i>Carlisle &amp; Solway Firth, Gretna Green</i> (11/97)                    |
| 86                                                                                                                               | C (revised 1996)    | <i>Haltwhistle &amp; Brampton, Bewcastle &amp; Alston</i> (11/97)           |
| 87                                                                                                                               | C (revised 1996-7)  | <i>Hexham &amp; Haltwhistle</i> (2/98) [AC]                                 |
| 90                                                                                                                               | C (revised 1996-7)  | <i>Penrith &amp; Keswick, Ambleside</i> (11/97) [AC]                        |
| 94                                                                                                                               | C (revised 1995-6)  | <i>Whitby &amp; Eskdale, Robin Hood's Bay</i> (2/98) [AC]                   |
| 105                                                                                                                              | B2 (revised 1988)   | <i>York &amp; Selby</i> (2/98) [AC]                                         |
| 111                                                                                                                              | B4 (revised 1982)   | <i>Sheffield &amp; Doncaster, Barnsley &amp; Thorne</i> (3/98)              |
| 120                                                                                                                              | C (revised 1996)    | <i>Mansfield &amp; Worksop, Sherwood Forest</i> (11/97)                     |
| 121                                                                                                                              | B1 (revised 1991-2) | <i>Lincoln &amp; Newark-on-Trent</i> (11/97) [AC]                           |
| 131                                                                                                                              | C (revised 1997)    | <i>Boston &amp; Spalding</i> (3/98) [AC]                                    |
| 135                                                                                                                              | B/ (revised 1996)   | <i>Aberystwyth and Machynlleth</i> (10/97) [AC]                             |
| [This replaces edition B, which is understood to have been withdrawn because of errors in the public rights of way information.] |                     |                                                                             |
| 139                                                                                                                              | C (revised 1995-97) | <i>Birmingham &amp; Wolverhampton</i> (3/98) [AC]                           |
| 142                                                                                                                              | C (revised 1997)    | <i>Peterborough, Market Deeping &amp; Chatteris</i> (4/98) [AC]             |
| 151                                                                                                                              | C (revised 1997)    | <i>Stratford-upon-Avon, Warwick &amp; Banbury</i> (1/98) [AC]               |
| 156                                                                                                                              | A4/ (revised 1980)  | <i>Saxmundham, Aldeburgh &amp; Southwold</i> (1/98)                         |
| 159                                                                                                                              | C (revised 1995-6)  | <i>Swansea &amp; Gower, Carmarthen</i> (10/97) [AC]                         |
| 160                                                                                                                              | A3 (revised 1983)   | <i>Brecon Beacons</i> (1/98) [AC]                                           |
| 163                                                                                                                              | B2 (revised 1988)   | <i>Cheltenham &amp; Cirencester, Stow-on-the-Wold</i> (1/98) [AC]           |
| 164                                                                                                                              | C (revised 1996)    | <i>Oxford, Chipping Norton &amp; Bicester</i> (12/97) [AC]                  |
| 165                                                                                                                              | C (revised 1996)    | <i>Aylesbury &amp; Leighton Buzzard</i> (10/97) [AC]                        |
| 174                                                                                                                              | C (revised 1995-6)  | <i>Newbury &amp; Wantage, Hungerford &amp; Didcot</i> (11/97) [AC]          |
| 179                                                                                                                              | C (revised 1995-7)  | <i>Canterbury &amp; East Kent, Dover &amp; Margate</i> (1/98) [AC]          |
| 183                                                                                                                              | B1 (revised 1991-2) | <i>Yeovil &amp; Frome</i> (2/98) [AC]                                       |
| 195                                                                                                                              | C (revised 1995)    | <i>Bournemouth &amp; Purbeck, Wimborne Minster &amp; Ringwood</i> (10/97)   |
| 196                                                                                                                              | C (revised 1996)    | <i>Solent &amp; The Isle of Wight, Southampton &amp; Portsmouth</i> (10/97) |

1:25,000 *Explorer* [Second Series]:

- 114 A *Exeter & the Exe Valley* (11/97)
- 117 A *Cerne Abbey & Bere Regis* (1/98)
- 118 A *Shaftesbury* (11/97)
- 119 A *Meon Valley, Portsmouth, Gosport & Fareham* (3/98)
- 120 A *Chichester* (11/97)
- 121 A *Arundel & Pulborough* (1/98)
- 124 A *Hastings and Bexhill* (11/97)
- 125 A *Romney Marsh* (1/98)
- 126 A *Clovelly & Hartland* (11/97)
- 127 A *South Molton & Chulmleigh* (10/97)
- 128 A *Taunton & Blackdown Hills* (10/97)
- 130 A *Salisbury & Stonehenge* (3/98)
- 131 A *Romsey, Andover & Test Valley* (2/98)
- 132 A *Winchester, New Alresford & East Meon* (3/98)
- 133 A *Haslemere & Petersfield* (10/97)
- 134 A *Crawley & Horsham* (10/97)
- 136 A *The Weald* (10/97)
- 139 A *Bideford, Ilfracombe & Barnstaple* (3/98)
- 143 A *Warminster & Trowbridge* (2/98)
- 144 A *Basingstoke, Alton & Whitchurch* (2/98)
- 145 A *Guildford & Farnham* (2/98)
- 146 A *Dorking & Leatherhead* (11/97)
- 147 A *Sevenoaks & Tonbridge* (10/97)
- 151 A *Cardiff & Bridgend* (2/98)
- 153 A *Weston-Super-Mare & Bleadon Hill* (3/98)
- 157 A *Marlborough & Savernake Forest* (3/98)
- 165 A *Swansea/Abertawe* (3/98)
- 167 A *Thornbury, Dursley & Yate* (3/98)
- 168 A *Stroud, Tetbury & Malmesbury* (3/98)
- 239 A *Lake Vyrnwy/Llyn Efyrynwy & Llanafyllin* (3/98)

Sheet 18, *Ashdown Forest*, was renumbered 135 with effect from 24 February 1998.

1:25,000 *Outdoor Leisure Maps* [Second Series]:

- 2 A *Yorkshire Dales - Southern & Western areas* (11/97).  
[This sheet has been republished: it now covers a larger area, including that formerly covered by OLM 10, which has consequently been withdrawn from publication.]
- 4 A *The English Lakes - North Western area* (3/98)
- 5 A *The English Lakes - North Eastern area* (3/98)
- 6 A *The English Lakes - South Western area* (3/98)
- 7 A *The English Lakes - South Eastern area* (3/98)
- 17 B *Snowdon/Yr Wyddfa & Conwy Valley/Dyffryn Conwy* (3/98)
- 18 C *Harlech, Porthmadog & Bala/Y Bala* (3/98)
- 23 C *Cadair Idris & Bala Lake/Llyn Tegid* (3/98)
- 29 A *Isle of Wight* (4/98)
- 45 A *The Cotswolds* (2/98)



The following maps are scheduled to be released for sale in April and May 1998:

1:50,000 *Landranger*:

|     |    |                                                                     |           |
|-----|----|---------------------------------------------------------------------|-----------|
| 16  | B  | <i>Lairg &amp; Loch Shin, Loch Naver</i>                            | [14/4/98] |
| 89  | C  | <i>West Cumbria, Cockermouth &amp; Wast Water</i>                   | [13/5/98] |
| 96  | C  | <i>Barrow in Furness &amp; South Lakeland</i>                       | [22/4/98] |
| 97  | C  | <i>Kendal &amp; Morecambe, Windermere &amp; Lancaster</i>           | [13/5/98] |
| 129 | B3 | <i>Nottingham &amp; Loughborough, Melton Mowbray</i>                | [8/4/98]  |
| 142 | C  | <i>Peterborough, Market Deeping &amp; Chatteris</i>                 | [8/4/98]  |
| 170 | C1 | <i>Vale of Glamorgan, Rhondda &amp; Porthcawl</i>                   | [10/5/98] |
| 189 | C  | <i>Ashford &amp; Romney Marsh, Rye &amp; Folkestone</i>             | [15/4/98] |
| 197 | C  | <i>Chichester &amp; The South Downs, Bognor Regis &amp; Arundel</i> | [15/4/98] |

1:25,000 *Explorer*:

|     |   |                                               |           |
|-----|---|-----------------------------------------------|-----------|
| 142 | B | <i>Shepton Mallet &amp; Mendip Hills East</i> | [13/5/98] |
|-----|---|-----------------------------------------------|-----------|

### **Withdrawn *Pathfinders***

The following 1:25,000 *Pathfinders* have either recently been officially withdrawn from publication (though residual stocks of some sheets may remain on sale), or will be following the new 1:25,000 publications listed above:

566-568, 575-577, 625-627, 635, 636, 647, 669, 736, 867, 1043, 1067, 1090, 1107, 1114, 1127, 1132, 1133, 1151, 1152, 1163, 1164, 1169, 1180, 1181, 1185, 1197, 1200-1207, 1208, 1213, 1220, 1221, 1223, 1224, 1227-1229, 1240, 1241, 1243-1247, 1249-1251, 1254-1257, 1261, 1262, 1264-1268, 1270-1272, 1274-1278, 1281, 1282, 1284-1287, 1290, 1291, 1298-1301, 1304-1306, 1309, 1314, 1317-1319, 1323.

The *Hadrians Wall* Historical Map & Guide was also withdrawn at the end of 1997.

### **Ordnance Survey of Ireland**

The following 1:50,000 *Discovery* series sheets have recently been published, all as First Editions:

Sheets 36, 42, 43, 59

### The Godfrey Edition

The following were published by Alan Godfrey Maps between 15 November 1997 and 26 February 1998:

*1:63,360*

England 285 1888 [surveyed 1865-71] [*North West Surrey*] [17/2/98]

*1:2500 reduced to 1:4340*

|                                                                           |         |                                                                |                     |
|---------------------------------------------------------------------------|---------|----------------------------------------------------------------|---------------------|
| Cheshire 20.14                                                            | 1907    | [ <i>Disley</i> ]                                              | [17/2/98]           |
| Derbyshire 50.13                                                          | 1899    | [ <i>Derby (South)</i> ]                                       | [15/11/97]          |
| Down 4.11                                                                 | 1902    | [ <i>Belfast (East)</i> ]                                      | [19/12/97]          |
| Durham 19.03                                                              | 1896    | [ <i>Holmside &amp; Edmondsley</i> ; with part of 19.04, 1896] | [28/1/98]           |
| (This was the one thousandth map to be published in the Godfrey Edition.) |         |                                                                |                     |
| Essex 27.08                                                               | 1896    | [ <i>Colchester (North)</i> ]                                  | [28/1/98]           |
| Essex [NS] 86.04                                                          | 1915    | [ <i>Upney</i> ]                                               | [17/2/98]           |
| Gloucestershire 71.16                                                     | 1901    | [ <i>Bristol (NW) &amp; Clifton</i> ]                          | [28/1/98]           |
| Lanarkshire 1.15                                                          | 1910    | [ <i>Bishopbriggs</i> ]                                        | [26/2/98]           |
| Lancashire 59.13                                                          | 1909    | [ <i>St Annes-on-the-Sea</i> ]                                 | [17/2/98]           |
| Lancashire 59.14                                                          | 1908-9  | [ <i>Lytham Hall</i> ]                                         | [26/2/98]           |
| Lancashire 71.12                                                          | 1908    | [ <i>Haslingden</i> ]                                          | [3/12/97]           |
| Lancashire 72.11                                                          | 1909    | [ <i>Bacup</i> ]                                               | [15/11/97]          |
| Lancashire 72.15                                                          | 1909    | [ <i>Stacksteads &amp; Bacup (SW)</i> ]                        | [17/2/98]           |
| Lancashire 104.03                                                         | 1889/91 | [ <i>Manchester (Harpurhey &amp; Collyhurst)</i> ]             | [22/12/97]          |
| Lancashire 106.03                                                         | 1906    | [ <i>Walton on the Hill</i> ]                                  | [19/12/97]          |
| London 140                                                                | 1894    | [ <i>Kingston &amp; Hampton Wick</i> ]                         | [3/12/97]           |
| London 149                                                                | 1894-5  | [ <i>Thornton Heath &amp; Norbury</i> ]                        | [3/12/97; 20/1/98]  |
| Middlesex 6.16                                                            | 1911    | [ <i>North Finchley</i> ]                                      | [15/11/97]          |
| Nottinghamshire 42.02                                                     | 1899    | [ <i>Central Nottingham</i> ]                                  | [3/12/97]           |
| Nottinghamshire 42.06                                                     | 1899    | [ <i>Nottingham (South)</i> ]                                  | [17/2/98]           |
| Staffordshire 67.03                                                       | 1901    | [ <i>Sedgley (NE) &amp; Deepfields</i> ]                       | [28/1/98]           |
| Staffordshire 67.07                                                       | 1901    | [ <i>Sedgley (SE) with Swan Village &amp; West Coseley</i> ]   | [22/12/97]          |
| Staffordshire 67.16                                                       | 1901    | [ <i>Dudley</i> ]                                              | [22/12/97]          |
| Staffordshire 71.07                                                       | 1901    | [ <i>Brierly Hill (East)</i> ]                                 | [26/2/98]           |
| Surrey 14.02                                                              | 1911    | [ <i>Thornton Heath</i> ]                                      | [19/12/97; 20/1/98] |
| Surrey 14.05                                                              | 1910    | [ <i>Croydon (Mitcham Road)</i> ]                              | [28/1/98]           |
| Yorkshire 231.15                                                          | 1905    | [ <i>Brighouse</i> ]                                           | 22/12/97]           |

*Richard Oliver*

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Mirror Image?

Lionel Hooper has noticed an error, or at least an oddity, on the cover of one of the First Series Explorer covers, whereby the photograph adorning the front looks as if it has been reversed. Have a look through your collection and see if you can identify which one it is, and we will print the images in *Sheetlines* 52.

RGS/OS Education/Consultative Committee

Gerry Jarvis

Just to remind readers that I am the Charles Close Society representative on this committee, and the purpose of reporting meetings in *Sheetlines* was covered in my first paper in *Sheetlines* 49, September 1997.

For those members who do not have access to *Sheetlines* 49, you can contact me for further information on any paper at:-

Rulow House, Buxton Old Road, Macclesfield, Cheshire SK11 0AG.

Tel. 01625 611594

E-mail: gerryj@zetnet.co.uk

Each paper is also available in full over the Internet at:- <http://www.ordsvy.gov.uk/>
or by writing to the Ordnance Survey at:-

Consultative Committee Liaison, Room 632

Ordnance Survey

Romsey Road

Southampton SO16 4GU

Tel. 01703 792545

Fax. 01703 792031

E-mail: dbill@ordsvy.gov.uk

The following items summarise papers from the last meeting in November 1997.

Consultation paper 2/1997

Enhancing the National Topographic Database

Introduction - Comments on feedback from 1/1997.

Pilot trial.

Beyond the pilot trial.

Degrees of enhancement.

Illustrations - Annexes A-D.

Comments and enquiries.

Consultation paper 3/1997

Positional accuracy of large-scale data and products

Introduction

Terminology and definitions.

Monitoring methods.

Accuracy of OS data and products.

Future requirements.

Data integration

Conclusions.

Responses and enquiries.

References.

Consultation paper 4/1997

Historical maps and map data.

Introduction.

Update on work in progress to create a digital historical database incorporating OS County Series and selected series of National Grid superseded mapping.

The strategic drivers for historical data.

Recent progress.

The next stage.

Joint venture with Landmark for exploitation of historical database, and the provision of products. Joint marketing strategy to be negotiated in coming months.

Legal deposit of our digital data.

OS as a 'place of deposit'.

Seeking to provide at Southampton an acceptable place of deposit for our digital mapping.

Responses.

Information paper 7/1997

Pricing principles for digital data products.

Introduction.

What determines our prices?

Price levels past and future.

Information paper 8/1997

Street and land and property gazetteers.

Introduction.

What are the gazetteers?

Benefits of standardised gazetteers.

Uses of gazetteers.

OS's role in the development of gazetteers.

Street gazetteers.

Land and property gazetteers.

Addresses.

Public rights of way.

Our commitment.

References.

Information paper 9/1997

Improving customer service for consumer products through the retail trade.

Introduction.

Background.

Improving the range of outlets.

Improving the range of products.

Providing up-to-date products.

OS accepting returns of superseded mapping.

Improved point-of-sale material.

Better information.

Major outlets will have up-to-date mapping, and listings showing the latest editions and their publication dates.

Customer Information Helpline and World Wide Web site will also provide this information, which should preclude the need for further wide despatch of printed lists.

Improving the standard of service.

Taking note of feedback.

The future.

Enquiries. Customer Information Helpline 0345 330011.

Information paper 10/1197

Involvement with the private sector.

One of our corporate aims is:-

‘to build long-term, mutually beneficial relationships with our customers, suppliers and business partners’

Partners.

Value added resellers.

Conventional co-publications.

Electronic co-publications.

International.

Agents and retail outlets.

Suppliers.

Mapping contracts.

Portable revision integral survey module (PRISM).

Human resources.

Other involvements with the private sector.

A growing commitment.

Information paper 11/1997

Miscellaneous items of interest.

National Interest Mapping Service Agreement (NIMSA) update.

Pricing of digital products.

Appointment of new Non-Executive Directors,

Staff development.

Promotional campaign.

Framework for the World.

New book edited by David Rhind, Director General and Chief Executive. Includes a frank account of ‘redesigning and rebuilding’ OS in the 1990’s. Also includes a chapter on new technologies.

Award for Explorer map.

Information paper 12/1997

Promotional events November 1997 to March 1998.

Information paper 13/1997

Developments for the World Wide Web (WWW).

Including Net-Map - simple picture mapping for the WWW.

Introduction.

Net-Map data set.

The need.

What is Net-Map?

Initial promotion.

What will it cost?

The future.

Enquiries.

Clare Hadley

Value Added Reseller Manager

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Railways and Maps

John Cole

Fortunate indeed is the society member who is also a railway enthusiast. The Popular Edition of the One-inch map is possibly the best collection to have, and failing that the New Popular or first issues of the Seventh Series (best for built-up areas). Every sheet for England and Wales and at least forty Scottish contained railway information. For those with considerable storage space six-inch maps of the pre-1923 period might be best of all.

Specific articles on the subject appear in *Sheetlines* 16, 25, 32, 33, 42, 48 and 49 whilst 38 features an account of a CCS visit to the National Railway Museum at York in 1993. A most important article on the mapping side of the business appears in *Sheetlines* 42 contains the 1897 instructions for 'Insertion of Railways etc. for One Inch map'. And one of the mapping gems (New Series One Inch 287) shows the Oxted-Groombridge line going up and down the hill at Markbeach instead of through the 1200 yard tunnel shown on the Second Edition of 1895.

Which brings me to Malcolm McIvor's article on Merrybent in *Sheetlines* 50. A village which immediately sprang to my mind is Halwill Junction in Devon. Equal in built-up area to Halwill itself (lying a mile or so to the west) it retains the name even though all railway has long since gone.

On Seventh Series Sheet 67 (1955) appears Annbank Station as a village name lying to the east of Ayr and a similar distance from Annbank as above. Inspection of the latest 1:50,000 reveals that the station as well as the name has gone and it is now Mossblown (apparently taken from a local farm).

On the other side of Scotland the name Riccarton Junction has long since vanished together with the former 'Waverley' line from Edinburgh to Carlisle. In its heyday this 'village' comprised thirty cottages, a one-roomed school, a post office and some large railway installations. But no roads and no doctor - the railway was the sole means of access (bar paths) and the reason for being. But the strangest story I have come upon - and I admit I cannot vouch for its authenticity - surrounds the hamlet of Twenty on the A151 between Bourne and Spalding.

The Midland and Great Northern Joint Railway ran from the Midlands into Norfolk through areas of sparse population with many of its intermediate stations virtually in no man's land e.g. North Drove, Counter Drain indicating by their names features rather than settlements. Thus it is claimed that Twenty Station took its name from the OS field number in which it was situated, which in turn suggests a date for the construction of post-1883 when the Lincolnshire 1:2500 commenced. Alternatively it could if earlier have been a field number on the tithe map. Nevertheless with the railway no more than a distant memory, the name persists on the 1:50,000.

The name Midland and Great Northern persisted up to the end of the New Popular One-inch map. The railway remained outside the 1923 grouping and whilst from 1936 it was

managed by the London and North Eastern, it depended on the London, Midland and Scottish for its traffic.

The 1923 amalgamation into the 'big four' (GW, LM & S, L & NE and Southern Railways) saw a number of joint lines and light railways retaining their names and in general the OS coped with these. However the following exceptions and their OS treatment may be of interest.

The Cheshire Lines Committee was GC, GN and MR joint and the means by which the GC (later L & NE) reached its outposts at Wrexham, the Wirral, Wigan and St Helens. From the outset OS appeared not to like 'Committee' or considered adding 'railway' in brackets too cumbersome, so it settled for Cheshire Lines Railway occasionally abbreviated to CLR.

In Norfolk were to be found the two separate sections of the Norfolk and Suffolk (Cromer to North Walsham and Gorleston to Lowestoft). This was another joint committee between the M&GN mentioned earlier and the GE. On my copy of New Popular (Provisional) 126 it is annotated Norfolk & Suffolk Joint Ry but the southern section on New Popular 137 appears as Norfolk & Suffolk Jt Rys Committee!

Apart from the concerns which retained their pre-1923 titles the usual One-inch map treatment for joint railways was LNE & LMSR, GW and LMSR etc. but on New Popular (Provisional) 103 the South Yorkshire Joint Railway (originally involving five pre-grouping companies) is so annotated at either end, but L&NE and LM & S Jt Ry in its centre section.

Finally Brian Dobbie is almost certainly correct when he suggests (*Sheetlines* 48) that OS may have intended to indicate which railways ran services over a line. This would explain LMSR and GWR being written twice between Tredegar and Risca (New Popular 154). In fact it was GW ownership between Newport and Nine Mile Point station (nine miles from Newport) and L & NW (later LM & S) from there to Nant-y-bwch. However passenger services were purely LM & S until nationalisation. The annotation LMSR is missing from the section of line between Rhymney Bridge and north of Dowlais but correctly appears as LMSR and GWR north of Merthyr Tydfil. Also correctly annotated is LMSR between Brynmawr and Abersychan but the double track section south of the latter was GW owned. Certainly in the early days of the line passenger services were L & NW and LM & S operated between Brynmawr and Pontypool. But the service was taken over by GW some time (I believe) in the 1930s and up till passenger service withdrawal in 1941.

The subject is indeed a complex one and perhaps the OS simply 'did their best', if a trifle inconsistently.

Ordnance Survey maps for the cycle-tourist

Richard Oliver

I have long considered it a curious thing that Britain has, thanks to the efforts of the Ordnance Survey, the reputation of being ‘the best mapped country in the world’; at all events, it has that reputation within its own bounds, though the only foreign confirmation that I ever heard of it was the French encomium at the Paris exhibition of 1867, which translates as ‘a work without precedent, and a model to all civilised nations’.¹ One could do with something up-to-date; this piece of Jamesian replotting has long served its turn.

Quite apart from the lack of empirical evidence, the ‘best mapped’ reputation is called into question by a curious gap in the sequence of scales, between 1:50,000 and 1:250,000. Once upon a time this gap was filled officially and adequately by OS mapping at the half-inch scale, 1:126,720, and later unofficially and less adequately by mapping published by John Bartholomew and Sons of Edinburgh, initially at 1:126,720, and latterly at 1:100,000. The latter mapping was abandoned as a national series in about 1986 or 1987. There has also been mapping at 1:100,000 published by George Philip Ltd, which has only extended as far north as southern Scotland. More detailed accounts of both the Ordnance Survey’s and its rivals mapping at these scales has appeared in *Sheetlines* in the past.² Here I am concerned not with how the present unsatisfactory situation arose, but with possible solutions.

Why an intermediate-scale topographic map?

I must admit the reason why I want a solution is entirely selfish. Usually, once or twice a year I take a holiday of two or three weeks cycling. These tours usually extend to about 600 or 700 miles, and I am fed up with a large proportion of my luggage consisting of Ordnance Survey 1:50,000 maps, containing far more detail than I need. For example, a tour of 790 miles in the autumn of 1993 needed 24 such sheets, and another in 1988 of 880 miles called for 33 of them. Empirical observation over the past seventeen years or so has convinced me of the following:

(1) The two greatest constraints on one’s progress by bicycle are the wind and the terrain, and that whilst the wind is necessarily variable and cannot be mapped, the terrain is fixed and can be depicted by means of contour lines. (This may seem a platitude: but read on.)

(2) Having regard to what is available in Britain, the optimum contour intervals are 20 metres at 1:100,000 scale, and 25 or 30 metres at 1:125,000 or 1:126,720 scale.

(3) Any greater contour interval than 30 metres is inadequate for the purpose.³ (When the Bartholomew mapping was converted from 1:126,720 to 1:100,000 the contour interval

¹*Report ... of the Ordnance Survey ... 1868*, (London, HMSO, 1868: BPP (HC) 1868-9 [4124] XXXVI.533). p.3.

²See ‘The ‘Half-inch’ at Tewin’, *Sheetlines* 9 (April 1984), 12-14, Bill Batchelor, ‘The Ordnance Survey Half inch map - Second Series 1956-1961’, *Sheetlines* 16 (August 1986), 7-12, and Richard Oliver, ‘The rivals...’, *Sheetlines* 47 (December 1996), 8-36. The first OS 1:126,720 topographical mapping to cover Britain was published between 1903 and 1910. It was not republished after 1945 (except as an outline base-map), the intention being to replace it by a wholly redrawn Second Series. Five sheets of the latter appeared between 1956 and 1961, when it was decided to abandon further work in order to release drawing staff for work on the 1:10,560, which was seen as a much more urgent priority. (*Ordnance Survey Annual Report 1961-62*, London, HMSO, 1962, 8). After 1969 only the *Snowdonia* sheet remained in print; it had been republished to cover a larger area in 1966, as the area of the National Park was too large for cover by a 1:63,360 Tourist Map. This map was withdrawn from publication in the winter of 1990-91.

³There is some support for this view in evidence presented to the Ordnance Survey Review Committee in 1978: see Evidence, Vol. VIII, RC 338. (Copy in British Library Map Library, Maps 207.e.1.)

was increased from 30 to 50 metres. The interval is 61 metres (200 feet) on OS 1:250,000 mapping and its derivatives.)

(4) Any map for the road-user on wheels must show the whole of the tarred road network, so far as is practicable within the limits of scale. In practice, that means that all tarred roads outside built-up areas must be shown; and experience shows that this is perfectly practicable even at 1:250,000 scale.

(5) The map should be up-to-date and show all detail in such a way that it can be relied upon.

(6) The map should cover at least England, Wales and lowland Scotland in as few sheets as possible.

(7) The map should be self-sufficient, and not need to be supplemented by other maps. To carry a current OS 1:250,000 for the current road network, and old 1:126,720 mapping for contours, is not acceptable. One piece of paper must serve all purposes.

(8) There must be continuity of supply: a map series which is offered one season, withdrawn the next, and republished in a different form, possibly with different sheet lines, later on is not acceptable.

(9) There is probably limited scope for special-user mapping, and that any mapping in the range 1:100,000-1:126,720 must, whilst being suitable for cycling, also be of wider use and appeal.

(10) The British public, as a whole, are not very imaginative cartographically, and any initiatives for increasing the range of mapping must come from map producers rather than map users.

(11) Most long-distance cycle tourists will use maps at 1:250,000 or smaller, rather than encumber themselves with large numbers of OS 1:50,000s; a few will cling to obsolete Bartholomew 1:100,000s. I have never, on my travels, met another touring cyclist who has carried twenty or thirty 1:50,000s.⁴

(12) Long-distance cycling is liable to be affected by wind, and that consequently, in planning a tour, it is advisable, first, to allow a margin for this, and second, it is useful to carry mapping which facilitates following a more sinuous route if the wind is suitable.⁵

The foregoing, which can be summarised as ‘a complete national road network, and contours at 30 metres or closer interval, on the least paper’, are essentials. Any map which fails any of these tests is obviously not ‘fit for purpose’ for cycle-touring. Experience points to the optimum scale being 1:100,000, 1:125,000 or 1:126,720. The following are very desirable:

(1) The National Grid: if nothing else, it can be useful for estimating distance.

(2) Upstanding landmarks such as to facilitate the identification of position, particularly if one has lost count of road junctions or if signposts are absent.

(3) Sufficient topography to give a general indication of the character of the landscape.

(4) Sufficient names to identify all but the smallest of villages and hamlets.

(5) Some indication of signposted cycle routes through larger built-up areas.

Having a combined ‘map and guide’ is evidently attractive to purchasers, but it has the disadvantage that not everyone will want the guide half of the package. A revival of the

⁴No doubt because I have never met another who writes about and collects Ordnance Survey maps.

⁵As an extreme example of the effect of wind, on 20 April 1992 it took me 116 minutes to cycle from Tattershall to Lincoln and 69 minutes to return, later that afternoon, over the same route of about 22 miles and with the same force 4-ish breeze from the same quarter.

method used in 1978-81 for the early issues of the OS 1:250,000 Sixth Series (*Routemaster*), of printing on both sides of the paper, but with a 10 x 2 Bender-fold (instead of the 10 x 4 of subsequent issues at this scale) would be attractive.

At present there is no map of Britain which fulfils all these conditions. The only near-national cover at any of the three desirable scales is that by the Philips 1:100,000, which is (or has been recently) available as a single atlas. (It was initially published in sheet-map form; but that was long ago.) Setting aside the comparative bulk of the volume, it fails on the all-essential test of relief depiction. There is not a single contour on it, and the only indications of altitude are a few heights on notable hilltops. At first sight Snowdonia might be taken to be as flat as the Fens. The confession from one of those responsible that omitting contours from the mapping was perhaps ill-advised⁶ seems distinctly an understatement. Otherwise, were it adequately contoured, and available in sheet form, it would be a worthy successor to the half-inch mapping of the Ordnance Survey and Bartholomew (Appendix 2 gives an indication of its content), and I should not be writing this article.

The history of a void

I have had it in mind to write a piece along the lines of the present one for some years: that I have finally set down to it is due to the appearance of a group of apparently modest little maps, produced by Ordnance Survey on behalf of CycleCity. From small acorns might great oaks grow, but before describing them I will trouble readers with some autobiography.

Some map collectors and students are one-inchers; others large-scalers; others half-inchers. I am not by nature one of the last. My introduction to OS mapping was at the one-inch (1:63,360) scale. I first encountered the half-inch in the form of OS England & Wales Sheet 31, printing 4039, which, as owners of copies will probably agree, is not a good advertisement for either the scale or the Survey. It was a paper flat copy, which my father had bought in about 1943, together with 1:63,360 Fifth (Relief) Edition Sheet 119: the comparison will not be laboured. Before September 1980 I took little interest in the scale, beyond buying a few second-hand sheets because either they were local, or cheap: any cycling was undertaken with the assistance of the OS 1:50,000. I only became convinced of the possibilities, indeed the desirability, of either the 1:126,720 or the 1:100,000 following a day excursion from Stourport-on-Severn to Hereford, a round trip of perhaps 60 miles. Put in a temper by a bad puncture, I asked myself why I had had to carry four 1:50,000 sheets when one at half the scale could have contained all the necessary information. At this time Ordnance Survey were conducting a customer consultation in connection with the introduction of the dual civil-military specification for the 1:50,000, and invited further comments on OS mapping so, mindful that there was an OS 1:100,000 of sorts (an outline map produced by direct photo-reduction from the 1:63,360 Seventh Series),⁷ I took the opportunity to ask for a 1:100,000 topographic map.

⁶Correspondence in the possession of the writer.

⁷These maps were successors to the 1:126,720 administrative series which used the first (1903-40) OS 1:126,720 as a base-map, and which might have been expected to be replaced in the 1960s by new base-maps using the 1:126,720 Second Series. Both the 1:126,720 and the 1:63,360 series were arranged by administrative counties, and were first produced between 1965 and 1972, when they were offered (1) as an uncoloured base-map, (2) overprinted with administrative boundaries, (3) overprinted with petty sessions areas, and (4) overprinted with County Series 1:2500 and 1:10,560 sheet lines. In 1974 several of the sheets were republished following local government reorganisation; in the mid-1980s the base-maps were remade using photo-reductions from the 1:50,000 Second Series, and thereafter only the administrative areas version was kept in print. These 1:100,000 maps only covered England and Wales, and the entire series was withdrawn in the spring of 1996 in favour of less-detailed mapping at 1:250,000.

Should I have mentioned something which didn't exist? The response was not encouraging: the official line seemed to be that the existence of the 1:100,000 outline map and the Bartholomew map excused the OS from further action. There was a plea of 'few requests', which could have been supported by reference to the evidence presented to the OS Review Committee (Serpell Committee) a couple of years earlier.⁸ Further requests over the next few years, fuelled by a tour in eastern England in 1983 relying mainly on the 1:250,000, of southern Ireland in 1984 using the Irish 1:126,720, and in Snowdonia in 1985 using the OS's solitary 1:126,720 offering, met with a similar response. Mention of the matter at a British Cartographic Society meeting on the subject of the OS motoring atlas early in 1986 seemed to be regarded by some present as in questionable taste.

Starting in 1986 with *M25 & London*, a map which seemed consonant with the first element of its title, OS published a few 1:126,720 *City Link* maps that were photo-enlargements of the current (analogue) 1:250,000 *Routemaster*, a point which the maps themselves modestly omitted to mention. As by this time inexpensive large-format road atlases, including several published by Ordnance Survey using this self-same 1:250,000 mapping, were well-established, the introduction of these maps seems a curious decision on both commercial and utilitarian grounds, only partly explained by their including 1:10,000 plans of airport termini and a gazetteer of place-names. Being photo-enlargements, they were not very refined in appearance.

In the summer of 1990, noticing the *City Link* maps, and with the sun of the OS Drive for Full Cost Recovery blazing brightly in the sky,⁹ it occurred to me that a national cycle-touring map series might be obtained economically by combining a photo-enlargement of the 1:250,000 with 30 metre-interval contours from the 1:50,000 digital (vector) contours. I drew up two sheet-line schemes, one for a 1:100,000 series, the other for a 1:125,000 series, both based on sheets with a map area of 110 by 88 cm (and giving cover of Great Britain in about 40 and 29 sheets respectively), and began devising a broad specification for the content. Things went no further, for before I could write to Ordnance Survey urging the idea, there appeared the *1991 Ordnance Survey Motoring Atlas of Great Britain*, the first fruit of digitising the 1:250,000.¹⁰ Although as an essay in colour it was as fine as anything OS had produced in the previous half-century, as a depiction of the landscape it left something to be desired. Too often were the crooked places made straight, and buildings sprouted in unlikely places that would be the envy of rural property developers. Having seen the inflation of the pillbox at Kilnsea (TA 40951575), I despaired.

However, despair is not a good way of getting things done, and, having covered another few thousand miles laden with 1:50,000 maps, I tried again. The occasion was Ordnance Survey's Cartographic Concepts exercise, carried out in 1993-4. The invitation to contribute to the exercise noted the possibilities for new cartographic products as a result of adopting digital production methods. I took the opportunity to make a long submission, about half of which was occupied with arguing the case for an intermediate-scale topographic map at either 1:100,000 or 1:125,000, with an eye to the cycle-touring market, but with other users in mind as well. The essential elements were to be large sheets (a map area of 110 by 88 cm is

⁸Ordnance Survey to writer, 27 November 1980; cf W.A.Seymour (ed), *A history of the Ordnance Survey*, Folkestone, Dawson, 1980, 328. There is a copy of the Review Committee evidence in the British Library Map Library, Maps 207.e.1: I have found four responses mentioning a 1:100,000, being one from the Cyclists Touring Club (Evidence, Vol. V, RC 212), and three from private individuals (Vol. I, RC 39; Vol. II, RC 161; Vol. VIII, RC 338). In the total sum of evidence these hardly registered.

⁹Or should it be a moon, ruling the night?

¹⁰For a review by Christopher Board, see *Sheetlines* 29 (January 1991), 33-5.

about the largest practicable, and gives a good mapped area to paper ratio), contours at either 20 or 30 metre interval, and content carefully designed so that, first, it included almost everything on the OS 1:250,000; second, it could be produced by wholesale inclusion or exclusion of categories of information shown on the 1:50,000 (with a view to minimising, if not eliminating, editing of vector data), and third, it was carefully drawn up in such a way as to minimise any potentially harmful effect on 1:50,000 sales. One example of that was proposing a naming density of about 0.35 per square kilometre, which contrasts with densities on 0.88 and 0.83 on the Bartholomew and Philip 1:100,000s, and about 1.35 on the OS 1:50,000 (see Appendix 2); a second was recommending 1:125,000 in preference to 1:100,000. (Otherwise the advantages of 20 over 30 metre contours on the one hand, and about 40 as against 29 sheets on the other, are rather finely balanced.)¹¹

1:125,000 is not an international standard, and as far as I know its use has been largely confined to mapping of the United States, Canada and some former British colonies in Africa, all now obsolescent if not obsolete; I cannot recall any domestic British examples.¹² Whilst 1:100,000, which is an international standard, would no doubt be chosen automatically were there a military requirement, that no such mapping has been produced officially in Britain is a sure indicator that there is no such requirement, and so there is presumably no need to consult military considerations. Non-standard scales such as 1:60,000 are widely used by commercial map publishers in Europe,¹³ where there is none of the phobia and hysteria about metrication which is one of the less attractive features of some sections of the British press, feeding on public uncertainty or apathy, and which no doubt explains why maps which are really 'metric' or 'natural' continue to be publicised in terms of inches and miles. 1:125,000 can be promoted as 'half-inch', whereas the 1:100,000, despite the best efforts of Philips, has no such advantage: is that why that firm's excellently executed mapping at that scale is so frequently 'repackaged'?

Anyway, the proposal was duly submitted, and the rest is pretty much history, if an effective void may be so dignified. Admittedly, there were a number of difficulties. One of them will have been spotted by the knowledgeable: although there was no mention of the point when inviting conceptual contributions, in 1993-4 digitising of the OS 1:50,000 and 1:25,000 was taking raster rather than vector form, and whilst the raster procedure facilitates revision and operations such as the conversion of the *Pathfinders* to *Explorers*, it is not so suited to producing derived mapping at a smaller scale. That was one objection to what I had in mind, but it was not the only one. In correspondence and in conversation, I had the impression that, were an intermediate-scale topographic map to be produced, OS were thinking in terms of 1:100,000, from which would follow, first, an assumption that it would be derived from the 1:50,000; second, that it would have to be drawn *ab initio*, and third, that it would present competition to the 1:50,000. That there was nothing necessarily magical about 1:100,000, and that OS were continuing to produce 'commercial' rather than 'core' mapping at weird scales such as 1:18,103, for which there was neither Imperial nor Metric rationale, did not seem to register: it was as if there was a belief that a map at a scale between 1:50,000 and 1:250,000 would contradict some hitherto obscure but implacable law of nature

¹¹The reason for not advocating a 25-metre interval is that the contours are at 10 metres interval on the 1:50,000 database, and therefore 'ready and waiting'. The necessary extra contours for a 25-metre interval would have to be input afresh, which would defeat the whole object of using existing materials as far as possible.

¹²Arthur R. Hinks, *Maps and Survey*, fifth edition, Cambridge University Press, 1944, esp. 77, 80; R.B. Parry and C.R. Perkins, *World Mapping Today*, London, Butterworth, 1987; Elri Liebenberg, 'Mapping British South Africa: the case of G.S.G.S. 2230', *Imago Mundi* 49 (1997), 129-42.

¹³Cf comment by Ian O'Brien in *Sheetlines* 36 (April 1993), 45.

which dictated that such a map must be at 1:100,000, or not at all. A cynic might suggest that the larger of the two scales, being closer to 1:50,000, was a better argument against the whole concept.¹⁴ A further difficulty was that, in terms of garnering ideas from the map-using public, the Cartographic Concepts exercise was not very successful. I believe that about two dozen people responded, plus one or two societies. Input to the study ... 'has been almost entirely from one interest group and does not represent the wide range of user requirements which OS seeks to satisfy', was the official comment.¹⁵ It is no secret that that 'interest group' was some members of the Charles Close Society, most of whom were circulated and urged to contribute. It is apparent that some of them did; it is equally apparent that most of the public did not, and that apathy undid any good which the CCS contributions might have done.

From the perspective of four or five years on, it is open to question whether the Cartographic Concepts exercise achieved anything at all. Certainly not the 'large format' 1:25,000, as the experimental *Gower* sheet had already been published, and the first five *Explorers* were in preparation; probably not the depiction of Access Land and Access Routes, which was unfinished business arising from the depiction of rights of way; and certainly not hill-shading the 1:50,000, which was perhaps the one innovation,¹⁶ and one which has not been persisted with. And, of course, we have no intermediate scale topographic map.

A charitable comment might be the complaint of those seeking, in vain, more energetic prosecution of the Ordnance Survey of Scotland in the 1840s: 'The answers were always very courteous... but beyond courteous answers, we did not get much.'¹⁷ In fact, I got nothing.

Light in the dark? The OS/CycleCity maps

Ordnance Survey might respond that it was not neglecting the cyclist completely. In conjunction with Hamlyns, in 1993 it started a series of *Cycle Tours* volumes, nineteen of which are listed in the Ordnance Survey map catalogue for 1998. I bought one, and reviewed it.¹⁸ The mapping element is 1:50,000 extracts, and they are a *table d'hôte* rather than *à la carte* approach, to which I am antipathetic. As the series is growing, it is a reasonable inference that I am in a minority, and that some cyclists are not neglecting this OS offering. 'Packed full of information, these excellent guides are both useful and fun to use.' Fun? My 'fun' is verbal, finding ways of commenting on them that are honest, trenchant and unflattering, whilst at the same time avoiding being proceeded against for defamation.¹⁹

The last quotation comes from the back covers of those modest-looking little maps, produced by Ordnance Survey on behalf of CycleCity, who claim to be both the publishers and the designers.²⁰ Not being OS publications, they have not appeared in the Survey's catalogues or publication reports. Five appear to have been published: I have two. They are

¹⁴These comments are based on correspondence in the writer's possession and informal conversations with OS staff in recent years. If what I have written here is a substantial misrepresentation of Ordnance Survey's position, then I apologise: I can only plead incorrect interpretation of the evidence.

¹⁵Ordnance Survey Information Paper 4/1994, quoted in *Sheetlines* 40 (August 1994), 4.

¹⁶Such digital hill-shading had already appeared on the 1:63,360 *Yorkshire Dales* map of 1992, and I have seen (in a private collection) an experimental analogue hill-shaded 1:50,000 Sheet 90, produced some time in the 1980s; and, of course, there is the final edition (C, 1970), of 1:63,360 Seventh Series Sheet 87, with hill-shading in brown.

¹⁷J.H. Maxwell, Secretary to the Highland and Agricultural Society, 26 May 1851, in *Report from the Select Committee on Ordnance Survey (Scotland)*, BPP. (HC) 1851 (519) XX.359, evidence, q.319.

¹⁸See *Sheetlines* 38 (January 1994), 53-4.

¹⁹A mishap which is not unknown: the experience is not a pleasant one, even when one is not out of pocket at the end of it.

²⁰CycleCity, Dome Publishing, 3/4 Zig Zag, Clevedon, BS21 7EJ. The maps are £4.95 each.

double-sided, with a map at 1:125,000, derived from 1:250,000 digital data, on one side, and street mapping at 1:18,103 on the other. *Oxford* has a single large map of that city; *East Kent* has plans of Ashford, Canterbury, Dover and Ramsgate. At first sight, they might be dismissed as just another commercially-oriented co-publication, of a sort of which, when I was editor of *Sheetlines*, I deliberately took no notice.²¹ Consciously or not, there is a considerable resemblance to the *City Link* maps of the late 1980s. As cycling maps, they can be failed immediately on the grounds of inadequate relief treatment (contours at 200 feet (61 metres) interval), as well as for lack of national coverage and a very poor ratio of mapped area to total paper. (See Appendix 2.) There is also a case for regarding them as local rather than potentially national maps, insofar as on the cover they have a description along the lines of 'Two maps in one: city centre on one side and up to 25 miles around on the reverse.' However, there are grounds on which they should not be dismissed, and which make a case for collectors of OS specimens to consider acquiring at least a sample.

The first is the principle of publishing at 1:125,000, rather than 1:126,720, which has been favoured hitherto, for example by Goldeneye, as discussed later; or, indeed, 1:100,000. More practically, it serves to demonstrate what is possible with the OS 1:250,000 data: a half-inch map, pretty much.

Second, it is a rather odd map to look at, as it seems to be dominated by 'yellow roads', and it is only on closer examination that classified roads and motorways appear. As it says in a note:

'CycleCity Guides uses a road hierarchy which is the opposite of the conventional. Most maps will relegate minor roads to thin lines, or leave them out altogether. Our choice is to emphasise the by-ways.

We have not ignored motorways and 'A' roads. Motorways are clearly represented as important elements in finding your way - but they are of no use to cyclists and so are shown as a narrow blue line.

The system makes it easy to plan a regular journey avoiding the worst of the traffic or to construct a leisurely circular route for a Sunday ride.'

As a result of this, 'unclassified roads' are cased yellow, about 1 mm gauge and 'A' and 'B' roads are about 0.5 mm gauge, which may be contrasted with about 0.6 and 0.8 mm respectively on the OS 1:126,720 Second Series, the only mapping produced since 1945 which offers a fair comparison. The result seems not wholly successful, insofar as the density of the road network makes for a very coarse appearance, as do the names, which might have been in a smaller point-size with advantage; the shadow of the *City Link* maps is there. On the other hand, there is a very considerable aesthetic gain from not showing Primary Routes, which on the 1:250,000 *Travelmaster* appear in green: it is very difficult to balance red and green, and the few successes (e.g. the 1991 *Motoring Atlas*) are far outweighed by the failures (e.g. the original (1993) printings of the 1:250,000 *Travelmasters*, and the otherwise excellent Ordnance Survey of Ireland 1:50,000). National Cycle Network routes appear in red, signposted cycle routes in brown, and 'advisory routes' in yellow which spills over the casing; the last looks like misregistration or miscalculation, and is perhaps the weakest design element on the map.

Most of the other details are in common with the parent 1:250,000, including all its tourist symbols, and several which do not appear in the legend, for example lighthouses and lightships. There is no hypsometric tinting ('layer colours') and the contours, such as they are,

²¹ Fortunately, no-one ever offered a review of such 'products': there are times when a lack of contributions can be welcome.

are not as legible as one would like. Nor does one like to see grid lines without values, as here: the *City Link* maps mitigated the crime by substituting alpha-numeric referencing.

Map folding is a largely neglected subject.²² the CycleCity maps are, in common with the Bartholomew 1:100,000, excessively wide when folded (150 and 141 mm respectively), which is too wide either for a coat side-pocket or for the map-pockets on my cycle panniers: 137 mm wide and 242 mm tall, as used for current OS 1:25,000 and 1:250,000 mapping, seems the absolute maximum. An 8 x 2 rather than 6 x 2 fold might have been used with advantage.²³

The CycleCity maps might perhaps be dismissed as an example of a ‘honeypot’ approach, but the important thing is that we have 1:125,000 mapping, intended for cycling, produced by Ordnance Survey. It could be a beginning.

Not necessarily a sterling map

Another group of maps might also be dismissed as ‘honeypot maps’, but they deserve attention being as they are at 1:100,000, aimed at cyclists, and getting away from the usual well-mapped tourist areas. They are strip-maps, published by Sustrans, and produced by Stirling Surveys; the Inverness to Glasgow map gained a British Cartographic Society design award in 1996.²⁴ They cover National Cycle Routes, which are being developed by Sustrans, with the shorter-term aim of having 2500 miles (about 4000 km) open by 2000, and an eventual total of about 6500 miles (about 10,000 km). The examples I have cover National Cycle Route 1, from Hull to Fakenham and Fakenham to Harwich, and were obtained because they traverse a part of England which I know well. The main maps are at 1:100,000, and are supplemented by some small town maps at a larger, unspecified scale: a black mark. They are ‘tourist’ or ‘leisure’ maps with a difference, in that the tourist district is lineal rather than areal.

It must be said straight away that they are most beautifully executed, and considered simply as an essay in colour and for crispness of line are superior to anything which Ordnance Survey is offering at present. Unlike on the CycleCity maps, roads are shown in an ‘ordinary’ way (Department of Transport-classified roads are coloured, others are not), with the addition of indications of traffic-free paths and sections of road on which special care is necessary. There are annotations such as ‘Very busy road’, ‘Route uses byway, surface can be rough’ and ‘Dismount and cross major road’. ‘Travel information’ includes cafes and grocery shops; most tourist information is by annotation (in green) rather than by symbols, which is to the aesthetic advantage of the map. Contours are at 30 metres interval, and are supplemented by hypsometric tints, of great clarity, and sectional ‘route profiles’ below each section of map. Anyone concerned with the *look* of maps should obtain a specimen.

However, handsome is as handsome does. Earlier, I referred to the necessity for showing detail in such a way that it can be relied upon. In the legend a youth hostel symbol appears, but the only one which appears on the face of the map is that at Blaxhall, Suffolk: one looks in vain for those at Lincoln, Kings Lynn, Hunstanton, Norwich and Great Yarmouth. This is hardly arcane or irrelevant information. Is it to do with the methods of compilation? ‘Based on 1926 and 1946 Ordnance Survey maps. Prepared from original field surveys in 1996 by Stirling Surveys, with additional information obtained from aerial

²²See C. Board, ‘Neglected aspects of map design’, *Cartographic Journal* 30 (1993), 119-22.

²³A ‘Serpell’ respondent suggested a maximum of 120 x 210 mm (BLML Maps 207.e.1, evidence, Vol.X, RC 451), but that seems to me a little cautious.

²⁴Sustrans (‘Routes for people’), 35 King Street, Bristol, BS1 4DZ; Stirling Surveys (‘specialist mapmakers, publishers of *footprint* maps’ [sic]), no address given. The maps are £5.99 each.

photographs' says one note and 'The maps in this guide cover a wide area; however it is only in the vicinity of the route that they have been surveyed in detail' says another.²⁵ Whatever the reason, the omission of something so obvious makes one wonder about the reliability of less easily checked details.

'Cover a wide area' or not, these are strip-maps, practically useless should one wish to venture away from the official route; that is to say, if your attitude to leisure is *à la carte* rather than *table d'hôte*. The route from Hull to Harwich is given as 369 miles, and meanders westwards to Lincoln, northwards to Hunstanton and eastwards to Orford. Some idea of what is involved can be shown by comparing the section from the south end of the Humber Bridge (TA 024234) to Fosdyke Bridge (TF 318322): the distance by National Cycle Route 1 is about 105 miles (about 169 km), whereas the direct route I use (via B1225 and B1192) is about 109 kilometres (about 68 miles). (By the way, you need four 1:50,000 sheets to cover this direct route - 112, 113, 122 and 131 - and a fifth - 121 - to cover Route 1 via Lincoln.) It is symptomatic of this 'National Route' that when it does use the B1192, for about a kilometre at Langrick (TF 265475 to TF 262486) it is actually completely doubling back on itself! True, that note about 'a wide area' carries on to say 'If you wish to travel further afield we recommend you obtain the relevant Ordnance Survey *Landranger* maps', but why not just buy the 1:50,000 *Landrangers* in the first place and have done with it, as I've been doing for years? *Why not* buy maps at a rather smaller scale than 1:50,000? Very simple: they are not to be had.

It is possible to cover considerable distances by cycle, - say 60 to 80 miles, 100 to 130 km, per day under favourable conditions - if you are prepared to take this mode of transport seriously,²⁶ and that, I fear, is what is ultimately lacking here: taking cycling *seriously*. Given that National Cycle Routes and maps specially for cyclists, indeed maps which (design awards apart) seem pretty useless for anything else, are under discussion here, this might seem ungrateful or curmudgeonly: but can any other conclusion be drawn? To be blunt, I do *not* want a National Cycle Network which seems intended to get cyclists from A to B via most of the other letters of the alphabet, and I do *not* wish to be fobbed off with maps which either concentrate on recognised tourist areas and don't join up with each other, or which, ultimately, are not self-sufficient. As it is, we appear to have a monument to dilettante cycling: one wonders if they might sell to the sort of cyclist who has a sort of conscience about being 'green', buys a helmet before buying something to ride, who seems to believe that the life expectancy of a cyclist is similar to that of a kamikaze pilot on active service, yet who desires to cover 369 miles!!²⁷ What I *do* want are cycle-routes which are direct, even if they include some sections not appealing to the timorous traveller caricatured above, and maps which enable me to deviate from them. At present, we have neither the routes nor the maps. What we do have is at best an irrelevancy, at worst a distraction.

To be more positive: a 1:100,000 or 1:125,000 national cycling map produced by Stirling Surveys, ideally taking advantage of copyright OS material, could potentially be a great step forward, though there are a couple of non-cartographic points about these maps which deserve attention: in their wallets they are over-width (150 mm), and they are printed on a stiff, glossy paper which is very prone to cracking on the folds, even without outdoor use.

²⁵Implicit in this is the whole question of how far Ordnance Survey copyright and royalty policies operate for or against wider social interests, both now and in the past, but it is rather too large a question to be discussed here, and would necessarily have to rely in part on 'commercial' data which are not in the public domain.

²⁶And that does *not* mean being either a zombie or a 'meat factory'.

²⁷Presumably in very easy stages, and not using youth hostels?

All that glitters...

A national map series at around 1:125,000 by Goldeneye might also be a great step forward.²⁸ Like the Sustrans/Stirling maps, they are extremely well executed, and any serious modern map collector or student of cartography should have at least a specimen. Choosing such a specimen may be more difficult: at least nineteen different maps seem to be published, and I have noticed four alternative formats, though perhaps not all nineteen are published in all the styles. What seems to be the 'standard style' has a map, usually at 1:126,720, on the front, and tourist information, with lots of colour photos, on the reverse. Covers are integral; some examples have the cover area laminated. A stiff paper is used, but it does not seem quite so prone to cracking as that for the Sustrans/Stirling maps. Hypsometric tinting is used, and the maps combine solidity, opulence and clarity. Most are derived from copyright OS mapping, although the Exmoor sheet, at 1:79,200 (1 inch to 1.25 miles), is from air photos. Imperial scales are more favoured than metric, but contour values are in metres.

An alternative issue, the 'Cycling Map', has the map only, sells for a similar price, and is laminated all over. The 'feel' is rather similar to the tear-and-water resistant 1:25,000 sheets which Ordnance Survey were offering in the early 1980s, but without the brown tinge which made the OS maps look faded whilst they were still in the shop. Some like the lamination, to judge from two cycling press reviews quoted; I am a little dubious about it, since although it is no doubt robust, lamination tends to degrade the image slightly by reducing crispness, and, more seriously, it makes it difficult to refold these Michelin-folded maps as Bender-folds, an important consideration when the maps, when folded, are 287 mm tall. The company's trademark of a flying bird - a goose?, a serious-looking bird, anyway - is modified, to show it on a bicycle, with its feet well clear of the pedals. Some of the cycling maps have cycle routes overprinted in purple, with on- and off-road routes distinguished, which is as well, as the overprint is heavy and tends to 'spread' under the lamination. Otherwise, the maps would be of limited use to motorists.

The Goldeneye maps vary in scale and in the number of minor names shown, but all have a wide range of tourist symbols (about fifty: see Appendix 2), supplemented by miniature lists appended to towns. These lists are the third worst feature of the maps. The second worst is the contour interval, which varies, but never seems to be less than 50 metres, and the worst of the lot is the pattern of cover. Devon presents an example. Almost the whole county is covered by a single sheet at 1:200,000, South Devon (south of about northing 103 on the National Grid, which does not appear) by one at 1:126,720 (both have contours at 76 metres interval), and Exmoor (north of about northing 109) by one at 1:79,200 (with contours at 100 metre intervals). Thus there is a gap of 6 km (about 4 miles) between the South Devon and the Exmoor sheets: one is not appeased by the comparative lack of detail on the Exmoor sheet, which only shows a few named paths, and which could surely (as Goldeneye seems rather to like imperially-related scales) have been at 1:95,040 (1 inch to 1.5 miles) with no loss of effectiveness. Cover at 1:126,720 is patchy, with ten of the fourteen sheets at that scale forming three groups, one from St Bees Head to Flamborough Head, another of East Anglia, and a third along the south coast from the Thames Estuary to Plymouth.

It would be worth spoiling the look of these maps with some more contours.

And, that done, why not cover Great Britain with them?

²⁸These are published by Goldeneye Map-Guides [an imprint of William Friskier Publishing], Mill Street, Prestbury, Cheltenham, Gloucestershire, GL52 3BG. In 1997 the maps were selling for £3.95 each. All the examples in the writer's collection state that the cartography was prepared by Goldeneye, except for the Exmoor sheet, which is copyrighted to Cox Cartographic Ltd, though the execution is identical.

At last, some positive comments

You will gather from the foregoing that I am discontented.²⁹ On a strict number count there is no shortage of ‘cycling maps’, but there is an effective absence of any which I regard as regard as suitable for cycle-touring.

To recapitulate, the three essential qualities are ‘a complete national road network, and contours at 30 metres or closer interval, on the least paper’. There are two ways in which such an ideal might be realised: either by a commercial firm, possibly by developing one of the existing series, or by Ordnance Survey, either by itself or as a co-publication. I assume here that the map will be at a scale of between 1:100,000 and 1:126,720.

It is difficult to see any commercial firm setting out to produce national cover in this scale range without at least some experience, and a core of proven successes, which suggests in turn that a development of either the Philip 1:100,000 or the Goldeneye series could be a way forward. There are two practical possible drawbacks to such a course. Whilst the Philip mapping is complete and up to date, it would have to be contoured, presumably from OS data, and it would have to be issued in sheet form, which Philip seem to have been very reluctant to essay in recent years. Adding contours to such a distinctive colour scheme (blue, green, yellow and brown roads) might also introduce design problems. There is the further potential disadvantage that the high density of detail and the scale could be interpreted by OS as a threat to their 1:50,000, which might make the supply of contour data tricky. These difficulties might perhaps be overcome by removing the minor names and untarred roads, and publishing the mapping at 1:125,000, but this could make for maintenance problems in the future. Goldeneye have a core of maps at a suitable scale, but they would need additional contours, and any further mapping would probably have to be drawn *ab initio*, which would involve considerable costs.³⁰ Similar considerations apply to a firm such as Stirling.

However, the greatest problem with a purely commercial mapping enterprise is continuity of supply. When in 1961 the Ordnance Survey abandoned its barely-started 1:126,720 Second Series there was the Bartholomew map to fall back on. That map may have seemed then nearly as much a national institution as the OS one-inch, but a quarter a century later it proved otherwise. The Philip 1:100,000 has been relaunched at least twice since it first appeared in the mid-1970s, and when, about ten years ago, it was being offered as a series of regional ‘Navigator Atlases’, cover of England and Wales was not complete. Should Ordnance Survey abandon one of its ‘core series’, the inconvenience to the public service alone would be great; should a commercial firm abandon a map series, the loss would be confined to whatever corporation tax might otherwise have been payable.

For this reason, it seems obvious that any real ‘solution’ to the cycle-touring map ‘problem’ must be one with a substantial active contribution from Ordnance Survey.

A suggested Ordnance Survey 1:125,000 series

OS enjoys the considerable advantages of holding all the necessary data for such a map, and a guarantee of permanency. With this in mind, the following scheme is suggested, for a national 1:125,000 series.

²⁹All the maps commented on here were purchased new at full price by the writer, except for the OS 1:126,720s, a couple of Bartholomew 1:100,000s, and an original-issue Phillip’s 1:100,000. Comments are therefore those of a paying customer. And in view of my suggestions below, let me say that I have not had any correspondence with either Goldeneye or Philip on the subject.

³⁰Whilst digitising removes the need for ‘redrawing’ in the inputting sense, the commercial supply of digital data is bound to reflect the advantage to the purchaser that the seller has done all the basic ‘drawing’ already, and so the cost to the recipient will be much more than simply the direct cost of physically transferring the data.

(1) The essential features of the map should be publication in the minimum number of sheets (with a map area of 110 x 88 cm, about 30 sheets would cover Britain), with a contour interval of 30 metres.

(2) The basis of the map should be the 1:250,000 digital data, except for the contours, which would use the 1:50,000 data.

(3) The map should be designed and sold in such a way as will minimise harm to 1:50,000 sales.

(4) As an interim measure, the maps should initially be published without further modification of the 1:250,000 data, except to reduce the point-size of the names and the gauge of the roads: it is suggested that gauges of about 0.8 mm for DoT classified and about 0.6 mm for other roads (as on the OS 1:126,720 Second Series) would meet the case. The narrowing of certain roads on the CycleCity maps suggests that this is perfectly feasible.

(5) As a long term measure, the 1:250,000 data would be augmented by a modest amount of additional data, described in Appendix 1 below.

(6) Unless there were strong indications that a special cycling map would be independently viable, the 1:125,000 should be designed, produced and sold as a general-user map.

This 'solution' offers the following advantages:

(1) The 1:250,000 is an OS 'core scale'. Whilst a 1:125,000 by itself would not enjoy that advantage, being a 'commercial' publication, it would rest on a solid foundation of core mapping.

(2) For reasons discussed in the preceding section, it is open to question whether a commercial firm would endeavour to enter the market in competition with OS at this scale.

(3) Of its nature 1:125,000 offers less of a threat to the 1:50,000 than would a 1:100,000.

(4) The specification for the suggested 1:125,000 would be devised by working upwards from the 1:250,000, rather than downwards from the 1:50,000. The aim is to improve on the smaller scale, rather than to challenge the larger. There is nothing radical in this, as for a decade or so the OS has been publishing its 1:250,000 mapping at substantially larger scales, as exemplified by the 'Superscale' motoring atlas and the CycleCity maps. It will be seen from Appendix 2 that the relative 'scores', deducting tourist information, for the 1:50,000, the OS 1:126,720 Second Series (reduced from the 1:63,360) and the suggested 1:250,000 are 129, 70.5 and 52 respectively.

(5) Indeed, the availability of the 1:250,000 data as a 1:125,000 map might be very attractive to some of the motoring public, as it would overcome the problem of legibility in a moving vehicle, a problem which seems to be little mentioned in cartographic literature,³¹ but which has always prejudiced me as a motoring navigator against the OS 1:250,000 at its original scale.

The question of map content is addressed in detail in Appendix 2, below, which has been compiled partly to provide comparative material and partly in order to demonstrate that the proposed 1:125,000 would be unlikely to be much of a threat to the OS 1:50,000. The method of 'scoring' is admittedly rough and ready, and could probably be greatly improved upon, and is open to the objection that it is largely based on presence or absence, rather than the likely value to users or the number of likely occurrences on a given sheet: however, I think the method might usefully be developed, not least for studying developments in map

³¹For an exception, see comment on p.224 in Gail Langran, Thomas G. Baybrook and Paul E. Sweeney, 'An experimental 1:100,000 ground/air product', *The American Cartographer*, 14 (1987), 223-4.

content over time.³² It will be seen that about two dozen tourist symbols are now a standard component of British small-scale maps. 'Raw' scores distort the comparison with older or more conservatively-designed mapping, particularly when maps such as the Bartholomew 1:100,000 are being compared with those by Goldeneye: thus adjusted 'scores' have been provided in addition.

I rest my case.

Appendix 1

Notes on a possible specification for a 1:125,000 map.

The proposed specification is set out on a presence or absence basis in the final column in Appendix 2, and is for the final rather than an interim version of the suggested map. It is based on that for the OS 1:250,000, and differs from it in the following respects:

Motorways: omit service areas with limited access.

Primary routes: omit, first because this information seems inappropriate at larger than 1:250,000, second, because it appears to be little understood by motorists anyway,³³ and third for aesthetic reasons, in that it is difficult to balance green and red satisfactorily, so as to maintain a hierarchical appearance.

Gradient arrows: these are useful for cyclists, even when the contour interval is 30 metres or closer.

Ferries: these should be classified as vehicular and foot-and-cycle. It is unclear from the existing classification which foot ferries do or do not carry cycles.

Cycle routes and numbers: notwithstanding my criticisms in the main text, it would be absurd to omit these from mapping produced with cyclists in mind, even if they were not already appearing on the 1:50,000 and on the OS/CycleCity maps.

Churches: these are useful as landmarks, particularly in open country, and a topographic map at a scale larger than about 1:250,000 without churches seems both aesthetically and spiritually desolate, though very common. It may be noted that the Geographia 1:190,080 mapping prepared in the late 1960s and published by the AA in both sheet and atlas form showed those churches which had towers or spires, though this nicety might be thought rather too much of a good thing.

Wind farms: these are proliferating, and may well be quite as useful as windmills or radio masts as landmarks in the future. They are also objects of interest to the green-minded.

Inns and public houses: rural ones should be shown, as it takes much longer for cyclists to pedal on to the next large village than it does for motorists to drive there!

Spot heights: many more should be provided along roads than are to be found on the 1:250,000 at present. It would be useful were the map layer-tinted at 60-metre intervals.

In addition, it would be useful to indicate cycle routes through built-up areas. One possible way would be to put supplementary diagrams, possibly at 1:25,000, on the back of the map.

³²I posted a question to the lis-maps e-mail list on 6 March 1998, asking if anyone knew if such a scoring method had been tried in the past: no-one was certain that it had, though it has since occurred to me that the germs of the idea are in the table showing archaeological depiction on p.150 of J.B.Harley, *Ordnance Survey maps: a descriptive manual*, Southampton, Ordnance Survey, 1975, and a correspondent's observation that there were now 29 tourist symbols on the 1:25,000 *Explorer* map. My thanks to those who replied, anyway.

³³See comment on p.166 of G.Gill, 'Road map design and route selection', *Cartographic Journal* 30 (1993), 163-6, on a survey of road users: 'it appeared that neither the convention nor the meaning of a 'primary route' itself was generally understood'.

Appendix 2

Features shown on some intermediate scale topographic maps

The following is intended to provide a rough count of either the presence or absence or of the numbers of types of features shown on the maps studied. The order of the features is mostly that of the legend on the latest editions of the OS 1:50,000 *Landranger*. The values are assigned as follows:

Y: Feature is mapped: counted as 1.

P: Feature is selectively mapped: counted as 0.5.

X: Feature is not mapped: counted as 0.

?: Uncertain from specimens studied if feature would be shown: counted as 0.

Numbers: number of features mapped under this general heading. For example, on the OS 1:50,000 motorways are shown (count as 1), with intersections and numbers (count 1), service areas (count 1) and elevated (count 1): total 4.

The ***bold italic*** numbers in the *Notes* column refer to text following the tabulated data.

In order to provide a basis for comparison, data for the Ordnance Survey 1:50,000 *Landranger* has been included, at the expense of data for the OS 1:250,000 *Travelmaster*; for the latter, a study of the original issues of Sheets 2-9 of 1993 yielded a score of 71.5, and differences between the *Travelmaster* specification and that proposed for the suggested 1:125,000 map are described in Appendix 1 above.

	<i>OS</i> 1:50,000	<i>OS</i> 1:126,720	<i>Barts</i> 1:100,000	<i>Philip</i> 1:100,000	<i>Goldeneye</i> 1:126,720	<i>CycleCity</i> 1:125,000	<i>Stir/Sust</i> 1:100,000	<i>Suggested Notes</i> 1:125,000
<i>Roads and paths</i>								
Motorways	4	1	3	3	3	2	2	3
Primary routes	X	X	X	Y	X	X	X	X
MoT classified	3	3	2	2	2	2	2	2
Other tarred roads	2	1	1	1	1	1	1	1
Other, untarred	1	1	1	1	1	X	P	X
Dual carriageways	Y	Y	Y	Y	X	Y	X	Y
Ring roads	X	X	X	Y	X	X	X	X
Unfenced roads	Y	X	X	X	X	X	X	X
Roads under construction	Y	Y	Y	Y	Y	X	X	Y
Narrow with pass places	Y	X	X	Y	X	X	X	Y
Toll bars	Y	Y	Y	Y	X	Y	X	Y
Paths	1	1	1	X	X	X	X	X
Gradient arrows	2	1	X	1	X	X	2	2

	OS 1:50,000	OS 1:126,720	Barts 1:100,000	Philip 1:100,000	Goldeneye 1:126,720	CycleCity 1:125,000	Stir/Sust 1:100,000	Suggested Notes 1:125,000	
Gates	Y	X	X	Y	X	X	X	X	
Road tunnels	Y	X	Y	Y	Y	Y	?	Y	
Roundabouts	Y	Y	X	Y	X	X	Y	Y	
Notable roads named	Y	X	P	P	P	X	X	X	
Ferries	2	1	1	1	2	1	1	2	
Road earthworks	Y	X	X	X	X	X	X	X	
Rights of way	4	X	X	X	X	X	X	X	
Other access routes	Y	X	X	X	X	X	X	X	1
Waymarked paths	Y	X	Y	Y	Y	Y	X	P	
Cycle routes	1	N	N	N	4	1	4	1	
National Cycle Routes	Y	N	N	N	X	Y	Y	Y	
Subtotal	34	12	14.5	19.5	16.5	12	14.5	18.5	
Railways									
Standard gauge	1	2	1	1	1	1	1	2	
Non-passenger lines	Y	Y	P	X	X	X	X	Y	
Narrow gauge	Y	Y	X	X	X	Y	?	Y	
Railway stations	2	1	1	1	1	1	1	1	
Bridges	Y	Y	X	X	X	X	X	X	
Level crossings	Y	Y	Y	Y	X	X	Y	Y	2
Viaducts	Y	Y	X	X	X	X	X	X	
Railway earthworks	Y	X	X	X	X	X	X	X	
Tunnels	Y	Y	Y	Y	Y	Y	?	Y	
Preserved railways	Y	X	X	Y	Y	Y	X	Y	
Remains of old railways	Y	X	X	X	X	X	X	X	
Subtotal	11	9	4.5	5	4	5	3	8	
'General information'									
Electricity lines	Y	Y	X	X	X	X	X	X	3
Pipe lines	Y	X	X	X	X	X	X	X	
Buildings	3	2	1	1	1	1	1	1	
Bus stations	Y	X	X	X	X	X	X	X	
Churches	3	1	1	X	3	X	X	1	4
Chimneys, towers	Y	X	X	X	X	X	X	X	
Glass houses	Y	Y	X	X	X	X	X	X	
Air & heliports	4	2	1	1	2	1	1	3	
Trig pillars	Y	Y	X	X	X	X	X	X	
Radio and TV masts	Y	Y	Y	X	X	Y	P	Y	
Telephones	2	2	X	2	X	1	1	2	
Windmills	1	2	P	P	1	1	X	1	
Windpumps	Y	Y	X	X	X	X	X	X	
Windfarms	Y	N	N	X	X	X	X	Y	
Quarries	Y	P	X	X	X	X	P	X	
Spoil heaps &c	Y	X	X	X	X	X	X	X	
Woods	3	1	1	1	1	1	1	1	5
Orchards	Y	X	X	X	X	X	X	X	5

	<i>OS</i> <i>1:50,000</i>	<i>OS</i> <i>1:126,720</i>	<i>Barts</i> <i>1:100,000</i>	<i>Philip</i> <i>1:100,000</i>	<i>Goldeneye</i> <i>1:126,720</i>	<i>CycleCity</i> <i>1:125,000</i>	<i>Stir/Sust</i> <i>1:100,000</i>	<i>Suggested Notes</i> <i>1:125,000</i>	
Parks	Y	Y	X	X	X	X	X	X	6
Access land	3	1	1	X	X	X	X	X	
National parks	Y	Y	Y	Y	Y	?	?	Y	
AONBs	X	X	X	Y	X	X	X	X	
Boundaries	4	2	3	2	1	1	X	2	
Danger areas	Y	X	Y	Y	Y	X	X	X	
‘Works’/industry	Y	Y	P	P	P	P	?	P	
<i>Subtotal</i>	39	21.5	12	11	11.5	7.5	5	13.5	
<i>Water features</i>									
Marsh	Y	Y	Y	X	X	X	X	Y	7
Canals	5	3	1	2	1	1	1	1	
Lakes & contours	2	1	1	1	1	1	1	1	
Footbridge	Y	X	X	X	X	X	X	X	
Upper tide limit	Y	Y	X	X	X	X	X	X	
HWM, LWM	Y	Y	Y	X	Y	X	X	X	
Weirs	Y	X	X	X	X	X	X	X	
Ford	Y	Y	?	X	X	X	X	X	
Foreshore	5	2	2	2	2	2	X	2	
Cliffs & slopes	2	1	1	P	X	X	P	X	
Dunes	Y	Y	X	X	P	X	X	X	
Lighthouses, lightships	3	2	2	X	1	2	X	1	
<i>Subtotal</i>	23	14	9	5.5	5.5	7	2.5	7	
<i>‘Abbreviations’</i>									
Milestones	2	X	X	X	X	X	X	X	
Public conveniences	Y	X	X	X	X	X	Y	X	
Inns, pubs, cafes	3	P	P	X	X	X	2	1	
Post offices	Y	X	X	X	X	X	X	X	
Town halls, &c	Y	X	X	X	X	X	X	X	
<i>Subtotal</i>	8	0.5	0.5	0	0	0	3	1	
<i>Archaeological and historical information</i>									
Site of monument	Y	X	P	Y	X	X	X	X	
Stone monument	Y	X	X	Y	Y	X	X	X	
Battlefield	Y	Y	Y	Y	Y	?	?	P	
Visible earthworks, etc	Y	P	X	Y	Y	P	X	P	
Periods indicated	2	2	1	1	2	2	1	2	
Course of Roman roads	Y	Y	Y	Y	X	Y	X	X	
<i>Subtotal</i>	7	4.5	3.5	6	5	3.5	1	3	
<i>Altitude and terrain</i>									
Spot heights	Y	Y	Y	X	X	P	X	Y	
Rock features	3	1	X	X	X	X	P	X	
<i>Subtotal</i>	4	2	1	0	0	0.5	0.5	1	

	OS 1:50,000	OS 1:126,720	Barts 1:100,000	Philip 1:100,000	Goldeneye 1:126,720	CycleCity 1:125,000	Stir/Sust 1:100,000	Suggested	Notes
<i>Tourist information</i>									
By symbol	6	5	X	23	46	21	6	23	
By highlighting	16	X	X	X	X	X	16	X	8
Caves	X	X	1	X	1	1	X	X	
Youth hostels	Y	Y	Y	Y	Y	Y	Y	Y	
Golf courses	1	1	2	1	2	1	X	1	
<i>Subtotal</i>	24	7	4	25	50	24	23	24	
Minor settlement names	Y	X	Y	Y	Y	X	P	X	
<i>Subtotal</i>	1	0	1	1	1	0	0	0	
Grand total:	152	70.5	50	73	93.5	48.5	51.5	75	
<i>Total less 'tourist info':</i>	<i>129</i>	<i>70.5</i>	<i>49</i>	<i>49</i>	<i>45.5</i>	<i>25.5</i>	<i>29</i>	<i>52</i>	9

Information not statistically evaluated

Contour interval (metres)	10	30	50	X	50	61	30	30	10
Names per square km	1.36	0.25	0.88	0.83	0.42	0.18	0.30	0.34	11
National grid shown	Y	Y	X	Y	X	X	X	Y	12
Latitude & longitude	Y	Y	Y	X	X	X	X	Y	
No. of sheets in series	204	51	62	65?	60?	100?	?	30?	13
Mapped area (sq km)	1600	7600	6240	5860	7360	3182	3780	14,850	
Map area (cm)	80 x 80	63 x 75	99 x 63	96 x 61	85 x 54	59 x 41	86 x 37	108 x 88	14
Paper size (cm)	100 x 89	70 x 87	104 x 73	98 x 71	99 x 57	90 x 84	100 x 94	125 x 94	14
Map area as % of paper	72	78	82	84	81*	32*	29*	81	15
Folded size (mm)	134x230	128x206	141x189	133x259	124x287	150x212	125x235	137x242	16

Notes

- (1) Other access routes: although these have only recently started to appear on OS maps, the principle has been implicit since the OS first started to show public rights of way in 1960.
- (2) Level crossings: these are shown on OS 1:250,000 *Travelmaster*.
- (3) Electricity transmission lines: these were included on the Bartholomew 1:126,720.
- (4) Churches: a 'tourist' symbol for cathedrals and abbeys is counted as a tourist feature.
- (5) Woods: Goldeneye uses one symbol for both woods and orchards.
- (6) Parks: these were shown on the Bartholomew 1:126,720.
- (7) Foreshore: this is not shown on all Goldeneye maps.
- (8) Tourist information by highlighting: it is assumed that all features shown by symbol on OS 1:250,000 mapping will be shown either by symbol or highlighting on OS 1:50,000, and a similar principle has been adopted for the Sustrans/Stirling maps.
- (9) 'Tourist information' deducted: youth hostels and golf courses are excluded, on the grounds that they were usually mapped at scales of 1:126,720 or larger before 1970.
- (10) Contours: the interval varies on Goldeneye maps: 100 metre interval is used on some sheets of hillier areas, e.g. Devon, Peak District.
- (11) Name density per sq km: this is based on the treatment of squares TR 14, 15, 24 and 25, except for the Sustrans/Stirling map, where it is based on the southern half of TG 30 and the northern half of TG 39. It is not straightforward, in that some of the Goldeneye maps have minor names and some do not (for example the *East Kent* sheet studied), and in that OS

1:126,720 Sheet 51 omits all antiquity names, a curious thing which I do not recall ever seeing remarked on in print. A comparative count of the area in TG 30 and TM 39 (OS Sheet 39 and Goldeneye *Norfolk*, which has minor names) gives name densities of 0.47 and 0.46 per square kilometre respectively.

(12) Unnumbered grid lines (as on the OS/CycleCity map) are treated as 'X'.

(13) These are the number of sheets needed for complete cover of Britain. '?' denotes uncertainty, as no complete sheet line layouts are available.

(14) Dimensions for map area, paper size and size of folded map are given in the order width, height. For the OS 1:126,720, the standard size contemplated for series sheets (exemplified by published sheets 28, 36 and 51) has been used, rather than the larger size of the *Snowdonia* sheet. For the Philip 1:100,000, map and paper areas are based on those for the original issue in sheet form in circa 1974-6, which went out of print a decade or so later.

(15) Area of mapping as percentage of total paper: double-sided maps are treated as single sided; enlargements of towns are not counted towards the total. The OS 1:126,720 Second Series ratio is based on a standard trimmed and folded sheet covering 80 km W-E by 95 km S-N. The standard paper-flat issue size was about 74 x 96 cm. * denotes a map with integral cover included in total paper size.

(16) Folded size: Stirling/Sustrans are issued in plastic wallets, 150 x 246 mm.

Sources:

1 - OS 1:50,000: Sheet 151, edition C (1997), and Sheet 179, edition C (1998).

2 - OS 1:126,720: Sheet 28, edition A (1961), Sheet 39, edition A (1961), Sheet 51, edition A (1956), and *Snowdonia*, edition A/**/**/** (1983).

3 - Bartholomew 1:100,000: Sheets 6 (1981), 9 (1978), 30 (1983) and 31 (1984), also 1:126,720 Sheet 10 (1972) for name-density only.

4 - Philip 1:100,000: Philip's Navigator Road Atlas Britain (London, George Philip, 1996), also Philip/RAC 1:100,000 Sheet 7, n.d. (?1974) for dimensions.

5 - Goldeneye 1:126,720: *Cotswolds* ('Map & Guidebook in one', 1997), *Kent* ('Cycling map', 1996), *Norfolk* ('Cycling Map', 1996), *Peak District* ('Magical Mystery Tours in...', 1993), *South Devon* ('Map-Guide', 1994), *Suffolk* ('Cyclists/All Purpose', 1994), *Sussex and South Surrey* ('Cycling Map', 1996), *Yorkshire Dales* ('Cyclists/All Purpose', 1994).

6 - CycleCity Guides/OS 1:125,000: *East Kent*, *Oxford* (both 1996).

7 - Stirling/Sustrans 1:100,000: *Hull to Fakenham* and *Fakenham to Harwich* (both 1997).

8 - Suggested 1:125,000: personal experience and years of frustration.

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#### **More wishful thinking?**

David Archer

It may not be original to reflect on how far we have come since 1981, but *Sheetlines* 50 caused me to do so once again.

At that time, I was fairly typical of what one would now call the average member of the Charles Close Society. I would visit second-hand bookshops, buying maps and asking if they knew of anyone else who collected them. Nobody could put me in touch with another enthusiast. At home, I had three books, Brian Harley's *Historians guide to Ordnance Survey*

maps,<sup>34</sup> which left many questions unanswered, the Ordnance Survey publication *Ordnance Survey maps: a descriptive manual*,<sup>35</sup> which described maps currently available in 1974, and Close's *The early years of the Ordnance Survey*,<sup>36</sup> which was very historical. These, and a couple of post-war *Descriptions*<sup>37</sup> were all most people had to tell them about the maps in their possession. Had one searched further, the newly published *History of the Ordnance Survey* by Seymour<sup>38</sup> and a few journal articles could have been added. But nothing really told us about the map we had just bought which was different from all the others in our collection.

For pre-1940 material, only Harley really gave any information about the maps themselves. But even he did not explain the difference between the maps in the blue bordered covers of the Fifth Edition and the red bordered covers Fifth (Relief) Edition in my collection.<sup>39</sup> Where did the green covered half-inch maps fit in? As for many people today, identification was primarily by cover design, which was distant from the brief descriptions in Harley. Nothing answered questions about the different covers for the map series or the various tourist and district maps held.

Today, we have the Charles Close Society, *Sheetlines* 1-51, various booklets and monographs, regular meetings and most of all, we have other members whom we can contact, ask questions of and share new discoveries with. No longer does one have to exist in isolation and frustration.

But what of the future? In *Sheetlines* 50 I asked for anyone willing to help with the proposed bibliography to contact me. Five members have expressed an interest, but nobody has felt able to offer themselves as a project leader. I see the bibliography or database as only the start of an organised programme of information collection and storage on computer. Let me explain.

Initially it was suggested that the Society should compile a 'bibliography on the Ordnance Survey'. I looked into this and suggested that such a bibliography should contain anything written about the Ordnance Survey or produced by the Ordnance Survey, such as internal documents, reports, catalogues etc. It soon occurred to me that it would be useful to record the existence or location of other items that might be of interest to members either now or in the future. For example, lithographic stones, copper plates, advertisements, headed notepaper, envelopes with logos. If stored on a computer, this would become a database rather than a bibliography and could be searched on any field, for example by subject, date, author, etc.

I would now suggest that we should go even further and aim for one massive database or several interconnected ones (whichever we are advised is best). Not only would we find a bibliographic file of use, but also a chronological file, a geographic file, and a file of biographic material. In addition, I see no reason why we should not have the intention of creating a sheet history for every Ordnance Survey map ever produced. Again, let me explain.

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<sup>34</sup>J.B.Harley, *The historian's guide to Ordnance Survey maps*, London, National Council of Social Service, 1964.

<sup>35</sup>J.B.Harley, *Ordnance Survey maps: a descriptive manual*, Southampton, Ordnance Survey, 1975.

<sup>36</sup>Col Sir Charles Close, *The early years of the Ordnance Survey*, reprinted Newton Abbot, David and Charles, 1969.

<sup>37</sup>e.g. *A description of Ordnance Survey small scale maps*, Chessington, Ordnance Survey, 1947.

<sup>38</sup>W.A.Seymour (ed), *A history of the Ordnance Survey*, Folkestone, Dawson, 1980.

<sup>39</sup>Seymour does discuss them, but at £35 was out of my price range.

We have a lot of members who own a lot of maps and other Ordnance Survey related material, some of which is meaningless in isolation. If details were held on a database, dispersed examples would be drawn together and might prove useful in answering questions or providing material for ongoing research. Many members come across isolated snippets of information and have no way of using them. If they were able to have them input into a database, the information would be stored for future use.

I consider a chronology of the Ordnance Survey as important as a bibliography. Imagine a double page spread with the dates 1875, 1876, 1877 etc down the left-hand side. The next column is headed 'Technological Developments', the next is headed 'Survey and Revision', the next is headed 'Map Series', etc. One picks a date and reads across to see what was happening under the different headings. A detailed chronology would answer the sort of questions we all ask: when did the Ordnance Survey first use colour printing, where were they surveying in 1858, when did Mudge take charge, when did they decide to adopt the 1:50,000 scale? As with the proposed bibliographic database, a lot of the information is fairly easily obtained and just needs to be keyed in once for the future benefit of all. The chronology would be structured to accept information for a specific day, week, month or year, and have an index.

By a geographic file, I mean one based on counties and towns, so that one could look up Northumberland and see that the surveyors were there in 1855-64, 1894-97, 1913-23, etc, and that Hexham had a 1:500 plan produced in 1860 (all of which is available in Richard Oliver's *Concise guide*).<sup>40</sup> To such a file we could add details of bench mark locations within each county taken from the various listings,<sup>41</sup> addresses of Ordnance Survey area offices, Ordnance Survey agents at different dates, details of correspondents for archaeological information in the 1920s, etc. A picture would emerge of all Ordnance Survey activity in a county.

A biographic file would be smaller and compiled more slowly, giving details of Ordnance Survey staff, where they worked, when they were employed etc. Information found by family historians when searching census returns would be a good source for such information.

Possibly the most useful file to map collectors would be the creation of sheet histories for every map produced. The Society holds the job files for the One-inch Seventh Series maps. Essentially, these consist of a card for each sheet onto which was noted every piece of work carried out in connection with that sheet: who did what, when, and how long it took. From the cards we might see that a certain sheet when reprinted in 1966 had a few minor alterations made and the price changed. It might then have been reprinted in 1969 with no changes. The creation of such a detailed record for all other maps is impossible, but I see no reason why we should not attempt to create sheet histories for every map ever produced by the Ordnance Survey. A sheet history will list every different state of a map, for example all states with different print codes (where they exist) and then subdivide these by those states with the same print code but differences elsewhere, such as different prices. Most information will come from observation and study rather than documentary evidence. Such a task will take well into the next century to become established, but a start should be made.

It does not take much imagination to see how various data elements could be combined with graphics to answer such questions as 'What would a shop display of the most

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<sup>40</sup>Richard Oliver, *Ordnance Survey maps: a concise guide for historians*, London, Charles Close Society, 1993.

<sup>41</sup>e.g. Col Sir Henry James, *Abstracts of the principal lines of spirit levelling in England and Wales*, London, Ordnance Survey, 1861.

recent one-inch maps consist of in 1954?’ (A mixture of Seventh Series, New Populars and Scottish Populars with the National Grid).

I am not advocating the above purely to justify playing with computers, but in order to harness the knowledge and resources of members. Few members are able regularly to attend meetings, few feel able to write for *Sheetlines*, but all, I am sure have something that can be added to a computer file. Most have something that will be new to other members or will be of interest in the future. Once files are of a certain size they will be useful in answering questions from members and non-members and will provide information to help in future research.

The sort of information to be included in a database will come from maps, written material and artefacts. This will however, ignore a major source of information which exists at present but will literally die out in the future. I am thinking of Ordnance Survey employees and other groups such as OS Agents’ staff, map users etc. A tremendous amount of information exists only in people’s memories and we should make an effort to record this.

Oral history consists of recording people talking about the past, often prompted by photographs of the workplace or topic under consideration, and then transcribing the tapes. Every one of us has performed a task at work which had short cuts or a better way of doing it than laid down in the official manual. Ordnance Survey employees must be full of stories concerning how things were ordered to be carried out and how they actually were carried out. All too often neither procedure is documented and unless we talk to people and record things, they will be lost for ever.

On page 58 of Owen and Pilbeam’s *Map makers to Britain*<sup>42</sup> there is a picture of two men in the stone store in Southampton lifting litho stones with pulleys. Imagine showing that picture to anyone who had worked in the store and the questions one would ask. How many stones did you move each day? How long did it take? Did you drop any? How many worked in the department? Had you worked in other sections? How big was the store? What sequences were the stones kept in? We will probably never know all the answers, but we might be able to find, for example some of the last people to produce hand lettering, and to record important aspects of their work. Yolande Hodson hinted at the need for this in the first issue of *Sheetlines* but no concerted effort has ever been made to follow this up.<sup>43</sup> Is anyone interested?

I assume that most articles in *Sheetlines* will continue to be about maps, but hope that in the future more will be written about map users, Ordnance Survey buildings, stores and area offices, transport and map distribution, technology and surveying instruments etc, rather than leave such subjects to local historians and industrial archaeologists. Whoever does look into such subjects, the provision of a good database and oral history archive will help enormously.

Again, if anyone is interested in helping with such projects, will they please contact me.

Having written the above, I have chanced to read again the bottom of pages one and six of *Sheetlines* 1!<sup>44</sup>

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<sup>42</sup>Tim Owen and Elaine Pilbeam, *Ordnance Survey: map makers to Britain since 1791*, Southampton, Ordnance Survey, 1992.

<sup>43</sup>Yolande Hodson *Sheetlines* 1 (October 1981), 6.

<sup>44</sup>Thank you to Richard Oliver for commenting on this piece and for some computer wizardry in passing it to the Editors.

## Construction lines on some OSDs

Rob Wheeler

### *Background*

It has been noted in the past that some of the Ordnance Surveyor's Drawings (OSDs) on which the Old Series one-inch map was based show what appear to be construction lines. While looking at a couple of the OSDs covering the Essex bank of the Thames Estuary, I noticed that these lines did not accord with the manner in which I had supposed that the survey was carried out. Subsequent acquisition of colour reproductions of the OSDs for the London area<sup>1</sup> provided an opportunity to investigate construction lines on two such OSDs to an extent that would not have been practicable with the originals. Both for this reason and to allow readers possessing the London Topographical Society folio to follow the argument, the subsequent analysis concentrates on these two OSDs, although some reference is also made to other OSDs showing construction lines.

### *Received Wisdom on Survey Techniques*

The Trigonometrical Survey was novel, at least for this country and for the standards of accuracy sought, and was regarded as scientifically interesting. Its conduct was consequently described in detail in contemporary accounts. In contrast, the topographic, or 'interior' survey was generally regarded as following normal surveying practice and no effort was made to record the procedures that were followed. Knowledge of these procedures today would provide guidance on the level of accuracy that might be expected in the OSDs depiction of the landscape, guidance that is otherwise lacking.

There appear to be just two sources that indicate how the topographic survey might have been carried out. The first consists of the instructions issued by General Roy in 1785, apparently for the survey of Kent<sup>2</sup>. They can be summarised as follows:

1. The Commanding Engineer on the spot was to take all the Great Triangles.
2. 'The filling in or surveying the interior part of the great triangles will be executed in the common manner by the Junior Engineers with the small Theodelets and chains provided for the purpose. They will consequently proceed around the contours and Creeks of the shore, along the great Roads and lanes; and also along the courses of the Rivers & Rivulets. The Boundaries of Forests, Woods, Heaths, Commons or Morasses, are to be distinctly surveyed, and in the enclosed part of the Country all the hedges, and other Boundaries of the Fields are to be carefully laid down, although the exact Turn of every one need not be Surveyed, if frequent Cuts in different directions are made through the enclosures and the direction of fences laid down where they intersect these cuts, the remainder may generally be taken by the Eye.'
3. This process of taking 'by the Eye' or sketching is described in more detail in an Appendix. The Engineer was advised to use a piece of equipment which sounds very much like a plane table. However the instructions for its use seem to indicate that features were fixed by their bearing from a single station, their range being determined (one presumes) from the skeleton plan already drawn up after the

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<sup>1</sup> London Topographical Society Pub144: Facsimile of the Ordnance Surveyor's Drawings of the London area, 1991.

<sup>2</sup> Reproduced in Seymour *A History of the Ordnance Survey*, 1980 363-365.

previous stage. The Appendix also notes that the traverses described in the previous stage should aim at enclosing blocks of 40-100 acres, depending on the nature of the terrain, and that off-road traverses should preferably run along footpaths 'as there will be the less Umbrage given to the proprietors of the lands you go through'. This appears considerably to limit the direction to proceed along all 'the Rivers & Rivulets' etc, at least in parts of the country with a dense road network.

The second account rests on the later textbook's<sup>3</sup> description of interior survey 'partly by measurement, partly by sketching, as was practised by the Ordnance Survey of England'.

1. Control is provided by a local triangulation.
2. The road network is surveyed by traverses with theodolite and chain. Points of detail near to these traverses are fixed by intersection with the theodolite. Points on the traverses and the intersected points provide terminals for additional chain lines. Points of detail near to these chain lines are fixed by offset (short perpendicular measurements).
3. The rest is filled in by sketching, which is similar to rigorous surveying except that the lines are paced and offsets, if small, estimated.

This latter account is recognisably similar to the procedures that the OS were still using in 1948<sup>4</sup> and which were then regarded as having been employed in the detail survey for the New Series.

Since the procedures set out in Roy's instructions differ in significant respects from those described by Frome, there remains considerable uncertainty as to which method, if either, was actually being employed for the early OSDs.

In the hope of casting some light on this, the two London OSDs, 130 and 131, are described. The latter, being more straightforward, is considered first.

## **OSD 131 - Stratford le Bow**

### *Description*

Since both the references start with a secondary triangulation, it is reasonable to look for this first. There are no primary trigs within the area of this drawing. However, St. Paul's Cathedral (that most famous of primary trigs) is marked, though outside the surveyed area. Stoke Newington church is also marked. This does not appear on the diagram of the primary triangulation published in Mudge and Colby's *Account of the Trigonometrical Survey* (1811) (reproduced in Margary<sup>5</sup>) but it was one of the 'most remarkable steeples and other places' surveyed by Roy in 1787<sup>6</sup>. From these two points, rays are drawn on the map to the church towers at Limehouse, West Ham and Layton Stone<sup>7</sup>. Rays are also drawn from Limehouse to West Ham and from West Ham to Layton Stone. Together these form a set of well-

<sup>3</sup> Frome *Trigonometrical Survey* 1839, quoted in Seymour, 59

<sup>4</sup> OS *Instructions for Detail Survey, (The Biscuit Book)* 1948 (BLML Maps 207 aa20)

<sup>5</sup> J.B.Harley & Yolande O'Donoghue. *The Old Series Ordnance Survey Maps of England & Wales* Vol 1 Lympne Castle, 1975 [henceforth 'Margary'], xvi.

<sup>6</sup> And published in *Phil. Trans.* LXXX (1788).

<sup>7</sup> The OSD shows a cross on the site of the present (later) church but it is only in pencil and nothing was shown on the engraved map. Confirmation that a church tower stood there in 1799 would be useful.

conditioned triangles<sup>8</sup> with check rays (Figure 1). There is no evidence on the map for other points whose position appears to have been fixed solely by measurement of angles.

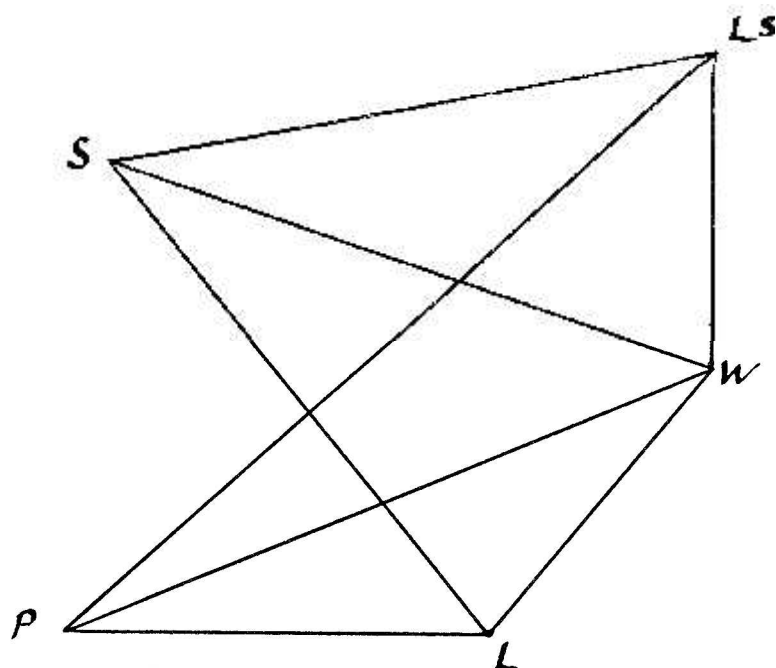


Figure 1: OSD 131: Secondary triangles

Key:

- S - Stoke Newington Church
- LS - Layton Stone Church
- L - Limehouse Church
- P - St. Paul's Cathedral
- W - West Ham Church

Rather more ubiquitous on the drawing are what I shall term 'Measured Lines with Offsets'. Certain lines, both those forming part of the secondary triangulation described above and other ones, bear figures along their length. The figures appear to be the distance from the end of the line in units of 440yds. The first figure after the decimal place is given (although the decimal point itself is sometimes invisible or omitted) so the effective module is one of 44yds. From the points referred to by these figures, perpendiculars, often quite long ones, are drawn to significant points, such as church towers or road junctions. The lengths of these perpendiculars may be given in the same manner. An example is shown in Figure 2.

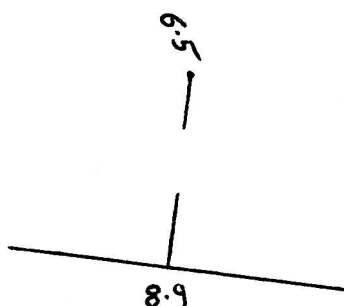


Figure 2: The road junction NW of Low Layton lies 8.9 units along the line from Stoke Newington to West Ham and 6.5 units offset from it.

All along the roads are a series of irregularly spaced dots. Similar dots occur along the road from the edge of the surveyed area to Stoke Newington church. (Since this lies outside the surveyed area, it is necessary to check with the engraved map to see that the dots

<sup>8</sup> To minimise the positional error resulting from errors in the measurement of angles, the angle opposite the base should not be excessively small. Such triangles are called well-conditioned.



do indeed lie along the road.) This last set of dots are joined by line segments, drawn fairly coarsely.

Finally, there are what can be termed the ‘minor rays’. These sometimes start from points along the roads but often their start point seems hardly tied in at all to the rest of the construction. Two special categories of minor rays can be singled out. *Axial rays* appear to have been drawn along the axis of a straightish feature: there are two along stretches of the Lea Navigation. *Furlong lines* have been so called because they have two or more cross-bars 440yds (or sometimes 220yds) apart and a whole number of such units from the start of the line. These cross-bars do not bear any apparent relationship to topographic features.

### *Interpretation*

Of the secondary triangulation, little more needs to be said. It may be worth noting that all the trigs seem to have been church towers.

Measured lines and offsets were used for the great majority of fixed points - perhaps fifty, as opposed to the three secondary trigs. The term employed here (and in the depiction on the OSD) tends to suggest that the Measured Line was chained directly on the ground and that perpendiculars from it were chained in the same way. However, it must be recognised that in certain instances the literal performance of this would have been impossible: chaining the line from St. Paul’s Cathedral to West Ham would have involved substantial amounts of demolition, whilst one of the offsets (to the east of the Isle of Dogs) runs wholly in the Thames. Clearly, methods existed for measuring round obstacles. What they were the drawings cannot tell us and indeed, as long as such work-arounds resulted in ‘along’ and ‘across’ figures in the surveyor’s notebooks, no finished drawing can be expected to give more than the barest clues about the nature of the work-arounds employed.

Great care appears to have been exercised in checking these offsets. A number of points are fixed by offsets from two separate Measured Lines; others are backed up by rays from up to two points already fixed (thus providing the nearest approach to a minor triangulation seen on the OSD). Moreover the Measured Lines themselves are never fixed solely by angle. When they are not sides of secondary triangles (or extensions thereof) they pass through one trig point and one prominent point (such as a church tower) already fixed by offset.

The dots along the roads would appear to confirm that the theodolite traverse prescribed by Roy was actually carried out along the roads and lanes. They also show up on the towpath of the Lee Navigation and may occur along other features depicted by a single line which now obscures them.

Such traverses are prone to accumulate error, especially when the fixed points are sparser, as they are in the east part of the drawing. Some of the minor rays can be interpreted as checks on this. Besides the ‘Furlong Lines’, several bear distances; it is possible that all were measured.

### *Implications*

Even from this one drawing, two points of substance emerge.

The first is that the detail survey did *not* appear to start in the manner that Frome suggests with a network of points already determined by the trigonometrical survey. The surveyor appears to have been told the distance of a baseline from St. Paul’s to Stoke Newington church; in other respects, he might as well been surveying virgin territory. This

should come as less of a surprise if we read Gardner's proposals<sup>9</sup> for economising on the completion of the survey of Essex (OSD 131 forming part of the coastal strip surveyed earlier to square off the map of Kent). The idea that the detailed survey should make extensive use of points already fixed by the trigonometrical survey is presented as a money-saving innovation, together with the abandonment of the practice of surveying field boundaries. Thus we should actually be surprised if the surveyor of OSD 131 had started with a sheet of paper with secondary trigs already pricked through, because that would imply that one of Gardner's two proposals for saving money would not reduce costs at all. The likely consequence of the OSD's method of construction is that the positional accuracy of points can be expected to deteriorate from west to east, especially in the far east of the drawing which lies beyond the OSD's own secondary triangulation. Fortunately for the surveyor, the most rigorous checking was likely to be in the west, where a number of churches had already been fixed by Roy's 1787 survey. Perhaps his painstaking approach in this area reflected that.

The second point to note is that, although the OSD falls into the category traditionally described as Fair Drawings, the complicated system of construction lines seems to rule out its being a Fair *Copy*. Rather it appears to be the original sheet of paper from which the surveyor started and to which features were added as they were surveyed. Interestingly, OSD 131 lacks hachures, so those on the engraved map must have come from some other document. This 'other document' survives for the OSDs further to the east, and consists of the 'Foul Plans', made up of several pieces of tracing paper. In most respects they show as much detail as the Fair Drawings, though more coarsely drawn, together with hachures, but the names are often scarcer than, and sometimes differ from, those on the Fair Drawings. Are these the pieces of oiled paper that Roy advised his surveyors to use for taking detail 'by the eye'? Certainly several seem to have the field boundaries drawn more thickly than the roads, which might be explained by the latter having been traced from the Fair Drawing at its skeleton stage, whilst the former were the result of the surveyor's own sketching and were then copied back onto the Fair Drawing<sup>10</sup>. The implication would be that the Foul Plans, where they survive, may be a more accurate depiction of the minor detail than the more careful depiction on the Fair Drawings. There is clearly scope for a lot more research especially where independent sources survive.

## **OSD 130 - Woolwich**

### *Red-dashed lines*

OSD 130 seems at first very different in that it has a system of triangles drawn in red ink. Figure 3 shows the triangles; the numbers appear on the OSD, also in red ink, whilst the letters have been added to the figure purely for ease of reference.

These triangles have in the past been described as construction lines. As such they suffer from being drawn using a 'straight' edge with pronounced irregularities.

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<sup>9</sup> Quoted in Margary, xxviii.

<sup>10</sup> Although there are occasional differences, especially in the line of curved boundaries, the precision with which these are repeated on the two versions confirms the view that they were an attempt at an accurate depiction. Impressionistic treatment of field boundaries only came in with the two-inch drawings.

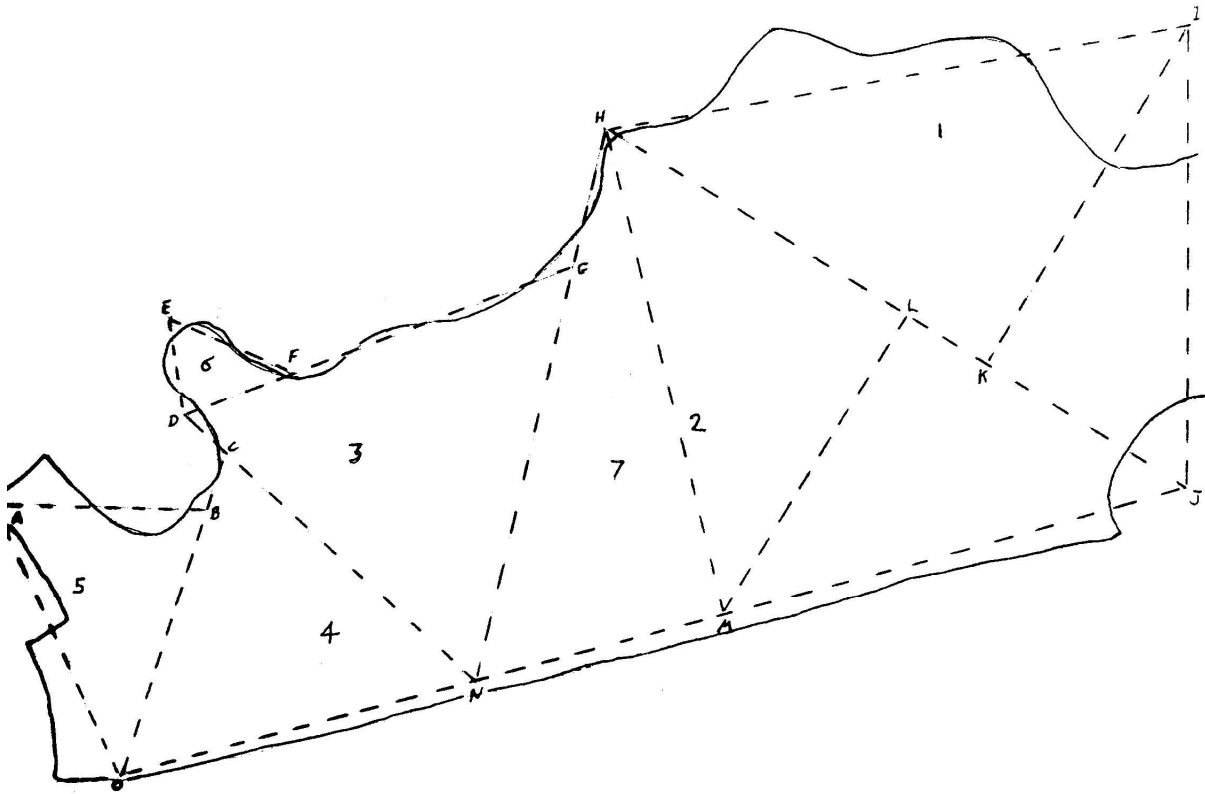


Figure 3: Red dashed lines on OSD 130.

If they are seen as a triangulation system, the problems are more numerous: they link into neither the Primary Triangulation nor the detail; the vertices occur at unsuitable points for observation (e.g. between the buildings of Greenwich Hospital); vertices frequently lie in straight lines (e.g. JMNO); H and N, having Shooters Hill between them, could not possibly have been intervisible.

What can be observed from Figure 3 is that the area covered by the triangles is just about equal to the surveyed area: the areas surveyed outside the triangles just about balance the areas where the triangles extend outside the surveyed area. Moreover, if IK and ML are regarded merely as perpendiculars dropped from a vertex to the opposite side for the purpose of measuring area (area of a triangle = base x height/2) then the figures on the drawing can be seen as reference numbers to their respective triangle. It therefore seems probable that this system of red triangles has been added to the finished drawing solely as a means of computing the area. At this time, surveyors were paid according to the area surveyed, so there was clearly a need to compute that area.

One apparent problem with this theory is that the line HM is superfluous: HJN could have been measured as one large triangle. Interestingly, the figure '2' is abnormally close to the line HM. If we suppose that HJN had indeed started off as one large triangle, then the figure would have been fairly central to it. Moreover, the figures would then have run consistently from east to west (with the Blackwall peninsula as a postscript). So perhaps the separate treatment as HMN as triangle 7 really was a last minute change. Why this might have been done or why only the first two triangles had their perpendiculars drawn in (an unnecessary defacement of the drawing, since one can measure the height of a triangle perfectly without it) are matters about which one can only speculate.

### *Secondary triangulation*

Dismissing the ink lines then, and concentrating on the pencil ones, the secondary triangulation soon becomes apparent. Greenwich Observatory and Shooters Hill (Severndroog Castle) were primary trigs. From these, Woolwich church and Charlton church were fixed. From Woolwich and Shooters Hill, the windmill on Bexley Heath was fixed; from Charlton and Greenwich, Lewisham church; from Lewisham and Greenwich, a point not designated on the OSD but apparently a telegraph station according to the engraved map.

The overall triangulation is shown on Figure 4. Some of the triangles are not well-conditioned, there is only one check ray, and the sequential nature of some of the fixes allows scope for the accumulation of error. In defence of the surveyor, the high ground in the middle of the area must have caused problems. Severndroog Castle lies a little off the ridge and the trees which now wholly obscure it may already have blocked some sight lines. Even the measurement from Woolwich to Bexley Heath may have required the use of a flagstaff (on top of Woolwich church tower, perhaps) to clear the high ground at Plumstead Common).

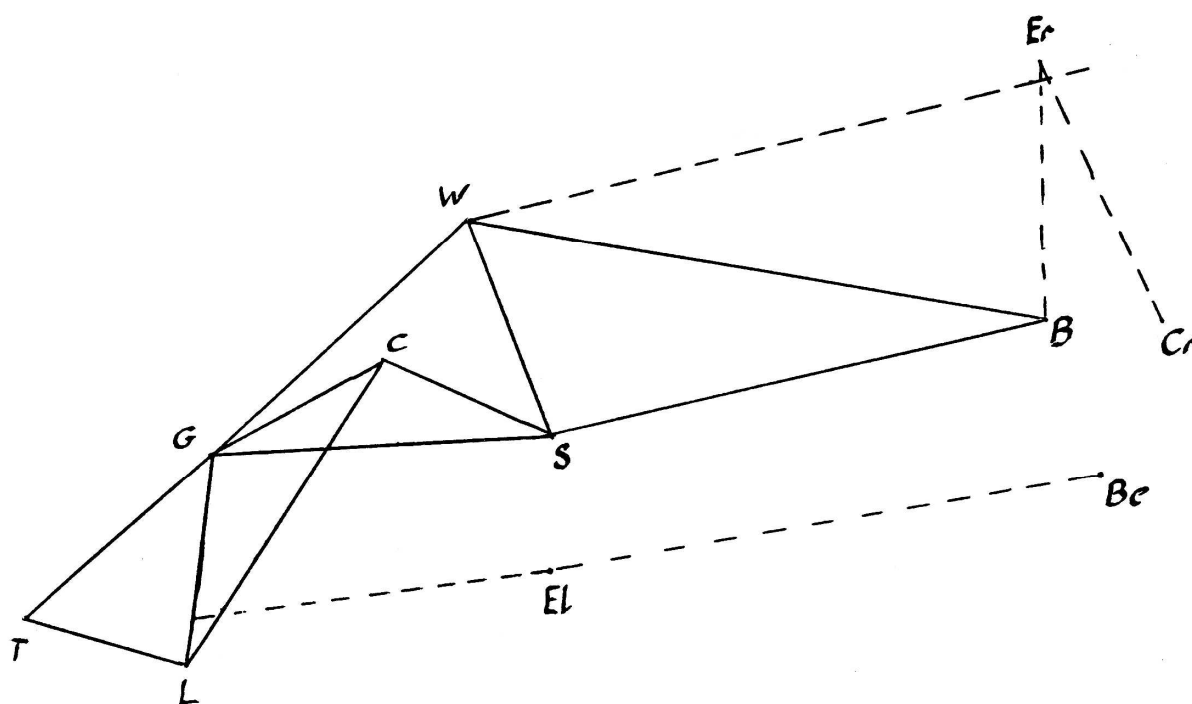


Figure 4: OSD 130 - Secondary Triangles and other major construction lines

|                           |                        |
|---------------------------|------------------------|
| G - Greenwich Observatory | S - Severndroog Castle |
| W - Woolwich Church       | C - Charlton Church    |
| B - Bexley Heath windmill | L - Lewisham Church    |
| T - Telegraph             | El - Eltham Church     |
| Be - Bexley Church        | Er - Erith Church      |
| Cr - Crayford Church      |                        |

### *Measured lines and offsets*

As on OSD 131, most of the fixing of point is done by offsets. Nevertheless, certain differences are apparent.

Firstly, there is much more evidence of lines being measured on the ground. For example, on the line from Woolwich church to a point in Belvidere Park, a cross-bar has been drawn at 5.8 units (quarter-miles again) where the line crosses a bank, at 7.3 where it crosses the road north from Plumstead church, at 10.7 where it crosses the road at Harrow, and so on. Even the offsets used to survey the Blackwall peninsula bear an intermediate measurement before terminating after 6.7 units at an indeterminate point in the estuary. In fact, these two terminating points may not represent anything on the ground at all but be a construction used to fix the furthest extent of the peninsula on the cross-line joining them. This and a couple of other examples around Deptford serve to indicate that not everything drawn on the map could have been measured on the ground.

As on OSD 131, some points are checked by rays from fixed points. Deptford New Church has a check ray from Greenwich Observatory and one from the bridge over Deptford Creek. However, the whole process seems to have been poorly planned. For example, the extension of the Woolwich-Greenwich ray south west from Greenwich served as a measured line but so did the ray from Greenwich to the telegraph, even though the two lines are only about two degrees apart. In contrast to the superfluity of construction lines in the west, Crayford church appears to be fixed only by a line from Erith church, critically dependent on an angular measurement at the latter, while from near Lewisham a measured line fixes Eltham church and, by a further stage, Bexley, being checked only by a couple of measurements from road junctions to Severndroog Castle.

Eltham church is noteworthy in that it appears on the triangulation diagram of SE England that was re-used to mount the Foul Plans for OSD 131. It is not used as a vertex in the triangulation shown there, but it would seem to have been fixed at some stage with rather more accuracy than on OSD 130. Indeed, Eltham, Crayford and Erith churches, the Bexley Heath windmill and even the point used in Belvidere Park all appear to have been fixed on OSD 129. This may account for the absence of checks in the east part of the area, especially as similarities in the drawings suggest that the same surveyor may have been responsible for both.

### *Traverses and minor rays*

Regular dots appear along roads and coastline. Dots along the west edge of Bushy Lees Wood (but about thirty yds outside of it) may indicate a traverse there also.

The only axial ray is drawn along the axis of Greenwich Hospital and extends over Blackheath, from which the Hospital would have been invisible. No use seems to have been made of it.

Quarter-mile crossbars appear on the ray along the road from Woolwich towards Rotherhithe, also along the road running from south of Plumstead Magazine towards Erith Magazine.

Unlike OSD 131, there is the occasional ray from a secondary trig that cannot be regarded as a check on an offset. For example, a ray from Woolwich is tangential to the shoreline below the Plumstead marshes.

### *Later markings*

This OSD suffers particularly from thick pencil lines drawn freehand and lacking any

obvious purpose. They are presumed to be of later date. More puzzling are the points on the coast marked 'My Point', which also appear on other OSDs on the Essex coast such as OSD133. They appear unrelated to any other construction lines and are perhaps associated with subsequent use of the OSDs for a coastal survey of some sort.

#### *Observations on other three-inch OSDs*

Inspection of microfiches of the other three-inch drawings confirms the impression one obtains from Yolande Hodson's catalogue<sup>11</sup> that most of these drawings show few or no construction lines.

More widespread are dots along the centre lines of roads. Although there is scope for confusion with dots showing land use or indeed dots from pricking through as a means of copying, they do appear to provide a way of distinguishing between original plans, on which the roads have been plotted from surveyors' traverses, and tracings or other copies. Many of these OSDs lack hachures and are accompanied by a corresponding sheet of Foul Plans, as described under OSD 131. That for OSD 133 is particularly interesting in that it appears to correct the edge of the road running south through South Ockendon showing by an enlargement in the right hand margin how the road widens, with houses facing south at the point of widening. This would be consistent with the original line having been traced from the Fair Drawing at a skeletal stage and subsequently corrected by the surveyor adding detail 'by the eye'. The Fair Drawing in its final state does now show a widening of the road here but cannot be described as a fair copy of the Foul Plan. Indeed, the Fair Drawing shows the detailed topography of South Ockendon more accurately<sup>12</sup> than the Foul Plan so must incorporate information from some other source.

OSD 129 is the only drawing which appears to bear mensuration triangles in the manner of OSD 130. OSD 128 looks at first sight as though it might be similar, but on closer inspection its dashed lines appear to be a triangulation system. The drawing also has a system of construction lines in pencil which appear unrelated to this triangulation.

Measured Lines and Offsets seem relatively uncommon. This may stem from the limitations of what can be seen on a microfiche, or it may be that the OSDs around London are atypical. Along the Essex coast, there is much greater use of secondary triangulations, many of the trigs being temporary (annotated as 'flag' on drawings) and some on the join of two OSDs being common to both.

#### *Reliability of Detail*

This investigation has thrown new light on the methods in use by the Topographic Survey around 1799. To what extent has it succeeded in its broader aim of indicating the reliability of the finer detail?

What has been demonstrated of the survey methods suggests that Roy's instructions do indeed indicate the basis of the survey: traverses along roads and other features. Unfortunately, most of the detail would have been 'taken by eye' and we are still nowhere nearer establishing just what that meant.

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<sup>11</sup> Y. Hodson: *Ordnance Surveyor's Drawings 1789-c1840*, Reading, 1989.

<sup>12</sup> It shows the square green north of the church, a pond to its east and buildings between church and street, all of which can be confirmed on the 25-inch map of 1866 (Essex LXXV.15). South Ockendon also appears on the Fair Drawing and Foul Plans for OSD 134 (r p serials 393, 392 respectively), the two Fair Drawings being similar, as are the two Foul Plans. It would clearly be extremely instructive if one could establish from independent sources just what was there in 1799.

One indicator of the level of detail accuracy is the degree of consistency between OSDs on the occasions when they overlap. Instances of this occur from time to time on the three-inch drawings with different numbers of buildings shown along the same street. It would clearly be unwise to assume that an exact depiction of individual houses was attempted.

For grander structures comparison can sometimes be made with the known history of a complex of buildings. For example, we know that the four main blocks at Greenwich Hospital (on OSD 130) were approximately in the same state as today. These four are properly shown on the OSD with the two closest to the river being set back from the axis (so that the domes above the entrances to Painted Hall and Chapel can be seen from the river). The interior courtyards to each block are not shown, although this may be allowed as acceptable generalisation. The engraver subsequently ruined the effect anyway by depicting these four blocks, together with two of the naval hospital to the west, in a regular pattern which gives no hint of the great formal axis aligned on the Queen's House. So at Greenwich Hospital the surveyor does as well as we could reasonably expect.

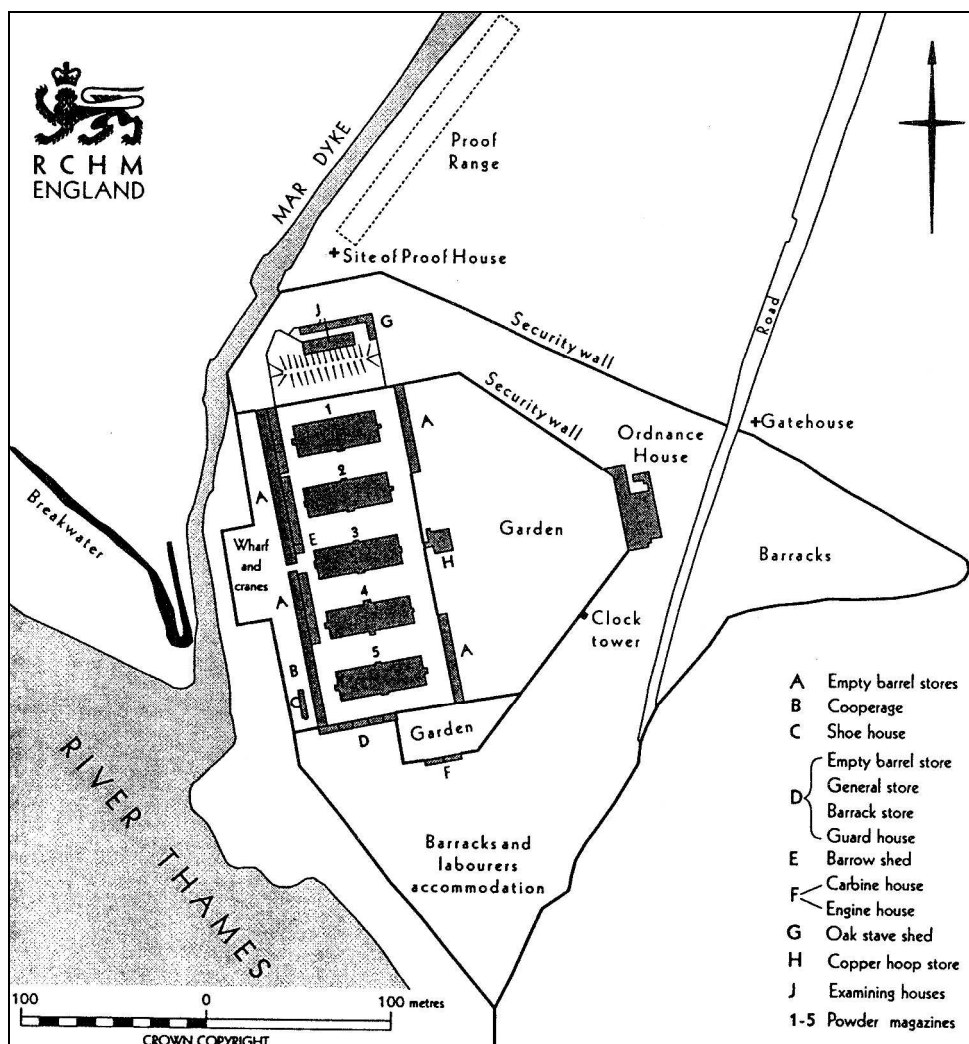


Figure5: PowderMagazine at Purfleet

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For a contrast, we need to move to Purfleet (OSD 133) to another naval site, the great powder magazine. This is shown from a later plan at Figure 5; the five large buildings date

from the 1760s and incorporated the latest technology for the safe storage of gunpowder - including, for example, travelling cranes. One of them still survives. The surrounding ancillary buildings may have undergone minor changes between 1799 and the date of the plan. The OSD depicts the enclosure correctly and also shows five storehouses; however, they have been turned through ninety degrees and so have been made much smaller in order to fit in. (The engraved map garbles things further.) The depiction here is so bad that the surveyor might even have drawn his sketch on the basis of a verbal description; if it was indeed 'taken by eye' his standards were extremely undemanding.

The conclusion for the three-inch drawings would thus seem to be that roads were surveyed, field boundaries were sketched, and buildings could be impressionistically sketched. This rather depressing outcome significantly limits the deductions on detailed topography that one would like to draw from OSDs. So if any members can cite instances where the fine detail can be shown to be an accurate representation of what was there at the time, it would be most welcome.

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The Centre of London

Three responses were received to A. G. Hunt's question in *Sheetlines* 50 about the location of the centre of London.

The first from Philip Atkins of the National Railway Museum in York:

Reference Mr A.G. Hunt's search for a definition of the centre of London (*Sheetlines* 50, p.57) *The Survey Gazetteer of the British Isles*, edited by J.G. Bartholomew, published by George Newnes in 1904, defines this as the centre of the dome of St Paul's Cathedral. This is given as Lat. 50° 30' 48" N and Long. 0° 5' 48" W. The local prominence of the edifice in question would appear to make it an ideal reference point.

Philip Atkins

The next suggestion came from Eugene Burden who writes:

May I suggest the following historical centres of London:

(i) The Standard in Cornhill - this was John Ogilvy's starting point for measuring the great roads from London in 1675. It has long since disappeared, but its site is known with reasonable precision - at the centre of the junction of Cornhill, Bishopsgate, Gracechurch Street and Leadenhall Street;

(ii) The junction in front of Mansion House - this was long known as 'The hub of the Empire';

(iii) St Paul's Cathedral - the meridian before Greenwich came into fashion - the centre of the dome should be reasonably precise.

All three are in the centre of London.

Eugene Burden

John Smith, a member from East Sussex, comes up with the following thoughts:

Q. The Lord Mayor of London: I pr'y thee Sir, where is the centre of this City?

A. An Alderman: Forsooth my Lord, me thinks 'tis as you like it or what you will'.

Mr Hunt appears to postulate some officially designated place in the metropolis, some precise spot, deemed by statute, government edict, royal fiat or papal bull to be the city's one-and-only undoubted 'centre', whatever that may mean. The question in those terms is misconceived.

There are places - Charing Cross (mentioned by Mr Hunt), Royal Exchange and Piccadilly Circus come to mind - which have from time to time been selected as zonal centres or zero points from which to measure radii of distances for the purpose of delimiting 'the London area'. These are no more than focal points of traffic or hubs of human activity, which it has been found convenient to use.

The answer to Mr Hunt must be that there is no such thing as a precisely defined centre of London - whatever is meant by 'London'; nor can there be a centre in the geometric sense, since such can exist only in a figure which is regular. The figure formed by London's boundaries is neither geometric nor regular. Even if it were, I doubt whether it would be possible to achieve a degree of accuracy he seeks.

If, dissatisfied with such a brusque reply to a polite enquiry, Mr Hunt insists on pursuing a will-o'-the-wisp, let us see what we can do to help him.

First we must decide what is meant by 'London'. Mr Hunt makes no mention of the historic 'square mile' of the City of London which, centuries ago was all the metropolis comprised. Perhaps he feels that the 'centre of London' is to be found in that area of which we often speak, but where limits are hard to define, namely Central London. Surely it must include 'the City' together with that nebulous area known (confusingly perhaps to strangers) as 'the West End'. But where are its boundaries? How far does it extend?

Lest we spend a disproportionate length of time in trivial pursuit, let us plump for the Greater London Council area, which may (or may not - I am no expert in such matters) coincide with the area today comprehended by the London Boroughs and the City of London.

Having decided on London's limits, can we now create an *ad hoc* definition of 'centre' for our present purpose - that is to say to satisfy a whim (as Mr Hunt puts it) - on the understanding that, whatever degree of precision may be attained in fixing its co-ordinates, it will have no practical validity?

For guidance let us turn to Sir Charles Arden-Close's article (re-printed from the Geographical Journal) in *Sheetlines* 36. There, after describing it as a 'curious, if useless piece of information', he goes on to tell us 'the usual way of finding the centre of a country', as if that were something that was customarily done; if the information was useless, why would anyone take the trouble to seek it?

The solution he proposes was, in essence, to find the *centre of gravity* of a lamina conforming in shape to that of the country concerned. He does not *refer* to it as the centre of gravity, but his reference to 'parts of equal moment', and his use of the suspension method - which is a standard textbook method for determining the centre of gravity of a plane body - makes it clear that that is what it is.

What seems to me a much more straightforward method would be to support a cut-out figure of the area concerned horizontally on a vertical pivot - say a knitting needle or a broomstick - until it is balanced. An alternative method, which I have not seen described,

would be to immerse a cut-out figure in a suitable liquid, measuring first the volume displaced with the figure fully immersed and then with the figure in various different attitudes, marking the 'tidemarks' registered on the figure when only *half* the full volume is displaced. The resulting criss-cross of tidemarks should coincide at a centre.

All these methods, none of which I have tried, would seem to work well enough with a figure representing a fairly compact area, even that of such a peculiarly shaped land as Britain; but would they work with those awkwardly shaped area such as say those in the form of a crescent?

Consider the map of Norway, Chile or Mainland Orkney. Better still an atoll in the South Seas. For convenience, consider a solid letter 'C'. Where is its centre of gravity? Half way round the arc? Now close up the figure so as to form the letter 'O'. Where is the centre now? It can no longer be *anywhere* on the circumference. It has to be in the geometric centre of the figure.

Applying this logic to a hypothetical circular atoll, we are forced to the conclusion that its centre would vary radically according to whether or not there was an entry to the lagoon from the sea.

Does not this demonstrate the absurdity of the concept of a geographical centre, and the futility of attempting to fix one? Perhaps, but so long as one is dealing with a single, fairly compact land entity such as London, the Isle of Wight or the mainland of Britain, it is possible to determine a plausible 'centre' to meet the demand from those who insist on having one.

It is when one has to deal with a mainland *together with* its offshore islands that matters become contentious. To render the task manageable one has to include intervening areas of sea. The question which immediately arises is how much sea does one include? For instance, does one go out to the edge of the coastal shelf, the extent of which will vary from place to place and will have no constant relationship to the shore line? Whatever criteria are adopted will have to apply all round and not only in the vicinity of islands. Arbitrary decisions and compromises will have to be made, inevitably affecting the final result.

Still, a job worth doing is worth doing well. One might as well do one's best to achieve accuracy even though the result is not to be taken seriously and the exercise is seen as strictly for amusement only.

This seems to have been the spirit in which Ordnance Survey embarked on its circa-1988 exercise - see the editorial note following the article in *Sheetlines* 36. What OS appears to have done was to set rectilinear boundary lines to create an artificial figure, rather as Philip Atkins did - though he made no claim to have found the centre - and then ascertain the co-ordinates of the intersection of diagonals. All that seems to have been arrived at was the centre point of a rectilinear figure enclosing Britain, not of Britain *per se*.

So far as the centre of Britain itself is concerned I am tempted to accept that there is no such thing or that the number of possible centres is infinite, and therefore the search for a meaningful centre must prove fruitless.

Having said all this, and notwithstanding Arden-Close's description of the information as useless, is it perhaps just possible that a use could be found for it? Conceivably, in a country having uniform characteristics, with an evenly distributed population and supply of resources, a centre determined by Arden-Close's method could serve as a guide to the optimum location for some national establishment such as an electricity generating station, a parcels distribution depot, a post office letter-sorting office or a national exhibition centre. Is it mere coincidence that the annual general meeting of the

Charles Close Society has been held more than once in Nuneaton, only two miles from where the place which Arden-Close decided was the centre of England?

Readers unconvinced by this reply, yet seeking further mental stimulus, may care to consider where they would place the centre of gravity of the following:

1. The pre-1889 counties of Cromarty and Ross - separately. No cheating! (See Brian Adams article in *Sheetlines* 29)
2. Spaghetti Junction, or any complex motorway interchange near you.
3. A Mandarin pictogram.
4. The Oozlum Woozlum bird.
5. A wobbling jelly in the shape of a fish.

Answers, on a postcard please, to the Editors, not to me.

John J. Smith

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### Letters

**Hugh Brookes, who has recently joined the Society writes from Wantage:**

A column in *Sheetlines* that I would like to see on a regular basis would be a question and answer page. The answers would not necessarily have to be 'in-depth', perhaps more of a general nature. Although some answers would no doubt be widely known, I am sure that there would be some benefit to a number of members.

If you think this idea has some merit I would appreciate answers to the following questions:-

1. Print run numbers - what do they mean? e.g. 25000/6/46Wa. The numbers, at first glance seem to be semi-random.
2. Some post WW2 1:25,000 maps do not appear to have a date on them. The only way to identify a date is by the magnetic variation.
3. Are there any maps of the red covered Seventh Series produced on cloth.
4. Are there any rarities amongst the Popular, New Popular and Seventh Series maps that are worth looking out for.
5. What is the likelihood of finding One-inch Third Edition maps in second-hand bookshops or other outlets.
6. Have you any price guide for maps, not necessarily in excellent condition, that can be bought from second-hand/ bric-a-brac shops.

Hugh Brookes

Editors note: If anyone has any other questions to which they have always wanted to know the answers write to Jim or myself and we will put them in *Sheetlines*.

JR

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Phil Clayton writes in response to Lionel Hooper's Christmas Quiz in *Sheetlines* 50.

I write in response to Lionel Hooper's Christmas Puzzle. There is a house called 'Ireland' about three miles north east of Craven Arms on *Landranger* Sheet 137. 'Wales' can

be found about eight miles south east of Sheffield, it is next to the M1 motorway on *Landranger* Sheet 111. There's a 'Scotland Gate' a couple of miles south west of Ashington in Northumberland (*Landranger* Sheet 81) and an area of Wolverhampton is known as 'Scotlands' (*Pathfinder* 891).

Here is another question to get your readers looking at their maps.

Where in South Wales, in the montane sense, is it possible to see right across the South Atlantic Ocean? *Landranger* 161 or *Outdoor Leisure* map 13 will point readers in the right direction.

Phil Clayton

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## **Two letters from Richard Evans, the first concerning footpaths, and the other National Trust "Access Land"**

### *Walking on Water*

Richard Oliver (*Sheetlines* 49, p45) points out that OS is only the messenger when it comes to depicting rights of way on its maps: it can only show RoW according to the information provided to it by highways authorities. Anybody who walks footpaths using 1:25,000 maps will have experience of paths where diversions and extinguishments have been formalised since their map was published, and this can be particularly galling where the signposting produces more puzzles than answers. What about those instances where the path is shown in the correct position but where it apparently crosses a fairly wide stretch of water? Such an instance can be found at Gennetts Wood (*Explorer* 134 Crawley and Horsham, edition A 1997 grid ref TQ028329). In fact at this point the Explorer does show the correct route according to the Surrey and West Sussex definitive maps. The lake came after the path and is not shown on the superseded *Pathfinder* 1246 TQ03/13, edition A1, 1991. In the meantime I am assured there is no need to walk on water; there is a way around the lake. In any case a proposal to divert the path is with the authorities. But how long before the walk-on-land alternative appears on a revised Explorer.

### *OS and NT revisited*

In *Sheetlines* 50, Richard Oliver reminded us that National Trust land has been shown on OS maps since the One Inch Fifth Edition and he casts a very critical eye on the OS's current policy of including NT land on 1:50,000 and 1:25,000 maps as part of "Access Land" and delineating it with a heavy purple border.

As well as that, I cast an equally critical eye over 1:25,000 Explorer sheet 133, Haslemere and Petersfield. As a result I entered into some correspondence with the NT's Southern Regional Office at Polesden Lacy, and have had a fruitful discussion with a cartographer at the Trust's London head office.

NT properties are not shown on maps if they are not accessible to the public at any time.

As to whether the "open access" or "limited access" pictogram is used, apparently depends on a variety of factors including accessibility, the terms of leases and the wishes of donors. It

follows therefore that not all “restricted land” will be found in the Annual Handbook as being open on particular days at specified times.

Again I was assured that as part of the Trust’s policy of increasing access it was generally in favour of showing NT permitted paths where they cross land not shown as “Access Land”.

At least orally, the Trust’s cartographer told me he was interested to hear of Richard Oliver’s adverse comments on the heavy handedness of purple vignetting.

Richard Evans

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Sue Rumfitt comments on Richard Oliver’s article in *Sheetlines* 50 about depiction of access land.

I read Richard Oliver’s article on the depiction of access land on OS 1:50,000 in *Sheetlines* 50 with great interest. With reference to his comments about legislation to give a right of public access to land, one of the difficulties facing legislators is the problem of defining land to which the public have access. Whilst the Ramblers’ Association and other access groups such as the Open Spaces Society have long campaigned for a change in the law and phrases such as ‘open access’, ‘freedom of access’ and more controversially ‘right to roam’ have been bandied about in recent years neither these, nor the phrase ‘access to open countryside’ assist much in framing legislation. It is possible that as with public rights of way any new legislation will introduce some system of recording access land, from which the Ordnance Survey will in future be able to take information for inclusion in mapping.

Dr Oliver comments that there is prospect of new legislation in the next two years. It is true that the Government has, in the past, made a commitment to amending legislation and a consultation paper is ‘to be published shortly’. However the definition problem is one of many to be overcome and it would be wrong to underestimate the strength of opposition to this change. The Ordnance Survey and others may have to wait some while for this source of information about access land.

Sue Rumfitt

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**Anne Wilks writes on rights of way on OS maps, further to John Cruickshank’s article in *Sheetlines* 50.**

I am most interested in the comments of Mr John Cruickshank about rights of way on OS maps and the anomalies that one meets. It is suggested that the OS should query peculiarities which do not seem to make sense.

This is a most interesting suggestion. Many of the highway authorities that produce the definitive rights of way maps are years behind with their work, and correcting anomalies often is at the end of their list of priorities. Yet it is most important that the correct routes are shown on the OS maps as soon as possible, as false information, or sudden lack of information, as where a route ends at a parish boundary, gives rise to troubles on the ground. One should, ideally, be able to produce one’s OS map and show that one is on the correct

public route if challenged. Often one cannot do this because of the numerous mistakes that have occurred in the preparation of the definitive rights of way maps.

The OS would be taking on a huge new task if it tried to raise queries and have the right routes provided without doubt. However, they would be doing a great public service if they did so, as it would, one hopes, jog the highway authorities into more speedy action. They have a statutory duty to keep all definitive maps up to date and, of course, free from error.

Anne Wilks

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Reproduction of OS maps in books

In *Sheetlines* 50 pp 40-41 John Fowler asked for further examples of OS maps in books. In my collection I have two books which may be of interest:-

G/1924/*Exercises on Ordnance Maps* by C.H. Cox, pub G,Bell and Sons Ltd

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### **John Cole has some additions to his article ‘Passing By’ that appeared in *Sheetlines* 50.**

The list of bypassed plans for Devon should include:-

|        |     |        |    |        |     |        |    |
|--------|-----|--------|----|--------|-----|--------|----|
| SX48NW | 19  | SX49NW | 18 | SX58NW | 15  | SX59NW | 19 |
| NE     | 14  | NE     | 22 | NE     | Nil | NE     | 17 |
| SW     | Nil | SW     | 25 | SW     | Nil | SW     | 20 |
| SE     | Nil | SE     | 25 | SE     | Nil | SE     | 8  |

The ‘definite’ figure for Devon should be 1123. It seems probable that NT28 should not have figured in the list of possible by-passed. *Sheetlines* 48 quotes a date of 1894 for the revision range of the 2½ inch and I now think that this applies to the island of Inchkeith. 1:2500 revision on the mainland area was not commenced until at least 1963.

John Cole

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Richard Oliver defends his dislike of ‘Humberside’

Oliver offside?

In ‘Something on the side?’ in *Sheetlines* 50 (p.32), Brian Biddiscombe expresses surprise ‘that a professional geographer like Richard Oliver should seek to eliminate such a useful descriptive concept’ as Humberside. His reasoning is impeccable, but depends on a misunderstanding of my background. First, although I am attached to a university department of geography, and though I have been F.R.G.S. for some years, my qualifications are purely those of a historian! (The history of cartography lands one in some odd places.) Second, so far as objecting to ‘Humberside’ on the grounds of ‘passing political correctness’ (which is frequently an excuse for not bothering to think), I have, I hope, the impeccable qualification of having been born and partly brought up in Grimsby, *Lincolnshire*, and I think that the first time I heard the word ‘Humberside’ was in 1969 when Lord Maud’s recommendations for local government reorganisation were published.

The difference between ‘Humberside’ on the one hand and Deeside, Tyneside, Wearside, Merseyside and Clydeside on the other is a profound one. The latter group are all around comparatively narrow rivers with several ‘fixed link’ crossings, and thus by the 1960s there was an established sense of identity. Until 1981, there was only one such fixed crossing between the two parts of Humberside, at Boothferry at the extreme western end, over 40 miles from the mouth of the Humber, and even the opening of the Humber Bridge failed to overcome the antipathy to ‘Humberside’ expressed by a poll in north Lincolnshire in 1971, when 75 per cent of the participants voted against the concept.

Richard Oliver

And responds to John Cruickshank on the up to dateness of current Ordnance Survey maps.

As we’d rather they weren’t

In *Sheetlines* 50, John Cruickshank raises the important question of the up-to-dateness, or otherwise, of some ‘current’ Ordnance Survey mapping. Although I don’t wish to excuse the defects to which he draws attention, I think that, in fairness to OS, some of the problems need to be explained.

The first is the ‘County Series Superplan’. I find it difficult to believe that the defective mapping really was a straight digitising of County Series rather than National Grid mapping; it is possible that whoever wrote the response on Ordnance Survey’s behalf failed to understand that the standard phrase ‘Reconstituted from former County Series plans and revised’ which appears on ‘overhauled’ 1:2500 plans (such as still form the basis of most of the mapping of rural England and Wales) means something rather different from simply copying County Series mapping without alteration. Whilst some of the distortion may be attributable to slapdash digitising (possibly by an outside contractor?), it is odd that apparent errors were allowed to remain from the 1912 County Series revision when it was ‘overhauled’ in 1977: the whole object of the work was to eliminate visible errors of this sort.¹³ Although ‘replotting’ in 1888 would have been involved, I am not persuaded that it is at the root of the problem in the present instance.

The second is the question of dating the information contained in the map. This really merits an extended article, but the following will show the nature of the problem.

The statement on a Superplan that it incorporates ‘surveyed revision to the date of printing’ is perfectly correct insofar as the map contains all the information which is held by Ordnance Survey; what is lacking is the range of dates to which that information relates. Although it would be very neat and tidy were revision so arranged that it proceeded evenly across the county, so that the date-range for all the information appearing on a large area (say 100 sq km or more) of 1:2500 mapping lay within a couple of years, in practice this has never happened. Leaving aside the geodetic content, the actual nature of the content of most 1:2500 OS Superplans will be something like the following:

(1) Original County Series survey (mostly at 1:2500, but at 1:10,560 in the Replotted Counties), using (1) as a framework.

¹³*The Overhaul of the 1:2500 County Series Maps*, (Professional Papers, New Series No. 25), Southampton, Ordnance Survey, 1972, especially p.6.

(2) First revision, in which only such old detail surveyed at (2) is tested as is necessary to facilitate revision work. (The alteration to detail surveyed at (2) would potentially be much greater in the Replotted Counties than elsewhere.)

(3) (For about half of England and Wales:) A second revision at 1:2500 in which, again, detail surveyed at (2) and (3) will only be tested so far as is necessary to facilitate current revision.

(4) Reconstitution and revision of County Series mapping; again, existing detail is tested only so far as is necessary to facilitate further revision.

(5) Further revision under either ‘continuous revision’ or ‘sweeping’; the former may result in certain features only being revised or added, but both have the effect, once again, that old detail is not comprehensively tested.

(6) Digitising, i.e. ‘redrawing’ of the map, with subsequent revision added by electronic means.

(From the very beginnings of large-scale revision, in County Donegal in the 1840s, the Ordnance Survey has been careful to distinguish between ‘survey’ and ‘revision’, as is evidenced by the retention of original survey dates on revised County Series mapping, and of original survey or revision-following-reconstitution date on printed National Grid mapping.)

Were comprehensive survey and revision data to be provided on Superplans, the result would look something like this:

Surveyed in 1885. Revised in 1905, 1932. Reconstituted and revised 1965. Revised 1973, 1987. Digitised 1992. Revision of settlement and communications from air photographs August 1995. Levelled 1946, 1951, 1968. Boundaries effective 1 April 1997. Plot printed 25 February 1998, incorporating all relevant data held by Ordnance Survey.

(And all this assumes that there is no complication, such as being at the junction of an area partly resurveyed after 1945 at 1:1250, or straddling a county boundary!)

This appears to say a lot: in fact, most of it says nothing, unless the (fortunate?) user has access to a complete set of the relevant superseded mapping, on dimensionally stable material (!!). Most users are probably not concerned with the date of survey or revision, as such, at all; what concerns them is how far what appears on the map is in accord with ‘reality’, and current OS large-scale revision policies, including 1:2500 rural revision on a five-year cycle,¹⁴ are aimed at minimising the gap. Unfortunately, the rural revision programme will not be complete for another two or three years, and, even then (unless there is a change in the law), Ordnance Survey maps will continue to be *prima facie* evidence in Courts of Law,¹⁵ which by itself is surely a strong argument for dating the content of the map.

What is wanted is dating which is (1) honest and (2) concise. It may be that ‘surveyed’ and ‘revised’ have had their day, and that another phrase is needed. It needs to be carefully chosen, in order to indicate that the date or date-range is that of what appears on the ground, rather than of some later process, such as the date when the data is edited (digitising an analogue map is an obvious example; plotting data from an air photograph is a more subtle one.) Possible phrases, applicable to the hypothetical map whose survey and revision dates were given above, are:

Ground Information Date: 1987-95.

Ground Situation Date: 1987-95.

¹⁴See *Sheetlines* 46, 10.

¹⁵The two cases which established this were *Fisher v. Winch*, 1939, 2 All ER 144 (Ct of Appeal 1939 1 KB 666), and *Davey v. Harrow Corporation*, 1957, 2 All ER 305.

Information Verification Date: 1987-95.

Information correct to: 1987-95.

I have to say that none of them impress me overmuch! Perhaps other readers can suggest something more suitable?

Having said all that, there are at least three practical problems with dating Superplans:

(1) Selective revision, e.g. of communications and settlement. How are these defined?

(2) Superplans which derive from several different kilometre 'tiles', which may have been updated, each either in whole or selectively, at widely differing dates.

(3) Designing software which can supply this information (if desired; and there will be many who won't desire it) for each plot.

The third is the discrepancy between the routes of public rights of way as shown on OS small-scale mapping and their actual position on the ground. The difficulty here is that OS is, in effect, merely repeating whatever appears on the Definitive Maps prepared by local authorities. It is by no means uncommon, in my experience, for a legal right of way to be at odds with the actual route on the ground; there were some good examples to be seen on the downs north-east of Brighton in the late 1970s (see 1:25,000 *Brighton and Sussex Vale*, edition A (1975), at TQ 330125 and TQ 363112, for example). What is wanted is an integrated operation, involving the Department of Transport, Ordnance Survey and local authorities, but such integration does not seem to be in the spirit of the age!

A fourth and last, which is related in various ways to the previous three, is the up-to-dateness, or otherwise, of the 'large format' 1:25,000 mapping now appearing, which I have commented on before in *Sheetlines*.¹⁶ Perhaps the real time to judge will be five to ten years hence, by which time the 1:2500 should have passed through at least one complete cyclic revision, and thus the data ought to be available for comprehensive revision of the 1:25,000. If the revision, by Ordnance Survey, is available, and yet Ordnance Survey declines to use it, then there will be strong grounds for censure. It could be argued that publication of the 'large format' 1:25,000 ought to have been delayed until the first cycle of 1:2500 rural revision is complete, but National Grid sheet lines for the 1:25,000 have never been popular, and delaying the change could simply lose revenue. That said, I am told, on excellent authority, that OS had a difficult job obtaining the necessary funds from the Treasury!

Richard Oliver

'A map of different specifications'

Three years ago Rob Wheeler drew attention to the curious pattern of revision on the 2500/30 and 3250/32 printings of Half-inch (1:126,720) England and Wales Sheet 6, *Middlesbrough, Richmond and Ripon*.¹⁷ The southern part - the lower eight inches - of the map had been fully revised from the One-inch (1:63,360) Popular Edition; the rest had only had minimal revision. Rob suggested that the map had been revised working south to north, but that part-way through the work it was decided to abandon full revision in favour of minimal revision.

The 'correct explanation' would appear to be slightly different, in that the northern limit of the full revision on Sheet 6 is also the northern edge of the special half-inch sheet, consisting of the whole of Sheet 9 and the southern part of Sheet 6, produced for the British

¹⁶See *Sheetlines* 47 (December 1996), 58-64, and 48 (April 1997), 76-7.

¹⁷Rob Wheeler, 'A map of different specifications', *Sheetlines* 42 (April 1995), 59-60.

Association meeting in Leeds in 1928.¹⁸ The revision of the southern part of Sheet 6 would therefore appear to have been carried out in 1927-8 for the immediate purpose of the special sheet. Perhaps there was not time to revise the rest of Sheet 6 then; it would be interesting to know (though I doubt whether we ever shall) whether a deliberate decision was taken in 1930 to leave Sheet 6 in part-revised state, or whether the partial revision and consequent anomalies (e.g. at Catterick Camp) were simply overlooked.

Richard Oliver

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Review

Richard Oliver

Gordon L. Herries Davies, *North from the Hook: 150 years of the Geological Survey of Ireland*, [Dublin], Geological Survey of Ireland, 1995. ISBN 1-899702-00-8, pp xi, 342, A4, hardback, £34.95 [in UK].

If he had written nothing else (in fact he has written quite a lot), Professor Herries Davies would be worth attention for his *Sheets of many colours*, which was noticed briefly in these pages in 1986.¹⁹ He has followed that up with a splendid volume, commissioned to mark the sesquicentenary of the Geological Survey of Ireland (GSI). Anyone who has enjoyed the earlier volume will enjoy this. ‘The Hook’, by the way, is the Hook Head peninsula in County Wexford where the survey ‘broke ground’ in 1845; the initial field survey was completed in County Donegal in 1887.

Paradoxically, GSI became a distinct entity as a result of the creation of a separate Geological Survey for the whole of the United Kingdom in 1845. On 1 April of that year a new department was formed by separating the Ordnance Geological Survey in Britain from the Ordnance topographic Survey, and adding to it the geological activities of the OS in Ireland. These latter were a part of the Ordnance Memoir Project which had finally been killed off a year or so earlier. Unlike the work in England, which had been progressing since 1832 under a professional geologist, Sir Henry de la Beche, the Ordnance Survey of Ireland’s geological mapping efforts, whilst doubtless well-intentioned, were distinctly amateur, and limited in areal cover, and not much can have been lost when it was decided to make a fresh start in 1845. Unfortunately, not much was gained in the next two field seasons. The first local director of the GSI was Captain Henry James, who was rather better at submitting over-optimistic progress reports than he was at mapping rocks; that eight years later he became the head of the Ordnance Survey is perhaps to be attributed partly to a lack of communication somewhere. Most of the mapping was executed under direction of James Beete Jukes (1850-69) and Edward Hull (1869-90). 1890 is a watershed in the history of GSI, in that towards the end of the year the last one-inch (1:63,360) sheet was published, and thereafter the department led a more circumscribed existence, concerned with increasingly limited revision of existing mapping and providing advice to the public, rather than with heroic new survey.

¹⁸See Tim Nicholson, ‘A la carte: some Ordnance Survey conference maps to 1939’, *Sheetlines* 18 (April 1987), 9-14, esp. p.12.

¹⁹Gordon L. Herries Davies, *Sheets of many colours: the mapping of Ireland’s rocks, 1750-1890*, Dublin, Royal Dublin Society, 1983; reviewed in *Sheetlines* 16 (August 1986), 13-14.

The story of GSI between 1924 and 1952 is a depressing one: the chapter is entitled 'Paralysis'. Mineral discoveries in the late 1950s and early 1960s led to a growing appreciation of the value of a national geological survey, and from 1967 onwards there was a considerable expansion in its staffing and the scope of its activities, although not in map publication: the continued delay in the appearance of a modern 1:50,000 topographic map of Ireland led to a decision in 1988 to publish instead a Bedrock Map of Ireland at 1:100,000, using enlargements of the OSI 1:126,720 as the base-map. The first Bedrock Map appeared in 1992, paradoxically at a time when the long-delayed 1:50,000 was at last on its way; one is reminded of the way in which the later sheets of the 1:63,360 geological map of England were published in the 1880s and 1890s on an Old Series topographic base even as the New Series base was in preparation. (It is of interest to learn that the 1:30,000 photography of Ireland flown by the IGN in 1973, which was the basis for the earlier 1:50,000 sheets, was flown originally for geological rather than topographical purposes.)

In relation to its bulk and the standard of production, the book is reasonably priced; perhaps 'the assistance of Irish Mining and Exploration Group', acknowledged on the wrapper, has helped here. Intending purchasers who do not possess *Sheets of many colours* need have no qualms about ordering; those who do are warned that the second half of that book is largely duplicated by the first third of this one. Also, there are no footnotes, which may be a disadvantage to future scholars interested in GSI since 1890. Against this, there are some new illustrations of nineteenth-century subjects.

There is not space here to do justice to the content of this expansively-written book; but those of us who work in higher education and 'pure' research will applaud the comments of James Beete Jukes in a lecture in December 1866:

'Men of science have of late years pandered too much to the utilitarian quackery of the age, and it is time that some one should stand up to protest against it. Government and the House of Commons should be told that science must be supported and encouraged for her own purely abstract purposes, independently of all utilitarian applications.'

'The utilitarian quackery of the age': will any university colleague be brave enough to write and publish a paper on this, to be submitted for the next Research Assessment Exercise? Anyone who does, and gets away with it, deserves a copy of this book as an extra prize.

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Further to Lionel Hooper's Review in *Sheetlines* 50 of *Flashers, Spotters and Sound Rangers*, it is available from Mr M.A. Nolan, Tall Trees, Broad Layings, Woolton Hill, Newbury, RG20 9TS, Tel: 01635 253167. The price is £16.00 + £1.25 p&p.

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Special Notice

We regret that because of unforeseen circumstances copies of Dr. Yolande Hodson's monograph on the Ordnance Survey Popular Edition One-Inch Map of England and Wales WILL NOT NOW be available at the AGM on May 9th.