

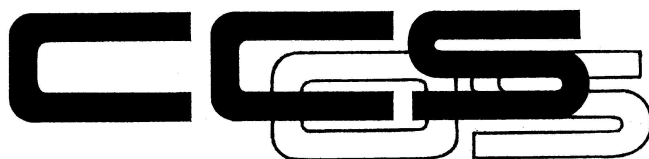


SHEETLINES

The Newsletter of
THE CHARLES CLOSE SOCIETY

No. 26 December 1989

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EDITORIAL

Once again readers will observe a change on our front page:- the Society's new logo appears there for the first time. It is a pleasure to congratulate Bill Batchelor on his design and for his success in the Society's competition. Our congratulations (and commiserations?) go also to the winners of the second, third and fourth prizes, Tony Bennett, Mike Cotterell and David Archer respectively.

One other piece of Society business which needs to be mentioned is that David Archer has very gallantly offered to relieve Karen Cook of the burden of the Membership Secretary's schedule. He has been co-opted on to the Society's committee as Membership Assistant. All membership matters including the renewal of annual subscriptions (due on 1 March) should now be addressed to him at the following:

David Archer
The Pentre, Kerry, Newtown, Powys SY16 4PD.

Readers will see that our final page contains notice of the date of the Society's next AGM. This is therefore perhaps a good time to start thinking about what they might do for the Society. They might reflect that its officers and committee members are not immortal (and that even editors fade away sooner or later!). It is your Society, your Sheetlines. If you feel that you could do better, don't be bashful, please step forward. Incidentally your Honorary Secretary is still hoping to receive more suggestions (or offers of help) for the mounting of the Society's OS Bicentenary Exhibition in response to her request in Sheetlines 25.

HELP WANTED

Roger Hellyer is compiling a list of map cover artwork which, it is anticipated, will be published by the Ordnance Survey. He is eager to examine any covers which he has not yet located, and would be grateful if anyone owning maps on Place's waterproof paper (who has not already done so) would contact him, especially anyone owning Place's versions of the Birmingham and Skye half-inch maps, Jersey or Guernsey, any Scottish one-inch Popular, or any map in the "Hiker at Stile" type of District/Tourist cover.

He is also anxious to locate any pre-war Scottish geological one-inch or quarter-inch map in pictorial covers, English/Scottish War Office/War Revision/Second War Revision in OS covers, the 1935 Kew Gardens map in covers, and the Scottish quarter-inch map in Ansell-fold.

Roger's address is: 60 Albany Road, Stratford on Avon, Warwickshire CV37 6PQ.

PUZZLE CORNER

Solution to Puzzle in Sheetlines 24:

The Editor apologises for not giving this in the last issue. The map extract was taken from the 1915 issue of Half-Inch (Large Sheet Series) Sheet 23. The missing canal is the westernmost section of the Warwick and Napton which joins the Warwick and Birmingham Canal at a point due north of the letter 'k' in "Barracks" (as is correctly shown on the 1925 issue of the same sheet).

Where is it?

Identify the piece of map behind the magnifying glass on the 1965 1:25,000 Second Series cover. Much more difficult is to identify the First Series version.

Roger Hellyer

THE ORDNANCE SURVEY AND BRITISH SURVEYS IN INDIA

Matthew H. Edney, Dept. of Geography, University of Wisconsin,
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The focus of historians of the Ordnance Survey has been the Survey's work within the British Isles. We should not, however, be surprised that the Survey played an influential role in the formation and prosecution of surveys in the rest of the British Empire through the nineteenth and twentieth centuries. In researching the British mapping of India between 1799 and 1843, I found that the OS was a key factor behind the Great Trigonometrical Survey of India and the great geodetic work of William Lambton and George Everest. I also unearthed a series of documents that concern the OS directly and which I list in an appendix for the information of future researchers.

The few direct ties between the survey establishments in Britain and India during this early and formative period were fleeting. In April 1823, James Gardner proposed to the Court of Directors of the East India Company that he become the Company's map seller and geographer, an office left vacant with the recent death of Aaron Arrowsmith, much as he had been appointed sole map seller for the Board of Ordnance after Faden's death in February 1823.¹ The University of Nottingham's "Newcastle of Clumber" manuscript collection includes two interesting maps, both at two miles to an inch, lithographed under Henry James' orders as part of the British reaction to the Indian Mutiny of 1857-58: Survey of the Country between Lucknow and Cawnpore, zincographed by the OS at Southampton, 5 Oct. 1857, from a lithograph done by the Surveyor General's Office, Calcutta; and Sketch of the Country round Delhi, not dated, lithographed by the Topographic Depot, War Department (Henry James, Director).² Finally, between 1811 and 1821, the OS trained a total of 44 of the Company's engineer cadets in topographic mapping.³

This last point of contact might have been expected to lead to some broader interaction between British and Indian surveyors. That it did not is due to the way in which surveyors were appointed in India. While the Court of Directors often directed that engineers should be used on survey duties, few actually were. Of the 44 OS-trained cadets, 19 are found in Phillimore's biographical sketches, and only 7 spent more than a year on topographic or revenue surveys.⁴ The majority of the surveyors in India were infantrymen or engineers who might have been at Addiscombe but had not spent the extra season with the OS. As Richard Oliver has shown in his dissertation, the OS was one of many different official surveys in the early 1800s. The surveys in India were equally diverse. Far and away the most ubiquitous surveys were route traverses of the marches of every army detachment, conducted by any available officer, who wanted the extra salary, with perambulator and compass. Closely equivalent to the Tithe Surveys were the revenue surveys of each village or group of villages. For uncultivated areas and regions beyond direct British control, there were topographic surveys, made at the initiative as much of field commanders as of the three provincial governments. All of these surveys produced maps in manuscript only, map publication being restricted for reasons of military secrecy. Set aside from these detail surveys were the trigonometrical surveys (Lambton's "General Survey" of the Peninsula, 1800-17, and the Great Trigonometrical Survey, 1817^{ff}) that provided the principal control as well as information about the size and shape of the earth. As Andrew Cook has noted, remarkably few of all the detail surveys in this period were actually based upon, or even connected to, the great triangulations.⁵ In this respect, the trigonometrical surveys were actually more concerned with providing the image of systematic control than the control itself. And in this function, their Superintendents and the Surveyor Generals looked to the OS, first as their guide and later as the epitome of systematic survey. While Oliver might put the OS's achievement of cartographic dominance in Britain in the middle of the century, in this respect the OS was dominant perhaps in the 1810s and certainly in the 1820s after the establishment of the Irish Survey.

The ultimate origin of the Great Trigonometrical Survey of India was a proposal by Alexander Dalrymple, FRS, for a survey to be made of the eastern coast of the Indian Peninsula based upon a geodetic-quality triangulation along the coast.⁶ William Roy supported this proposal and wrote:

The British Dominions in the East Indies offer a scene particularly favourable for the measurement of five degrees of latitude on the coast of Choromandel, as has been noticed by Mr. Dalrymple, FRS in his paper on the Marine Survey of that Coast. Two degrees of longitude, at each extremity of this arc, should likewise be measured.

The plains of Bengal, directly under the northern tropic, afford another situation where it would be of great consequence to determine the lengths of a degree or two of latitude, and as many of longitude. These two operations could not fail to be patronized by the East India Company, who should defray the expense; since, whatever tended so much to the improvement of science in general, and so directly to that of navigation in particular, must be thought important to a Body of Merchants, whose power, as well as opulence, stand at this day unparalleled in the mercantile history of the world.⁷

The immediate effects of this support were not particularly successful. The East India Company did order a copy of Roy's Great Theodolite from Ramsden, yet they refused to take delivery of it after Ramsden modified the design at an increased cost.⁸ An actual survey of the Coromandel Coast was begun in 1790 by Reuben Burrow, yet it lapsed with his death in 1792.⁹

Roy's comments -- not Dalrymple's -- were taken up by William Lambton, an officer of His Majesty's 33rd Foot, serving in India. In November 1799 he submitted a plan (now lost) for measuring degrees of latitude and longitude in the southern Peninsula. In a revised plan dated the following February, he credits Roy and his successors on the Ordnance Survey with introducing the new style of scientific survey.¹⁰ In the published version of this plan, he specifically noted that it was their publications which "first led (me) to consider the subject,"¹¹ while in one of his few surviving personal letters he stated that:

Mine will be precisely the same kind of Survey that was begun by Genl. Roy, but my operations will be performed in a much more delicate latitude where the degrees on the Meridian and on its perpendicular differ very little.¹²

Roy was clearly Lambton's role-model, and the latter's work was frequently equated with the OS.

In 1817, Lambton's survey was transferred from the provincial government of Madras to the Government of India at Calcutta and was renamed the GTS. This transfer had been mooted before, but it took a direct comparison of Lambton's work with the OS to effect it:

The importance attached to such works by the economists and statesmen, as well as by the learned of Europe, is proved by the perseverance for so many years of England and France in similar undertakings. The Governor General ventures to speak to this point with no ordinary confidence, because it came under his personal knowledge when he had the honour of presiding over the Royal Ordnance department.¹³

The Governor General was the Marquess of Hastings (previously Earl of Moira) who had been Master of Ordnance in 1804-07. Hastings was an exception among the chief administrators in India who generally confessed themselves to be ignorant of the principles and importance of the GTS. Their political masters in London relied on outside advice to judge the worth of the surveys in India. In such a situation, it is not surprising that the great developments in the GTS after 1817 involved its

direct comparison to the OS.

Lambton's successor as Superintendent of the GTS was George Everest, of the Bengal Artillery, who had showed ability as a surveyor during the 1811-15 Java expedition. After a severe bout of illness he returned to England on furlough in 1825, staying until early 1830. While in Europe he toured many of the astronomical observatories of the Continent, and he obtained the Company's permission to accompany Thomas Colby on a tour of inspection of the Irish Survey in the summer and autumn of 1829.¹⁴ From this experience he wrote a lengthy memoir, drawing extensive lessons from Colby's work and applying them to the GTS. After introducing his topic, he dived into the comparison:

There is but one department in Ireland, viz. the Great Trigonometrical Survey, to which all the others are subservient. The Irish Survey is trigonometrical not only in its basis, but in all its minutest ramifications and details. A great net of principal triangles extends over the whole face of the country, the angular points of which rest on high mountains. Within these are secondary triangles of 1st, 2nd, 3rd ... 6th classes, the sides of each lower order being shorter than those preceding it. And when these become sufficiently diminished, further regular triangulation is superfluous and the interior details of the topography are laid down by a common chain and small theodolite, much upon the principle of the road measurement with perambulators used in India, with this exception however that nothing whatever is left to guessing a conjecture.¹⁵

The implication was clear: existing survey techniques in India allowed too many errors to accrue as they were based on astronomical observations that were at best approximate. The only way in which proper accuracy could be achieved and maintained was via a thorough and systematic triangulation upon which to base the topographic detail. The bulk of the memoir concerns the details of the survey: how the systematic nature of the survey is organized and how it produces ready checks on the quality of each surveyor's work. But it all comes down to the basic question of systematic triangulation as the basis for topographic surveying, to bringing the GTS to the focus of all surveys in India whereas it had hitherto been "looked on as an excrescence from the (current) system" of surveys (para. 34). To meet the demands on instrumentation and manpower that this would necessitate, Everest proposed a hierarchy of labourers be recruited and structured like the sappers on the Irish Survey, while the officers would of course use identical instruments, most notably Colby's "compensation bars" for measuring baselines, theodolites, and Drummond's new night-lamps. Everest did however stress that the Irish Survey did not have a geodetic component, and so submitted a second memorandum to the Company outlining his proposals in that field, together with Colby's views in support.¹⁶ The Court of Directors was already amenable to Everest's suggestions: it had two years before sent a copy of the Parliamentary inquiry that had proposed the Irish Survey to the Bengal Government as a guide for its revenue surveys.¹⁷ The Court's orders now were favourable and when Everest returned to India he went as both GTS Superintendent and Surveyor General; he was able to re-establish the GTS upon a dramatically expanded footing.

A decade later, another surveyor on furlough in England was as adamant as Everest -- if not more so -- that the OS was the best possible role model for the British Surveys in India. Thomas Best Jervis, of the Bombay Engineers, had been one of the Company's cadets who had spent a field season with the OS. After fifteen years on survey duty, he returned to England in July 1837 and immediately began publicizing himself as the best surveyor to succeed Everest who was nearing retirement. The Court appointed him provisionally and agreed to his suggestion that he go with Colby on the next season of the Scottish Survey.¹⁸ Jervis soon wrote to the Court that

Colonel Colby's system is valuable in many respects: it is simple and methodical to a degree; it is expeditious, most comprehensive, economical

and what is yet more desirable than all, his survey is conclusive.¹⁹

And he began a lengthy petitioning process to have the OS train a hundred men on the Scottish Survey who might then be employed in furthering the 'Survey of India'. In this he created a chimera. The Survey of India did not then exist and would not until 1878. Rather, Jervis took the integrated concept of the OS and applied it unchanged to the myriad of cartographic activities in India. In the event he ran into difficulties. Some Directors and members of the Company's secretariat objected to his proposals as they would be far too expensive and would give Jervis far more power than was allowable in the Company's military. Colby might have been able to force his independence from higher authority in hiring and firing staff, but the Company had ever been jealous of its rights of patronage and it was not about to have an officer (not even a general officer) usurp its prerogatives. As Jervis explained the situation to John Hobhouse, the President of the Board of Control (the Parliamentary overseer of the Company):

I have found some of the Directors, my friend Sir James Carnac (ex-Chairman), Mr. Loch (ex-Chairman), Sir James Lushington (Chairman), Mr. Jenkins (Deputy Chairman), and Mr. Bayley (subsequently Chairman) more accessible to reason than others, but confess I find it no easy matter to deal with 24 men compounded of such perverse and various materials. Other expedients failing, I resolved to engage those I have mentioned, to visit the Ordnance map office at the Tower, and there lay before them the surveys of every state in Europe, more particularly the Irish and Ordnance Survey, and then leave them fairly and dispassionately to judge for themselves as to the real merits of that work on which they have expended so large a sum of money to so little a purpose. I succeeded beyond my expectations ...²⁰

Unfortunately, he was unable to persuade the Company's secretariat and the body of the Directors, even if he had the Chairman and Deputy-Chairman on his side as well as the President of the Board. As Colby wrote to his wife in December:

Jervis is working away to get my system introduced in the Indian Survey, but as yet he is violently opposed by all the East India underlings.²¹

In the ensuing debate, Jervis sent Hobhouse copies of the Parliamentary Report on the Irish Survey and of memorials for the Scottish Survey, and he in turn forwarded these to the Court.²² In forwarding another letter to the Court, Hobhouse wrote:

It is in truth so apposite in all its bearings and to the President's mind so conclusive that if the word India were substituted throughout for that of Ireland, it would run word for word as closely to the question at issue as Major Jervis' or all the arguments that have ever yet been placed on record relative to the necessity of an accurate survey and the best mode of conducting it.²³

The Court's adamant refusal to approve Jervis' plans was not a sign that it no longer accepted the OS as the epitome of 'good mapping', but rather that it acknowledged the special circumstances of Indian surveys. Its attitude was that Everest had already established the GTS on the same grounds as the OS, with modifications for India, so why should it expend yet more money on a less applicable system? Throughout this debate, it was never disputed (as it had been before) that surveys should be systematic and based upon rigorous triangulation.

APPENDIX: SOME NEW ARCHIVAL SOURCES FOR THE HISTORY OF THE ORDNANCE SURVEY.

Royal Greenwich Observatory Archives

Now held in the Dept. of Manuscripts, Cambridge University Library, West Road, Cambridge CB3 9DR. The handlists and indices to these papers should be transferred from Herstonceux in the near future.

Correspondence about the OS is scattered throughout a number of archival series:

RG0 4 : Papers of Nevil Maskelyne, Astronomer Royal, 1765-1811.

RG0 6 : Papers of Sir George Biddell Airy, Astronomer Royal 1835-81. These are a veritable mine of information on instruments, techniques, results, pendulum experiments, geodetic calculations, etc. Henry James was a frequent correspondent and his letters are scattered throughout this collection. Items of particular interest are:

/181-88 : Longitude of Valentia, Ireland.

/325 : Correspondence re. 1858 Parliamentary Commission on OS map scales. Airy sat on this commission; this folder includes his official and private correspondence on the subject, various memoranda, minutes of evidence, a draft of the final report with Airy's comments. Also,

f.88 is lithographed index to maps @ 1:2,500 and six-inches of the Parish of Kirkconnel in Dumfries-shire, undated.

f.89 is a copper-engraved plan of the OS headquarters in Southampton at 1:2,500.

/338-67 : Official and general correspondence on the standards commission.

/416-24 : very large collection of papers entitled "Geodesy: Zenith sectors, surveys, Triangulation of Europe" and principally re. OS operations. Also several plans of the principal triangulation (two of that in Europe).

RG0 14 : Papers of the Board of Longitude, 1714-1828, eg.

/21 : Accounts of the England-France geodetic link, 1821-23.

RG0 15 : Papers of the Cape of Good Hope Observatory, 1820^{ff}, including papers on Maclear's geodetic survey.

British Library

Add. 14380, "Papers relating to the Survey of India." Collected by Thomas Jervis and are copies of most of the IOR papers, with the exception of:

ff.18-22: Jervis to the Court, 16 June 1838 -- on Colby's plans for training surveyors.

India Office Library and Records

197 Blackfriars Road, London SE1 8NG.

E/1/150, ff.477-79, "Memorial to the Court of Directors of the East India Company by James Gardner," 29 April 1823. This includes both biographical information and data on the Board of Ordnance's plans to establish a repository of foreign maps and plans.

L/MIL/5/402 205, "Communications from Captain Everest relating chiefly to the Great Trigonometrical Survey of India, and his Report on the Irish Survey." The specific item of interest regarding the OS is: ff.297-317, George Everest, "Memoir containing an Account of some Leading Features of the Irish Survey, and a comparison of the same with the System Pursued in India," 20 Oct. 1829.

NB. There is a copy of this memoir in the University of Nottingham's archives, Portland Collection, Pw Jf 2767/1.

L/MIL/5/413 306, "Correspondence relating to Major Jervis." Special items of interest are:

ff.12-25: Jervis to the Court of Directors, 26 Dec. 1837; Jervis to James Salmond, 13 Oct. 1837; and Salmond to Jervis, 23 Oct. 1837 -- which discuss the structure of the OS.

ff.44-60: Jervis to the Court, 11 Apr. 1838, plus accompanying memoirs -- on application of OS methods to GTS. Copies in BL Add. 14380, ff.4-17.

ff.61-67: Jervis to the Court, 12 June 1838 -- on more of Colby's recommendations.

SOCIETY NEWS

Acquisitions

Thirteen 'Miscellaneous' files, comprising Job Cards relating to the Seventh Series One-Inch map, have recently been acquired on disposal from Ordnance Survey. The missing Sheet History file for Seventh Series sheet 109, Chester, has been located at Ordnance Survey and transferred to the Society's Archive.

Logo Competition

The presentations for this competition were made at the Society's meeting at Southampton on 14 October. The winning design was the work of Bill Batchelor, and we had quite a job in thinking of a suitable prize for the man who had virtually everything (except a copy of Killarney, which others could not be persuaded to part with), but after secret consultation with his wife, it was decided to give him the next two volumes of the Margary facsimile of the Old Series (one of these is being donated by an 'anonymous' member).

Although we had not announced that further awards would be given, we were so taken with Tony Bennett's design, and with the quality of his work, that we decided to award him a second prize of a £10 book token. Mike Cottrell, whose artwork was of a very high standard, and who had clearly taken great care with his presentation, was given a consolation third prize of two modern OS maps. Finally, although no prize was given, David Archer was highly commended for the sheer ingenuity of his ideas.

We should like to thank all those who took the trouble to enter the competition; some of the designs were highly entertaining, albeit not quite suitable for a logo.

OS Bicentenary 1991

Many thanks to those of you who have written with ideas for the Society's exhibition at the RGS; the 1991 sub-committee is still selecting exhibits and will make the final choice early in 1990.

Membership Secretary

David Archer has very kindly agreed to take over from Karen Cook as Membership Secretary, and has been co-opted to the Committee as Membership Assistant until the next AGM. He inherits a formidably well-organised system set up by Karen (with not a little help from Andrew) to both of whom we are indebted for their efficient hard work.

Yolande Hodson
December '89.

CARTOBIBLIOGRAPHY AND THE ORDNANCE SURVEY ONE-INCH OLD SERIES

by Richard Oliver

For the past three years or so a good deal of my time and energy has been devoted to compiling the cartobibliographies for volumes 6 (Wales, due to appear in 1991), 7 (North Central England, due to appear at the turn of 1989-90), and 8 (England north of the Preston-Hull line, due to appear in 1990), of Harry Margary's facsimile of the Ordnance Survey one-inch Old Series. It is curious that I can find no record as to how I came to undertake this work: the only thing that I am certain of is that I had agreed to do so before the CCS meeting on 22 March 1986. I also recollect that a lunch at Lympe Castle about a month later had something to do with it. The original intention was that John and Barbara Manterfield, who had executed the cartobibliographies for volumes 4 and 5, would carry out volume 7 and I would carry out what was then projected as two volumes, 8 & 9, but which by May or June 1986 had already been amalgamated into one, not least because of the problems of concocting a suitable introductory essay for the north-east England volume. (Volume 6 was deferred until the other work was on its way.) In the event, pressure of work, and the impending arrival of Master Luke, meant that the Manterfields were forced to withdraw, although not before doing a good deal of work on sheets 61-63. From September 1987 to June 1988, therefore, I was working on volumes 7 and 8. In June or July 1989 it became apparent that something would have to be done about volume 6, and as it was impossible to find anyone else willing to take on this work, I added it to the work already in hand. I should not have done so but for the experience gained earlier. In turn, this makes easier my current preoccupation, with completing the New Series cartobibliography, started in 1982.

This work can only be done by visiting individual libraries, record offices and private collections, and as so many of these are only open on a 9-to-5, Mondays-to-Fridays basis, any significant output is only possible either by sacrificing one's holidays, or having a source of income which does not tie one down. Until recently I was working, mostly from home, as a 'freelance research assistant', most of the work being typing and tidying up someone else's book, which could be (and was) done at any time, and so it was possible for me to gad about the country, to such effect, indeed, that in 1988 I was away from home for about two months, mostly hunting maps, added to which there were numerous day-trips to London, Oxford and Cambridge. Since August 1989 I have been working respectable hours (determined by the Public Record Office) on the University of Exeter Tithe Survey Index project. Fortunately, the Old Series cartobibliography was just about complete by then. I must add that I have received exemplary co-operation from many librarians up and down the country, to say nothing of some twenty Charles Close Society members (and several spouses), and the quality of the end result reflects their efforts as much as mine.

Although I have been supremely fortunate in having the right sort of employment at the right time enabling me to complete the cartobibliographies for volumes 6, 7 and 8, it was still necessary to make the work as expeditious as possible. The method which I have evolved is one which is only really possible with the use of a home computer. It consists of taking the earliest and latest known states of each sheet, examining the whole sheet minutely, listing all the changes between the two, and then examining copies printed at various intermediate dates, noting when each change was made. The result is then typed up on the computer and printed out, forming a skeleton cartobibliography, designated 'version A', which is stored on disk. The process is then repeated, the discovery of new states leads to the more precise dating of additions to the plates, and 'version B' is prepared by amending version A on disk. The process is repeated as often as is necessary. Because of the heavy costs of type-setting and proofing, the cartobibliographies in volumes 4 onwards of the Margary Old Series facsimile have been from camera-ready copy, which can be prepared directly from the disk, making for enormous economies in typing and

proofing. The original disks are retained, and the cartobibliography can then be kept, effectively, under 'continuous revision'. One important point to mention is that the methods which I use are by no means the only ones which can be employed. They seem to work for me, but I don't wish to disparage anyone else's method.

Although the principle of the system is the comparison of the earliest and latest state, in practice this often has to be modified, according to the amount of revision. Sheets covering, for example, the mountains of central and northern Wales and northern England, were as a rule very lightly revised, whereas a sheet such as 36 (Cardiff and the valleys) underwent a much more complex development. This sheet was first published in 1833, and the environs of Cardiff were extensively revised c.1842-3, c.1854-5 and c.1862-3; some of the new features added in 1843 and 1855 were deleted in 1863, and any attempt to go direct from the first state of 1833 to the latest known printing of 1909 would be asking for big trouble. The system also stands or falls on the ability to get first, last, and at least 3 or 4 intermediate states together in the same room, and in practice only the British Library collection comes close to fulfilling this condition for the whole of the Old Series, though some sheets are sufficiently numerous represented in the RGS, CUL and Bodley collections to make preliminary work possible there. None of these collections, however, has a complete set of either first or last states of the Old Series. A further complication is that the latest copy of a sheet to be printed is not always in final revision state: a good example is sheet 90 NE, copies of which in a state dateable to c.1848-50 were printed sometime after 1912. The most satisfactory method of dating is the embossed stamp, used from 1851 to 1912, which gives the date of printing, but this is often cropped; a fall-back is the watermark. Other useful features, particularly for pre-1850 states, include the presence or absence of such things as adjacent sheet numbers, and the arabic sheet number, top right, and the price. First states can also be elusive: the first states of sheets 72 SW and SE are only known from a single copy in a private collection.

Example: A sheet Bibliography prepared for Volume 7.

Sheet 88 NE: draft cartobibliography, version A (25 January 1988)

State AG

- (a) Spot heights reengraved, with some variations, e.g. 671 at Bierley becomes '672'; '244' added SW of Huddersfield.
 - (b) The following railway added: (11) unnamed line from Heckmondwike on 7 to Thornhill on 1 (1:vi:1869).
- BL Maps 209.a.1 (EPD ix:1869) (m*)

State AH

- (a) 'Electrotyped in 1880' added, bottom left, 18 bnl.
 - (b) 'Price 1/-' below scale bar, 28 bnl.
 - (c) Spot heights reengraved, with some additions, e.g. '423' to WNW, '312' to E, '188' to NE of Huddersfield; 672 at Bierley reverts to '671'.
 - (d) 'G.N.R.' added to railway 9; railway 10 partially reengraved (E to S spur at Rouse Mill deleted), railway 11 wholly reengraved.
 - (e) The following railways added: (12) 'Kirkburton Branch' (1:x:1867); (13) branch S from 5 [to Meltham] (5:vii:1869); (14) 'G.N.R. Ossett Branch' [Dewsbury-Thornhill] (1:iv:1867); (15) 'Stainland Branch' (P 1:i:1875); (16) 'Ossett & Dewsbury R.' (9:ix:1874); (17) 'G.N.R. Bradford and Thornton' (14:x:1878); (18) 'Bradford Halifax & Keighley Rail./G.N.R.' (P 1:xii:1879); (19) unnamed line in N between 4 and 8 [GNR into Bradford Exchange] (7:i:1867); (20) unnamed branch SW from Sowerby Bridge [to Ripponden] (5:viii:1878); (21) title deleted from railway 16, which is extended through Batley to join 10 at Rouse Mill (15:iii and 12:iv:1880); (22) 'Lancashire and Yorkshire' (Wike-Brighouse; 1:iii:1881).
- BL Maps 1175 (309) (TJHK) (EPD xii:1881)

Sheet 88 NE: draft cartobibliography, version E (11 April 1989)

State EL = DJ = CH = BG = AG = 12

- (a) [New electrotpe: 1864 electrotpe note deleted.]
- (b) Spot heights reengraved, with some variations, e.g. 671 at Bierley becomes '672'; '244' added SW of Huddersfield.
- (c) The following railway added: (11) unnamed line from Heckmondwike on 7 to Thornhill on 1 (1:vi:1869).

BL Maps 209.a.1 (EPD ix:1869) (m*)

State EM = 13

- (a) [Further new electrotpe.]
- (b) Spot heights reengraved, with some additions, e.g. '423' to WNW, '312' to E, '188' to NE of Huddersfield; 672 at Bierley reverts to '671'.

PC18 (EPD xi:1871)

State EN = DK = 14

- (a) [Further new electrotpe.]
 - (b) Spot heights as in state 12.
- The following railways added: (12) 'Kirkburton Branch' (1:x:1867); (13) branch S from 5 [to Meltham] (5:vii:1869).

CUL Atlas 1.08.4; MCL/B (both m*); PC18 (m*)

State EO = 15

- (a) [Further new electrotpe.]
- (b) Spot heights reengraved and revised, generally as for state 13, but 671 is omitted; 244 present SSW of Huddersfield.
- (c) Some reengraving of railways; railway 13 is omitted.

PC18 (m*)

State EP = 16

Railway 13 reinstated.

MCL/J (m*)

State EQ = 17

The following railways added: (14) 'Dewsbury Loop' [Dewsbury-Thornhill] (1:iv:1867); (15) 'Stainland Branch' (P 1:i:1875); (16) 'Ossett & Dewsbury R.' (9:ix:1874); (17) unnamed line [Bradford-Thornton] (14:x:1878); (18) 'Bradford Halifax & Keighley Railv.' (P 1:xii:1879).

PC18 (m*)

N.B. - The deduction of states 13 to 17 rests entirely on copies with cropped margins, and is open to reinterpretation.

State ER = DL = CI = BH = AH = 18

- (a) 'Electrotyped in 1880' added, bottom left, 18 bnl.
 - (b) 'Price 1/-' below scale bar, 28 bnl.
 - (c) Spot heights as in state 13.
 - (d) 'G.N.R.' added to railway 9; railway 10 partially reengraved (E to S spur at Rouse Mill deleted), railway 11 wholly reengraved; 14 is now 'G.N.R. Ossett Branch'; 17 is now 'G.N.R. Bradford and Thornton'; 18 is '... Rail.' and 'G.N.R.' is added below.
 - (e) The following railways added: (19) unnamed line in N between 4 and 8 [GNR into Bradford Exchange] (7:i:1867); (20) unnamed branch SW from Sowerby Bridge [to Ripponden] (5:viii:1878); (21) title deleted from railway 16, which is extended through Batley to join 10 at Rouse Mill (15:iii and 12:iv:1880); (22) 'Lancashire and Yorkshire' (Wike-Brighouse; 1:iii:1881).
- BL Maps 1175 (309) (TJHK) (EPD xii:1881)

In order to illustrate the system in practice, reproduced here are two extracts from draft cartobibliographies for sheet 88 NE, covering Huddersfield and Halifax; the first is from version A, of January 1988, and the second from version E, of April 1989. Comparison with the published version in volume 7 will show some minor differences of style: the layout is much more cramped, states are identified by letters rather by number, and copies in private collections are coded by number, ('PC 12', etc). The cramped layout is to keep down the bulk of the printout, to save both trees and space in the cartobibliographer's luggage; some of the travel was done by cycle. The use of letters facilitates revision, both before and after publication: the confusion if states AG and AH had been numbered '7' and '8', and then progressively renumbered, becoming '12' and '18' in the final version, hardly bears thinking about! The published volumes will retain numbering of states, purely in order to be consistent with the earlier volumes; difficulties arise when a published cartobibliography is revised and republished: one either has to use new numbers, with scope for confusion, ('State 8 (= old state 6)', or else letters, (e.g. 5A, 5B, 5C) which might have to be subdivided further in third and subsequent editions; a fifth edition might be full of states called e.g. '5BACA'. I propose to retain letters in any published New Series work. Most of the volume 6 and 7 sheets were published in 'Index to Tithe Survey' form, and these states are numbered T1, T2, etc, in the published version, and ETA, ETB, etc in the drafts; similarly, most volume 8 sheets were published in both hachured Hills and outline-with-contours versions, coded respectively H-1, H-EA, O-1, O-EA, etc. The ten known sheets with 'Shaded Zones of Altitude', which appear to have existed in one state only, are simply 'SZA'. A number of volume 8 sheets are known in either 'Unfinished impression' or uncountoured outline form: these are coded U1 and OU, or OU-EA. For those sheets, (notably 38, 40 and 58), revised and re-engraved after initial publication, the states are numbered I-1, I-2, II-1, II-2, etc. (By the way, these re-engravings make nonsense of some people's ideas about 'First Editions'.) And yes, the use of letters was a conscious derivation from modern Ordnance Survey practice! The coding of private collections preserves confidentiality when copies of the draft are circulated, whilst enabling the compiler to see at a glance which copy belongs to which collection, or, if he sends a print-out, to advise the recipient what number he is. The treating of quite minor alterations to the plate, such as price changes, as full states in their own right, has been criticised by some; there would certainly be some advantage in reserving numbers for states in which the map proper is revised, and treating sub-states by adding a letter, say, but against this are both precedent and the complication of extra numbers and letters; I don't much care for the prospect of H-EA-B, for instance.

There are also a number of differences in content, as compared with the earlier Margary volumes, which are retained in the published versions. One of these is the numbering or lettering of railways, (they are numbered when all railways on a sheet are mentioned, as is the case with volumes 6 and 7, and lettered when only some are mentioned, as in Volume 8 and with the New Series.) This is partly to speed up the work - it is much quicker to write down 'railway 18' than the full title - and partly to save space in the published work when dealing with re-engraved railways. Looking at the Version E cartobibliography for sheet 88 NE, it will be seen that on the 1880 electrotpe (state ER or 18) several railway names are altered: these reflect the re-engraving of these lines on the new electrotpe. The electrotpe process for producing duplicate copper plates was adopted for the Old Series in February 1847; by producing a matrix and then a new positive it enabled the original plates to be preserved from wear by printing sales copies from duplicate plates which could be scrapped when they became too worn; which could mean very worn. Whereas until 1862-3 new railways and other revision seem to have been added to the original plate, and a new matrix taken each time a new printing positive was needed, thereafter one matrix was used, and was scrapped wherever a new railway or other correction was to be added, so that the railway or whatever had to be added to the new duplicate before sales copies could be printed off, and when that positive was scrapped the process had to be repeated. Things did not always work that smoothly, and sometimes embarrassing white spaces appeared, (see e.g. the

omission of railway 13 in sheet 88 NE, state E0 or 15). There is a good example in the south-east part of sheet 69, in the David and Charles version, (sheet 37); on sheet 98 NW there was an attempt to revise the spot heights and some other features, including an inn replaced by a hotel further away so as to improve a view, (I owe this information to John Cruickshank), which in practice resulted in strange white spaces on many states of this sheet. Other innovations are the listing of the states used for the David and Charles versions, (quite the most widely circulated of the Old Series) building dates for new churches, docks, etc, and the date when the corrections were received by the engravers, as recorded in the 'Day Book' (Public Record Office OS 3/279).

I am often asked whether any of the David and Charles work is reused in the Margary volumes. The short answer is 'No', though by the time the work on the latest Margary volumes had reached the 'C' version the draft cartobibliographies were compared with the David and Charles notes, in order to ensure that nothing noted in the earlier work was omitted. When compiling the David and Charles notes, Brian Harley managed to find several states in private collections which eluded me twenty years later, and these have been duly noted, as not seen by me. A different problem is that of states not seen but presumed to have existed, notably where price changes are concerned. On 28 November 1866 the prices of Old Series quarter sheets were doubled from sixpence to a shilling, and, say, an 1865 electrotpe priced at a shilling must have been altered from sixpence, and so an entry followed by 'Not found' is made. There are no doubt other unsuspected states, but some at least have been anticipated. A further problem is the cropping of margins: states 13 to 17 of sheet 88 NE are the worst case encountered so far, but there are plenty of cases where two or three successive states are at present known only from cropped copies.

What is achieved at the end of it all? Well, the Old Series has long had the reputation of being the most difficult of Ordnance Survey maps to date, but it is now practically tamed. A considerable proportion of the surviving copies in public collections have now been examined, (though new copies, both of individual sheets and of complete sets, keep turning up, making a system of revision virtually essential), enabling users of these collections to make much more confident use of these maps than before. It is now possible to generalise about Old Series revision policies, and I will close by listing the major categories:

- (1) Full-scale revision, involving complete re-engraving: confined to sheets 1, 2, 28, 33, 38, 40, 48 and 58, together with parts of sheet 47 and the coastal parts of the Devon and Cornwall sheets.
- (2) Revision along sheet edges where there was a considerable gap in publication between adjacent sheets. This is well illustrated on some of the Lincolnshire sheets, (notably 65 and 86), but is unusual in volume 7 and unknown in volume 8, which was surveyed by counties at 6-inch and larger scales, and not by 1-inch sheetlines.
- (3) Railway revision. The first systematic railway revision of the Old Series seems to have been the addition of the Grand Junction Railway to some volume 7 sheets in the late 1830s, and it went on until the addition of Rolleston station to sheet 72 SE in January 1895. The addition of railways was not always systematic: one of the more peculiar cases is that of the Hull Victoria Docks Branch, which ought to be on sheet 86. This was opened in 1853 for both passenger and goods traffic, and was duly recorded by the OS 6-inch surveyors. Then as now, the 1-inch was revised independently, and the Victoria Docks Branch was belatedly added to sheet 86 in the mid-1880s. By that time two other railways had joined it, the Hull and Holderness, opened in 1854, and the Hull and Hornsea, opened in 1864, both added to sheet 86 within a few years of their opening, and shown terminating, absurdly, at the point where they should have joined the Victoria Docks Branch. The explanation may lie in the Victoria Docks Branch being closed to passenger traffic from 1854 to 1864, (non-passenger lines often did not appear at all on the Old Series), and on over-

pedantic following of instructions by whoever added the Holderness and Hornsea lines. I suspect that the Victoria Docks Branch was 'discovered' when the Hull and Barnsley, which intersected it, was added following its opening in 1885. But all this while it had been on the 6-inch! But at least the Victoria Docks Branch made it onto the Old Series: the Whisker Hill curve at Retford of 1859 never did, and had to wait until the coming of the New Series in 1890 before making its debut on the 1-inch scale. An opposite aspect of the Old Series is the addition of railways before they were opened: the Shaftholme-York line, opened on 2 January 1871, was nevertheless on sheets 87 and 93 by July 1869.

(4) Partial topographical revision around towns: this is usually associated with railways, and volumes 4, 5 and 7 afford many examples of such additions around 1850, in particular, and to a lesser extent until c.1862. Usually it seems to have been carried out in conjunction with railway revision; an unusual exception is the addition before 1851 of a Gas Works at Sevenoaks, although this town was only reached by the railway in 1868.

NOTES AND QUERIES

Completion of the 1:25,000 Second Series

The final sheet in the "Pathfinder" series:- 1362 (SX 54/64) Newton Ferrers and Thurlestone, was published by Ordnance Survey during November. The first regular sheets of the 1:25,000 Second Series appeared in December 1965 after a decade of experimentation. At one period during the 1970s when OS was under heavy financial pressure there were considerable doubts as to whether it could ever be completed as a national series.

Ordnance Survey Engraving Times

I have recently acquired a copy of NS-2-H of sheet 265 "Bath", which contains in its margin the statement "The Hills engraved by C. S. Fudge in 346 working days: Cost £350". This was surely added by the engraver "for internal use only" and must have been overlooked by the proof reader. If this is an accurate measure of the situation nationwide, it gives some measure to the amazingly disproportionate amount of its time and income the Ordnance Survey used in drawing hills which, judging by the rareness of the surviving examples, the public did not wish to purchase.

Roger Hellyer

Editor's comment

Readers may like to compare these figures with those quoted by Johannes Dörflinger, "Time and Cost of Copperplate Engraving - Illustrated by Early Nineteenth Century Maps from the Viennese firm Artaria and Co" Imago Mundi 35 (1983) pp 58-66. A densely hachured 1:72,000 map of a mountainous area (44 x 36.5 cm in extent) was engraved in 98 man/days. Perhaps the Austrian engravers were exposed to commercial pressures absent from Southampton?

198 YEARS AND 153 MERIDIANS, 152 DEFUNCT

(Continued from Sheetlines 25)

by Brian Adams

Homework/Puzzle Corner

The reference in Sheetlines 25 is to Rippon Tor, county origin of Devon, the home county of Angela Rippon.

Terminology (applicable to Parts Three and Four)

When referring to the situation in the final stage of county series mapping the present tense is generally used.

'County' means a geographical county as existing prior to 1965, except that in the context of county series, Isle of Lewis, Isle of Skye and Outer Hebrides are equivalent to counties, having separate series of sheet numbers (Outer Hebrides here signifies just the Inverness-shire portion); the Isle of Man, too, is here equivalent to a county.

'Combined counties' means a group of counties, not necessarily contiguous, mapped on the same origin with a single system of sheet lines, though each county usually has its own series of sheet numbers.

'Unified counties' means a pair of combined counties with a single unified series of sheet numbers.

Part Three - Ordnance Survey's Most Inaccurate Maps (?)

In 1920 the OS published a booklet A Description of the Ordnance Survey Large Scale Maps; running through eight editions, the last published in 1954, it had a total shelf life of some forty years. Most editions contained two maps showing the origins used for the projection co-ordinates of the county series of twentyfive-inch and six-inch maps, which were drawn on Cassini's projection. Covering respectively England & Wales and Scotland, they depicted the county origins and their meridians in red over black base-maps showing the counties. The same maps were included in Brigadier Winterbotham's The National Plans published in 1934. Throughout they were entitled diagrams showing the meridians, the Ordnance Survey's usual practice being to describe a map as drawn on the meridian of so-and-so; but every point on a flat surface has to be fixed by two co-ordinates and it is their origin which is the definitive feature. Further, a plot of positions on a geographically true base-map, especially when produced by the OS, would hardly be regarded as a diagram.

However, most people will know that St Paul's is situated in the centre of London and not in the vicinity of Harrow in Middlesex, where it is marked on the England & Wales map; many will know that Leith Hill is as near the southern boundary of Surrey as it is depicted near the northern. Anyone familiar, if only as a map user, with the peaks which comprise the origins in the Scottish Highlands will realise that several of them are shown miles out of position; indeed Ben Cleugh placed in the middle of Perthshire actually lies in Clackmannanshire. A detailed check, inspired by these evident errors, on all thirty-eight origins suggests that they were thrown at the map from some way off, for their positions are virtually all in error by distance rising to 17 miles, the average error on the Scottish map being 5.6 miles and on the southern map 5.2 miles. A glance at the maps accompanying this article will show that the erroneous positions lie in all directions from their true positions, so that the meridians are as much in error as the origins themselves.

The red plates also carry firm lines enclosing the groups of combined counties, as do black ones on my maps, but in some editions of the OS booklet as well as 'The National Plans' West Lothian is incorrectly included with the counties drawn on The Buck instead of those on Lanark Church Spire. Several incorrect spellings of the names of the origins also persist through some or all editions of the maps. All these facts lead to the suggestion that these two maps must be among the OS's most inaccurate, and I find it surprising that such maps, produced for the information of map users and surveyors by the country's national cartographic authority, continued to be reprinted without major correction for so long. I find it equally surprising that Winterbotham, who one supposes was particularly familiar with the subject, should have included the maps in his Professional Paper without apparently realising the errors they contained, especially the incorrect assignment of West Lothian to the origin of The Buck.

For some reason the four south-western origins in England were not plotted on the maps in the first three editions of the OS booklet, being indicated solely by their names and meridians. In the original edition only, the remaining English and Welsh origins were marked by open circles, and Danbury Church Spire which (as will be explained in Part Four) lay outside the combined counties drawn on it, continued to be so marked throughout the life of the map. Otherwise, and on the Scottish map from the start, the origins were indicated by solid dots. There is no official list of the county origins and some of their names will be found in varying forms in OS internal documents and publications. I have examined as many of these sources as possible and drawn up a list of generally accepted forms as given on the page of abbreviations accompanying my two maps. It should be remembered that the names of the origins date from the early days of the Survey, and that the spellings adopted for them at that time remain unchanged in their roles as origins, notwithstanding any changes in their spellings as features. In addition to the definite spelling errors already mentioned, the maps in the OS booklet have some names differing in form from the approved norms, e.g. Brandon instead of Brandon Down.

The red plates were repprepared for the fourth (1930) edition and it was at this stage that the combined counties' boundary was diverted to the wrong (west) side of West Lothian; it was corrected to run east of this county in the fifth (1937) edition. The sixth (1939) edition contained a single newly-drawn map of Great Britain in black only, but it must be presumed that this was lost in the bombing as the first post-war edition of 1947 reverted to the old pair of two-colour maps and to the erroneous assignment of West Lothian! The latter was re-corrected in the final 1954 edition, which also for the first time correctly spelt Scour-na-Lapich (previously -Lopach) though it included the hyphens not generally used. For this last edition the title of the booklet was altered to A description of the Ordnance Survey Large Scale Plans.

Even the black base-maps (excluding the sixth edition) contained some strange features; the old county names of Carnarvon, Edinburgh, Elgin, Forfar, Haddington and Linlithgow appearing in the first edition were all altered to their modern forms in the fourth, but the M in Dumbarton was never corrected to N, and the older alternative spelling Argyle was used throughout although this spelling was not otherwise used by the OS as far as I can determine. These two counties were spelt correctly in the sixth edition. But the oddest feature of the base-maps was the remarkably idiosyncratic selection of towns; only one (Aberdeen) appeared on the Scotland map, and none appeared in thirty-six counties of the southern map, whereas, for example, Lincolnshire contained Grimsby and Grantham, and in the East Riding the village of Flamborough was marked together with Hull. In the post-war editions the positional circle at Flamborough was deleted, but although the name might have been regarded as applying to the promontory the word 'Head' was not added; in these editions too an intrusive 'o' appeared in Middlesboro'.

In 1975 a new publication appeared, Ordnance Survey Maps a descriptive manual by JB Harley, replacing the former three booklets on different scales. Unfortunately

it includes a single plate of Great Britain combining the material on the pair of maps in the former Large Scale booklet; the glaring errors in the positions of the origins and meridians (now on a blue plate) are all reproduced, as well as the peculiar selection of towns plus the name Flamborough, three spellings are corrected and the abbreviation for 'Island' altered, but Argyle and Dumbarton remain, and an additional error is introduced in the boundary of Peebles on the black but not on the blue. These matters can hardly be laid at Brian Harley's door, for the plate is clearly the result of an unthinking exercise by the drawing office in combining the two old maps, but it has to be regarded as a prime contender for the Ordnance Survey's Most Inaccurate Map Title.

I cannot forbear to add that, apart from a small displacement of Lanark, none of the catalogue of errors appears on the maps in a booklet issued by the Hydrographic Department for its surveyors and staff in 1946 (in which a young hydrographic officer named BW Adams had a considerable hand). On another page this booklet does contain incorrect co-ordinates for the sheet lines of Zetland 54 (Foula), but my research into the present series has confirmed that the erroneous figures were supplied from, and still remain in, the OS records at Southampton and Kew.

References

A description of the Ordnance Survey Large Scale Maps OSO Southampton undated (1920)

Second Edition	(1922)
Third	" (1926)
Fourth	" (1930)
Fifth	" (1937)
Sixth	" (1939)

A description of the Ordnance Survey Large Scale Maps OS Chessington unnumbered edition 1947

A description of the Ordnance Survey Large Scale Plans OS Chessington unnumbered edition 1954

The National Plans by Brigadier H St J.L. Winterbotham
Ordnance Survey Professional Papers New Series No 16 HMSO 1934

J.B. Harley OS Southampton 1975 Ordnance Survey Maps a descriptive manual

HD 364 Ordnance Survey Sheet Line Co-ordinate Data for Six Inch and 1:2,500 Sheets
Hydrographic Department of the Admiralty Restricted Issue 1946.

Illustrations

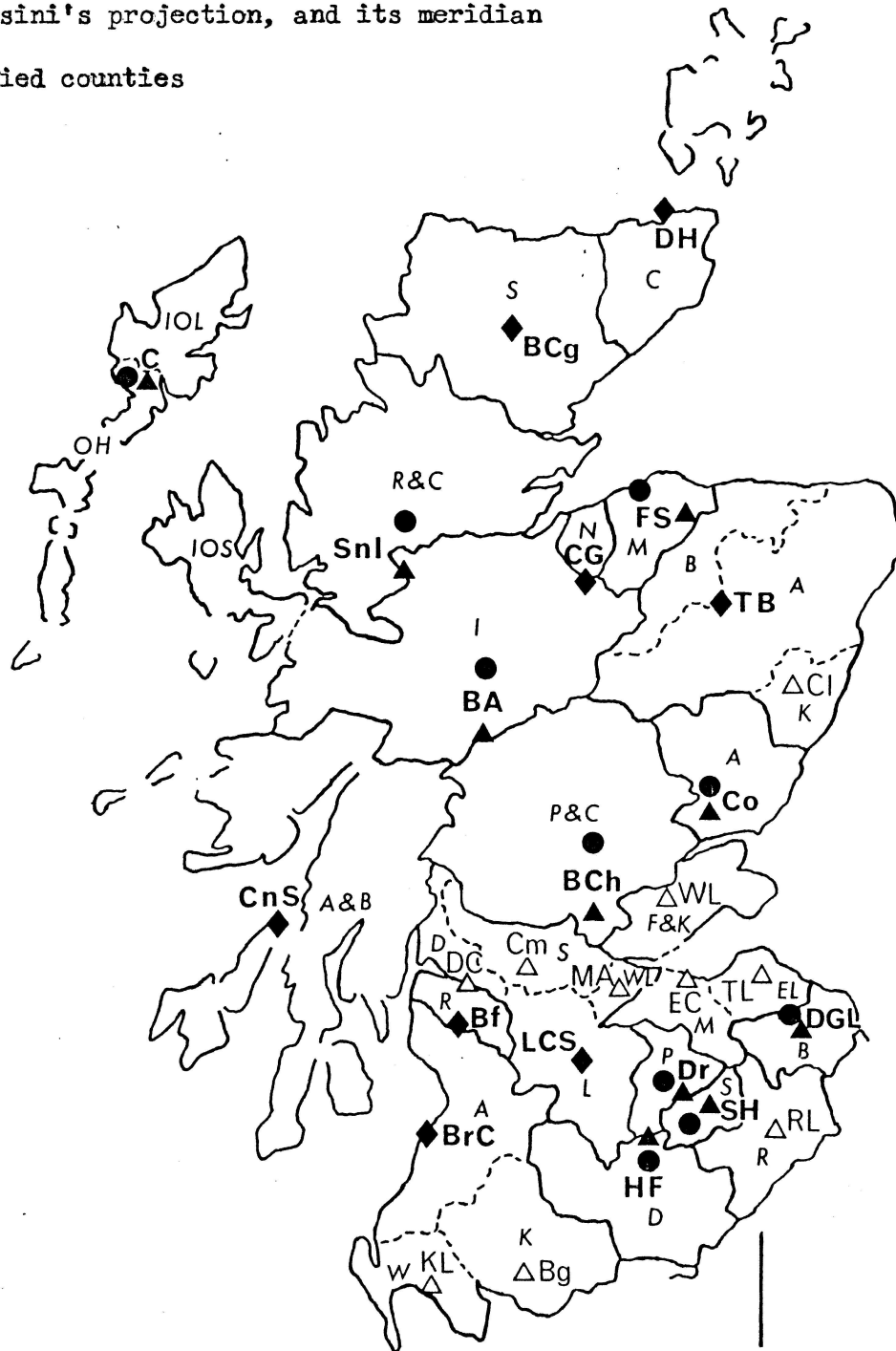
Map of County Origins, Scotland

Map of County Origins, England and Wales

List of County Origins.

COUNTY ORIGINS

- ▲ Actual position
- Position shown in OS publications
- ◆ Actual position, where the error in OS publications is 3 miles or less
- △ Superseded before 1920 (see Part Four)
- ▽ National origin for small scale maps on Cassini's projection, and its meridian
- A&B Unified counties



LCS is origin for R
 TB " " " EL, F&K and M

BA989

NOTE -



BA989

DCS is origin for C, H, N and S
(and was for E before 1920)

- Names and details of the origins are listed overleaf

Code	Name of Origin	Latest Form	Identification on 1:50,000	
			NG Ref.	m. Name at Point
BA	Ben Auler	Ben Alder	NN496719	1148
BCg	Ben Clibrig	Ben Klibreck	NC585299	961 Meall nan Con
BCh	Ben Cleugh	Ben Cleuch	NN903006	721
Bd	Blackdown	Black Down	SY613876	237 Hardy Monument
BD	Brandon Down		NZ208401	266
Bf	Broadfield		NS409592	236
Bg	Bengray		NX631598	366
Bl	Bleasdale (a)		SD591468	510 Fair Snape Fell
BrC	Brown Carrick	Brown Carrick Hill	NS284160	287
C	Cleisham	Clisham	NB155073	799
CG	Cairn Glasher	Carn Glas-choire	NH891292	659
Cl	Caerloch	Kerloch	NO697879	534
Cm	Corkmulaw	Cort-ma Law	NS651799	531
CnS	Cruach-na-Sleagh	Cruach na Seilcheig	NR684981	296
Co	Craigowl		NO377400	455 Craigowl Hill
CyB	Cyrn-y-Brain	Cyrn y Brain	SJ214496	562 (b)
DC	Dumbarton Castle		NS399745	
DCS	Danbury Church Spire		TL779051	
Del	Delamere		SJ543696	176 Pale Heights
DGL	Derrington Great Law	Dirrington Great Law	NT698549	398
DH	Dunnet Head		ND205765	127
Di	Ditchling		TQ332131	248 Ditchling Beacon
Dn	Dunnose		SZ568802	235 Shanklin Down
Dr	Dunrich	Dun Rig	NT254316	742
EC	Edinburgh Castle		NT252735	
F	Foula		HT948395	418 The Sneug
FH	Forest Hill	The Forest	NY528036	
FS	Findlay Seat	Findlay's Seat	NJ258549	338 Brown Muir
He	Hensbarrow	Hensbarrow Downs	SW997575	312
HF	Hart Fell		NT114136	808
Hg	Highgate		SR968999	
Ho	Hollingbourne		TQ859557	197
HP	High Pike		NY319350	658
KL	Knock of Luce		NX255558	175 Knock Fell
LCS	Lanark Church Spire		NS886436	(c)
LHT	Leith Hill Tower		TQ139432	294
LL	Llangeinor	Mynydd Llangeinwyr	SS913948	568 Werfa
MA	Mount Airy		NS989711	312
NCT	Nantwich Church Tower		SJ652523	
RL	Rubers Law		NT580156	424
RT	Rippon Tor (a)		SX747756	473
SB	South Berule	South Barrule	SC258759	483
SH	Sandhope Heights	Sundhope Height	NT342237	513
Si	Simonside (a)		NZ027985	429
Sn1	Scourna1apich	Sgurr na Lapaich	NH161351	1150
SP	St.Paul's Cathedral (d)		TQ321811	
TB	The Buck		NJ415224	Kebbuck Knowe
TL	Traprean Law	Traprain Law	NT582747	221
WL	West Lomond		NO197066	522
YM	York Minster		SE603522	

- (a) properly Bleasdale new, Rippon Tor new, Simonside new (names of trig. points)
 (b) adjacent to Sir Watkin's Tower
 (c) not on map; position of church is just within circle of railway station symbol
 (d) conventionally St. Paul's

No key is provided to the initials of counties; readers unfamiliar with the British counties prior to 1965 are referred to an appropriate map

MEETING AT SOUTHAMPTON, 14 OCTOBER 1989

a personal view by Richard Oliver

About 15 members of the Society visited the rearranged and improved exhibition area in the Ordnance Survey headquarters at Southampton. They were welcomed by John Leonard (Director of Marketing, Planning and Development), who remarked that OS was probably the only Government department with its own fan club! (Perhaps he has not seen the letters which some of us write to his colleagues in the Information Branch!). Before proceeding to the main business of the day, the result of the CCS logo competition was announced. The winner, Bill Batchelor, is to receive Volumes 7 and 8 of the Harry Margary facsimile, when published! He was accompanied by Mrs Batchelor and their son, Gareth, who was presented with a badge.

The OS exhibition area: the historical section

The exhibition area divides into historical and modern sections. Some of the exhibits were on display when the Society last visited the HQ buildings in October 1982, but there are some more recent additions. There are a number of surveying instruments, including a unique collection of theodolites, and standard bars, from the bar-room at the old HQ at London Road, Southampton, (a room for storing measuring-bars and nothing to do with 'P.H.' or 'B.H.'.) There are also a litho stone and two copper plates, some original drawings for the 1-inch 7th Series, specimens of scribing, and a number of smaller exhibits, including a box of 'Songster' steel gramophone needles used in the early days of scribing in the 1950s, before more conventional gravers became general. The 'hall of fame' of portraits of all the Superintendents and Directors-General, (save for poor Colonel Williams), is back in place, in a much better light, and there are now also a number of very interesting photographs of survey work, including one of open-air photography circa 1856. I very much hope that one day these photographs will be published in book form.

The one-inch map in particular is well illustrated, by very fine quality photographic reproductions, but though splendid in execution this exhibit is faulty in concept. The area chosen is Stockton and Middlesborough, so that the Old Series map of 1861 and the New Series map (dated 1888), are in fact the same 1850s survey, the one in hachured, the other in contoured guise. The Fifth Relief, which most of us regard as the high point of post-copperplate OS cartography, is unrepresented, though we do have the Popular both in its original and in its Second War Revision guise. For a third, the word 'Series' is used throughout. This writer's views on the cavalier use of 'Edition' and 'Series', on respecting what is actually written on a map, and on such abominations as 'Fourth Series ('Popular Edition')', will be familiar to many. There is a yet more fundamental error, in throwing so much weight onto the one-inch in the first place. While for 95 per cent of the public the OS begins and ends with the 1-inch and 1:50,000, disguising the fact that more like 95 per cent of OS work is on the larger scales has done enormous harm to the OS over many years: from the proceedings of the Elcho Committee in 1851, which recommended against the six-inch, through the post-1918 reductions, to the pursuit of 'full cost recovery' today.

The OS exhibition area: the contemporary exhibits

These cover much more floor-space than the historical section. They include specimens of all the main series and scales currently in production, with the result once again that the small-scales get more than their fair crack of the whip. Against this, the display of original scribed artwork, demonstrating how colours are built up for 4-colour process printing, and how the 1:25,000 is produced from 1:10,000 fair drawing, can hardly be faulted.

The main interest today, however, was Research and Development, which inevitably means digital cartography. The Society was given a talk by Duncan Shiell on recent developments at Edinburgh in November 1988, but digital cartography is so fast-moving that there was little overlap between it and that by Graeme Smith. Digitising the basic scale 'archive' began in 1971, (when about half the 1:2500 National Grid plans remained to be resurveyed or revised), and has been gathering pace ever since. About 80 per cent of the 1:1250 urban plans are now digitised, with completion scheduled for 1991, and about 15 per cent of the 1:2500 rural plans, to be completed by 1995. As yet only a few basic-scale 1:10,000 sheets have been digitised, and there is no completion date scheduled for them; the programme is dictated by user needs. Digital data users want towns rather than moors. Digitised data is now being structured so as to facilitate coloured graphics; by forming 'polygons' it is possible to produce coloured maps, with e.g. pink buildings, blue water, and so on, both on a VDU, and as hard copy from an electrostatic printer, which by using the four process colours (black, magenta, cyan and yellow) is capable of 500 shades. The 'map' can be produced in any colour or scale, and the tyranny of arbitrary sheetlines is overcome by the ability to combine sheets. All this is much closer to what customers want.

Experimental specimens of such work, called Super-Plan, were to be seen at the Edinburgh meeting, but now Super-Plan is on sale to the public in three trial areas, being launched at the HMSO shop in Birmingham early in October, with Milton Keynes following in November and Manchester in December. The trial is intended to run for 9 to 12 months. Super-Plan comes in four formats: Line-Plot site-plan, with no colour-fill, and vegetation merely described; 'Budget', infilled with stipple and hatching; 'Budget colour', with vegetation described; and 'Standard colour', which differs in that it has vegetation coloured. All of these take about five minutes per sheet to print out. Mr Smith said that the end-result wasn't claimed to be elegant, but then it wasn't intended to be; in this, I feel he was being too modest. These digitised 1:1250 and 1:2500 plans are no whit inferior to their 19th century hand-coloured ancestors, assuming you aren't fussy about serifs. Mr Smith rather disproved his claim, and proved mine, by handing round a handsome sheet covering Easton Grey, the seat of Lord Hesketh, the minister currently responsible for the OS, which was produced for his visit on 10 March 1989, and decorated with his Lordship's arms. Apparently production was facilitated by there just happening to be a survey aircraft flying past at the time.

Although strictly outside OS's normal functions, Mr Smith demonstrated how a digitised map could be tied up to a Geographical Information System (GIS), showing, in this case, land-ownership and planning controls, and how information could very readily be extracted, for example all parcels of unwooded land over 1 hectare, and how many of those parcels had outline planning permission, how many had road access, who owned what, and how many of the owners were willing to sell. The information is as up-to-date as when the surveyor left the ground, which may be less than 24 hours ago, giving the prospect of continuous updating. (In theory; but surely in practice this will be controlled by the minimum number of 'house units' regarded as an economical day's work.)

Mr Smith thought that the growth of the database would be financially beneficial to OS, as the greater possibilities and flexibility would attract more customers, and take the large scales nearer 'full cost recovery'; at present, 45 per cent of large scales costs still come from the Treasury.

Mr Smith then moved on to the 1:625,000 database, first put together in 1984, and since used for the 'Routeplanner'. The database has been sold to several private software firms, who have removed much of the data in order that the rest can be fitted onto floppy disks for use with personal computers. Mr Smith demonstrated how the database can be used to plan routes, whether by motorways or by slower roads, or how to avoid certain notorious sections of road, and so on. Using this

database, and road centre-line information obtained from the large scales, Bosch have developed an in-car system which costs about £1,500. We were treated to a demonstration video, which showed how a doctor in NW 8 could find an otherwise elusive accident. (Several members of the audience thought that, though approved by the Department of Transport, the system was more likely to cause an accident.) Mr Smith pointed out that if the database was used to its maximum potential for route-finding it could theoretically reduce the need for new road construction by enabling better use to be made of existing, more lightly used, roads.

"Armed with pens": Cartography in the Territorial Army

We now had a complete change, in the form of a talk by Roy Baker on experiences in the Territorial Army (TA). Mr Baker first joined the OS in 1936. In 1939 he was called up in the militia, whence he went successively to Royal Engineer survey, Survey Training Centre, air survey in India, the Survey of India, and by 1945 was in Ceylon. He rejoined OS in 1946, was seconded to the Directorate of Military Survey in 1950-52, and retired in October 1979. He thanked goodness that he did his work when you could get some satisfaction from the job, and see something approaching the end product.

In 1949 it was decided to form a Territorial Royal Engineer Survey Unit. 135 Survey Engineer Regiment, formed in October 1949, comprised three squadrons, 337 (topography), based in London, 338 (cartography), based in Southampton, and 339 (Printing), also based in London. Each squadron comprised 100 to 120 men, about 350 all told in the regiment. The regiment was formed as a receptacle for ex-National Servicemen doing their three year stint in the TA. A lot of its members were OS employees; indeed, 338 Squadron was based in the OS compound, so many men merely walked from one building to another in the evening! Mr Baker was invited to join, and did so.

The Squadron had a nucleus of wartime NCOs; otherwise, recruiting was not easy, though ex-National Servicemen provided a 'captive audience'. The first camp was at the School of Military Survey, Newbury, in 1951. There were considerable problems in running the squadron: you would timetable work, but parades being voluntary, men didn't necessarily turn up. (The minimum obligation was about 12 parades and one camp per year). Parades were from 7 to 9 pm on Tuesday evening, and what with roll-calls and other chores, there was at most only 90 minutes for practical work. Worse still, many of the men had been drawing maps all day for their living, and were not very keen on doing more of the same after hours. It was necessary to try something different, so air survey work was tried. OS draughtsmen had to pass both written and drawing examinations in order to gain promotion, so this was used as a point of interest; additionally, large-scales draughtsmen were got to take an interest in small scales work and vice-versa. It was also necessary to give them military training. Air survey was probably the most (successful) of these, with 'some small measure of success' achieved. In 1957 the Squadron acquired a Multiplex set for air survey work; unfortunately only one man could operate it at once, so it took two months to do the equivalent of a day's work. At annual camp it was possible to do a small amount of cartography, but again time had to be spent on military training. Incidentally, TA work was paid for, as was annual camp, the bounty in the 1950s being around £80. One source of potential recruits, particularly after National Service was abolished, was new entrants to the OS: one such TA recruit of Mr Baker's was John Paddy Browne, who neatly reversed things by recruiting Mr Baker to address this meeting.

In the late 1950s two things happened which gave the Squadron a higher public profile. Mr Baker realised that there was some value in publicity, and he turned to advantage his wartime acquaintance with another OS man, Geoff Bowles, who was also a keen journalist. Mr Bowles did a number of write-ups on the Squadron's activities, such as local exhibitions and camps, for the local press, and this no

doubt encouraged further ventures. In 1958 the Squadron acquired a print-train, consisting of lorries carrying camera, helio and printing equipment; it was now possible both to draw and to watch the finished product coming off the presses. How could the Squadron use this?

About this time the M1 was nearing completion: could the Squadron perhaps map it? It was worth a try. In the event they did a 30-mile stretch one weekend, using compass survey, scribing using double-scribers, and reproduction using the print-trains: 'pretty ambitious for a weekend!' As they could not enter on the motorway proper, survey was by compass bearings taken from bridges. The information was rushed back, plotted at 1:25,000, scribed, and printed during the night in red on grey outline proofs of standard OS 1:25,000 sheets. Their base was a group of poorly-lit TA huts; and if there is one thing requisite for drawing, it is good light. After representations by Mr Baker, two sergeants improvised something better, at the expense of a murderous-looking jungle of cables snaking everywhere.

It was a cartographic feat, but it was also one of publicity: they even made it into the Daily Telegraph, which generated a considerable correspondence. As a gimmick the Squadron sent a set to Ernest Marples, then Minister of Transport, who sent a holograph letter in reply. A feature in the Southampton Echo of 23 May 1960 was very useful in recruiting, and gave the men pride in the job.

The next 'trick' was to survey one of the Cheddar caves, in the form of a traverse plus a series of levels. The work was done early in the morning, before the public was about, and one of the hazards was disturbing a colony of bats. Once again, this gave the men interest in the job and once again there were very good write-ups. Later in the same year, 1961, the Squadron went to Herm, in the Channel Islands, to map the island; the owner was an ex-Royal Engineer, and thus sympathetic. As a new gimmick, they microfilmed the map, and sent it back by carrier pigeon, to be printed in Southampton; 'not bad for a weekend's job', though in fact a microfilm had been prepared before their departure, as a precaution! More good write-ups followed, including 'Armed with pens they invade an island'.

Mr Baker retired from the TA in 1962, but the work went on: for example, in 1966 the Severn Bridge was mapped, and an account of the work is to be found in Major N.H.S. Smith, 'Exercise "Overcast"', Cartographic Journal, vol 3, no 2 (1966), 59. This was altogether a most lively and interesting talk, excellently illustrated by specimens of the maps and newspaper cuttings.

Jubilation; A 'new' New Popular

After Mr Baker had finished his talk, there was some time left to look at a number of curiosities assembled by John Paddy Browne, and not normally on public display. These included the 'Jubilee Book' of 1887, put together for Queen Victoria's Golden Jubilee, and including a number of interesting illustrations of OS work, as well as specimen maps; specimens of one-inch engraving, produced in 1921, and of drawing at 2-inch on a blue key for heliozincography, produced in 1922, both by F. Leslie Smith, an engraver who retrained as a draughtsman at this time; and the only piece of manuscript to survive the bombing of the Jubilee Block at Southampton on 30 November 1940, drawing 131/5 for the New Popular Edition. The drawing covers the area around Redditch and Alcester, between 400 and 415 km E & 257 and 270 km N on the National Grid. The SE part is incomplete, and shows faint traces of blue transfer from 6-inch. The drawing was never used for a published map. It is a most important survival, and my only regret is that it came to notice just too late to be mentioned in my booklet on the New Popular Edition. Also on display were specimens of the recently-published maps of Georgian and Roman Bath, the new 1:50,000 of Hadrian's Wall, and of some of the (then as yet unissued) overseas tourist maps, produced by OS from Overseas Survey Directorate material.

THE NINTH EDINBURGH THREE DAY EVENT 9 - 11 NOVEMBER 1989

Once again a strong force of loyal map enthusiasts of many persuasions converged on Edinburgh for that other festival the city hosts when the tourist flocks have flown. They saw a city bathed in autumn sunshine. (Rain only fell when the programme decreed that they be snug within the National Library's new Causewayside Building.)

The opening lecture by Neil Stuart of Edinburgh University's Department of Geography "Cartography and GIS: Incompatible or Inseparable?" set the scene for the following morning's demonstrations in the University Library and at John Bartholomew & Co Ltd. These demonstrations left participants in no doubt that the answer to Neil Stuart's question must now be "inseparable"! At the Library Barbara Morris showed us the most recent developments with Cartonet while a range of related computer based systems for indexing and analysing geographical data were demonstrated by others while for the less technically inclined Ann Sutherland had lain out a representative spectrum of the Library's map holdings.

The visit to Bartholomews was directed to the firm's progress in developing a geographical information system which will integrate both graphic and non graphic data (for example both the basic mapping and the lists of places, with attributes such as population or administrative status from which an atlas and its accompanying gazeteer can be constructed). Alex Elder, Bartholomews data base manager, described the development of automated cartography within the firm to the point where it was no longer possible for map users to distinguish between maps made by it or by more traditional means. Parallel with the GIS a management information system was also being developed. This had required a very thorough analysis of how the firm functioned. For the GIS all features were being classified in great detail, indicating at what map scales they would be required. The visitors were left in no doubt as to the substantial financial investment implied, one which the firm's present owners would clearly expect to see matched by lower unit costs and expanded sales. We must hope that this revolution will not sweep away all those characteristics which have distinguished Bartholomew maps for so many years.

When we re-assembled in the National Library it was to hear John McDowall, Head of Survey and Minerals, Scottish Group, British Coal, describe the programme for rationalising their records of past and present coal workings. Despite the contraction of mining in Scotland (and elsewhere) British Coal is committed to maintain records of all known coal workings in the country. Slides showing the drastic consequences of subsidence left no doubt as to the importance of this task, there being something like 100,000 abandoned shafts in U.K. of which 16,000 are known to exist in Scotland. Major difficulties are that while there has been a legal requirement since 1872 for plans of all abandoned workings to be deposited, until quite recently these were not drawn at uniform scales while many of the most hazardous abandoned workings date from long before the law demanded the keeping of proper records. Mr. McDowell's team have made extensive use of earlier plans now deposited in National Library or the Scottish Record Office, some of the former being on display. It was decided to maintain the master record as overlays to the County Series 1:2500 plans - in part because British Coal had a complete set of these for the coalfields but also because they often depict surface features that appeared on older mine plans that are now absent from the current National Grid Series (OS computed NG sheet corner co-ordinates for all relevant County Series plans).

Later that evening a reception was held to launch Dr Jeffrey Stone's book "The Pont Manuscript Maps of Scotland Sixteenth Century Origins of a Blaeu Atlas" published by Map Collector Publications. The one ominous note was the revelation that Margaret Wilkes had vowed not to retire from National Library before reproductions of these maps were in print. We must hope, now that they are, she will not feel moved to hang up, whatever map librarians do hang up when they relinquish their task. Finally the evening was rounded off with an excellent buffet supper arranged by Margaret, Diana Webster and Ann Sutherland.

The last event in the Edinburgh programme was the CCS visit to the British Geological Survey's Scottish Headquarters where we were welcomed by Bob McIntosh (lately moved from British Library). Bob gave us an outline of the history of the Survey and the growth of its Edinburgh Library, from its acquisition of the books of the second Director, Sir Roderick Murchison. The library today houses an incomparable collection of records of Scottish geology and Scottish geologists (including the records of the latter's "Grizzley Bears" dining club from which their Director was excluded lest he spoil the fun). When the appalling conditions under which these men worked are considered (longevity was an exception) the standard of work on their "Six Inch" "field slips" is astounding. Bob took us on a guided tour of the building, which was all too short a time to take in more than a fraction of the splendid displays explaining recent BGS activities, both on land and offshore.

Our visit to BGS and to Edinburgh ended all too soon. Did we overhear Margaret and our Honorary Secretary plotting to offer us as yet unrevealed delights in 1990? We look forward to hearing more.

DO WE NEED A NATIONAL ATLAS?

Joint Meeting of The Royal Geographical Society, Royal Institute of Navigation, Society for Nautical Research, British Cartographic Society and Charles Close Society, 29 November 1989.

A year and a half ago CCS members had the opportunity to hear from Professor Eila M.J. Campbell how the national atlas project was developed under the guiding hand of the late Professor Eva G.R. Taylor from a set of maps prepared for the Barlow Commission on the location of industry (Report in Sheetlines 21/16). In his E.G.R. Taylor lecture, delivered at The Royal Geographical Society, Chris Board expanded on this theme offering the results of his recent researches, in particular in the relevant Ordnance Survey files held at PRO, (OS documentation of the project seems to have been much more complete than that of other interested organizations). With help from the then DGOS, Maj. Gen. MacLeod, and others, Professor Taylor prepared an ambitious scheme which was submitted to the British Association in September 1939 but on the outbreak of the Second World War all this had to be placed in cold storage. However with the recognition of the need for postwar planning came, a little more slowly, recognition that such planning required maps, not only of topography, geology and land utilization but of a wide range of other physical, economic and social phenomena. From this came the splendid series of "Ten Mile" or rather (after a meeting in September 1941 of the Advisory Maps Committee of the Ministry of Works and Planning) 1:625,000, maps. Chris considered how far these, and the related "Desk Atlas" came to constitute a "de facto" British National Atlas. He went on to discuss how a present day successor might be constituted.

The discussion that followed included a very valuable contribution from Dr E. Christie Willatts, who was present at that meeting in September 1941 and brought alive the events and personalities of that time. We must hope to see the early publication of this major contribution to recent British cartographic history in the pages of the Geographical Journal.

Reference

Plans for A National Atlas. Discussion opened by Professor E.G.R. Taylor, Geographical Journal 95 (1940) 96-108 includes written contribution by Major General M.N. MacLeod proposing publication by O.S.

EXHIBITION

Togail Tir : Marking Time

Stornaway, 3 October to 4 November 1989.

This remarkable exhibition of the evolution of the mapping of the Outer Hebrides from the re-discovery of Ptolemy in the Fifteenth Century to the present day (represented by a "Landsat" Thematic Mapper image) was recently held at the An Lanntair Gallery in Stornaway. It was inspired by Finlay Macleod, who lent many of the exhibits and edited the accompanying book of the same name. He was ably supported in both enterprises by Margaret Wilkes and her colleagues from The National Library of Scotland. The exhibits displayed the development of geographical knowledge of the islands by outsiders (few, if any, islanders were involved in mapping activities other than as sources of local information) over the centuries. The exhibition then proceeded to consider some aspects of the relationship between maps and art.

For this reviewer the two most notable revelations were a reproduction of the manuscript map of Scotland produced by Lawrence Nowell (an Englishman!) in 1565, who evidently had access to much better Scottish sources than his contemporary Mercator and the very detailed estate maps which were produced of most of the Western Isles around about 1800-20, thereby pre-dating the drastic reorganization of the cultural landscape, the outcome of which was to be recorded later in the century by the Ordnance Survey.

In place of a conventional exhibition catalogue, Finlay Macleod has assembled a liberally illustrated book which surveys the whole field containing a general review in Gaelic supported by a number of more specialised studies in English (fortunately for most Sheetlines readers all captions to illustrations are in the latter language). These studies include Jeffrey Stone on Timothy Pont, Diana Webster on Murdoch Mackenzie, and on surveying techniques, and James Caird on the early 19th Century estate plans. Of particular interest to Charles Close Society members will be Michael Robson's chapter "The Living Voice" in which he considers the problems experienced by the Ordnance Survey surveyors and their colleagues from the Hydrographic Department in rendering Gaelic place names into written form. Then, as more recently, the key issue was whether the names on the maps should be correctly spelled in relation to Gaelic usage or whether they should be given in a form which would enable a monoglot English speaker to pronounce them in a manner which might be recognisable to one of the inhabitants. The reviewer was reminded of analogies between OS experience in the Western Isles and more recent problems experienced in the "Third World", for example in Fiji where the same island name may appear on the map as Beqa or as Mbengga.

A great many of the exhibits are illustrated in Finlay Macleod's book. Apart from a few finely engraved originals subjected to an excessive reduction in scale (eg an OS 1:2500 sheet) the quality of the plates is remarkable for the price. Nevertheless a book can never be a complete substitute for the original exhibition which was moving to Benbecula for November/December. It is hoped that arrangements can be made for it to be shown in Edinburgh next summer and for it to be displayed at the Pearce Institute in Govan, Glasgow, during October 1990.

Reference

Finlay Macleod (Editor), Togail Tir, Marking Time, The map of the Western Isles, pp 1 to 160. Many illustrations (colour and monochrome, Stornaway, Acair Ltd and An Lanntair Gallery, 1989. £10.95. ISBN 0 86152 842 5.

PUBLICATIONS"Phoenix Maps" Reproductions of Irish Ordnance Survey Maps

Mike Miller has drawn our attention to this new venture. Phoenix Maps of Dublin are offering reduced scale reproductions of Nineteenth, or early Twentieth, Century OS plans of many Irish towns including Dublin (1:10,560 reduced to 1:12,000), Athlone, Belfast, Cork, Drogheda, Dundalk, Galway, Kilkenny, Limerick, Waterford and Wexford (all 1:2500 reduced to 1:4,300) among others. Mike tells us that this venture was launched in Trinity College, Dublin, by Dr Anngret Simms, President of the Geographical Society of Ireland in July. The maps are printed on good quality paper at the Ordnance Survey in Phoenix Park. More details, including a catalogue, can be obtained from:

Phoenix Maps,
26 Ashington Avenue,
Navan Road,
Dublin 7, Ireland.

World Maps

Ordnance Survey launched its new series of World Maps on 24 October. The series aims to provide visitors to various distant holiday destinations with authoritative and attractive maps at appropriate scales. The first maps in the series, all produced using the archive which came to Southampton when the Directorate of Overseas Surveys was merged with OS in 1984, were Ambergris Cay (Belize) Cayman Islands, Mahe, Praslin (both in Seychelles), Kilimanjaro (Tanzania) and Mount Kenya.

FUTURE MEETINGS

Saturday London. 11.00 am to 3.00 pm. British Library.
17 March On the Large Scale Series. Luncheon will be taken within BL/BM.
Numbers must be limited to 15 so would those wishing to participate please notify the Honorary Secretary.

Saturday Annual General Meeting. 11.00 am.
12 May Geography Department, Birkbeck College, 7-15 Gresse Street, London W.1.
Full details are being circulated to members separately.

THE CHARLES CLOSE SOCIETY for the study of Ordnance Survey maps is open to all at an annual subscription of £5.00 (UK) for individual members, or £7.50 for family, corporate or overseas members, which falls due for renewal on 1 March of each year. Remittance, in Sterling please, to the Membership Assistant (see page 2 of this issue for address).

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