

tral Leicestershire, central Sussex, and northern Warwickshire; some indication of their likely extent can be gained from the survey dates given for 1:25,000 Second Series sheets, where these include dates substantially earlier than the mid-1940s.

Although the 1 x 1 km publication format made for ease of indexing, users found them inconveniently small; they had been accustomed to the County Series plans, which covered an area nearly four times as great (960 acres versus 247 acres). In August 1959 the format of publication was changed, from 1 x 1 km to 2 x 1 km, with the additional advantage that the number of parcels broken by sheet edges was reduced, making for a saving in calculating and numbering areas.⁹ As a result of this, the great majority of the 1:2500 plans have been published in 2 x 1 km format, but no precise figures appear to have been published of exactly how many. In any case, matters have been complicated further by the publication since 1959 of revised editions of earlier plans in 2 x 1 km format, although, for reasons to be explained later, a great number of 1 x 1 km plans, including many 'by-passed' ones, remain in print.

By 1961, the 1:2500 resurvey or overhaul of most of the coalfields had been completed, but for the country as a whole only about 14 per cent of the new 1:2500 was complete, a figure which rose to 50 per cent a decade later, by which time most towns too small for 1:1250 survey had been overhauled at 1:2500.¹⁰ There was now increasing use of air photographs in overhaul, with a technique being introduced in 1966 whereby the aerial photographs were put directly into the hands of the surveyors, resulting in a 100 per cent increase in output in some areas.¹¹ The recasting, overhaul, revision and resurvey of the 1:2500 on National Grid sheet lines was substantially completed by 1982, although a dribble of plans continued to appear until 1987,¹² since when new publication has been confined to a few areas of recent coastal reclamation.¹³ Appendix 1, below, gives approximate dates for initial 1:2500 and 1:10,560/1:10,000 resurvey or overhaul.

The 1:2500 work in the cultivated areas was complimented by resurvey at 1:10,560 (six-inch) and (after 1969) 1:10,000 scale elsewhere, notably in the Scottish Highlands. As with the County Series surveys, the general policy was at first to survey any settlement at 1:2500, which resulted in a number of detached plans following valleys, often containing little more than one or two houses. In the mid-1970s the policy as regards which areas were to be covered respectively by 1:2500 and 1:10,000 mapping was reviewed.¹⁴ As a result, a number of areas were downgraded from 1:2500 to 1:10,000, including both a number of isolated plans in the Scottish Highlands which had been published at 1:2500, and a number of upland and other uncultivated areas not yet covered by overhauled or resurveyed National Grid mapping,

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including, most notably, much of the military training area on Salisbury Plain. (The current extent of 1:2500 and 1:10,000 coverage, with an indication of which published 1:2500 plans are

⁹ OSR 1958-9, p.5; 1959-60, p.14.

¹⁰ OSR 1960-1, p.10; 1970-1, p.iii.

¹¹ OSR 1966-7, p.2.

¹² See monthly publication reports.

¹³ e.g. NZ 5225/5325, published November 1988.

¹⁴ OSR 1972-3, p.6.

no longer maintained at that scale, will be found in the 'Plandex', or Plan Availability Index, published quarterly.)

The extent of 1:2500 coverage has also been affected by the development of the 1:1250. Although the idea of a series of scales with the smaller deriving from the larger is neat in theory, in practice it leads to complications. A central feature of the 'Davidson Programme' was the adoption of continuous revision, whereby each National Grid sheet would be revised once it had satisfied certain criteria, calculated in 'house-units', independently of its neighbours. For a basic scale such as the 1:1250 this works very well, but problems begin immediately one goes down a scale. If a 1:1250 plan in a group of eight in a 2 x 1 km wholly-derived 1:2500 is revised, is the 1:2500 revised and republished, does it wait for the other seven 1:1250 plans to be revised, or what happens? A further difficulty was that very often the joins between adjacent 1:1250 plans were not perfect, sometimes differing by half a line's width. In 1973 the wholly-derived 1:2500 was abandoned.¹⁵ That large numbers of wholly-derived 1:2500 sheets remain in print is an indication of their comparative lack of success. In any case, this sort of mapping has been rendered largely redundant by modern office reprographics, to say nothing of the rise of digital mapping. 1:2500 basic-scale coverage has also been reduced by the spread of 1:1250 resurvey, both due to the outward growth of urban areas mapped at the larger scale, and to the resurvey of a growing number of towns originally overhauled at 1:2500. As a result of this a number of plans originally published in 2 x 1 km format have been republished with the residual basic 1:2500 area in 1 x 1 km format.

'Continuous Revision' has already been touched on. It is in practice dependent on change. The original expectation seems to have been that it would be at frequent intervals, but an increase in the number of units necessary to qualify a plan for revision has meant that the intervals have been much longer: the present criteria for publication of fully revised 1:2500 plans are 300 units for a 1 x 1 km plan and 450 units for a 2 x 1 km plan, plus (a select few!!) any plans over 40 years old. (For 1:1250 plans it is 300 units; for 1:10,000 basic scale plans it is 500 units.) Thus whereas revised versions of the 1:1250 have tended to appear more frequently than was the case with the County Series large-scale plans,¹⁶ the opposite is at present the case with the 1:2500, at any rate away from towns or growing dormitory villages. However, whilst it is convenient for historians for every map to be a 'bird's eye' view of its territory at a single moment of time, it is axiomatic that a map starts to get out of date as soon as the surveyors leave the ground, and it is equally convenient to the contemporary user to have at least partial revision, to reduce the gap between the mapped and actual landscapes. Here, of course, is where 'Survey Information on Microfilm' (SIM) comes in: a microfilm version is published after roughly 50 units of change.¹⁷ The drawback of SIM is that only part of the sheet is revised, and no survey date is quoted, and so historians using SIMs must be much more wary than when using paper versions. In 1982 a system of 'periodic revision' was introduced, whereby a large block of sheets would be 'swept' for change, so as to offset on the one hand the need to record scattered rural change and on the other to provide an economic amount of work necessary to justify sending surveyors to the ground.¹⁸ In practice, air methods are very largely employed; experimental

¹⁵ OSR 1972-3, p.6.

¹⁶ Oliver (1989).

¹⁷ I am indebted to Ordnance Survey for the current survey-unit figures quoted here.

¹⁸ OSR 1982-3, pp.7-8; OSR 1983-4, p.3. This has been translated from the original gobbledygook.

areas have included blocks near Alloa, Gunnislake, Halstead, Honiton and Kingsbridge.¹⁹ Experiments with using private contractors have not been very successful, 'primarily because of the difficulty of specifying without ambiguity the standards to be maintained when the accuracy of existing mapping cannot always be quoted with certainty'.²⁰ The demands of continuous revision, particularly at 1:1250, means that periodical revision has been a low priority, though output has increased recently.²¹

Since 1973 Ordnance Survey has been free of any obligation to publish its basic-scale maps in conventional chart-paper format,²² and once paper editions of these plans are exhausted only print-outs from microfilm aperture cards are available. This has had the practical consequence that the 1 x 1 km format has quietly returned. The 2 x 1 km format is unsatisfactory for

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filming, and 1 x 1 km has the advantage of covering the same area of film, or paper print-out, as a 500 x 500 metre 1:1250. As a result, all SIMs are published in 1 x 1 km format.

Although work on digitising the large-scales has been going on since the early 1970s, since the spring of 1989 all fully-revised 1:1250 and 1:2500 plans have been produced wholly by digital means (right down to the OS logo), with the map available both in conventional or magnetic tape form. The policy now is to digitise all Ordnance Survey 1:1250 and 1:2500 basic-scale mapping by 1998, and it can be expected that within a decade the conventional 2 x 1 km 1:2500 on 150 gsm paper will be a thing of the past, though precisely what form of non-digital output will be available remains to be seen. At 31 March 1990 31,326 sq km of the total of 163,357 sq km of 1:2500 basic survey had been digitised.²³

As with the 1:1250, described in my article in *Sheetlines* 24, I will conclude with some practical examples, drawn from a study of about 305 sq km around the mouth of the River Humber, in squares TA 20, 21, 30, 31, 40 and 41. This area was mapped at 1:1250 in 1961-4 and at 1:2500 (in three phases) in 1964-72. Individual carto-bibliographies are given in Appendix 2 for 17 sheets, each of which has some features of interest. The study area contains 132 2 x 1 km and 20 1 x 1 km sheets, mostly along the coast, i.e. a total of 284 single 1 x 1 km plans, 34 of which are now wholly covered by 1:1250 mapping. Of the remaining 150, there are a total of 76 new editions (mostly B, a few C), and 96 SIMs, published to 31 March 1990.

APPENDIX 1 - Survey dates for basic-scales rural National Grid mapping

(These dates are not necessarily applicable to those parts of counties mapped at 1:1250. They have been compiled mainly from Ordnance Survey annual reports. For reasons of space only pre-1960 counties are used here.) Abbreviations: (c) = survey of National Coal Board areas only at this date; (u) = urban areas only surveyed at this date; X = survey incomplete.

¹⁹ OSR 1982-3, pp.7-8; 1983-4, p.3.

²⁰ OSR 1984-5, p.4.

²¹ OSR 1985-6, p.3; OSR 1986-7, p.3; OSR 1987-8, p.5; OSR 1989-90, p.4.

²² OSR 1972-3, p.6.

²³ OSR 1989-90, pp.6, 32.

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Aberdeenshire	1963-82	Lancashire (main)	1954-6/59-74/78-82
Argyllshire (main)	1960-2(c)/64-9/73-82	Furness	1959-60/68-81
(Island of Mull)	1975-9	Leicestershire	1954-77
Anglesey	1969-76	Lincolnshire	
Angus	1965-79	Holland	1967-79
Banffshire	1963-82	Kesteven	1965-82
Bedfordshire	1968-80	Lindsey	1963-80
Berkshire	1964-82	Linlthgowsh [W.Loithian]	1953-65
Brecknockshire	1962-82	Isle of Man	1 9 6 8 - 7 0 (u) / 7 7 -
Buckinghamshire	1960-3/66-7/69-82		80(u)(X)
Buteshire:		Merionethshire	1971-82
Island of Bute	1964-6/78-80	Middlesex	1961-2/69-73
Arran	1979-81	Monmouthshire	1958-79/82-3
Caernarvonshire	1959-61/64-82	Montgomeryshire	1966-70/72-82
Caithness	1964-76	Morayshire	1964-81
Cambridgeshire (main)	1969-81	Nairnshire	1965-7(u)/71-9
Isle of Ely	1968-82	Norfolk	1964-82
Cardiganshire	1964-5(u)/72-82	Northamptonshire (main)	1961-2/65-81
Carmarthenshire	1959-82	Soke of Peterborough	1969-78
Cheshire	1953?-73/77-80	Northumberland	1956-82
Clackmannanshire	1960-3/77-8	Nottinghamshire	1953-5/58-77
Cornwall	1950-5/62-81	Orkney	1965-78
(Isles of Scilly)	1978	Oxfordshire	1962-80
Cumberland	1960-3/65-82	Peebles-shire	1964-82
Denbighshire	1959-80	Pembrokeshire	1964-82
Derbyshire	1956-82	Perthshire	1964-82
Devon	1948-80	Radnorshire	1972-82
Dorset	1954-82	Renfrewshire	1959-70/78-9
Dumfries	1958-82	Ross and Cromarty	1964-82
Dunbartonshire (main)	1964-70/76-8	Island of Lewis	1966-7/72-6
(det portion)	1958-60/63-4/69-70	Roxburghshire	1962-75/78-82
Durham	1957-82	Rutland	1962-4
Edinburghshire [M.Loithn]	1950-73/78-82	Selkirkshire	1963-9/78-81
Elginshire [Morayshire]	1964-81	Shetland (Zetland)	1966-8/70-3
Essex	1949-81	Shropshire	1956-78/81-2
Fife	1959-79	Somerset	1955-80
Flintshire (main)	1960-71	Staffordshire	1956-79
(det portion)	1958-9/65-6/71-7	Stirlingshire	1954-5/58-64/69-79
Forfarshire [Angus]	1965-79	Suffolk	
Glamorgan	1957-79	East	1955-6/64-82
Gloucestershire	1954-5(c)/58-81	West	1955-8/68-82
Haddingtonshire [E.Loith]	1958-60(c)/64-73/80-2	Surrey	1963-78
Hampshire	1945-81	Sussex	
Isle of Wight	1970-78	East	1955-79
Herefordshire	1967-75/82?	West	1957-9/64-7/69-79
Hertfordshire	1961-3/68-81	Sutherland	1959-73/75-6
Huntingdonshire	1969-81	Warwickshire	1953-75
Inverness-shire (main)	1966-80	Westmorland	1967-81
(Island of Skye)	1964-76	Wigtonshire	1965-6/69-81
(other islands)	1968-75	Wiltshire	1956-7/64-82
Kent	1955-7(c)/58-79	Worcestershire	1959-61/64-75
Kincardineshire	1963-82	Yorkshire	
Kinross-shire	1961-70/77-9	North Riding	1964-82
Kirkcudbrightshire	1958-9/64-82	West Riding	1952-82
Lanarkshire	1956-82	East Riding	1962-79

+2708 A 1962-3 1951 - 1965 WSI
 Another wholly derived sheet, this time of a district where 'first generation' development was practically complete by the early 1930s, never mind the 1960s!

2802+	A	7:64	1951	-	1965	BCI	
2802+	B	7:69	1951	7/69	1970	BRM	
2802+	C	7:74	1970	3/74	1975	BRM	
2802	A1	-	-	-	3:89	BAM	5/89

Growing dormitory village.

+2902	A	7:64	1951	-	1965	BCI	
+2902	B	7:69	1951	7/69	1970	BRM	
+2902	C	7:74	1970	3/74	1975	BRM	
2902	C1	-	1970	-	10:82	BAM	
2902	C2	-	1970	11/88	1:89	BAM	2/89

Companion to 2802, but revised independently.

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3219+	A	9:70	1966	10/70	1971	BCM	*
3219	A1	-	-	-	8:84	BAM	+

* MHW 1970.

+ Sheet now entirely above MHW, so no note.

Edition A1 (a SIM) was produced following coastal reclamation.

3404	A	10:65	1951	-	1967	BCI	
3404+	BA	7:72	1970	9/72	1973	BRM	*

* MHW 1971. This sheet makes a very bad join with 3403/3503, and was presumably produced in 'BA' form was a result of changes in HWM.

+3503	A	10:65	1951	-	1966	BCI	*
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* This sheet makes a very bad join with 3404/3504-BA below HWM.

+3504	BA	7:72	1970	9/72	1973	BCI	*
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* MHW 1971. This sheet makes a very bad join with 3403/3503, and was presumably produced in 'BA' form as a result of changes in HWM.

3804	A	5:72	1970	8/72	1973	BCM	*
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* MHW 1971, MLW 1970. This retains, presumably by accident, a note about further information being added after survey, and new roads and houses not being named and numbered; in fact, what very little of this sheet is above MHW is saltmarsh.

+3919	A	7:70	1966,67	9/70	1971	BCM	
3919	A1	-	-	-	11:79	BAM	
	A2	-	1966	5/87	7:87	BAM	10/87

This includes the Easington Gas Terminal, which has an insatiable appetite for land.

4002+	A	2:72	1951	4/72	1973	BCM	*
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* MHW 1971, MLW 1970

Most of this sheet lies below high water mark, and it was presumably produced for the sake of continuity.

4019	A	8:70	1966	9/70	1971	BCM	*
	A1	-	1966	-	1:86	BAM	

* MHW 1970, MLW 1970

Another gaseous sheet; in contrast to TA3219, there is also coast erosion.

[Addendum, originally published in *Sheetlines* 29 (December 1990): In connection with the changeover to all-digital production of this series, the 2 x 1 km format has now been abandoned in favour of reversion to 1 x 1 km; almost all new plans published since November 1990 have been in 1 x 1 km form.]

Obituary

THE HALF-INCH SECOND SERIES: the last sheet, *Snowdonia*, formerly Sheet 28, passed away recently, after a prolonged illness. It was the last of a very small family, which did not breed in the way originally hoped for, owing to a shortage of drawing staff, and for the last twenty years was its only surviving member. Much missed. No flowers, please: energies and monies would be better spent on lobbying Ordnance Survey for a suitable replacement.

'Cyclist'

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[Announcements of 'Future Meetings' and 'New publications' and a 'Letter from the Editor', of ephemeral interest at this point in the original have been omitted from this reprint.]

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Notes, News and Editor's Jottings

The publication and revision of the 1:50,000 map

The 1:50,000 *Landranger* map is so comparatively new (it was authorised in November 1971), that it is to be suspected that very few collectors or historians pay much attention to it, though I know one member who was first inspired to collect by the 'ballyhoo' at the time of the appearance of the first sheets in March 1974, and promptly bought large numbers of the new maps. For the benefit of those who do take an interest in recent OS mapping, the following notes may be useful:

Southern block, published 7 March 1974:

First Series sheets, based on field revision for 1:63,360 Seventh Series, 1958-71: 105-107, 110-113, 118, 119, 121, 122, 127, 128, 130-134, 137, 138, 141-175, 178-204. (Total: 82 sheets.)

First Series sheets, based on field revision for 1:50,000, 1971-2: 102-104, 108, 109, 114, 116, 117, 120, 123-126, 129, 135, 136, 139, 140. (Total: 18.)

Second Series sheets, based on field revision for 1:63,360, 1967-9: 176, 177.

Second Series sheet, based on field revision for 1:50,000, 1971: 115.

Northern block, published 20 February 1976:

First Series sheets, based on field revision for 1:63,360 Seventh Series, 1953-68: 5-7, 21, 26-30, 37, 38, 42, 45-63, 67-71, 74-78, 81-84, 89-92, 95-98. (Total: 53 sheets.)

Second Series sheets, based on field revision for 1:50,000, 1972-4: 1-4, 8-20, 22-25, 31-36, 39-41, 43, 44, 64-66, 72, 73, 79, 80, 85-88, 93, 94, 99-101. (Total: 48 sheets.)

The replacement of First Series sheets began with the publication of Sheet 107 in June 1977 and was completed with the publication of Sheet 29 in January 1988. Sheets 176 and 177

were published in fully revised 'B' editions in 1978, and again in fully revised 'C' editions in 1989. Publication of fully revised 'B' editions of the other Second Series sheets began with the publication in May 1988 of Sheets 109 and 115, and by 31 August 1990 the following 24 sheets had been published: 64-66, 88, 94, 99-101, 105, 106, 109-112, 115, 119, 139, 151, 163, 169, 175, 186-188.

For those interested in recent landscape change, comparison of Sheet 88 in its A (1976) and B (1990) editions is strongly recommended; the considerable growth of new housing at Cramlington (NZ 270780, etc) is counterbalanced by the literal blank left by the removal of the steelworks at Consett (NZ 0950, etc).

[Addendum, first published in *Sheetlines* 30: Although Sheet 111 has been republished in a 'B' edition, this was in 1983 (in connection with a digitising experiment) rather than more recently. Sheet 76 was experimentally produced in a digitised version of the First Series map, but in Second Series style, in 1983 for display purposes, but was not published.]

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A most useful specification change on recent sheets has been the showing of dead-end tarred roads with yellow infill; in the past, the annoying habit of only colouring a few of these has led to a good deal of intemperate language on the part of the writer.

Sheet history files for 1:50,000 First Series

The Lord Chancellor has now given his approval to these being transferred to the Society's custody, and by the time that this appears in print they may have joined the One-inch Seventh Series files, which are kept by the Society's secretary.

Price rises

As usual, Ordnance Survey map prices were raised on 1 November. The prices of the principal publications are now: 1:1250, £21:00; 1:2500, 1 x 1 km, £21:00; 1:2500, 2 x 1 km, £29:65; 1:10,000/1:10,560, £16:00; SIM printouts, £16:00; 1:25,000 *Pathfinder*, £3:25; 1:25,000 *Outdoor Leisure*, £4:50; 1:50,000 *Landranger*, £3:70; 1:63,360 and other Tourist maps, £3:70; 1:250,000 *Routemaster*, £2:95. As these increases are broadly in line with inflation, it would be most unjust to complain.

Triangulation pillars

Earlier Ordnance Survey triangulation stations were marked by stones sunk about a foot below the ground, but in the mid-1930s the familiar concrete pillars started to appear, as a part of the re-triangulation of Great Britain. 'A decision was taken in March 1990 to invest £463,000 over the next two years in a new national control network of some 400 stations which will replace the existing triangulation network in the more developed areas of Great Britain. The new network is designed to take advantage of the Global Positioning System (GPS) and will provide, at a density of 15-25 kms, more accessible, and therefore more cost effective, control stations for the use of public and private sectors alike. The satellite observations required will produce station values in both plan and height, thus providing the first major three-dimensional network for Great Britain.'¹ It is understood unofficially that the question has now been raised as whether to demolish the large number of triangulation pillars thus made redundant. The Editor's personal

¹ Ordnance Survey Annual Report 1989/1990, p.3.

feeling is that they should stay, as valuable landmarks; after all, they are protected under the Survey Act of 1841, and provide valuable free advertising! It has also been suggested, however, that they despoil beauty spots: Kilroy of the OS always got there first. Those who feel strongly either way are urged to write to the Ordnance Survey.

The (in?)definite article

A member writes: 'I hate the use of "OS" in text. Please can we have "the OS" or "the Ordnance Survey"? Or has there been an official change of name to "OS" or "Ordnance Survey?" This is a thing which has been creeping into speech over the past ten years and I think that it stinks of America. It would be nice to have an editorial policy to be old-fashioned and refer to "the" OS and "the" Ordnance Survey.' A fair point. In fact, though I have not gone into the matter thoroughly, the dropping of the definite article seems to have taken place about twenty years ago, and when preparing a document for Ordnance Survey recently I was told that it was to be just that: no 'OS' and no 'the'. This seems straightforward enough (one simply treats the organisation as one does a change of personal name, using whatever applies at the period of which one is writing), save that in the footnotes to maps one still finds 'Digital data for this map... is available... from *the* Ordnance Survey', 'Made and published by *the* Ordnance Survey, Southampton', 'Reproduction... is prohibited without the prior permission of *the* Ordnance Survey'. A similiar ambivalence is to be seen on the maps produced by the two Irish surveys. The Editor proposes to drop the definite article when seeking to propitiate and to retain when being critical or historical.

Ordnance Survey Annual Report 1989/1990

Points of interest include the following. There was 'a very marked decline in house building' during the year, which appears to have enabled surveyors to be switched from urban to rural work, with 8697 maps revised against a target of 5564. Considerable efforts are being made to reduce the cost of field revision, with great reliance being placed on surveyors' personal integrity. Conversion to Digital Field Update, which is due to replace the old Master Survey Drawings within the next two or three years, is being pushed ahead, with equipment installed at 25 offices by the end of the year, and with another fourteen due to begin 'the lengthy conversion process to a fully

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digital environment' during the current year. 19,000 maps were digitised during the year, making a total to date thus treated of 81,105 (this compares with 24,952 at 31 March 1985), and it is expected that the 1:1250 digitising programme will be completed in 1991. The 1:2500 digitising programme to 1994-5 is set out in some detail, by counties, though priorities are subject to change. Manual processes have now been formally abandoned for the 1:1250 and 1:2500, and 'major investigations' are being carried out into alternatives to conventional revision of the 1:10,000. The grand total of large-scale maps at 31 March 1990 was 230,912, being 57,395 at 1:1250, 163,357 at 1:2500 and 10,160 at 1:10,000; of this total 1,825 remain to be published. Digital methods of maintaining boundary information are to be implemented. Sales of graphic large-scale maps fell, due to the decline in building, but sales of the 1:50,000 and 1:25,000 helped to increase revenue on core activities by sixteen per cent above that for 1988-9. Revenue for the year was £44M; expenditure was £66.2M. The £44M comprises £29.8 from and £52.4M spent on core activities, £5.2 spent on and £5.7M from commercial work, £6.7M from repayment work and £1.8M from overseas mapping. Unfortunately there is no indication of which scales make a profit and which a loss.

Recent cartographic discoveries

The New Series 'full sheet series'

It will be remembered that in *Sheetlines* 12 I drew attention to the intention in 1872-3 to publish the One-inch New Series maps in sheets numbered as quarters, and drew up a conjectural index (issued with *Sheetlines* 13), and those who have had dealings with mid-nineteenth century OS large-scale maps will have come across small (roughly foolscap-sized) diagrams of counties designed to be coloured in according to progress made with surveying and publishing at six-inch and/or 1:2500, though in practice most surviving diagrams of this type that I know of lack this colouring. Drawing these two themes together, I have recently found in a private collection *Index showing the progress of the Ordnance Survey of the South Eastern Counties of England Published on a Scale of on the 18*. The scale is quarter-inch (1:253,440) and the map is evidently zincographed. It covers the counties of Berks, Bucks, Essex, Hants, Herts, Kent, Middlesex, Oxon, Surrey and Sussex. Railways are shown rather sketchily. The parish boundaries appear to be incomplete: perhaps they were taken from the 'Index to Tithe Survey'? Six-inch and one-inch sheet lines are shown. There are lists of towns intended for survey at 1:500 or 1:1056, with their population at the 1861 census, with boxes to be completed as they were 'Surveyed', 'Drawn' and 'Published'; there are also boxes for areas surveyed, drawn and published during the month, and for the progress of triangulation ('Poled', 'Observed (District)' [i.e. secondary], ditto, 'Parish', [i.e. tertiary or minor], 'Computed'), engraving ('Outline', 'Writing', 'Ornament', 'Published') and 1:2500 publication ('Received', 'Examined', 'In Drawing Office with remarks', 'Reduced to 6-inch', 'Zincographing', 'Published'). The most interesting feature is the one-inch sheet numbering, for New Series full sheets 65-8, 74-7, 82-5 and 90-93, confirming the conjectural numbers on my index. The 1861 census information and the one-inch sheet lines clearly date the map to *circa* 1872; anything substantially earlier is unlikely because of the presence of the New Series sheet lines (it was authorised in July 1872, though engraving of Sheet 76 SE, later 272, had begun some months earlier), and of two railways opened in 1868, and anything later by the availability of the 1871 census figures and of the change to the familiar small-sheet numbering of the New Series by late 1873. This map, like the earlier foolscap indexes, was presumably prepared primarily for internal use in making up monthly reports, although this particular copy was formerly in the hands of John Bartholomew and Son, and has been marked with their six-inch holdings as at 3 November 1888.

An early colour-printed Ordnance Survey map

A most important discovery has recently been made, in a private collection, of a copy of Yorkshire six-inch Sheet 168, with the contours printed in reddish-brown. On this copy the dates of contouring, engraving and publication have been left blank, and Lt-Col. L.A. Hall is given as the Superintendent of the Survey; this is of significance, in that the published map is stated to have been contoured in 1853, engraved in 1854, and published on 20 September 1854 by Major James, who succeeded Hall on 11 August 1854. Both the colour-printed and the standard published maps note that the

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engraving was directed by Captains Gosset and Yolland; Gosset succeeded Yolland in October 1852. On 1 August 1853 Hall told the Select Committee investigating the one-inch map of

Ireland (BPP (HC) 1852-3 (921) XXXIX, 393, minutes, q.21) that experiments were being made in printing contours in 'red'; he did not specify the scale, and he did not produce a copy. The coincidence of dates strongly suggests that the experiment referred to was carried out on Yorkshire 168. The experiment would have involved engraving the contours on a separate plate; for the ordinary, relatively familiar, published version of this sheet the contours were reengraved on the detail plate, in the usual way, and there are small differences between the two, notably in the positioning of the figures.

[A list of 'Corrections and additions to *Sheetlines 28*' which appeared at this point in the original has been omitted, and the text of *Sheetlines 28* in this reprint has been suitably amended in its place.]

Peter McMaster writes... (to his staff):

Ordnance Survey is well placed to take advantage of opportunities in the decade of the 1990s. Our maps have been brought onto the National Grid, made metric, and we are now well on the way to converting them to a digital form. These changes allow us to meet our customers' needs for modern, up-to-date mapping and to support their move to a greater use of geographic information systems....

We have long had the advantage of a product which is of genuine use to people and is wanted by them, but the map has traditionally been under-priced. In the past, governments have seen mapping as a prerequisite for many social reforms and for the proper running and development of the modern state. They were therefore ready to treat the expense of mapping as a proper cost of administration.

Now, with the strong move to reduce public spending, governments want the users of services to pay for them if they can; consequently this means a more realistic pricing strategy for mapping. The computer readable map, as a new product with considerable added value, can command a price more commensurate with its cost and benefit to the customer.

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The most obvious application of an improved service due to digital mapping is the ability to supply the customer with up-to-date large-scale maps plotted at scales, specifications and sheet lines chosen by them. With products like these and a high standard of service delivery, we should be able to achieve the long term goal of full cost recovery which was adopted by the OS Management Board in June 1988 and which is now part of our corporate objectives.

... when Ordnance Survey is self supporting, it will be more secure. If Ordnance Survey is seen to be meeting the needs of users and giving good value for money to those who are willing to pay for its services, it will be less subject to changes inspired by the wish merely to reduce spending.

Ordnance Survey has now become an Executive Agency as part of the Government's Next Step Initiative. The idea of the change is to give civil servants the freedom to manage their work better and hence to enable them to serve their customers better. With the move to geographic information systems and digital mapping, Ordnance Survey can take advantage of the Agency initiative.

In the process of becoming an Agency, Ordnance Survey was examined to see whether it could reasonably be sold off, in whole or part, or privatised and the decision was against any of these courses. Whilst the decision is subject to review in the medium to long term, there are good and valid reasons which can and will be advanced as to why Ordnance Survey and its map-

ping should remain in the hands of public servants, giving efficient and cost effective service to the very wide range of map users, public and private, in this country.

Peter McMaster
Director General
October 1990

(Quoted, with slight editing, from *OS News*, November 1990, p.16. Crown Copyright 1990.)

Puzzle corner

What is so interesting about the more built-up part of Cumberland 1:2500 sheet (Carlisle SE), reprinted by Alan Godfrey a few months ago?

The reason why readers of *Sheetlines* might expect to have a more than passing interest in HMV record number D.1900, of Elgar's *Pomp and Circumstance* no.5, is as follows. One day in 1929 Elgar was out walking his dogs (see record label!) when he was struck with an idea for a theme. The only 'paper' to hand was his copy of the one-inch outline-with-roads-coloured of Gloucester and Cheltenham, so the theme was jotted down on that. (The recording was made on 18 September 1930, two days before the first public performance of the work.) The map is illustrated in E. Wulstan Atkins, *The Elgar-Atkins Friendship* (1984), p.381.

The vexing question of which 1:25,000 First Series map served as a basis for the 'magnifying glass' cover (see *Sheetlines* 26, p.2), has been solved, by a non-member: it is of Berry Pomeroy, in Devon, SX 8261.

[Sections appealing for assistance with the Alan Godfrey Edition and Roger Hellyer's work on the ten-mile maps which appeared in the original at this point have been omitted from this reprint.]

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'Fit for purpose'?

30 November 1990

Sir

As an adopted Northumbrian and member of one of the other governmental agencies I read with concern your comments in *Sheetlines* 28 on the Hadrians Wall map, since I believe it may herald the introduction of a new corporate philosophy phenomenon. I believe the Ordnance Survey's official justification for the quality of the product is that it satisfied one of the criteria within the philosophy of Total Quality Management.

The product was 'Fit for Purpose'. It was so popular that it needed to be reprinted and therefore its cost effectively satisfied the needs of its intended customer, the Great British Public. The organisation will justify cost-cutting or quick fixes in terms of cost effectiveness and any pretence of cartographic or artistic convention will be disregarded in order to gain 'full cost recovery'. OS databases will be used, whatever the cartographic consequences, until they drop, because increased use of databases will increase efficiency and decrease unit costs.

Total Quality puts the onus of quality maintenance (i.e. presumably standards of positional accuracy, etc) on the individual surveyor, draughtsman, photographer, printer, etc; common sense, really. Unfortunately the end result is that Quality Assurance sections are seen as superfluous and abolished as a waste of resources.

Fortunately the Roys, Colbys, Mudges, etc of this world sought as great an accuracy as was humanly possible. If they had simply satisfied the survey needs of the eighteenth and early

nineteenth centuries how would the OS have fared in the mid to late nineteenth century as our whole society came to expect increased standards of accuracy?

Today we are on the threshold of practical, totally digital cartographic production methods. Let us hope 'fit for present purpose' has not crept into OS research and development thinking, otherwise it will not be Joe Public who is subjected to a bad product (and who obviously doesn't know a practical joke when he sees it) but the major corporations of this country. Here mistakes cost millions; the OS will not get a second chance and will, in their eyes, lose a reputation gained by millions of man hours of toil and graft over 200 years.

'Bulkeley'

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Parish Boundaries

Collecting details of the distribution of wild plants in the countryside is a fascinating way of spending your spare time, but if the information you collect is to be of any use to others besides yourself it has to be stored in a readily retrievable form. That the National Grid should have been so quickly recognised as providing a framework for organised research into plant distribution seems now to have been inevitable. In its early days, few botanists were far-seeing enough to make use of the grid for this purpose and most British botanists used the 'Parish' (civil or ecclesiastical) as the basic unit of distribution.

The relative merits of the two systems have long been argued. The value of the geometrical grid is that it tends to compel a more uniform survey of the area under review than the system of Counties, Vice-Counties, and Parishes, simply because the latter are irregular both in shape and in size. On the other hand, parish boundaries are usually related to other topographical features, and are therefore more readily recognised on the ground than grid lines.

It is generally accepted that both systems have their place in the scheme of things and it is usual to define the site where a plant or a community of plants is to be found with both a parish name and a six-figure grid reference.

During the past five years I have been working on a research project dealing with the identification of elms which have survived the catastrophic impact of Dutch Elm Disease that struck Britain in the 1970s. I have already made 'presence or absence' records in over 600 Hectads (10 km grid squares) and am now in the course of making more detailed records based on Tetrads (2 x 2 km squares) and Parishes. To acquire 1:25,000 OS sheets covering this sort of area would be quite beyond my personal resources, and, if the project were sponsored (which it is not) it would be hard to justify the expense simply on the grounds that the current issue of 1:50,000 maps omit parish boundaries, and the 1:25,000 series is the smallest scale of map which includes them.

Fortunately, I obtained a set of First Series 1:50,000 sheets shortly after they were first issued, and I am at present making use of these. For much of my work, the fact that the topographical details in these sheets are getting more and more out of date is very much outweighed by the facts that they contain parish boundaries, and that in many cases a single 1:50,000 sheet does away with the need, not of eight, but of as many as twenty-four Second Series 1:25,000 sheets. (Work that one out!)

Of course, some of my First Series 1:50,000 sheets are getting pretty heavily worn, and it is beginning to look as though I may have to hunt for replacements before very long. It goes without saying of course that Second Series sheets will not serve my purpose.

Bother the OS for their short-sightedness!

Guy Messenger

The scattered county of Cromarty

Readers familiar with nineteenth century maps of Scotland will know that the old county of Cromarty consisted of a number of separate portions scattered through the northern half of mainland Ross-shire; they may not have realised that it totalled as many as twenty-three individual areas. In accordance with Ordnance Survey standard practice the principal portion of the county was designated 'CROMARTYSHIRE' and the remainder were 'CROMARTYSHIRE (Detached No.1)' to 'CROMARTYSHIRE (Detached No.21)'; the arithmetic is not in error, please read on. In the peculiar circumstances of this county the principal portion, that containing the town of Cromarty, was not the largest but still the second in area although only one-sixth the size of the largest portion. The latter, Detached No.10, contained the district of Coigach to the north-west of mainland Ross-shire.

By various provisions of the Local Government (Scotland) Act 1889 the counties of Ross and Cromarty were united, those of Orkney and Zetland were separated, and the Boundary Commissioners for Scotland were established *inter alia* to review county boundaries generally. And so in 1891 W. & A.K. Johnston were able to publish their *Map of Scotland showing the*

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New County Boundaries, which depicted seventy-six areas transferred between counties, although some had not then been confirmed. Comparing the former areas of Cromartyshire shown on this map with the OS six-inch first edition index, I was surprised to come across 'Det. No.14a.' on the latter with no close affinity to 'Det. No.14', and then established that there was no 'Det. No.13' on this index.

I first supposed that this represented a most unusual intrusion of superstition into OS practice, and an equally unusual substitution of 14a instead of 12a for the unlucky 13. However, on examining the individual six-inch sheets I discovered 'CROMARTYSHIRE (Detd. No.13)', with the different abbreviation then current on the actual sheets, to be a small area not labelled on the index sheet. In fact it was an area of only fifty-two acres on the southern tip of Gruinard Island, which undoubtedly experienced more than its share of bad luck when it was selected to be infected with anthrax during the Second World War.

Whilst the intrusion of Det. No.14a into nos. 1 to 21 explains the arithmetic, its existence defies reasonable explanation, and it seems to me could only have resulted from major human error, such as duplication, in the original numbering of the detached parts. Does anyone know who numbered these intriguing areas and at which stage in the mapping process? And which authority area had the greatest number of 'Dets.'? - the parish of Glaisdale in the North Riding of Yorkshire formerly ran to twenty-six detached parts, or twenty-seven portions in all; any advance?

Brian Adams

New maps

Ordnance Survey: The following were published *inter alia* between 1 July and 30 September 1990:

1:25,000 Second Series (*Pathfinders*): revised editions: Sheets 403, 1052, 1109 (all 'B' edition)

The following should be added to the list of revised 1:25,000 listed in *Sheetlines* 28, p.15: as 'B' editions: 407, 455, 550, 703, 744, 768, 774, 812, 1258, 1343, 1351; as 'C' edition: 1176.

Tourist maps, 1:158,400 scale: *Snowdonia and North Wales; Wessex*. *Snowdonia* replaces the Half-inch Second Series sheet, so that *ad hoc* mapping at this scale is now extinct. The two new maps are similar to *Northumbria*, being straightforward garnished enlargements of 1:250,000 Sixth Series mapping, and thus more of financial than cartographic interest.

1:1250: Since the list of 1:1250 National Grid surveys and dates was published in *Sheetlines* 24, mapping at this scale of the following has been published: Berwick-upon-Tweed; Beighton (Derbs); Clevedon; Drayton (Norwich extension); Evesham; Fraserburgh; Hailsham; Lymm (Ches); Olney; Peterculter (Aberdeen extension); Peterhead; Ranfurly and Bridge of Weir; Romsey; Skipton; Stamford; Teignmouth; Wisbech. Saltburn (1969-70) should be added to the main list; the dates for Billericay should read 1975-6; for Braintree 1974-5. The Ordnance Survey annual report for 1989-90 announces the completion of 1:1250 surveys of Bagshot, Montrose, Oxted, Stranraer and Todmorden, but as yet no plans have been published.

The Godfrey Edition

Between 1 September and 4 December 1990 the following places were added to those covered hitherto: Aberdeen; Bexley; Boxmoor; Bridport; Ferrybridge (Yorks WR); Hemel Hempstead; Hendon; Keswick; Malvern Wells; Rickmansworth & Croxley Green; West Bromwich; Whitehaven. The coverage of central Sheffield has been completed, and a gap on the Tyne filled with the appearance of East Jarrow. Antrim 61.13 includes Ireland one-inch second edition Sheet 36 on the back; Ireland second edition Sheet 45 includes reductions of 1:1056 plans of Tempo and Maguiresbridge. Hertfordshire Sheet 33.12 (Hemel Hempstead South) includes an emarginate New Series first edition Sheet 238 on the reverse. It

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is expected that by the time this issue of *Sheetlines* is published maps of Hatfield and Sherborne will have appeared.

Trench Maps: 'British Artillery and Trench Maps on the Western Front 1914-1918', by Peter Chasseaud, was published in *The Map Collector* no.51, Summer 1990, pp.24-31, and is strongly recommended as an introduction to the subject.

Review

1991 Ordnance Survey Motoring Atlas of Great Britain, Hamlyn and Ordnance Survey, 1990, £5.99.

When I first saw the latest large-format motoring atlas at the British Cartographic Society's annual symposium in September, only the words 'Brand New Mapping' suggested a radically different design. Since this atlas first appeared in 1983 it has been revised annually but has had only major facelift in the 1985 edition, which was described as the Second Edition. The new one is described as the Eighth Edition. For their bicentenary year, Ordnance Survey have produced what is really the third design, despite the unchanged cover. This co-publication with Hamlyn is coy about revealing that the three-mile and five-mile maps are produced from the new OS database at 1:250,000. This is being marketed separately as a database, but will become familiar to most users in its atlas form. At the time of writing the *Routemaster* series at 1:250,000 is still based on the second style with the re-compiled name plate in condensed sans-serif ?Univers typeface. This new atlas will cost you only 4p more than last year's. It will appeal particularly

to those who are keen to see what small-scale digital mapping looks like, but I am not sure whether they will like it.

Only the Orkney and Shetland Islands are now shown at the five-mile scale. The Central London, Town Centre maps and Town Plans are essentially the same as they were last year. Some re-jigging of the sheet lines has taken place, but it is not at first obvious because the sheet diagram does not show overlaps, perhaps because they are thought to confuse the motorist. It seems ever more confusing to suggest that the sheets are of very different size and shape, in which pages 6/7 looks as if it will show only Portland, the Isle of Purbeck and the southern Isle of Wight. Elsewhere Kent has now been split between a Thames Estuary page and one covering Tunbridge Wells, Eastbourne and Dover. I know you can't satisfy everyone. South Waleians should be pleased to have Swansea to Monmouth and Bristol all on a single spread. The thinner, light blue bands showing the margins of overlapping sheets are a distinct improvement on the broader, grey bands of previous editions. Detail can now be easily seen below the new bands.

The most striking change is in the appearance of the three-mile maps. These look finer, neater, clearer and more open than their predecessors. Instead of feeling that you are looking at maps enlarged for those with poor sight, for the first time we have maps that look as if they have been meant to be produced at this scale. An opportunity has been missed because Orkney and Shetland now look over-reduced. With more interactive editing place-names could have been enlarged and names of water features in blue would not appear so cramped. Built up areas are now depicted only by a fine black screen, giving them a grey look as opposed to the lurid yellow of the previous editions. This change makes the roads stand out much better, because the strong yellow always seemed to drain colour from everything that crossed it.

Unhappily the small black blocks hitherto used to show scattered houses are no longer used. This gives the disturbing impression of substantial built-up areas, for example in the Outer Hebrides and other areas characterised by relatively sparse ribbons of crofts or small hamlets, as in parts of Wales. It looks as though there has been a building boom around Stornoway. The designers will have to find a way of plotting small black squares instead of minimum

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width (0.5 mm) belts of screening for such settlement. The varying width of these screened zones is not always genuinely related to the actual size of the settlement on the ground. Intriguingly inspection of central Somerset (p.10) reveals that it is possible to show settlements with much narrower bands of grey stipple. (See for example Smeatharpe, Bishopswood and Buckland St Mary in SY 21, p.10.) Are such differences caused by their being digitised by different people not keeping to specifications? How many other times has the stippled fill been left out (as at Old Windsor (SP 9874) and Wraysbury (TQ 0174), p.22)?

The very uneven widths of minor roads on previous editions has now been replaced by a more consistent width, and with it the individual lines are now of constant thickness. These improvements are directly related to their being plotted by computer from the centre-lines of roads in the database. Consequently there is now a better match between the legend and the maps as far as roads are concerned. Nevertheless it seems that it has proved impossible to preserve the sharp corners and 'wiggles' of the rural road system because all roads have been smoothed. I invite readers to compare road depiction in an area they know well to see the effect of such treatment. In some areas of the country where sharp corners are a legacy of strip-field enclosure smoothing is inappropriate, but it is not so distorting in western Britain. Such smoothing goes too far and I doubt if it will be appreciated by the motorist, because it destroys the dis-

tinctiveness of road alignments. My grandfather used to observe that all the hills had been flattened out since he cycled as a boy; now the roads have been straightened too!

Primary roads are now depicted in green to conform with traffic signs. Dual carriageways are more clearly shown either by two green lines divided by a thin yellow strip, or two magenta lines and a white strip. They are wider than they used to be and very obviously different from single carriageway roads. I personally don't like the fairly dark green used for primary roads, but there may be evidence that motorists find it helpful in following chosen routes. The effect is particularly marked on Plates II to IV which are the route-planning maps at 1:1,375,000. At least now the road numbers are in the same colour as the roads themselves. However the deep, yellow-green 'high-lighting' of names on the primary road network continues to obscure place-names. These names instead of being printed in black could now be printed in the same green surrounded by a rectangle also in green. It is a pity that the boxes containing details of future opening dates of roads still obliterate all underlying detail. More sensitive placing of such boxes could save some detail, e.g. between Charing and Westwell (G1 on page 17). It is also a pity that road numbers always seem to take precedence over all other detail.

Most readers will be pleased to see railways much thinner, but there are already murmurings about the wisdom of not breaking the lines for stations, despite there being plenty of instances of railways being interrupted to show other detail. Some stations have almost disappeared, e.g. Seaford lost under the A259 (B6 on p.16) and some are half stations which will puzzle a few users. Some others can be detected only from their names (e.g. Tiverton Parkway, obscured by Junction 27 on the M5, but attached to what is actually Sampford Peverell, B4, p.10). One has to assume that in a motoring atlas roads take precedence over railways and railway stations and that in a digital product the extra interactive editing required to restore whole stations could not be economically justified.

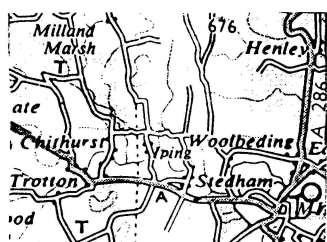
Turning to the depiction of physical features, it is immediately obvious that the hill shading has finally been abandoned. This certainly gives the maps a cleaner look, the smudges having gone. Look for instance at North Wales, at Snowdonia and especially around the sources of the Rivers Severn and Wye. True, part of the improved clarity stems from the omission of contours at 200 and 3000 feet reducing the number of layers to five from seven. Scrapping the lowest layer which was in pale green is sensible, but it should have been replaced by the palest buff for the 600-1000 feet layer. Thus we have returned to the colour scheme used on the Fourth Edition of the Quarter-inch. It has to be said however that the amalgamation of the two layers below 600 feet removes most indication of relief in the south-eastern part of England. The South and North Downs are now there only in name! An

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opportunity has been missed to depict detailed relief in layers, untrammelled by hill shading. Let us hope that metric contours, layers and spot heights will soon replace this anomalous and inadequate height information in imperial units.

As this is the first time we have seen what the new database can provide, it is heartening to see how some of the undesirable consequences of changing the names plates in 1985 have now been rectified. In a couple of hours of study I was able to find only a couple of instances where detail previously not made good had still not been made good by the digitisers. This process chiefly affects the minor road pattern. A few errors have nevertheless been perpetuated. My first example comes from West Sussex where the road following the north side of the Rother between Easebourne and Iping is broken west of Woolbeding. The original typeface produced a

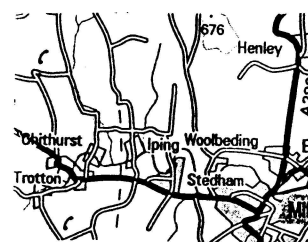
longer name which hid the road. From 1985 it was even 'made good' to cut off its westward extension. (See Figures 1a, 1b, 1c.)



1a



1b



1c

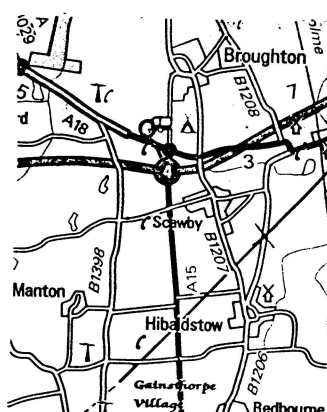
The second example comes from Lincolnshire, where Gayton le Marsh and Theddlethorpe All Saints are now connected by a road crossing the Great Eau (TF 4587, p.55). Woe betide any motorist venturing that way because in patching the roads for the 1985 edition someone extended a minor road a few hundred metres towards the Great Eau along the line of a path or track. These two cases highlight deficiencies in the database itself, evidently created from digitising the mapping of the edition prior to the 1991 atlas. No doubt other examples can be found throughout the country.

Less easily explained is an apparent shift in the A15 between Scunthorpe and Brigg. In the 1990 edition of the atlas, a deviation is foreshadowed by a road under construction west of Scawby (D3, p.56). On the 1991 edition (D3, p.54) A15 now runs straight up Ermine Street, whereas in 1990 it was to the west. Which is correct? It would be patronising to suggest that motorists might be put out by such apparently random shifts, but the recent case of the man who drove 200 miles only to end up a few miles from home when he thought that he was near Durham has prompted drivers to look at maps both before they set out and en route.

In summary, this new atlas is altogether lighter and generally clearer than its immediate predecessors. It could have been even better. It does look like a set of maps designed to look right at the published scale. The Ordnance Survey's recent penchant for enlarging maps to super and mega scales must ultimately begin to look rather coarse. Just because it sells well it cannot be assumed that it is incapable of improvement. The saving grace of the annual revision makes it much easier to incorporate changes and improvements step by step. I predict that in a few years time this series of OS atlases will prove most instructive and a fascinating insight into the modern history of OS cartography.



1990



1991

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Christopher Board

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Meeting at Public Record Office, 30 November 1990: About eighteen members attended, who in the morning were shown a number of Ordnance Survey curiosities and less familiar maps, etc, such as parish name books, boundary sketch maps, and various manuscript maps, and the afternoon was shown various tithe maps, which were described by Richard Oliver, who is working under Dr Roger Kain on the University of Exeter/Leverhulme Trust Tithe Survey Index project.

Sheetlines, special Irish issue: Introduction

The editorial policy hitherto for *Sheetlines* has been to avoid undue specialisation, and so all issues hitherto have theoretically applied to all 'Ordnance Survey' activities. In practice there are three Ordnance Surveys, of Great Britain, based in Southampton, for the Irish Republic, based in Dublin, and for Northern Ireland, based in Belfast. There is only one Charles Close Society, and being British-, indeed English-based, the 'Irish' content of any one issue of *Sheetlines* tends to be thin. In the past few months, however, an unusual amount of Irish material has come to hand (even the Editor was born on St Patrick's Day, though admittedly in Grimsby), and so it seemed a good idea to have a 'special Irish issue' of *Sheetlines*. Apart from anything else, whatever the organisational separateness of the past seventy-odd years, the diversion into Ireland from 1824 onwards is an integral part of the story of the Ordnance Survey of Great Britain. The example of the Irish six-inch led to the introduction of the six-inch into Great Britain in 1840, and questioning the utility of the six-inch in 1851 led to the introduction of the 1:2500, and to the Ordnance Survey becoming the *sine qua non* of British cartography.

One important point of difference between Ordnance Survey activity in Great Britain and that in Ireland is the question of motive. In Great Britain the Ordnance Survey developed very largely 'because it was there', something with which in its early days grew apparently more by accident than design, and which by the mid-nineteenth century was something with which the government of the day was lumbered. The mid-Victorian Treasury sanctioned the 1:2500 because it offered much better value for each penny spent than did the six-inch or one-inch, and when the question of revision came to be considered in the early 1890s it was a question of maintaining a capital asset to prevent it becoming worthless. In Ireland the Ordnance Survey developed because the state needed it: territorial taxation reform could only proceed on the basis of a complete survey of the country, and the Board of Ordnance was the only body capable of the work. It is true that when, in the mid-1840s, the initial publication of the six-inch was approaching completion, there was a proposal that the printing plates be handed over to the Irish government, and the organisation disbanded, and that it was only rescued by the desirability of bringing the northern Irish sheets up to the standard of those in the south by including field boundaries; but the development of land reform in the second half of the nineteenth century once again made the Ordnance Survey essential to the state, culminating in the 1:2500 resurvey of the cultivated parts of the country between 1887 and 1913. Since 1922 the head of operations of *Suirbheireachta Ordanais* has been the Assistant Director, the Director being the Commissioner of Valuation. In contrast, though the possibility of state requirements have been a justification for Ordnance Survey developments in Great Britain, the accent has very much been on possibility: in 1857-62 the expectation of the establishment of land registration was used by Sir Henry James and others as a justification for the 1:2500, though by the time that the Davidson Committee was effectively writing the obituary of the Jamesian 1:2500 in 1938 compulsory registration had not progressed beyond London, two small counties, and a handful of county boroughs. Compulsory registration on sale finally became effective in November 1990 - by which time the Davidson 1:2500 was in process of being eclipsed by what we might call the Serpell-Chorley 1:2500.

There are three things which draw together the Ordnance Surveys of Great Britain, Ireland and Northern Ireland. Most obviously, of course, there is the intertwining of their development

between 1824 and 1922. Secondly, each is unusual in combining two distinct strands in state mapmaking, that on the one hand of small-scale, initially military-orientated cartography, and on the other of large-scale territorial, cadastral-type cartography. In other countries the pattern tends to be that the one function is undertaken by a 'Military Geographical Institute', as a branch of military engineering, and the other by a 'Department of Lands' which is primarily concerned with registration and taxation of land. In Britain and Ireland the mapping function is subsumed into an even whole. Thirdly, there is the matter, some might say the magic, of the name. 'Ordnance Survey' stands for an absolute, or a belief in absolutes, in an imperfect world. It is possible to see the initial development of the Ordnance Survey as an attempt to reduce the gap between human and divine endeavour and its continuation as an assertion of absolutes in a world of increasing uncertainty.

Richard Oliver

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A record copy of the one-inch Irish hill map

by J.H.Andrews

The 205 sheets of the Ordnance Survey's first one-inch hill map of Ireland appeared in two forms, with and without hills. The outline edition was issued with unusual haste, between 1854 and 1860, because it was thought to be urgently needed as a base map by the Irish Geological Survey. The hill version began promptly enough, in July 1855, but with its heavier demands on both indoor and outdoor staff its progress was inevitably slower and the final sheets were not published until 1895. The result was a certain loss of continuity in the management of this complex map. The sketching of the hills in the field was done on different scales, and with no less than twenty-five engravers of different generations employed on the hachures there was sometimes a personal element in the texture of the finished product. For some sheets the hills were engraved on the original plates, for others on a duplicate plate, and this led to variations in the topographical up-to-dateness of different sheets and occasionally of the same sheet.¹ There are also some irregularities among the footnotes. The usual practice in the hill map was to print a date of publication (a rare amenity in the Survey's nineteenth century Irish output) but on at least eight sheets this information was inexplicably omitted even from the latest printings. The most striking anomaly affected the last three sheets, numbers 136, 145, and 146, which were overtaken by the advent of colour printing: in 1894 it was decided to publish these sheets with hills in brown, and with both hachures and outline printed from transfers to zinc instead of from copper plates.² In the general picture these are all minor blemishes, and the map as a whole remains the most effective hill-shaded representation of Ireland ever completed.

The history of the hill map is partially documented in one of the manuscript volumes at the Ordnance Survey office, Dublin, known as 'records of alterations'. These purport to give for each sheet the dates of publication and the successive changes made by the engravers to its original and duplicate plates. Of 179 post-publication entries unambiguously assignable to the

¹ J.H.Andrews, *A paper landscape: the Ordnance Survey in nineteenth century Ireland* (Oxford University Press, 1975), pp.273, 278-80.

² Ordnance Survey Office, Dublin, files 854 (1894) and 1765 (1894). Some surviving impressions of the last sheets meet these new specifications, but (as Dr Richard Oliver kindly points out) all those in the British Library's copyright deposit have hills in black.

hill plates, 140 record the insertion of new railways, 14 the insertion of new or altered administrative boundaries, and 12 the removal for security reasons of forts and other military detail. The rest relate mainly to minor omissions and mis-spellings. Unfortunately, however, the record of alterations is far from complete, especially as regards marginal information. For instance, the printed dates of sheets 176 (March 1891), 179 (October 1890) and 181 (January 1891) are known to be late additions to the plates in question, because they are absent from the impressions of these sheets supplied to the National Library of Ireland, but there is no mention of this change in the record. The volume also omits all reference to the price of the map, and to the reservation of Ordnance Survey copyright, both of which were added to all or most of the existing plates in the 1880s. Another problem for the researcher is that the earliest entries in the record of alterations were evidently not written until some time after the first sheets of the hill map had been published: they must therefore have been copied in from some other source (now unavailable) and seem in consequence more likely to be erroneous or defective.

Further study of the map will necessarily depend on a comparison of surviving impressions and especially of complete sets in public repositories, for which an accession date is likely to be available. The present note draws attention to one such set, a handsomely bound volume preserved in the Survey's Dublin office. Its history begins on 11 February 1903 with a letter from the officer in charge of the Irish division, Lieutenant Colonel G.H. Sim, to the executive officer in Southampton, Lieutenant-Colonel R.H. Hellard.³ Sim was a relative newcomer in Dublin. He had been in charge there for a few months in 1899 and after service in South Africa had begun a longer second term of office in June 1902. He clearly recognised the historic importance of the Survey's first complete military map of Ireland, and the danger that it might be underrated, forgotten and even lost amid current preoccupations with the revised one-inch. He wrote:

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I should like to have a record copy of the old 1" map of Ireland as well [as certain six-inch maps currently under discussion], bound, and one of the revised outline as soon as it is finished. I find impressions of the unrevised outline have not been kept, but perhaps it is not necessary to keep them as well as the hills edition, on which the outline is the same.⁴ If you think it is I can have record impressions pulled of the old edition. Will you want a 1" record copy for Southampton as well[?]

Hellard agreed to the binding of a record map but tactlessly declined the offer of a second copy for the Survey's head office. The most charitable explanation for his indifference is that Southampton had been keeping all the Irish hill sheets as they came out, but this policy can hardly have extended to every state of every plate. He added: 'As to 1" sheets it will be time enough to pull impressions of any sheet for record purposes when someone asks for a copy but some of the spare unrevised copies of each sheet should have been preserved for record instead of cancelling them.' It is not known how the Dublin office reacted to this rather unhelpful comment, for the rest of the file is entirely concerned with the technicalities of the binding process as performed by a local firm. In assembling the proposed volume Sim evidently made no effort to

³ Ordnance Survey Office, Dublin, file 7941 (1903).

⁴ [In fact, there are slight differences between the outline detail on the outline and hills editions (J.H.A.).]

show the state of the plates in 1903 or at any other single date. More probably he used the latest available impression of each sheet, and with sheets 136, 145 and 146 he perpetrated a gross anachronism by superimposing the hachures of the obsolescent hill edition on the revised outline of 1899-1900 with its new vocabulary of conventional signs and modernised coverage of territorial divisions. However it seems unlikely that Sim had more than a very limited range of states to choose from. Otherwise he would have been better able to avoid the kind of inconsistency exemplified by the Galway-Clifden railway, which was engraved in 1896 on sheets 93 and 94 (both originally published in 1878) but which in the record atlas appears only on sheet 94.

The present note is too short for any further analysis of Sim's collating procedures, except to point out that unhappily two of the best-known methods of dating early Irish ordnance maps had ceased to be applicable at this comparatively late period. In the first place watermarks - at any rate the marks of these particular sheets - no longer included a date. Similarly, dates no longer accompanied the hand-written initials of staff-members inspecting printed sheets, nor are the possessors of these initials as easily identified as in the days when every sheet was examined by the chief engraver. Altogether eleven sets of initials have been noted in the record atlas. This at least seems to confirm that not all the sheets were printed at the same time, though if the duty of inspecting sheets was now shared among several individuals the initials may be less helpful in establishing a chronology than might be hoped.

Clearly, much arduous labour awaits any cartobibliographer who attempts a serious study of this fascinating map. Meanwhile amends have finally been made for Colonel Hellard's apparent lack of interest in it. In 1989 the Ordnance Survey of Ireland authorised a new facsimile edition of the complete volume by a private publisher, Phoenix Maps of Dublin. This time progress has been faster than in the nineteenth century: all 205 facsimile sheets were published on the same day, 14 December 1989.

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The Ordnance Survey of Ireland

The Ordnance Survey of Ireland, with its headquarters at Phoenix Park, Dublin, has recently issued two publications, *The Ordnance Survey* and *Ordnance Survey Annual Report 1989*, and together these give a useful picture of the Department. In what follows 'the Ordnance Survey', if not qualified, refers to the department in Dublin rather than Southampton.

In its present form the Ordnance Survey dates from 1 April 1922, when the organisation in Dublin became independent of that of the Ordnance Survey of Great Britain. (The organisation in Belfast, the Ordnance Survey of Northern Ireland, with responsibility for the 'six counties', had gained its independence on 1 January 1922.) It had somewhat less than 200 staff, who were responsible for maintaining about 25,000 maps (including coverage of about 90 per cent of the country at 1:2500), and the organisation carried on in this general manner for the next forty years, new publications being mainly revised 1:2500 plans on county sheet lines. Urban areas were covered by a mixture of 1:1250 and 1:1056 enlargements from the 1:2500. As with the Ordnance Survey of Great Britain, the department relied heavily on subventions from the national exchequer, which restricted the possibilities for revision and republication; a more obvious effect of this for non-Irish users has been that whereas the half-inch map has been maintained, the one-inch map has been left largely unrevised (four district sheets apart) since 1922.

In 1964 a Mapping Advisory Committee was set up, which may be seen as an approximate equivalent to the Davidson Committee of 1935-8 on the British survey. The recommendations included: metrication; the use of the scales 1:1000 (for urban areas of over 1000 population, with continuous revision), 1:2500 (to be extended to cover the whole country), 1:5000 (to be obtained by direct reduction from the 1:2500), 1:25,000 (to cover the whole country), 1:50,000 (to be revised at at least 15 year intervals), 1:100,000 or 1:125,000, and 1:250,000; the adoption of a standard sheet size of 80 x 60 cm; some simplification of land-use information on large-scale maps, but against this the addition of wetland information; contours at 5 metres to be shown on the 1:5000 map, with some additional 2.5 metre VI contouring; and that the Ordnance Survey 'should endeavour to effect a conformity in the use of place names between the official forms shown on the map and other forms in common usage'.

This has provided the framework for subsequent activity, but pressure of funding has meant that in practice the cartographic output has been limited to the 1:1000 and 1:2500 scales, and matters have also been both complicated and facilitated by the development of digital mapping, introduced to the Ordnance Survey in 1978. 'Current thoughts' are that the 1:5000 and 1:25,000 are no longer needed, and that there will be two databases: a Cadastral Database, surveyed at 1:1000 and 1:2500, and published at those scales and also at 1:10,000, and a General Database, surveyed at 1:50,000, and published at 1:50,000, 1:100,000, 1:250,000 and 1:500,000, and also supplying contours for the 1:10,000. The Cadastral Database will provide information to the accuracy needed for the utilities and land registration, and the General Database will serve land resource management and tourism.

Although the 1:5000 *per se* appears to have been abandoned (the only published map at this scale is a town plan of Athlone), it has a shadowy existence in that it provides the basis for the National Grid sheet lines of the 1:2500 and 1:1000. The 1:5000 is numbered from north to south as a continuous series of some 6000 sheets. The 1:2500 is laid out as quarter sheets (A, B, C, D) of it, and the 1:1000 of larger urban areas as divisions (sub-sheets 1 to 25) of it. Large-scale maps are currently produced by photocopying from master transparencies.

The 1:1000 series contains approximately 1800 maps and is described as 'for practical purposes complete', though urban expansion will result in new as well as continuously-revised sheets appearing. In 1989 9795 hectares were stereoplotted at this scale, 6336 hectares continuously revised, and 4992 hectares digitised. As with the British 1:1250, the archive is now being converted into digital form. In 1989 84 staff were engaged on urban mapping. Smaller towns

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are published on local sheet lines, so as to minimise the number of sheets needed. In November 1989 the Department of Finance set the objective of the 1:1000 being self-financing by 2005.

The 1:2500 series is projected to contain nearly 23,000 sheets when complete. As with the National Grid 1:2500 of Great Britain, it is being converted from county sheet lines, revised, and redrawn, though all new mapping will be produced digitally, whereas in Great Britain hardly any of the National Grid 1:2500 was initially produced in this way. In 1988 2,047,392 hectares of a total of 7,031,000 had been revised (partly on county sheet lines) and were under continuous revision. In 1989 151 staff were engaged on this scale, output including 73,344 hectares of continuous revision, 126,300 hectares of new revision, and 113,076 of digitising. In 1989 21 County and 337 National Grid plans were published. A summary of large-scale six-inch and 1:2500 coverage since 1824 is given on page 8 below. Due to the increasing number of staff engaged on continuous revision of published mapping, fewer have been available for the production of new

mapping, and trials in applying new technology to the 1:2500 have been conducted, so as to increase output with existing staff, with initially promising results.

The new 1:50,000 map has already received some publicity in these pages. In 1967 it was announced that an experimental sheet of the Dublin area was being prepared, so as to elicit comment before settling the specification, but this proved to be a false start. In 1986 work began on producing a 1:50,000 series, using aerial photography and direct digital input. (Incidentally, the Irish survey was ahead of the British in this.) Sheets 54, 56 and 78 have been published, and Sheets 16, 25, 70 and 79 are expected shortly (see diagram on page 9). These are all 'preliminary editions'; a 'first edition' of Sheet 78, taking account of users' comments on the preliminary edition, is at an advanced stage of preparation. In 1988 a review of small-scale mapping needs was carried out, and it was made clear that there was 'a keen demand' for up-to-date small-scale mapping, particularly at 1:50,000. In November 1989 the objective was announced of publishing thirty maps within three years and completing the series in six to seven years. During 1989 361,216 hectares of detail and 338,288 hectares of contours were stereoplotted at this scale. (Each sheet covers an area 40 km west-east by 30 km south-north and thus contains 120,000 hectares.)

In order to carry out its programme the Ordnance Survey has invested very heavily in new technology. It now includes eleven analytical stereoplotters and 31 digitising tables and terminals, and occupies 78 staff. Manual production of large-scale mapping ceased in March 1988, over two years before a similar development in the Ordnance Survey of Great Britain. In March 1990 the digital mapping system was upgraded. In 1989 four global positioning systems (GPS) were purchased, and GPS was used for controlling the 1:1000 mapping of Kilcullen. (Triangulation of Ireland is practically complete except for some third order coverage of Donegal.) In 1988 a new four-colour printing press was installed.

In addition to the strictly cartographic work, there are an Archaeological Branch, set up in 1947, and a Placenames Branch. The main work of the Archaeological Branch is a survey of megaliths, and four of a projected eight volumes of this work for the Republic have been published. (Another three are projected for Northern Ireland.) The Placenames Branch is concerned with establishing the original Irish forms of place-names and researching for bilingual mapping. County gazetteers for counties Limerick, Louth and Waterford and a National Gazetteer of 3500 names have been published.

On 31 December 1989 the Ordnance Survey had 345 staff, a mixture of civilians of the Department of Finance and 42 officers and men from a Survey Company, Corps of Engineers, of the Department of Defence, some of whom later transfer to the Department of Finance as civilians. In 1987 revenue was £IR 1.60M and expenditure £IR 7.26M (revenue 22 per cent of expenditure); the 1989 figures were £IR 2.25M, £IR 6.24M, and 36 per cent. The increase in revenue is due in particular to increased royalties, and the Ordnance Survey is actively seeking commercial contract work, mostly for local authorities.

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IRELAND

Six-inch and 1:2500 survey and revision dates

Columns: 1, county; 2, six-inch survey (dates from published maps); 3, six-inch revision; 4, 1:2500 survey (six-inch revision in uncultivated areas); 5, 1:2500 cyclic revision; 6, post-1922 revision.

	1	2	3	4	5	6
Antrim	1829-33	1853-8	1900-06	1920-31	B	NI
Armagh	1834-5	1858-62	1905-7		B	NI
Carlow	1839	1873-4	1905-6			IC
Cavan	1835-6	1876-81	1908-11			
Clare	1840-1	-	1893-7	1913*	AB	IG
Cork	1841-2	-	1896-1904	1926-37	B	
Derry	1830-2	1850-4	1904-6	1920-*		NI
Donegal	1833-6	1845-52	1900-05		B	
Down	1833-4	1858-60	1900-03	1916-26	B	NI
Dublin	1843	1868-74*	1863-7*			
			1906-9	1935-8	B	IC
Fermanagh	1834	1855-9	1905-7		A	NI
Galway	1838-9	-	1890-1900	1912-16*	AB	IG
Kerry	1842	-	1892-8	1914-15*	A	
Kildare	1837-8	1870-2	1907-9		A	IC
Kilkenny	1839	-	1899-1902		B	IC
Leitrim	1836	1882-8	1907-9		B	
Leix/Laois (Queens)	1838	1888-91	1906-8	1959-63	A	
Limerick	1840-2	1897-1903	1918-24			
Longford	1836-7	1878-80	1911-12			
Louth	1835	1861-8	1907-9		A	IG
Mayo	1837-8	-	1893-9	1913-17/23-6		
Meath	1836	1882-4	1908-11	1954-61		
Monaghan	1835	1857-9	1907-9		B	
Offaly (Kings)	1838	1884-5	1908-10			IG
Roscommon	1837-8	1888-91*	1888-2*	1912-13*		
			1912-13*	1923-5*		
Sligo	1837	1885-8	1909-12		B	
Tipperary	1840-1	-	1901-5		AB	IG
Tyrone	1832-4	1851-5	1904-7	1931-9/50-2		NI
Waterford	1840-1	-	1903-5	1922-3	B	IC
Westmeath	1837-8	1874-6	1910-13		B	
Wexford	1839-40	-	1902-5	1921-2	B	IG
Wicklow	1838-9	1885-7	1907-9		A	B

* = survey/revision incomplete.

A = limited revision of urban areas before c.1940.

B = limited revision of urban areas after c.1940.

IC = whole county revised since c.1960 on county sheet lines.

IG = partial coverage by 1:2500 on Irish Grid sheet lines.

NI = Counties mapped by Ordnance Survey of Northern Ireland, and now published at 1:2500 on Northern Irish Grid sheet lines.

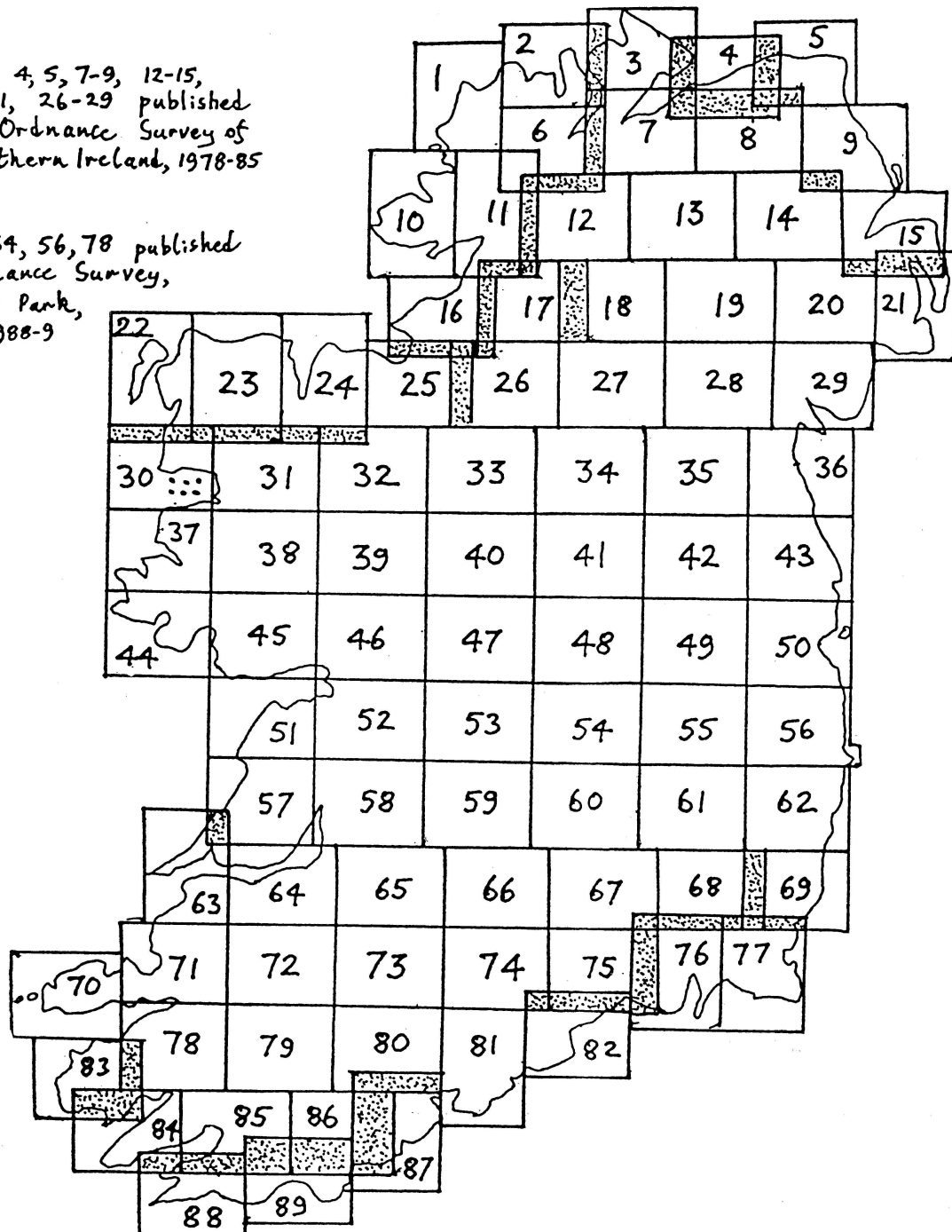
Sources: J.H.Andrews, *History in the Ordnance Map*, Dublin, Ordnance Survey Office, 1974, p.19; *Catalogue of the... Maps... of Ireland... of the Ordnance Survey*, London, HMSO, 1920; *Catalogue of the large-scale Maps*, Dublin, Ordnance Survey, 1964; *A description of the Ordnance Maps of Northern Ireland*, Belfast, Ministry of Finance, 1952; *The Ordnance Survey*, Dublin, Ordnance Survey, 1989.

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DIAGRAM OF SHEETS OF 1:50,000 MAP OF IRELAND

Sheets 4, 5, 7-9, 12-15,
17-21, 26-29 published
by Ordnance Survey of
Northern Ireland, 1978-85

Sheets 54, 56, 78 published
by Ordnance Survey,
Phoenix Park,
Dublin, 1988-9



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Ordnance Survey of Northern Ireland

Ordnance Survey of Northern Ireland (OSNI) became formally independent of the Ordnance Survey of Great Britain (OSB) on 1 January 1922. At present it employs 200 staff, 70 of them surveyors. It differs in a number of ways from its counterpart in Dublin, one being that its colour printing has almost always been undertaken by OSGB, another in that 1:2500 and 1:50,000 mapping of the province is complete, and a third that the standard scale for urban areas is 1:1250. The large-scale maps are laid out as a continuously numbered run of 1:10,000 full sheets divided into 1:2500 and 1:1250 subsheets. Areas are not now published on the 1:2500, but can be had on application, and as a result the Northern Irish 1:2500 is somewhat more bare-looking as compared with its counterparts produced in Dublin and Southampton. The 1:10,560/1:10,000 is also more open than its British counterpart, though this is mitigated to some extent by the townland names.

Digital developments at OSNI are of more than local interest, and have recently attracted visitors from, amongst others, Ethiopia and Malta. The Director of OSNI, Mr Michael Brand, has recently been appointed president of the European Organisation for Aerial Research. At present OSNI is halfway through a programme, due to be completed in 1996, to digitise the mapping of the province. The digital information has recently been used to study possible leukaemia case clusters in County Down, and whether there was any pattern in claims for damages from footpath tripping cases.

Three 1:25,000 *Outdoor Pursuits Maps* are published, *Mourne Country* (1981), which has sold more than 25,000 copies, *Fermanagh Lakeland - Lower Lough Erne*, and *Fermanagh Lakeland - Upper Lough Erne*. The last is folded in a curious amalgam of Bender and tuck-under. They are produced by direct reduction from the 1:10,000, with the addition of road infill and tourist information. There is also a 1:20,000 series covering the whole province, produced for police and military use only; it is understood that it is drawn ad hoc and fully coloured. Most of the larger towns in the province are covered by street plans. Between 1978 and 1985 the One-inch Third Series was replaced by eighteen sheets of a new 1:50,000 series laid out on all-Ireland sheet lines.

(Some of the above draws on a recent article in the *Belfast Telegraph*, reprinted in *OS News*, February 1991.)

The one-inch maps of Ireland to 1922: a summary

by Richard Oliver

Although it is well known that Ireland has been covered by a one-inch map in three basic editions, and that some of the maps are still in print, or reprinted, it may be helpful to summarise exactly which sheets were - or, more precisely, are known to have been - produced in the various editions and styles, together with what is still available. These lists have been compiled on the basis of the lists and indexes in J.H. Andrews, *History in the Ordnance Map* (Dublin, Ordnance Survey, 1974), the OS annual report for 1913-14 and the holdings of the British Library and Royal Geographical Society, together with some explorations in the Freeman Library, Trinity College, Dublin: as usual, corrections and additions would be welcome. I have here adopted as

shorthand an extension of the system which I first used in my article on the one-inch maps of Great Britain of 1870-1914 in *Sheet lines* no.5 (December 1982). A basic diagram of the standard 205-sheet layout appears below, on p.18.

The first edition (I-1)

Based on the six-inch Townland survey of 1825-42, with some revision 1853-5, and limited post publication revision, e.g. in County Down c.1867.

With hills (I-1-H): all 205 sheets published, 1855-95; late states republished by Phoenix Maps, Dublin, 1989.

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In outline (I-1-O): all 205 sheets published, 1855-62.

In outline, revised with new revision or republication date (I-1R-O): 30 sheets published, 1888-95 (sheets 56, 57, 68-71, 79-82, 89-92, 99-102, 109-112, 118-121, 128-130, 138).

The one-inch geological map of Ireland (I-1-G), published 1854-90, was based on a mixture of I-1-O and I-1-H.

The second edition (I-2)

Based on a field revision of 1898-1901, and generally following the specification of the second edition (revised 1893-8; NS-2), of the English New Series.

In outline, without contours (I-2-O): all 205 sheets published, 1899-1902. (Sheets 45 and 57 have been republished by Alan Godfrey; more are planned.)

In outline, with contours added (I-2-O): all 205 sheets published, from c.1908 onwards. (Sheets 31, 32, 39-44, 46, 51-58, 62-126, 131, 132 remain available from OS, Dublin.)

With hills, overprinted in brown on contoured I-2-O base (I-2-H): 46 sheets published, c.1909-12 (Sheets 2, 6-8, 12-14, 18-21, 28, 142, 149-152, 159-166, 170-177, 183-188, 194-196, 200-202, 205).

With administrative boundaries in red, printed from stone on I-2-O base: all 205 sheets published, 1900-1903; Sheets 1/2, 37/8, 42/3, 49/50, 71/2, 122/3, 197/8 were combined.

In colour (I-2-C): initially published 1902-6. The combination and recombination of coastal sheets (described by Brian Adams, p.15 below), resulted in Ireland being covered in 170 sheets (36 being combinations of more than one sheet) by 1910. There were five colours: black outline, blue water, brown hachures, green woods, sienna roads.

District maps:

Outline-with-roads-coloured district maps (I-2-DR): *Belfast*, *Cork* and *Killarney* (all 1902) and *Wicklow* (1903)

Fully coloured maps, in style of I-2-C (I-2-DC): *The Curragh* (1903), *Dublin* (1904).

Fully coloured map in style of English Third Large Sheet Series (I-2-DC): *Belfast* (1912). (This sheet is co-extensive with 'Large' Sheet 17.)

With layers and hachures, in modified 'Killarney' style (I-2-DE): *Dublin* (1918). (This sheet is nearly, but not completely, co-extensive with 'Large' Sheet 51.)

The 'Third Edition' (I-3)

Revision for this was begun in 1908 and abandoned incomplete in 1914: at least 22 sheets (15, 31-3, 44-5, 68, 111-112, 116-117, 125-126, 131, 132) were revised but not published.

In outline (I-3-O): 122 sheets published 1909-16 (Sheets 1-14, 16-30, 34, 35, 37, 38, 46-50, 57-61, 70, 71/2, 127-130, 133-205). (Sheets 1-6, 9-12, 16, 17, 22-5, 30, 57, 58, 70, 71/2, 127-130, 133-205 remain available from OS, Dublin.)

With hills, overprinted in brown on contoured I-3-O base (I-3-H): 50 sheets published c.1910-12 (Sheets 2, 156-176, 178-205)