Sheetlines

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

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

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

The Society publishes a wide range of books and booklets on historic OS map series and its journal, Sheetlines, is recognised internationally for its specialist articles on Ordnance Survey-related topics.
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Sheetlines 65

December 2002

Annual General Meeting, 2003

The 2003 AGM will be held at Edinburgh University on Saturday, 10 May, business commencing at noon. It is hoped that this will take place as part of a Three Day Event organized by the British Cartographic Society and its Map Curators Group, starting on the Thursday evening, with BCS events open to CCS members and vice-versa.

Similar events were held in 1993 and 1998 and members found them stimulating and enjoyable. The 1993 event in particular will long be remembered and not only for the penetrating qualities of Scottish rain. More details will be provided in the next issue of Sheetlines with a partial programme, as soon as it becomes available, posted on the website.

Forthcoming visits

Our programme for 2003 is shown below. As usual there will be a nominal charge per person per meeting of £1 to £2, as it is not considered fair to make administrative charges for these visits to the membership at large. Members are registered for visits on a ‘first come’ basis. If you would like to register for any visit, please contact Gerry Jarvis, Rulow House, Buxton Old Road, Macclesfield, Cheshire, SK11 0AG, 01625 611594, visits@charlesclosesociety.org.uk.

Where arrangements are already complete, full details are given; otherwise the preferred month for the visit is shown. Full details for these visits will appear in the next edition of Sheetlines. But if you have access to the Internet, please note that these details are posted on our Web site, www.charlesclosesociety.org.uk, as soon as they are available.

Whilst I am very happy to organise these visits, which inevitably reflect my own interests, I am very conscious that I may not be catering for the needs of other members. I would therefore welcome help from members for the 2004 season to suggest and organise a particular visit or meeting, or to organise an already identified visit. I would be happy to offer any help you might need.

I received a few complaints this autumn with regard to the cancelled visit to Alan Bowring in Chester, now rearranged for February 2003. Unfortunately, with Sheetlines appearing on three occasions only each year, if we are to provide a full programme of visits, it is inevitable that there will be occasions where visits dates do not ideally coincide with Sheetlines production dates. But I would reiterate that we do post information on our Web site as soon as it is available.

Gerry Jarvis
Chairman, Meetings Sub-Committee

1 see Sheetlines 37.
2 … and sole member! – CJH
Visit to Cheshire County Council, Chester 25 February 2003

Alan Bowring, who is one of our members, and his colleagues work at the Cheshire County Council Rights of Way Unit at Goldsmith House, Chester, and we shall have an opportunity to see the work undertaken there. We shall meet at 1000 for 1030, and aim to finish by 1600, although it will be possible for anyone travelling a long distance to get away earlier.

In the morning we shall look at the definitive maps of public rights of way for Cheshire, and examine the processes which led to its publication in the 1970s. Then an opportunity to look at how changes are made, and the process of evidence gathering to achieve this, which includes tithe and estate maps: also the powers of councils to create, divert and extinguish public paths.

After a break for lunch they will demonstrate the use of Arcview GIS to record and manipulate rights of way and countryside access information, and to produce digitised versions of the definitive map. They will also cover several aspects of the Countryside and Rights of Way Act, and its relevance to the earlier maps produced from NPACA 1949: and the forthcoming ‘Discovering Lost Ways’ project, which Alan wrote up in Sheetlines 64.

Hydrographic Office, Taunton, 4 March

The visit postponed from this year, and a repeat of a visit last undertaken in 1995, when we were given an excellent tour of their facilities. There will be a maximum of 10 visitors for this meeting, and a buffet lunch will be provided at a cost of £5.50 per person.

One of our members is a registered tourist guide for the South West, now retired; and he has offered to show members around Taunton either the day before or after the meeting, and to arrange accommodation. Contact Roger Eckersley on 01823 331010 if you would like to take advantage of this offer.

National Trust Library at Belton, near Grantham, Lincolnshire May

An opportunity for a private viewing of this library and its books and maps. Lord Brownlow was a subscriber to the Old Series one-inch, and we shall have an opportunity to see what is almost a complete set.

The first Earl was a great traveller as a young man, and they have an interesting collection of other maps, albeit not Ordnance Survey, which we shall also be able to see. This will be a morning visit, and after lunch there will be an opportunity to view the rest of the house.

AGM in Edinburgh – see above 10 May

John Samuels Archaeological Consultancy, Normanton, near Newark (SK 791688) 7 June

Ken Hollamby is a CCS member, and with fellow member Dan Slatcher will show us around this company. JSAC are consultants whose speciality is archaeology and the planning system. In the morning Ken and Dan will describe how they use all types of maps in their business. After lunch at the pub opposite their offices (cost approx. £5) they will take an example of a project and work through it in detail.
A visit to view our archives at Cambridge University  
July or August

Royal Commission on Ancient and Historic Monuments in Wales and National Library of Wales Map Library, Aberystwyth  
19 September

A morning visit in Aberystwyth to view a rich vein of very unusual, unpublished maps in the collection of the Royal Commission and, as a bonus, an afternoon visit to The National Map Library.

This will result in a very full day on the Friday, and with the location, we thought we could make this a long weekend visit. You will also need to consider possibly getting there on the Thursday. Our current intention is to use university accommodation on the Thursday and Friday evenings and possibly Saturday.

We have yet to finalise any plans for the Saturday, but there is the narrow gauge railway to Devils Bridge as an option.

Visit to Ordnance Survey, Southampton  
9 October

With all the changes taking place in the OS map world, I am sure that Southampton will have something new to show us, and if you have yet to visit, we always get very special treatment.

Other visits

We have several other visits in the planning stage, some of which may need to be deferred until 2004. They include a visit to Ireland: a visit to the railway records at Swindon, combined with a talk from one of our members and his colleague, who are building up a railway record of the British Isles; and several repeat visits where we have a return invitation; including Keyworth, Alan Godfrey, the London Transport Museum, and the Railway Records at Waterloo.

Midlands Group meetings

The informal Midlands Group will meet at 19:30 on Thursdays, 9 January, 15 May and 11 September 2003, at Voluntary Services Centre, Union Street Car Park, Union Street, Burton upon Trent, Staffordshire (SK 246229). Roger Hellyer will talk on the 1:25,000 First Series at the January meeting. More information from Lez Watson, 54 King Street, Burton upon Trent, DE14 3AF, Lez4Lynne@aol.com, tel: (01283) 541303.

Academic misassociation

Sheetlines 64 should, of course, have congratulated David Rhind on his Honorary Fellowship of the British Academy, and Roger Kain on being elected Treasurer of the same body. The Editor apologises to all concerned for the very embarrassing lapse of concentration that caused him to transfer these appointments to the British Association!
**Brian Dobbie**

Brian Dobbie died on 10 August following a second serious stroke. He joined the Society nine years ago and was a regular and enthusiastic contributor to *Sheetlines* on a wide variety of subjects – often making use of his great knowledge of railway history. As well as attending our Midlands Group meetings, Brian was for many years treasurer of the East Midlands Group of the Railway and Canal Historical Society.

Our sympathies go to his wife, Ann, and their two sons.

**Michael Bell**

We were very sorry to hear from Pauline Bell that Michael died of a brain tumour in the early hours of Friday, 8 November. Gerry Jarvis adds this tribute:

> For a number of years until his terminal illness I would see Michael most months, when I visited the Buxton Book Fair, often in the company of David Parsons. He was a regular stallholder, and by far the best map dealer there, always with a good selection of quality maps. I usually made him my first port of call, although always a few yards behind David!

> A man of few words, often because his stall was always popular, we normally managed a brief chat, often about the latest *Sheetlines*. He had given up his stall some months ago, with the onset of his illness, and I know that I was not the only visitor who now found a major gap in the range of maps available.

> We shall miss him.

**OS: no goplc, many go, and an ‘Indian takeaway’**

In *Sheetlines 63* we reported that the minister then responsible for the Ordnance Survey, Sally Keeble, was minded to see the Survey become a government-owned public limited company, or goplc. Following completion of the Quinquennial Review, there has been a change of minister and a change of mind. In a written answer in July, the new minister, Tom McNulty, said, “I am now of the opinion that there is no clear evidence to support the view that Ordnance Survey would benefit from a change of status to a government-owned plc. I am satisfied that sustaining Ordnance Survey as a Trading Fund with some extended freedoms will enable it to continue to develop – and continue to progress its impressive programme of cultural change – to the benefit of all who use its geographic data.”

A consequence of the cultural change became evident at the end of October with the announcement that a further 300 jobs were to go at the Southampton headquarters, about one in five of the total. The *Southern Daily Echo* maintains a comprehensive website at www.thisishampshire.net with a useful archive of back issues. On 29 October it reported Vanessa Lawrence as saying “The planned reductions are a recognition that technological change means that we can enhance quality and improve customer service with fewer staff. Technological and business change are also providing opportunities for other significant shifts in the cost structure of the business.”
The following day, the *Echo’s* website continued the story, reporting that ‘bosses of the historic government offshoot, founded in 1791, are wrestling with a technological age where the world is smaller and competition growing fiercer by the day’. An OS spokesman said, “Our staffing levels have more than halved in thirty years but we now produce more than ever before”.

The *Echo* went on to note OS hopes that the job losses could be met through voluntary redundancies with an attractive package offered to those ‘whose skills are out of date or not needed in the digital age’.

On 19 September a Danish consultancy, Kampsax, announced from Copenhagen a five-year contract worth over €35M to supply Ordnance Survey with an updated digital map covering a large part of Great Britain. The company’s website at www.kampsax.com records that the order ‘includes the aerial photography of Great Britain. Kampsax has extensive experience with aerial photography and digital mapping, and own their own aircraft, cameras and production facilities. The production of digital maps based on aerial photographs will fall on Kampsax’s Indian subsidiary in New Delhi. … Kampsax will continually, and with short production deadlines, supply the digital data that underpins Great Britain’s mapping, including the topographic layer of Ordnance Survey’s *Mastermap* product’.

This looks to be another example of the current trend to outsource major IT projects to the well qualified, but much cheaper, Indian labour market. The story broke in the *Southern Daily Echo* on 31 October under the headline ‘An Indian Takeaway’. The paper quoted an unnamed insider: “Not only is Ordnance Survey management deciding to reduce staff but most of its cartographic work is now going to India. In time, probably within two years, there will be no cartographic work carried out at Ordnance Survey headquarters.”

One hopes that this is an over-reaction. Obviously OS is caught in a quandary between loyalty to its existing staff and the constant pressure to reduce costs. Does the Kampsax press release oversell the company’s involvement? Would any of their work normally have been done at Southampton?

The *Echo* quotes OS spokesman Scott Sinclair as saying that there was no connection between the contract with Kampsax and the voluntary redundancy. “They are third party suppliers who provide us with mapping services. This is nothing new. … We let contracts to third party suppliers when our existing workforce is fully utilised.”

Richard Evans has provided a cutting from the November issue of *Prospect Profile*, the newsletter of the trade union representing over 1200 cartographic and specialist staff at Ordnance Survey. Prospect reports an undertaking that there will be no compulsory redundancies and is demanding assurances that there is no connection between the restructuring at Southampton and the Kampsax contract.

Finally, we note two further redundancies. An OS news release on 29 August announced OSTN02, an improved transformation between GPS co-ordinates and familiar National Grid co-ordinates, correct to within ten centimetres. A new geoid model, OSGM02, also allows conversion between GPS height co-ordinates and heights based on ODN, sea level at Newlyn. OSGM02 height conversions are accurate to two centimetres across mainland Great Britain.

The crucial point is that OSTN02 is now the *Definitive Transformation*, defining National Grid position by reference to National GPS Network stations rather than trig points. So farewell triangulation and farewell levelling!
Ordnance Survey has been developing its Explorer series of mapping since 1994. In that year approval was given for thirty sheets of 1:25,000 mapping to be published as a trial series. In 1996, with the trial proving a great success, it was decided that the Explorer series should roll out nationally and replace the existing, but ageing Pathfinder series.

In late 2001 market research over the preceding months identified a significant amount of confusion in the map buyer about which map should be used for which activity. In particular, the 1:25,000 series posed a major headache. While Explorer dominated the series in numbers of maps, there were still significant Pathfinders, mainly in Scotland and then there were the high selling Outdoor Leisure Maps. This series focussed on the National parks or other areas of outstanding natural beauty, but in most other respects there was no difference. Ordnance Survey, becoming more customer focused, decided that it would be sensible to resolve this conflict and in the Spring of 2002 the OLMs were converted into orange covered Explorers, with the number prefixed with OL and a yellow flash on spine on cover to indicate the migration. Since this change, sales of Explorer and Explorer OLs have boomed and it is expected that in 2002 the Explorer range will become Britain’s most popular map.

National coverage of the Explorer series will be achieved in March 2003, completing a six year programme, on target. Ordnance Survey is now working hard to decide its next steps with the series. The most obvious need is to commence a revision programme, so that the currency of the mapping can be improved, proposals for this are now well in hand.

Another issue is the cover and the brand. In the Spring of 2002 Ordnance Survey rebranded the Landranger series. The new cover design has been well received by trade and public alike and is contributing to a significant increase in sales. This new design has made the Explorer appear rather old fashioned and out dated, work is now commencing on how this can be improved and taken forward.

The last issue is the specification. Explorer is primarily a map for the outdoor market, for walkers and mountain bikers. Market research has been carried out at the Ordnance Survey Outdoor Show and with numerous organisations and a new specification is under development. The mapping produced will be clearer and more suited to the users of the Explorer. Some of the elements that clutter the map and reduce clarity will be removed, while other elements, such as Open Access areas, which are due to be announced in the Spring of 2003, will be added.

Since the initiation of the Explorer series there has been much development in cartographic software and techniques. In addition, Ordnance Survey has continued to lead the mapping world with the creation of its OS Mastermap database, a seamless, object oriented database of GB at large scales. These developments are being used by Ordnance Survey and it is expected that they will play a significant part in the production process of the Explorer series.

In summary, the Explorer series has grown in stature and importance for Ordnance Survey and there is a great deal of investment and development to come as the series moves from its national coverage roll out to revision and second edition.
Creating the 1:25,000 cartobibliography – some reflections

Roger Hellyer

What follows is a condensed version of a paper on the 1:25,000 First Series map read at the Exeter meeting of the Charles Close Society, 21 September 2002.

I thought I might spend a few minutes this morning talking about how the 1:25,000 cartobibliography came about. Its genesis lay, I suppose, in discussions more than a decade ago now with Richard Oliver, about who was doing what with which map series. Guy Messenger had dealt with the one-inch third editions, the Harry Margary project with the Old Series was in progress, I had just finished my book on the ten-mile, Richard himself seemed to be dealing with all one-inch series from the Fifth Edition onwards, Yolande Hodson with the Popular, and others with half-inch and quarter-inch maps. It seemed that the New Series should await the completion of the Old. Irish mapping was at the time a closed book to me.

In order to find a new challenge, therefore, to follow the ten-mile, there seemed nowhere to go than to a larger scale map, and the 1:25,000 was the obvious choice. We devised a grand concept – ambitious certainly, but hopelessly impractical. The medium scales could be covered in a three volume set, with the Provisional Edition, or First Series, as the OS came to think of it, as volume 2. Volume 3 would be the Pathfinder, and would now also include the Explorer. Volume 1 would cover all those military predecessors – the map of East Anglia, GSGS 3036, the 1:20,000 GSGS 2748, the 1:25,000 GSGS 3906. Richard Oliver would research and write the necessary introductory essays, setting the series in their historical context. Here we are, ten years on. Richard many years ago published a provisional shortform list of the Pathfinder in Sheetlines 48. Even on the day we were meant to be celebrating the publication of the First Series book, it is still with the printers. And as for volume 1 – the military predecessors? Let me just say that the research continues.

Is listing a series of 2000 sheets like listing the maps in ones own collection? Is the only difference the obvious one of the size of the project? We have all at one time or another made lists of our own maps, principally, I suppose, in order to keep a check on those sheets still missing. If we have a greater interest in any particular series, our wants lists will become more specific, and go beyond the particular sheet number to a particular revision of that sheet. It may go even further than that, resulting in a list containing every printing of every revision state of every sheet. This is the ultimate objective of anyone seeking to publish a cartobibliography of a map series – but one, unhappily, that will rarely be fulfilled.

It is rare for public collections to aspire to hold a copy of every printing, in most cases because lack of adequate storage space is a major limiting factor. The legal deposit collections in practice claim by copyright only those issues of each sheet that the Ordnance Survey chose to announce in the periodical publication reports – and even then they may have made a determination to omit collecting, for instance, outline editions, for reasons of space. It is important therefore to be aware of what issues the Ordnance Survey does include in their publication reports. Since the second world war it has been OS policy to list printings which show important revision to the country’s infrastructure, primarily of roads and building development. Minor revision, such as the correction of a detail, perhaps an AA telephone incorrectly marked RAC, or the addition of a golf course symbol would pass unannounced. Still further down the chain, the Ordnance Survey has never made it a policy
to announce facsimile reprints, or those which merely show an increase in price, or some other such marginal alteration.

So the publication reports, and by extension, the maps present in the copyright collections, will be no more than a skeleton of the entire corpus that is the complete printing of any particular map in a particular series. How to fill in the gaps is the problem that confronts the cartobibliographer – no, not even that in the first instance, but how even to identify where the gaps may lie.

What other collections might assist us? How about the Ordnance Survey’s own record map library? Surely they have retained a copy of each printing? Indeed not. By the time of the 1:25,000 First Series their policy was indeed to retain superseded editions, stamped to that effect once replaced by more up to date editions. But unfortunately reissues with only minor changes were not part of this policy, thus, for this series, issues kept in the RML have a remarkably annoying habit of reflecting precisely those issues sent to the copyright libraries. It major advantage for this series lies in its holding of the outline edition, which is equally as large as that of the coloured.

Where else can we look? How about the university map collections? For the 1:25,000 these are a most rewarding hunting ground for the cartobibliographer, and many issues, suspected and unsuspected, have emerged in these collections. Some of the universities began collections at the very start of publication, others obviously made a decision to do so some years later, and it is in those collections where one suddenly discovers a whole batch of, for instance, 1951 reprints of sheets published earlier, among first printings of sheets published in 1951 and later. Sometimes the university would later have invested in another set, say in 1966. And the cartobibliographer discovers another snapshot of how the series appeared at a particular date. The results are collections of very uneven coverage, but in some cases of remarkable depth, but with all printings of some sheets almost certainly present. But again, there never was, nor never could have been, a systematic attempt on the part of any university to acquire and retain all printings of any map series, never mind one as extensive as the 1:25,000. But, in order to build up an acceptably full picture of the intermediate states of any map series, those not in the copyright libraries, it has long been my policy to inspect in some detail the remarkably large map collections of our “mature” universities – Oxford, Cambridge, Dublin, Belfast, Durham, Newcastle, Nottingham, Birmingham, London, Leicester, Manchester, Leeds, Bristol, Edinburgh, Glasgow, and here at Exeter, as well as other less accessible places such as Hull, Liverpool and Aberdeen. I would like to have visited them all, but life is too short for that. To this list should be added the remarkable collections of the Royal Geographical Society, which are, I believe, largely built up from donations, both public and private. The RGS does seem to retain a copy of every printing they manage to get hold of, and as such this is an essential resource to the cartobibliographer.

To my knowledge, there is only one other map collection where there has been a deliberate policy of retaining a record copy of each printing, and even then the policy began well after the second world war. I speak of the superseded map collection of the Mapping and Charting Establishment, of the Ministry of Defence, recently transferred to the British Library. But it will rarely advance the cause of the researcher into Ordnance Survey maps, because of course it is a collection almost entirely of military printings. And, because the policy of retaining record copies of all printings only started after the war, the further back one goes, the more gaps there are even in this collection. But it does leave us with a
collection of the military edition of the 1:25,000 First Series that must be 99% complete. There appear to be a few gaps among early printings, not that one can be certain of this because there is no available record; one can just make assumptions from what does survive that on occasions something must have come before. For instance no sheet first issued in 1950 would have had legends, so if one apparently exists, it is safe to say that there would have been a 1947 or 1948 predecessor that has yet to be located.

These are in my opinion the most fruitful public repositories for any would-be cartobibliographer to investigate, and while we may have been remarkably successful with some sheets in discovering the full picture, the result so far must necessarily be very uneven. But so far we have merely discussed where to look. Perhaps I am presenting this discussion the wrong way round. Before we look would it not be better to obtain a precise picture of what we should be seeking? How can we obtain a definitive list of the map states that were issued in any series? As I said before, in an ideal world it would be the ultimate objective of the cartobibliographer to identify and list every printing of the map that is his concern, and ideally to locate a copy of each. One would have to exclude from this latter goal facsimile reprints, since by their very nature it would scarcely be possible to be certain which of several print runs any given example came from. But this would not negate the ambition to record each of the printings. When I worked on the ten-mile map, I was fairly confident that I had achieved that for the postwar map, barring those issues the OS printed for internal use only. Similarly I am confident that every printing of the Quarter-inch Fifth Series appears in my Sheetlines 37 list. I know I have failed in this objective in my other published lists. I know equally that I have failed in the case of the 1:25,000 First Series.

The difference between success and failure is in the end down to the survival of one source of information – the job files. For every sheet it published, the Ordnance Survey opened a file that recorded all the processes involved in the day by day maintenance of that sheet. Among other things, this includes detailed records of all the various printings of that sheet. Thus we know the identification numbers of the plates used, and of the colours, the initials of the individuals who issued the instructions, and of those who carried them out, and the precise dates on which the various stages in the process were done. We may learn of the various proof copies required, the number of sheets printed, the number of good copies made, the number of record copies retained; we know of printings which caused problems, or may even have been abandoned, and the reasons behind the decision. Sometimes one might find file copies of different printings. For the ten-mile and the Quarter-inch Fifth Series these files had survived, and are now in the Charles Close Society archive at Cambridge. Those for the 1:25,000 First Series have been destroyed. Thus however many printings we find, we will never know whether we have found them all. It is really as simple as that.

So what other indicators might we explore? Price codes may help. It is an easy matter to ascertain the dates between which any particular map was sold at a particular price, and, against an assessment of the likely public demand for any particular sheet, it is possible to make educated guesses about where likely gaps remain in the sequence of prices. Then there are print codes. We all know about these, and we all know how misleading they can be on occasions. We have all looked through those long strings of pre-war figures and noticed print codes that come and go in different strings, or some that are altered from one year to another in different strings. At least with the 1:25,000 we are spared those uncertainties. Only three sheets, published in 1945 and early 1946, ever had print codes offering a print run, month and year of publication, followed by a place of publication. For about a year, through 1946
and into January 1947, the OS used a four or five figure number as the print code, combining the print run and year of publication, in the form 10046, or 25047. The OS then initiated the system familiar to us all, and still with us today, the print code letter, which may, at least until recently, have been followed by a motley selection of bars and stars. As most of us understand it, it was normal practice under this system to advance the letter from A to B and on to C whenever a new edition was published containing major changes. These would be announced in the publication reports. Less important revision would qualify for a bar to be added to the current letter, and if the printing was to be announced in the publication report, it would also have a star. And from about 1950 onwards, this is how the system operated with the 1:25,000. Latterly there were no printings with only a bar; all sheets that were revised either came to have a star as well, or received a new letter. Either way they would be announced in the publication reports. One might expect therefore that for late printings a cartobibliography should be complete, barring identical or facsimile reprints. Not a bit of it. I will explain this in a minute.

And I quickly learned that this is not how the system worked in the early years of the 1:25,000. It was not unusual to trace the second reference noted in the OSPR to a C or even a D printing of the map. What therefore had happened to the intervening letters? In those early years, it transpired, every printing was to have a different letter, never mind how insubstantial the change. In a few cases the logic of this policy even extended to the outline edition, where the first edition was actually given the letter B! And it is perhaps needless to report that when the decision came to revise the letter code system to the one familiar to us now, the transition was in many cases less than orderly. There are many cases where there are two completely different printings with the letter B, one deriving from the old system and one from the new. It is even the case with some sheets that the sequence of print codes might run A, B, A/, B, C.

How complete, therefore, can any cartobibliography be, once the job files have been destroyed? It is obvious that a state should exist between states A and C, equally between states A/ and A///. But until one locates it, I know of no way to learn of a state A/ between states A and B. The omission of such states from my list will, I fear, prove to be its major weakness, since they would presumably have different revision status to those that have been recorded, and would thus have materially added to the overall picture. I concentrated my efforts on locating printings of these kinds in the latter days of the research, checking in particular sheets with print codes with bars but no stars, or with letter codes abnormally advanced against the price code. I am not so concerned for other less significant omissions, where an alteration in price or some other aspect of marginalia is likely, since from a revision point of view they will add little if anything new. There were many occasions when I suspected that two apparently identical printings would in fact have come from different print runs. Perhaps a difference in the colour of the paper suggested this. But one has to be realistic. One cannot follow up such possible red herrings for a total of 2027 sheets, and if one did, what would one achieve? As to omissions from the record during the latter years, how can we even know of them? With sheets published before 1964, the most obvious detail to inspect first after the print code is the price state. After 1964 sheets were not priced. Alterations made to unrevised printings from that point usually involved the heading to the sheets. From 1972 the comma may be removed from “1:25 000”. The words “Provisional Edition” were removed in 1973, leaving a blank. From 1974 revised sheets would have the words “First Series” inserted in their place. All this is clear enough, one might think, until
you reflect upon the fact that from about 1947 onwards all sheets sold to the public folded in covers were cut down – by the removal of everything printed above the map! Since 1965 these have appeared first in the magnifying glass cover, and then printed with an integral blue cover. This leaves the many thousands of sheets held by collectors and members of the public printed with the blue integral cover in effect useless to the cartobibliographer.

The database

It is scarcely necessary to point out that I could never have undertaken this project at all without a laptop computer, and the consent of map librarians for me to use it. I used Foxpro, an excellent database programme supported at the time by the DOS operating system. My aim was to provide a unique description of each different printing identified, and to offer the user in as clear a manner as possible the detailed information he may find most useful. Of paramount importance was a full listing of all revision dates, and the detail to which they refer.

The first essential was to list all the sheets published. I knew in advance that the total figure was 2027, and that sheets covering the highlands and islands of Scotland had not been published. An examination of indexes revealed two more important details, that there were many combined sheets around the coast, and that large areas in Lancashire and East Anglia had been published in a second format – in three colours rather than the standard four. It would be essential, but no problem to create a separate identity for these in the list.

But in what order was I going to list the sheets? We were no longer dealing with a straightforward numerical array. Early sheet numbers were all in figures, late ones had two letters and two figures. Between the two there was a transitional stage when both appeared. Each describes the National Grid reference of the south west corner of the 10 km square covered by the sheet. But the decision was taken in 1951 to change the method of identifying the 100 km squares from a pair of figures to a pair of letters. The numerical sequence of 100 km squares – which worked their way upwards from south west to north east, did not result in the same sequence of sheets as when letter references, which started north west and ended up south east, were employed. I quickly decided to follow the current system.

The next step was to create a framework of printings one might expect to record for each sheet. One could do no better here than to go through all the publication reports from 1945 to 1987, and to record in the database every reference to a 1:25,000 First Series sheet. It was not as easy as that, of course, because for a long time what was not recorded was the print code to which each reference applied, and it took quite a long time in some cases to sort this out. In addition there were the references to the outline edition, and the administrative areas edition as well.

Yes, there are three versions of the 1:25,000 map, and I decided early on that if my database was to remain within useable bounds at all that some form of compression was going to be required. Thus I set up a different set of fields in which to record the imprint of each of the three types, expecting that all additional information would apply equally to all three. In general this worked out very well, with the exception of sheet numbers: outline editions followed their coloured one in many cases by such a serious delay that the specification of the sheet had moved on, from the full sheet number to the transitional form, etc, or even contained some form of minor revision for which I could not find a coloured equivalent. Thus it was imperative to provide an extra record for these forms. But the outline and administrative areas editions remained exactly in parallel, with the same outline printing
used for both, the latter with the addition of a red overprint of administrative and National Trust information, and its own independent part of the print code.

I had to decide what details to record. I had already been warned that it was extremely hard to date some 1:25,000 sheets, so anything that would mitigate that would be advantageous. But what else? The obvious place to start was to compare an early sheet with a late one, and see in what respects they differed. These are some of the more obvious aspects of change that I noted:

- The early has legends – the late has none,
- The early has no revision dates – the late may have many,
- The early is priced – the late is not,
- The early has a Provisional Edition heading – the late First Series,
- The early has a figure print code, or an italic letter – the late has a Roman letter,
- The early has a numeric sheet number – the late is alpha-numeric,

and so on. There were many others. Having identified the first and the last, the next requirement was to identify all the intermediate changes in specification in each category. It was essential to make this list as comprehensive as possible before I started work on compiling the database: I had learned the hard way with the ten-mile map that to discover another feature worth listing part way through the work meant an enormous number of revisits to sheets already inspected. And there I was dealing with two or three sheets. It was immediately obvious that there could be no revisiting when over 2000 sheets were involved. Anything missing at the start was missing for ever.

By consistently recording these detail changes one gradually builds up an accurate chronology of when changes in design were made. A well-developed chronology provides a vital means of discovering errors in one’s work, and will of itself suggest where further unidentified gaps in the sequence may lie. One can easily ask the database to locate points of detail which should or should not be coincident. One thus comes up with lists of sheets containing possible inaccuracies which it would be prudent to check – a glance at any page of the cartobibliography will immediately demonstrate the impracticability of attempting a general check. Sometimes my work was proved accurate, sometimes not. There will always be some instances of maverick printings.

What one does not immediately know is how relevant each detail change being listed will prove to be in our quest of a unique identification of each sheet. Many would prove irrelevant, in the final analysis, but one could not know which in advance. Details of that kind that I listed included extensions to the neat lines at the corners of three colour sheets, and the change in the abbreviation of ‘variation’ from $Var^n$ to $Var$. But I persevered for a long time with such apparent trivialities in case they should prove significant.

I noted eight versions of the imprint. The early wording read *Printed and Published by the Director General at the Ordnance Survey Office*, followed by the publication date. At first there was no place of publication, then *Chessington, Surrey* was added, and finally the move back to Southampton was recognised. In late 1958 the words *Printed and published* were altered to *Made and published*. In 1982 reference to the Director General was omitted. In 1948 publication dates were indeed removed, to be reinstated two years later – with the original publication date. Crown copyright dates were also added in 1958, after which publication dates were again sometimes deleted.
I noted four varieties of the left hand legend. The removal of the legends themselves in 1948, apparently to save paper, is the single most obvious point of change in the entire history of the series. Cards were published showing details of specification to be used in conjunction with sheets that no longer recorded this information. Once they were removed this message was added in the centre of the bottom margin: To save paper tables of Conventional Signs are omitted. They are published separately. In 1962 this was altered to The reference tables of Conventional Signs are published separately, and in 1970 removed altogether.

The 1:25,000 First Series started life in the very infancy of the National Grid, and the OS obviously felt it essential to offer the user as much assistance as possible in how to use it. Thus there were extra panels on very early sheets. One described how To refer to a particular point. Another described The full kilometrical reference of the south west corner of the sheet. These descriptions were very early casualties, both being deleted before 1947. What remained was the explanation giving a grid reference, and the diagram of Great Britain covered by 100 km squares with numerical references. Also retained were the defining elements of the National Grid.

This was all swept away with the removal of the legends from the sheets. A completely redesigned bottom margin contained the imprint, sheet number in each corner, sheet prices, a print code, grid north and magnetic variation information, a description of the grid lines, the conventional signs statements, standard statements relating to heights, copyright and rights of way. Over the years other elements were added. At the end of 1951 began the long process of renumbering sheets according to the new method of defining the National Grid. Easting values, heretofore printed sideways, were reprinted upright. For a short while sheets had republication dates. An index of adjoining sheets reappeared in 1952. In 1956 was added a notice that 1 square inch on this map represents 99.639 acres on the ground.

But the most profound change concerned revision dates. At the start these were completely lacking. Once finally the decision was taken to include them in 1950, the first steps were very timid, being limited to the revision date of the six-inch sheets from which they were compiled. To this was quickly added partial systematic revision, then road revision. During the early 1960s it was policy to describe in much more detail the various types of revision incorporated, be it tide line, railway, forestry, industrial, road, reservoir, and finally, selected. These were often listed in association with a line added to the imprint, describing the nature of the changes made. It was essential to find space for all these details in the database.

There was also the question of what changes were being made to the face of the map itself. Again some things were obvious – railway company names were deleted, as a direct reflection of nationalisation. Airfields came and airfields went, and I finally reduced this to a sequence of four states – no sign of its existence, a blank space, a perimeter, and the full runway layout. AA and RAC symbols were added to roadside telephones, then deleted. Bridle roads were marked at the start, and later removed. Bench marks were included, and later removed, and, I discovered, not always in parallel with the marginal data relating to them. Full stops were present to begin with in abbreviations, and later removed – I drew the line at recording these. There was the whole question of security deletions to be considered.

Every class of information required its own column, and at its fullest the database grew to have over eighty columns, once additional columns required for the military edition were included. I did the initial phase of the compilation work in the Bodleian Library in Oxford.
The coincidence of sheets in the collection against those listed in the publication reports was very high indeed, as one would expect, even to a few freak occasions where a sheet listed twice resulted in two copies of the same state. I followed this with inspecting the collections in several of our university libraries, that at Birmingham being central to this stage of the process, mostly because the collection there is larger than any other I know. I inspected collections of military maps wherever I could, including one in the Library of Congress while I was working in Washington.

There comes a point in this process where the discovery of unrecorded states slows to a trickle. You know that you have not found them all, equally that you are not going to find them all, but there is little point in delaying publication unduly in the hope of finding more. It is after all quite easy to slip in the occasional extra state for a long time to come. You can wait for ever, and ultimately achieve nothing. So finally I had reached the stage where I had to convert my database to a format capable of being presented in a book. I pondered this for months, and indeed on and off for nearly two years. I knew I had over 12,500 records in my database, that most of those contained both a coloured and an outline state, that over 1000 of them also included an administrative areas edition, and that there were well over 1000 sheets in the military edition, many of those in more than one edition. The military edition required in display terms many different aspects from the civilian, the military edition number, the print code, the printer, the heading.

What had always been obvious from the start, if the book was to be of manageable proportions, was that there could be no more than one line of text allocated to each state of the map. But how to reduce eighty or so columns in a database into a single line on a sheet of A4? It was possible to eliminate certain fields altogether. It had been interesting to note the very early sheets which “referred to a particular point” and the such, but in the end it was not going to assist with the identification of these states to record this detail. Using this justification, I was able to exclude from the record much marginal detail. But what remained was still scarcely going to fit on to two lines, never mind one.

It was an easy decision to relegate the whole of the military edition to an appendix, where one could include the unique headers that were never relevant to the civilian map. The military edition could be tied to the civilian by means of footnote references. Within footnotes also one could add reference to the Soil Survey and Geological Survey editions, even to the Administrative Areas edition.

The next essential was to attack the question of sheet prices. Many sheets were reprinted with little or no change but for an increase in their price, or removal of reference to it altogether. It was an easy matter to allocate a different code for price state, and to include printings showing no other change in a single line rather than providing a different line for each price state. By this means several hundred lines could be eliminated altogether.

But the outstanding and most intractable problem remained that of how to organise revision dates, since I was convinced that all revision dates to appear on the maps should appear in my cartobibliography. As I have explained this ranged from none in the early states, then one, then a normal display of two or three, until in the later years three, four, or even more additional types of revision dates could be supplied from a list of ten or more additional types. For a long time I was convinced that three columns at least were essential, for the six-inch revision date, the partial systematic revision date, the road revision date. But how could one allocate list space for all the others, the more so since for most states they would mostly be blank anyway?
The solution I finally adopted to was remove revision dates from the lists altogether, and add them instead into my header lines. The header was already earmarked for the sheet number, in both its styles, to a sheet name, and to the sheet dimensions. There remained space to add revision information, and no problem at all if one allocated two lines where necessary. By means of cross reference letters any particular revision date could be associated to any particular state in the list. But it still required organisation, for ease of reference. So, since even the primary revision dates did not remain a constant during the lifetime of a sheet, I allocated letters $a$ and where necessary $b$ to six-inch revision dates, the letters $c$ and where necessary $d$ to the partial revision dates, the letter $e$ to the one-inch road revision date, the letters $f$ to $h$ for additional road revision dates. Letters from $j$ onwards were reserved for other types of revision, all of which would be specified. These letter codes would all be repeated against the map states to which they refer in column seven of the list.

Roger brought a copy of a sample page of the book for every member present at the meeting, and proceedings were concluded by an explanation of the layout.

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A Bookless Book Launch

University of Exeter, Saturday 21 September 2002

Jon Risby

Some twenty members of the Society met at the University of Exeter for the launch of Richard Oliver’s and Roger Hellyer’s book on the two-and-a-half inch First Series. Unfortunately the actual book was not at that time available, but Roger had brought along a sample of the cartobibliography from the book.

Richard started by giving a potted history of the development of the 2½" from its beginnings in 1910 when the War Office produced mapping based on East Anglia. The first example was prepared in 1911 and was taken from six-inch mapping reduced to 2½". It contained a good deal of military information, contours and even Traction Engine Watering Points! The road classification was a simplified version of that described in the one-inch Popular Edition.

In 1940 the OS produced six-inch maps photographically reduced to 2½". Richard speculated that the 2½" scale was picked at least partly because of the paper size. In 1943 work began on a redrawn map. Richard showed a few examples of one of the early sheets, 40/09, of the Bournemouth area, which showed the way that the series had developed in the early years. For instance the early lettering was Caslon, which soon gave way to the Times New Roman on the definitive sheet, a font with which we are all familiar. The Second Series was begun in 1965 with a sheet of Burgess Hill, but First Series sheets continued to be published until 1989.

Roger described the problems of producing a cartobibliography. New editions are sent to map libraries but sheets which showed only minor changes are very difficult to track down, and libraries may replace the old version with the newer. Unfortunately there are no surviving job files which would record the printings actually made, and the printed maps are the only source. Construction of the database, which was put together using Foxpro, was
tricky as it needs to include as much information as possible, whilst at the same time being fairly easy for readers to understand.

Roger studied many of the 2027 sheets, using as his starting point the publication reports from 1945 to 1987. Then it was a case of comparing a later edition and an early editions and noting the changes that have taken place. All that is left after that is to find all the intermediate editions and log the information. What one ends up with is a database consisting of over eighty columns, and some 12,500 records. This is then simplified for publication.

After a very pleasant lunch in a local hostelry, we reconvened back at the University for a talk from Jeremy Stokes, who is Marketing Manager (Consumer) for the Ordnance Survey, about the Explorer map series. Jeremy started by giving us a background to the market for maps, and the analysis that the OS does. Two monitors, Booktrack and BML’s Books and the Consumer, are used. The first measures actual sales at the till, while the second is based on a panel of over 2000 users representative of the population. It covers all purchases of books and all publishers. The OS commissions a special sub-report, the Maps, Atlases and Guides Survey. Using the information from these sources the OS is able to find out what is happening in the map market and the habits of map buyers, and then respond by re-branding or working with particular retailers to maximize sales. For instance, sheet maps represent sales of a little over £30m per year in 2001. In terms of percentage of sales of sheet maps, OS claimed about just over 50% of the market in 2001. Most maps are bought through bookshops or Book/Stationery shops. Despite the massive increase of the Internet over the last few years only a tiny proportion of sales are direct from publishers.

The OS is able to draw up a ‘buyer profile’ of those that buy maps. Typically 1% of the adult population buy a map each year (this obviously excludes members of the CCS!); 20% use a map, and the typical map user is a male upmarket person aged between 35 and 54. Most maps that individuals own are over five years old, and amazingly 13% are over 20 years old. 28% buy one Landranger per year, and of these a quarter buy three or more. The main trigger for buying a map is visiting a new area, and the research has shown that W H Smith is most likely to be used.

2001-2002 has been a period of consolidation by OS in terms of its marketing activity. Some of the problems include a general lack of understanding by the public of the different types of map available. Examples have been found of motoring atlases being used for walking. One side effect of the current change from Pathfinders to Explorers has been that the new maps are seen by many to be too similar to the Landranger maps. There is a perception that the information shown on different series is the same. There was also confusion between Explorers and Outdoor Leisure maps, which the OS tackled earlier this year by making the Outdoor Leisure maps Explorer/OLs.

As we are all aware the OS recently re-branded the Landranger series, and have also created a ‘family’ of Travel Maps – the Routeplanner, Road and Tour maps, and although we as map purists might have our own view of them, these maps have been generally very successful for the OS. They have raised awareness of OS as a publisher and they hope they will capture buyers, causing them to go out and buy Landranger or Explorer versions which cover the same areas.

The Explorer map series should be complete for the mainland by early next year, with the series completed by March. From April 2003 they will begin the process of revision, with the inclusion of Open Access Land. The series will be renumbered to get the ex-OLMs into a sensible geographical order. There is currently much debate in Jeremy’s team about the
options for the renumbering, and we were able to give Jeremy some suggestions, perhaps by starting with 1000 in a similar way that the Swiss use for their numbering. Future marketing of the Explorer map will focus on the outdoor nature of the Explorer map, and new covers will be action based.

Altogether it was a very interesting and informative day, and despite the lack of the book we were there to launch, most enjoyable.

Two photographs from the Exeter meeting will be found on page 36.

**Seventh Series Covers – An Update and an Appeal**

*R C Wheeler*

Two issues ago¹, I produced a short article on the cover variants encountered on the One-inch Seventh Series. A number of members have written to me and their comments add somewhat to the picture I presented.

First, four changes to the table on p44 are needed.

1. RO18b should have price 6/6, 8/6 (my typo).
2. RO25 should have CB in the Index column (ditto).
3. RO1b should have dates 52–55 (further specimen seen)
4. RO14b should have dates 8/63 – 11/63.

Secondly, the anomalous state 6ax has been confirmed: in addition to the two copies of Sheet 98(cloth) (5-60-M) of which I was aware, copies have been reported of Sheet 45(cloth) (5-60 M), Sheet 48(cloth) (5-60-M), Sheet103(paper) (5-60-M), Sheet 160(cloth) (5-60-M), Sheet 164(paper) (5[unreadable]M) and Sheet 164(cloth) (5-60-M). Does this perhaps represent a misunderstanding at producer ‘M’? Do the letters indeed refer to particular printers and, if so, which?

Thirdly, the changes to the sheet lines shown on the index were more extensive than I had noted.

1. What I called ‘Index P’ had no hatching on the overlap between sheets 86 and 92.
2. In Index 1, as well as sheets 189/190 not overlapping, the same was true of sheets 185/190. This corresponds to a southward move of Sheet 185 between indexes 1 and 2 and a move of Sheet 189 1km to the East.

Fourthly, in the Explanation of the Table of cover variants for H99.1, under Grid, I wrote that figures ‘are replacing’ letters, when of course it was the other way round. And in the explanation for the table of cover variants for H132.1, under Product info (2), “Peak District and Kinder Scout” should have read “Peak District around Kinder Scout”.

My very rudimentary lists of covers for sheets 113, 146 and 180 have been completely surpassed by a listing for Sheet 120 provided by Bill Henwood, which I give below for cover variants up to RO25 – i.e. the H99.1 covers.

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¹ *Sheetlines* 63, pp43-7.
Because of the numbers of cases where covers are separated in date by four to six months, I am inclined to believe that covers were reprinted about every five months, paper and cloth-mounted maps being treated as separate products. If that is so, Bill’s list is still far from complete, especially for cloth maps.

This is a hypothesis that is readily testable: I would ask volunteers with any cloth copies of Sheet 120 with H99.1 covers to send me the cover details (ideally Edition + cover type + print code, but print code is what really matters). This should be done irrespective of whether the cover is listed in the table above. Then, if 95% of respondents report cover print codes already listed by Bill, I will need to consider rejecting my hypothesis and concluding that OS policy on cover print runs was a good deal more variable than I had supposed.

Returns may be sent to me by post (address on back page) or by e-mail to 7thcovers@charlesclosesociety.org.uk. Respondents are welcome to list covers for paper maps as well if they wish (but distinguishing carefully between paper and cloth in their response); my reason for focusing on cloth was to limit as far as possible the amount of data I was requesting.

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2 With “National Gird” on front cover instead of “National Grid.
3 “covers Oban to Ben Nevis” in round brackets.
4 “covers Oban to Ben Nevis” back in square brackets.
5 but Notes 7* applies.
**Diagnostics for distinguishing emarginate revised New Series and Third Edition sheets**

*Richard Oliver*

In *Sheetlines* 62 David Archer described the problems of dating what he called ‘Little marbled jobs’, being those sheets of the one-inch New Series of England and Wales which have had their margins cropped, and thus also any explicit dating information. In the same issue I described specification changes on the New Series, and said that I intended to produce a guide to diagnostics whereby copies of the revised and Third Editions which were ‘emarginate’ could be distinguished.¹ Such a list forms the bulk of this article.

It may help to recapitulate the four ‘generations’ of the New Series engraved sheets:

A *de facto* first edition, published 1847-95 (abbreviated here as ‘NS-1’). Churches are shown only by a cross (⁺), and there is no distinction of single and double-track railways. These sheets are thus readily distinguishable from their successors.

A revised edition, published 1895-9 (abbreviated here as ‘NS-2’). Churches are shown by symbols to distinguish those with tower, spire, or neither, post and telegraph offices are shown by ‘P’ and ‘T’, single and double-track railways are distinguished, and there is a clear four-fold road classification.

A ‘Third Edition’, published 1903-13 (abbreviated here as ‘NS-3’). This is very similar to NS-2, except that a windpump symbol was used, although in practice it is only found on a few sheets and, from 1909, symbols for railway stations were used: these appear on 53 sheets.

A ‘Fourth Edition, of which only seven sheets were published, 1911-12 (abbreviated here as ‘NS-4’). These are identical to contemporary NS-3 sheets but, as these NS-4 sheets use station symbols whereas their NS-3 predecessors do not, there is no problem in identifying emarginate copies.²

There is thus no problem in distinguishing NS-1 and NS-4 sheets, but, except where station symbols were used on the face of the map, it is very difficult to distinguish NS-2 and NS-3 sheets.³ The ‘windpump test’ might seem the answer, but in practice these tend to be concentrated regionally: they are only cited for seven sheets in the following list, and two more which have by far the greatest number of these symbols, 148 and 162, also happen to use railway station symbols. Road classification differences might be useful, but are often difficult to describe succinctly, and so I have relied largely on differences to ‘names’ (an OS category which includes what lay people might call ‘descriptions’, e.g. Smithy, Windmill).

Best of all is a name which appears either on NS-2 or on NS-3 but not on both; a second-best is where the name is either converted in style (upright to italic or vice-versa; lower case

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¹ David Archer, ‘Kerry musings’, *Sheetlines* 62 (December 2001), 76-7; Richard Oliver, ‘Design and content changes on one-inch mapping of Britain, 1870 - 1914’, *Sheetlines* 62 (December 2001), 6-23. I owe ‘emarginate’ to the late Guy Messenger.

² Sheet 354 was only published in NS-1; sheets 243 and 260 were seemingly never published at all; and a few sheets (e.g. 81, 82) were published as combined sheets.

³ A few NS-3 sheets, e.g. 356, were published after the station symbol was adopted, but, as there were no stations to be shown on the map face, this diagnostic is obviously useless for identifying them.
(‘l.c.’) to upper-case (‘u.c.’) or vice-versa) or is moved (e.g. re-engraved on two lines instead of one).

Although NS-2 and NS-3 sheets carried latitude and longitude figures in their margins, these are sometimes cropped, and so the system of reference used here is based on measurements from the nearest sheet corner, with horizontal preceding vertical. Thus, for example, NW 4.5, 2 means that the diagnostic will be found about 4.5 inches to the right and 2 inches below the north-west corner; SE 3.25, 1.75 means that it will be found about 3.25 inches to the left and 1.75 inches above the SE corner.4

1 NS-2 only has ‘COUNTY OF THE BOROUGH AND TOWN OF BERWICK UPON TWEED’; NS-3 only has Shoreswood [SE 3, 1] and Horncliffe [SE 3.5, 3] in upright.
2 NS-2 has Ancroft [SW 0, 0] in italic; NS-3 has it in upright.
3 In italic on NS-2, in upright on NS-3: Akeld [SE 2, 2.5], Milfield [SE 3.5, 3].
4 In italic on NS-2, in upright on NS-3: Detchant [NW 6, 5]; ‘Adderston’ [SW 9, 3] in italic on NS-2 is ‘Adderstone’ in upright l.c. on NS-3.
5 In italic on NS-2, in upright on NS-3: Clennell [SE 3.5, 0.5].
6 In italic on NS-2, in upright on NS-3: Prendwick [SW 1, 4]; Branton [SW 3.5, 6].
7 NS-3 has ‘Colliery’ [SE 1.5, 1.5], ‘Plashett’s Colliery Cottages’ [SE 0.5, 1.5].
8 In upright on NS-2, in italic on NS-3: Falstone [SW 1.5, 0.5]; in italic on NS-2, in upright on NS-3: Otterburn [SE 6, 4].
9 In italic on NS-2, in upright on NS-3: Hartington [SW 2.5, 1], Amble [NE 1.5, 1]
10 In italic on NS-2, in upright on NS-3: Hauxley [NE 0, 1.5]; NS-2 has italic ‘Newbiggin’, NS-3 has upright ‘Newbiggin by the Sea’.
11 NS-3 has tramway on Solway Moss [SE 4, 0.5]; church [SE 1, 2.5] shown with spire on NS-2, without tower or spire on NS-3.
12 Church [SW 3, 6] without tower or spire on NS-2; with spire on NS-3.
13 In italic on NS-2, in upright on NS-3: Newborough [SE 7, 0], Cocklaw [SE 3, 2.5].
14 In italic on NS-2, in upright on NS-3: Great Whittington [SW 1, 2], Dinnington [SE 4.5, 4].
15 In italic on NS-2, in upright on NS-3: Cowpen [NW 1.3]; Whitley [SW 5, 3] is l.c. italic on NS-2, u.c. italic on NS-3.
16 Silloth [SE 0, 3] italic l.c. on NS-2, italic u.c. on NS-3; NS-3 adds ‘Golf Links’ to south.
17 In italic on NS-2, in upright on NS-3: Dundraw [SW 6, 0.5], Belle Vue [SE 2.5, 4.5].
18 In italic on NS-2, in upright on NS-3: Hathersgill [NW 4.5, 0.5], Midgeholme [NE 3.5, 5.5].
19 In italic on NS-2, in upright on NS-3: Henshaw [NW 4, 2]; Sandhoe [NE 1, 1].
20 In italic on NS-2, in upright on NS-3: Wallbottle [NE 6.5, 0.5]; l.c. italic on NS-2, u.c. italic NS-3: Black Hill [SW 7, 2].
21 In l.c. upright on NS-2, in u.c. italic on NS-3: Wallsend [NW 1.5, 0.5], Chester le Street [SW 0, 2].
22 In italic on NS-2, in upright on NS-3: Allonby [NE 2, 3.5], Tallentire [SE 0.5, 3.5].
23 In upright on NS-2, in italic on NS-3: Aspatria [NW 2, 4.5]; in italic on NS-2, in upright on NS-3: Mosedale [SE 3, 1.5].
24 In upright on NS-2, in italic on NS-3: High Hesket [NW 4, 2.5]; in italic on NS-2, in upright on NS-3: Catterton [SW 5, 2.5].
25 NS-3 adds ‘Edmundbyers Common’ [NE 0.5, 1.5]; Dunfell Mine [SW 2, 1.5] is ‘Disused’ on NS-3.
26 In l.c. italic on NS-2, u.c. italic on NS-3: Spennymoor [SE 1, 3]; Crook [SE 7, 4].

4 These diagnostics have been compiled mostly on the basis of the British Library Map Library NS-2 and NS-3 sets received under copyright deposit, supplemented by some limited checking of ‘emarginate’ sheets in my own collection.
In italic on NS-2, in upright on NS-3: Hetton le Hole [NW 5, 0.5], Cornforth [SW 2.5, 3.5].

Cleator Moor [SE 5.5, 2.5] italic l.c. on NS-2, italic u.c. on NS-3; Harrington [NE 8, 3] upright l.c. on NS-2, italic u.c. on NS-3.

Name Borrowdale in upright l.c. appears [SW 9.0, 2.5] on NS-3 only, and Church nearby in is italic on NS-2, upright on NS-3.

Shap [SE 8, 3] upright l.c. on NS-2, italic u.c. on NS-3; Sockbridge [around NW 6,2] italic l.c. on NS-2, upright l.c. on NS-3.

Soulby [SW 3.5, 0.5] italic l.c. on NS-2, upright l.c. on NS-3; on NS-2 ‘Stainmore Forest’ in italic capitals appears twice, [at SE 7,2 and SE 3,1]; on NS-3 it appears only once [at SE 3,1].

Gilmanby [SW 1,2], Piercebridge and Cliffe [both about SE 4,4] italic l.c. on NS-2, upright l.c. on NS-3.

Coatham Mundeville [NW 1,5], Hemlington [SE 3.5,3] italic l.c. on NS-2, upright l.c. on NS-3.

One lighthouse at Whitby [SW 3,2] on NS-2; two on NS-3; ‘Coastguard Sta’ at Sandsend [SW 1,3] on NS-3 only.

66, 67, 68, 69, 70 NS-3 uses station symbols.
Appleton Roebuck [NW 0.5, 5] and Bielby [NE 3, 4.5] italic l.c. on NS-2, upright l.c. on NS-3.

North Cliff, South Cliff [SW 2, 3] and Thearne [SE 3, 3.5] italic l.c. on NS-2, upright l.c. on NS-3.

Great Hatfield [NW 3.5, 5] and Lelley [SW 5, 1] italic l.c. on NS-2, upright l.c. on NS-3.

North Cliff, South Cliff [SW 2, 3] and Thearne [SE 3, 3.5] italic l.c. on NS-2, upright l.c. on NS-3.

Great Hatfield [NW 3.5, 5] and Lelley [SW 5, 1] italic l.c. on NS-2, upright l.c. on NS-3.

North to east railway curve at Hensall [NW 3, 5.5] shown with track on NS-2, without track on NS-3; Asselby Island [NE 7.5, 3] shown wholly as marsh on NS-3; ‘M.S. & L.R.’ in SE 1.4, 1.1 on NS-2 is ‘G.C.R.’ on NS-3.

On NS-2 there are three underbridges on ‘Manchester Sheffield & Lincolnshire Railway’ in SW of sheet [e.g. at SW 2.5, 0.5]; these do not appear on ‘Great Central Railway’ on NS-3.

North to east railway curve at Hensall [NW 3, 5.5] shown with track on NS-2, without track on NS-3; Asselby Island [NE 7.5, 3] shown wholly as marsh on NS-3; ‘M.S. & L.R.’ in SE 1.4, 1.1 on NS-2 is ‘G.C.R.’ on NS-3.

Broomfleet Island [NW 3, 3] detached from mainland on NS-2 and shown mostly as marsh on NS-3; ‘M.S. & L.R.’ in SE 1, 4, 1, 1 on NS-2 is ‘G.C.R.’ on NS-3.

On NS-2 there are three underbridges on ‘Manchester Sheffield & Lincolnshire Railway’ in SW of sheet [e.g. at SW 2.5, 0.5]; these do not appear on ‘Great Central Railway’ on NS-3.

Broomfleet Island [NW 3, 3] detached from mainland on NS-2 and shown mostly as marsh on NS-3; ‘M.S. & L.R.’ in SE 1, 4, 1, 1 on NS-2 is ‘G.C.R.’ on NS-3.

Broomfleet Island [NW 3, 3] detached from mainland on NS-2 and shown mostly as marsh on NS-3; ‘M.S. & L.R.’ in SE 1, 4, 1, 1 on NS-2 is ‘G.C.R.’ on NS-3.

Stocksbridge [SW 1, 3.5] italic l.c. on NS-2, upright l.c. on NS-3; Rawmarsh [SE 7,2] upright l.c. on NS-2, upright u.c. on NS-3.

‘Colliery’ at Arksey [NW 1.5, 3] appears on NS-3 only; ‘Owston’ [SE 2, 4.5] thus in upright l.c. on NS-2, as ‘Owston Ferry’ in italic l.c. on NS-3.

Stocksbridge [SW 1, 3.5] italic l.c. on NS-2, upright l.c. on NS-3; Rawmarsh [SE 7, 2] upright l.c. on NS-2, upright u.c. on NS-3.

Gunhouse [NW 0.5, 0.5] on NS-2 is Gunness on NS-3; Kirton in Lindsey [SW 6, 3.5] upright l.c. on NS-2, italic u.c. on NS-3.

‘Great Grimsby’ [NE 8.5, 1.5] on NS-2 is ‘Grimsby’ on NS-3; windmill north of Fulstow [SE 5, 3.5] on NS-2 is windpump on NS-3.

‘Great Grimsby’ [NE 8.5, 1.5] on NS-2 is ‘Grimsby’ on NS-3; windmill north of Fulstow [SE 5, 3.5] on NS-2 is windpump on NS-3.

Sand Haile Flats [SW 2.5, 2.5] on two lines on NS-2, on one line parallel to shore on NS-3; Saltfleet [SW 2.5, 1] in l.c. upright on NS-2, l.c. italic on NS-3.

Sand Haile Flats [SW 2.5, 2.5] on two lines on NS-2, on one line parallel to shore on NS-3; Saltfleet [SW 2.5, 1] in l.c. upright on NS-2, l.c. italic on NS-3.

‘Water Works’ [SE 0.5, 3.5] on NS-2 is ‘Reservoir’ on NS-3; ‘Caves’ added N and S of North Stack [SE 1, 4] on NS-3.

‘Water Works’ [SE 0.5, 3.5] on NS-2 is ‘Reservoir’ on NS-3; ‘Caves’ added N and S of North Stack [SE 1, 4] on NS-3.

‘W.Mill’ on NS-2 at Wragby [SW 0, 2.5] is ‘Old W.Mill’ on NS-3; ‘Ch’ at Castle Carlton [NE 1, 5] on NS-2.

‘W.Mill’ on NS-2 at Wragby [SW 0, 2.5] is ‘Old W.Mill’ on NS-3; ‘Ch’ at Castle Carlton [NE 1, 5] on NS-2.

Colwyn [SW 3.5, 1.5] in l.c. italic on NS-2, u.c. italic on NS-3; Prestatyn [SE 2.5, 4.5] italic l.c. on NS-2, upright l.c. on NS-3.

Colwyn [SW 3.5, 1.5] in l.c. italic on NS-2, u.c. italic on NS-3; Prestatyn [SE 2.5, 4.5] italic l.c. on NS-2, upright l.c. on NS-3.

Ellesmere Port [SW 4.5, 3.5] named on NS-3 only; Childer Thornton [SE 1.5, 1.5] italic l.c. on NS-2, upright l.c. on NS-3.

Ellesmere Port [SW 4.5, 3.5] named on NS-3 only; Childer Thornton [SE 1.5, 1.5] italic l.c. on NS-2, upright l.c. on NS-3.

New Mills [NW 2, 5] l.c. italic on NS-2, u.c. italic on NS-3; Bamford [NE 3, 6] italic l.c. on NS-2, upright l.c. on NS-3.

New Mills [NW 2, 5] l.c. italic on NS-2, u.c. italic on NS-3; Bamford [NE 3, 6] italic l.c. on NS-2, upright l.c. on NS-3.

Dronfield Woodhouse [SW 5, 2.5] italic l.c. on NS-2, upright l.c. on NS-3; Eckington [SE 7.5, 3] l.c. upright on NS-2, italic on NS-3.

Dronfield Woodhouse [SW 5, 2.5] italic l.c. on NS-2, upright l.c. on NS-3; Eckington [SE 7.5, 3] l.c. upright on NS-2, italic on NS-3.

South Carlton [NW 3, 5.5] l.c. upright on NS-2, l.c. italic on NS-3; at West Burton [NE 2.5, 4.5] ‘Ch’ is l.c. upright on NS-2, is in gothic on NS-3.

South Carlton [NW 3, 5.5] l.c. upright on NS-2, l.c. italic on NS-3; at West Burton [NE 2.5, 4.5] ‘Ch’ is l.c. upright on NS-2, is in gothic on NS-3.

Saxilby [SW 3.5, 1.5] and Holton [SE 0.5, 5] l.c. upright on NS-2, l.c. italic on NS-3.

Saxilby [SW 3.5, 1.5] and Holton [SE 0.5, 5] l.c. upright on NS-2, l.c. italic on NS-3.

‘W.Mill’ on NS-2 at Wragby [SW 0, 2.5] is ‘Old W.Mill’ on NS-3; ‘Ch’ at Castle Carlton [NE 1, 5] on NS-2 only.

‘W.Mill’ on NS-2 at Wragby [SW 0, 2.5] is ‘Old W.Mill’ on NS-3; ‘Ch’ at Castle Carlton [NE 1, 5] on NS-2 only.

Rigsby [SW 1, 1.5] and Withern [SW 1, 6] l.c. upright on NS-2, l.c. italic on NS-3.

Rigsby [SW 1, 1.5] and Withern [SW 1, 6] l.c. upright on NS-2, l.c. italic on NS-3.

Upright name Llanwdna moved from SE 2.5, 1.5 [to right of ‘C’ in county name] on NS-2 to SE 2.5, 1 [below ‘C’ and ‘A’ of county name] on NS-3; at Traeth Melynog [SE 4.5, 3.5], low water mark is well clear of the name on NS-2, whereas it touches ‘M’ on NS-3.

Upright name Llanwdna moved from SE 2.5, 1.5 [to right of ‘C’ in county name] on NS-2 to SE 2.5, 1 [below ‘C’ and ‘A’ of county name] on NS-3; at Traeth Melynog [SE 4.5, 3.5], low water mark is well clear of the name on NS-2, whereas it touches ‘M’ on NS-3.

‘Kennels’ added in Vaynol Park [NW 1, 4] and ‘Brick Works’ added at NE 1, 1.5 on NS-3.

‘Kennels’ added in Vaynol Park [NW 1, 4] and ‘Brick Works’ added at NE 1, 1.5 on NS-3.

Henllan [NE 4.5, 4.5] and Llanrhaiadr [SE 1.5, 4.5] upright l.c. on NS-2, italic l.c. on NS-3.
‘Llanrhydd’ [SW 2.5, 1] is thus in upright l.c. on NS-2, is ‘Plas-Llanrhydd’ in italic l.c. on NS-3; NS-3 only has ‘Chester Golf Links’ [NE 4.5, 2.5].

Little Stanney [NW 1.5, 0.5] italic l.c. on NS-2, upright l.c. on NS-3; Over [NE 2.5, 5.5] is upright l.c. on NS-2, italic u.c. on NS-3.

Minshull Vernon [SW 1, 3] and Bosley [NE 3, 5.5] italic l.c. on NS-2, upright l.c. on NS-3.

Burbage [NW 4.5, 1] and Aldwark [SE 1.5, 1.5] italic l.c. on NS-2, upright l.c. on NS-3.

Middleton [SW 1.5, 0.5] upright l.c. on NS-2, italic l.c. on NS-3; Shirebrook [NE 1.5, 4] italic l.c. on NS-2, upright l.c. on NS-3.

Market Warsop [NW 1.5, 3.5] and Low Marnham [NE 2, 2.5] upright l.c. on NS-2, italic l.c. on NS-3.

‘Lancashire Derbyshire & East Coast Railway’ [NW 4, 1.5] on NS-2 is ‘G.C.R. Chesterfield & Lincoln’ on NS-3; ‘Windmill’ appears just SW of Nocton [NE 4, 6] on NS-2 but not NS-3.

Woodhall Spa [SW 4.5, 5.5] and New Leake [SE 1, 2] italic l.c. on NS-2, upright l.c. on NS-3.

Willoughby [NW 4, 0.5] upright l.c. on NS-2, italic l.c. on NS-3; Skegness [SW 9, 5.5] upright l.c. on NS-2, italic u.c. on NS-3.

NS-3 only has ‘Well’ in gothic immediately south of St Mary’s Church [SE 5, 4] and mileages ‘7’, ‘8’, ‘9’ on road south from near Penllech [NE 0, 1.5].

NS-3 only has mileages ‘1’, ‘2’, ‘3’, ‘4’ on road going south-westish from Morfa Nevin [SW 3.5, 2] and name Dinas south-west of Criccieth [SE 1, 0.5].

‘Treflys’ appears in upright l.c. on NS-2 [SW 1, 0.5] but is omitted from NS-3; Blaenau-Ffestiniog appears in upright l.c. on NS-2, italic u.c. on NS-3.

NS-3 only has + symbol at Tai-hirion [NW 2, 2.25] and ‘Reservoirs’ on south-west of Corwen [SE 1, 4].

‘Llanfair’ in upright l.c. [NW 2.5, 0.5] on NS-2 is italic ‘Llanfair-Dyffryn-Clywd’ on NS-3; Bersham [NE 4.5, 4] is small italic l.c. on NS-2, upright l.c. on NS-3.

‘Bangor’ in upright l.c. [SW 5.5, 0.5] on NS-2 is italic ‘Bangor is-y-Coed’ on NS-3; Hankelow [SE 0.5, 5.5] is italic l.c. on NS-2, upright l.c. on NS-3.

Buerton [SW 1, 4.5] and Fulford [SE 0.5, 1.5] italic l.c. on NS-2, upright l.c. on NS-3.

Forsbrook [SW 0.5, 3.5] and Prestwood [SW 8.5, 4] italic l.c. on NS-2, upright l.c. on NS-3.

Mugginton [SW 1.5, 4.5] is upright l.c. on NS-2, italic u.c. on NS-3; Bulwell [SE 0.5, 5.5] is italic u.c. on NS-2, italic l.c. on NS-3.

‘Radford’ in upright l.c. on NS-2 [SW 0.5, 3] is ‘Old Radford’ in l.c. italic on NS-3; ‘Newark’ [NE 3, 0] on NS-2 is ‘Newark upon Trent’ on NS-3; ‘Brick & Plaster Works’ [SE 4, 3] on NS-2 is ‘Brick Works’ on NS-3.

At Hough on the Hill, ‘Windmill’ [NW 6, 4.5] on NS-2 is ‘Old Windmill’ on NS-3; Holdingham [NE 2, 4] is upright l.c. on NS-2, italic l.c. on NS-3.

Donington [SW 5, 1] is upright l.c. on NS-2, italic u.c. on NS-3; at Scrane End [SE 1.75, 4.5] ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3.

NS-3 only has ‘Moats’ in gothic at Rings Hill [NW 0, 0.5]; ‘Hunstanton St Edmunds’ [SE 2, 4] on NS-2 is ‘New Hunstanton’ on NS-3.

Burnham Westgate [SE 8, 5.5] on NS-2 is Burnham Market on NS-3; Crabb’s Castle [SE 5, 3.5] has ‘[Site of]’ added on NS-3.

NS-3 uses station symbols.

NS-3 only has mileages ‘5’, ‘6’ on road past Tydweiliog [NW 1, 0.5] and ‘Church [Site of]’ north of Pwllheli [NE 9, 1.25].

NS-3 only has ‘Golf Links’ and ‘Golf Club Ho.’ at Harlech [NW 4, 3.5].

NS-3 only has Bryn Mawr [SW 1.5, 1.5] and Cyriau [SE 2, 4.5]

Llangadwaladr [NW 5.5, 4] is upright l.c. on NS-2, italic l.c. on NS-3; Welsh Frankton [NE 1.5, 2.5] written straight horizontal on NS-2, on a curve on NS-3.
138 Bettisfield [NW 4.5, 0.5] italic l.c. on NS-2, upright l.c. on NS-3; NS-3 only has School at High Hatton [SE 3.5, 5].
139 Chetwynd [SW 4, 2.5] is upright l.c. on NS-2, italic l.c. on NS-3; Hilderstone [NE 1, 1] is italic l.c. on NS-2, upright l.c. on NS-3.
140 Hixon [SW 3, 5.5] and Horninglow [SE 5.5, 0.5] are upright l.c. on NS-2, italic l.c. on NS-3; Abbots Bromley [SW 7.5, 5] is italic u.c. on NS-2, upright l.c. on NS-3.
141 NS-3 only has Sewage Farm [NW 1.5, 3.5]; Thorpe Acre [SE 1.5, 2.5] is upright l.c. on NS-2, italic l.c. on NS-3.
142 Clifton and Glapton [NW 0.5, 0.5] and Wycomb and Chadwell [SE 3, 5.5] are upright l.c. on NS-2, italic l.c. on NS-3; Hilderstone [NE 1, 1] is italic l.c. on NS-2, upright l.c. on NS-3.
143 Wyvill[e [NW 3.5, 3.5] is upright l.c. on NS-2, italic l.c. on NS-3; NS-3 only has ‘Little Bytham & Edenham Ry’ [SE 5, 3].
144 NS-3 only has ‘[Toll]’ at Casswell’s Br [NW 2.5, 4.5]; NS-2 only has ‘Windmill’ south of Gedney Broadgate [SE 0.25, 3.5].
145 NS-3 only shows orchards around Oldroyds Farm [SW 4, 1] and NW of Saddlebow [SE 5.5, 0.5].
146 Flitcham [NW 1.5, 4.5] is upright l.c. on NS-2, italic l.c. on NS-3; Litcham [SE 6.5, 1.5] is italic u.c. on NS-2, upright l.c. on NS-3.
147, 148 NS-3 uses station symbols.
149 NS-3 only has ‘Rifle Range’ [SW 4.5, 0.5] and ‘Cross Foxes’ [NE 2.5, 0.5]; Dolgelly [NE 4.5, 0] is italic u.c. on NS-2, upright u.c. on NS-3.
150 NS-2 only has ‘Ford’ at Mathafan [SW 0.25, 3.5]; ‘Lwydiarth’ [NE 3.75, 1.25] on NS-2 is ‘Pont Lloeg’ on NS-3; Pant-y-Craig [SE 1.5, 1.75] is written above road on NS-2, below road on NS-3.
151 Guilsfield [NW 8, 3.5] and Alberbury [NE 1.5, 1.5] are upright l.c. on NS-2, italic l.c. on NS-3.
152 Cardeston [NW 0.5, 3] is upright l.c. on NS-2, italic l.c. on NS-3; NS-2 only has ‘Old Windmill’ at Cluddley [NE 2.5, 4].
153 Oakengates [NW 2, 4] is italic l.c. on NS-2, italic u.c. on NS-3; Featherstone [SE 1.5, 5] is italic l.c. on NS-2, upright l.c. on NS-3.
154 Norton Canes [NW 3.5, 5.5] and Wilnecote [SE 1.5, 2.5] are upright l.c. on NS-2, italic l.c. on NS-3.
155 NS-3 only shows earthworks on mineral railway cutting name Baddesley Ensor [SW 1, 1]; Groby [NE 1, 5.5] italic l.c. on NS-2, upright l.c. on NS-3.
156 NS-3 only has ‘Brick Works’ [4.5, 5.5]; Pickwell [NE 2.5, 2.5] is upright l.c. on NS-2, italic l.c. on NS-3.
157 NS-2 only has ‘Old Windmill’ at Cottesmore [NW 4, 1.5]; NS-3 only has ‘Colyweston Cross Roads’ [SE 6.5, 3].
158 Market Deeping [NE 1, 3.5] is upright l.c. on NS-2, italic u.c. on NS-3; NS-3 only shows orchard north of Westry [SE 0.5, 2].
159 NS-3 only shows orchards SW of Newton [NW 1, 1] and Smithy [SE 2, 0.25].
160, 161, 162, 163, 164, 165 NS-3 uses station symbols.
166 NS-3 only has ‘Five Chimneys’ at Presthope [NE 5, 0]; ‘Mill’ at Cleobury North on NS-2 is ‘Mill Fm’ on NS-3 [SE 2.5, 5.5].
167 NS-3 adds name ‘Kinsley Fm’ [NW 1.75, 1.5]; NS-3 upgrades road to first class and adds mileage ‘5’ between Bradley and Buttombridge [SW 3, 0.5]; NS-3 adds three ponds in Hagley Park [SE 2, 1.75].
168 NS-2 only has ‘Middletonhall Fm’ east of Northfield [SW 4.5, 1] and ‘Rowheath Fm’ [SW 5, 1.25]; NS-2 only has ‘Rifle Range’ south of Maxstoke [SE 0.25, 4.5].
169 NS-3 only has ‘Cemetery’ SE of Nuneaton [NE 8, 4]; NS-3 only has ‘Coundon Court’ and park [SW 4, 2.25]; NS-3 only has ‘Ford’ NE of Cosford [SE 2, 1.25].
NS-2 only has ‘Old Windmill’ at Lutterworth [SW 0.5, 4.5]; NS-3 only has ‘Ironstone Quarry’ SW and NE of Desborough [SE 1.75, 2.75 & 1, 4.25].

NS-3 adds ‘Cemetery’ at Kettering [SW 3, 1]; NS-2 has ‘Ashton Lodge’ [NE 2.5, 5.5] where NS-3 has ‘Ashton Wold’ and a park; NS-3 only has name ‘Tansor Cross Roads’ [NE 3.5, 3.5].

NS-3 adds ‘Brick Works’ on west side of railway at Farce [NW 4.5, 1.5]; at Doddington ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [NE 0.5, 3.5].

NS-3 adds ‘Golf Course’ [NW 1.0]; NS-3 only has ‘Old Windmills’ by River Lark [SE 5, 3]; NS-3 only has tramway running south from Methwold Severals [NE 2, 1].

‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 SE of Feltwell [NW 1.5, 3.5] and at East Wretham [NE 4, 3].

NS-2 only has ‘Old Windmill’ at Brome [SW/SE 9, 0.25]; at Earsham Street ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [SE 2.75, 1.5].

At Holton ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [SW 8, 1]; NS-2 only has ‘Old Coastguard Sta’ at Kessingland [NE 2, 5]; NS-3 only has Pier at Southwold [SE 3.25, 0.5].

NS-2 only has ‘Workhouse’ at Aberaeron [SE 3, 2].

NS-3 adds mileages 14-22 to road from Shirl Heath [SW 4, 0.25] through Aymestry [SW 3, 4] to Walford [NW 1, 4]; NS-2 only has ‘Collery’ on Clee Hill [NE 4, 1.25].

NS-3 only shows road south from Stockton on Teme as first class with mileage ‘13’ [SW 3, 4.5]; NS-2 only has name ‘Hill Court’ north of Droitwich [SE 3.5, 3.25].

At Woolmere Green ‘Mission Ch’ in italic on NS-2 is ‘Ch’ in upright on NS-3 [SW 0.25, 2.5]; at Shrewley ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [SE 1.75, 6].

NS-3 adds ‘Reformatory’ at Kenilworth [NW 3.5, 3]; NS-3 only shows parkland round Spring Hill Ho. [NE 1.5, 2] and Hillmorton Ho. [NE 1.5, 2.75].

NS-3 adds parks and windpumps around Dunsmore [NW 0.5, 0.5]; NS-2 only has Cemetery at Weston Favell [SE 2.5, 2.5].

NS-3 only has ‘Hospital’ at Wellingbrough [NW 4.5, 5]; NS-2 only has ‘Windmill’ NE of Riseley [SE 4, 4].

NS-3 only has ‘Golf Course’ north of St Neots [SW 4.5, 2.25] and ‘St Johns College Farm’ east of Fen Drayton [NE 3.5, 5.5].

At Impington [SW 2.5, 3.5] ‘Hall’ in italic on NS-2 is ‘Impington Park’ in gothic on NS-3; NS-3 adds large orchard NW of Exning [NE 5, 5.5].

NS-3 only has ‘Whitham’s Fm’ and ‘Guiles’s Fm’ [SW 4, 1]; at Rattlesden ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [SE 0.5, 1.25].

NS-2 only has ‘Windmill’ west of Stowupland [SW 5, 2] and ‘Windmills’ at Saxtead Green [NS-3 retains symbol only] [SE 1.5, 5].

At Framlingham ‘Mill’ on NS-2 is ‘Windmill’ on NS-3 [SE 0.5, 4.25]; at Blythburgh ‘Mill’ on NS-2 is ‘Old Windmill’ on NS-3 [NE 6.75, 0.5].

SE of St Davids ‘Anchorage’ on NS-2 is ‘Glanymor’ on NS-3 [SW 7.5, 1.75], and NS-2 only has ‘Training Ground’ [SE 3.5, 2.25].

NS-3 uses station symbols.

NS-3 only has name ‘Careg-wen’ [SW 0.5, 0.5]; NS-2 only has name ‘Dyffryn-mawr’ south of Dihewid [NE 1.75, 2.75].

196, 197 NS-3 uses station symbols.

NS-3 adds park around Sylches Fm, south of Eardisland [NW 3, 1]; south of Canon Frome ‘Canal (Disused)’ on NS-2 is ‘Old Canal’ on NS-3 [SE 1.5, 2].

SW of Bosbury ‘Canal (Disused)’ on NS-2 is ‘Old Canal’ on NS-3 [SW 1, 1.25]; on Deford Common, NS-2 only has ‘rough pasture’ ornament and NS-3 only has ‘Training Ground’ [SE 3.5, 2.25].
200 NS-3 only shows park and 'Deer Forest' at Craycombe Hill [SW 3.25, 5.25] and Wood Norton [SW 4.5, 5]; east of Stratford on Avon 'Ch' on NS-2 is 'Ch (Disd)' on NS-3 [NE 2, 2.5]; SSE of Stratford on Avon 'Hill Fm' on NS-2 becomes 'Orchard Hill Fm' on NS-3 and an orchard is added [NE 2, 3.5].

201 NS-3 only shows parkland on SW side of Moreton Morrell [NW 3.75, 1.75]; NS-2 only has 'Mill' at Trafford Bridge [SE 1, 5.5].

202 East of Greatworth, 'Great Halse Copse' and 'Little Halse Copse' on NS-2 are 'Halse Copse' on NS-3; NS-3 only shows parkland surrounding Preston Deanry [NE 2.25, 1.5].

203 NS-3 only shows parkland surrounding the church at Clifton Reynes [NW 4.5, 4]; and NW of Ravensden [NE 2.75, 2].

204 South of Biggleswade, NS-2 has 'Windmill', 'Mill', NS-3 has 'Windmill' only [SW 4.75, 3.5]; Therfield Heath is shown with 'rough pasture' ornament on NS-2 only, but with a 'Golf Course' only on NS-3 [SE 4, 1.25].

205 NS-3 only shows parkland surrounding the church at Clifton Reynes [NW 4.5, 4]; and NW of Ravensden [NE 2.75, 2].

206 NS-3 only shows rough pasture NW of Blunt's Hall [NW 0.25, 5.5] and 'Windmill' south of Boxford [SE 1, 2.5].

207 NS-3 only shows 'Hill Fm' SW of Hadleigh [SW 2.5, 2.5] and 'School' east of Bucklesham [SE 1, 3].

208 NS-3 adds 'Golf Course' ENE of Woodbridge [NW 1.5, 4.25] and park and 'Bawdsey Manor' south of Bawdsey [SW 4, 0.5].

209 NS-3 uses station symbols.

210, 211, 212, 213, 214 NS-3 only has 'Smithy' at Three Ashes north of Newent [SW 3.5, 4.25] and at Stoke Orchard [SE 1, 1.75].

211 'Kingham Hill homes' on NS-2 is 'Kingham Hill Orphan Homes on NS-3' [SW 1.5, 3.75]; NS-3 only has park at Church Icomb [SE 2, 1.75].

212 South of Newent Stow 'College Fm' on NS-2 is 'Chesterton Fields Fm' on NS-3 [SW 0.75, 1.75]; NS-3 only shows 'Smithy' at Beachampton [NE 3, 1].

213 At Liscombe Park, 'Park Fm' on NS-2 is 'Home Fm' on NS-3 [SW 3.75, 4]; at Luton, NS-3 only shows 'Tower' [SE 0.5, 2] and 'Cemy' [SE 0.5, 1.5].

214 'Windmill' on NS-2 is 'Old Windmill' on NS-3 at Great Offley [SW 1.5, 5] and Barkway [NE 1.25, 1.25].

215 Mileages on first class road ENE through Broad Oak to St Owens Cross [SW 5.5, 0 - SE 7.5, 2.75] are '9' to '5' on NS-2, '13' to '18' on NS-3.

216 NS-3 only shows 'Smithy' at Three Ashes north of Newent [SW 3.5, 4.25] and at Stoke Orchard [SE 1, 1.75].

217 NS-3 only has 'Race Course’ north of [Cheltenham] [SW 0.25, 2.75]; NS-3 only has park at Church Icomb [SE 2, 1.75].

218 'Kingham Hill homes' on NS-2 is 'Kingham Hill Orphan Homes on NS-3' [SW 1.5, 3.75]; NS-3 only has 'Frog's Lodge' south of Lower Heyford [SE 2.75, 2.5].

219 South of Middleton Stoney 'College Fm' on NS-2 is 'Chesterton Fields Fm' on NS-3 [SW 0.75, 1.75]; NS-3 only shows 'Smithy' at Beachampton [NE 3, 1].

220 NS-3 only shows 'Smithy' at Beachampton [NE 3, 1].

221 At Liscombe Park, 'Park Fm' on NS-2 is 'Home Fm' on NS-3 [SW 3.75, 4]; at Luton, NS-3 only shows 'Tower' [SE 0.5, 2] and 'Cemy' [SE 0.5, 1.5].

222 'Windmill' on NS-2 is 'Old Windmill' on NS-3 at Great Offley [SW 1.5, 5] and Barkway [NE 1.25, 1.25].

223 'Kingham Hill homes' on NS-2 is 'Kingham Hill Orphan Homes on NS-3' [SW 1.5, 3.75]; NS-3 only has park at Church Icomb [SE 2, 1.75].

224 NS-3 only has two 'Colly.' at Onllwyn [SW 3, 5.25]; NS-3 only has 'Merthyr Common' north of Dowlais [SE 0.5, 5.25].

225 NS-3 only names 'Reed Hall', SSW of Colchester [SW 0.5, 3.25]; NS-3 adds 'Spa' south of Harwich [NE 0.75, 3.5]; NS-2 only shows 'Mill' at Shotley Common [NE 3, 0.25].

226 NS-3 only has 'Smithy' [NW 0, 0]; 'Eastend Fm' on NS-2 is 'Golf Club Ho.' on NS-3 [NW 3.25, 0.5].

227 US-3 uses station symbols.
Road north from Raglan past Henllys is 2nd class on NS-2, 3rd class on NS-3 [SW 2.5, 5]; ‘Lydney Ho’ on NS-2 is ‘Old Park’ on NS-3 [SE 2.5, 0.75].

‘Venns’ on NS-2 is ‘Newtown’ on NS-3 [SW 1, 0.5]; ‘Inn’ on NS-2 is ‘Air Balloon (P.H.)’ on NS-3 [NE 1, 2.5].

NS-3 only has ‘Seven Springs’, east of crossroads [NW 1, 2] and ‘Oxleaze Fm’ [SE 1.25, 3].

‘Lydney Ho’ on NS-3 is ‘Old Park’ on NS-3 [SW 2.5, 0.75]; ‘Lydney Ho’ on NS-2 is ‘Old Park’ on NS-3 [SE 2.5, 0.75]; ‘Lydney Ho’ on NS-3 is ‘Old Park’ on NS-3 [SW 2.5, 0.75].

‘Venns’ on NS-2 is ‘Newtown’ on NS-3 [SW 1, 0.5]; ‘Inn’ on NS-2 is ‘Air Balloon (P.H.)’ on NS-3 [NE 1, 2.5].

NS-3 only has ‘Military College’ at Temple Cowley [SE 1, 2.75]; NS-3 only has windpump ENE of Owlswick [SE 1.5, 4].

NS-3 only has ‘Cemetery’ east of Aylesbury [NW 0.5, 3.5]; NS-3 only has ‘Frogmore End’ SSE of Hemel Hempstead [SE 2.75, 3.5].

NS-3 only has ‘Sch.’ at St Stephens [SW 2, 3.75]; NS-3 only names ‘Rye Park’ north of Hoddesdon [NE 1.5, 5.5].

‘Copt Hall’ and ‘Little Copt Hall’ on NS-2 are ‘Copped Hall’ and ‘Little Copped Hall’ on NS-3 [SW 2, 1.5]; at Good Easter ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [NE 4, 3.75].

NS-3 only has ‘Seven Springs’, east of crossroads [NW 1, 2] and ‘Oxleaze Fm’ [SE 1.25, 3].

NS-3 only has ‘Military College’ at Temple Cowley [SE 1, 2.75]; NS-3 only has windpump ENE of Owlswick [SE 1.5, 4].

NS-3 only has ‘Cemetery’ east of Aylesbury [NW 0.5, 3.5]; NS-3 only has ‘Frogmore End’ SSE of Hemel Hempstead [SE 2.75, 3.5].

NS-3 only has ‘Sch.’ at St Stephens [SW 2, 3.75]; NS-3 only has ‘Rye Park’ north of Hoddesdon [NE 1.5, 5.5].

‘Copt Hall’ and ‘Little Copt Hall’ on NS-2 are ‘Copped Hall’ and ‘Little Copped Hall’ on NS-3 [SW 2, 1.5]; at Good Easter ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [NE 4, 3.75].

NS-3 only has ‘Milford’ near Hubberton [NE 3.5, 0.5].

NS-3 only names ‘Llangenith Moors’ [SE 5, 5.5]; NS-3 only has ‘Smithy’ at Pilton Green (SE 3.5, 2.5).

NS-3 only has ‘Isolation Hosp’ [NW 1, 2 and ‘Grange’ [in gothic] [SE 1, 2.25].

‘Cefn Iron Works’ on NS-2 is ‘Ferro-manganese Works’ on NS-3 [SW 4, 0.5]; NS-3 only has ‘Colliery’ on north side of Aberaman [NE 4, 0].

NS-3 only has ‘Walnut Tree Br.’ [SW 3, 0.5] and ‘Smithy’ [SE 0, 3.5].

NS-3 only has ‘Pont Sandpit Ho.’ [NW 0.75, 1], and windpump [NE 0.5, 1.25].

NS-3 only has ‘Soap Wks’ [SW 0.25, 4] and ‘Langley Common’ [NE 1.5, 3.75].

NS-3 only has ‘South Wick’ [NW 1, 0.5].

NS-3 only has ‘Sutton Quarries’ in gothic [NW 4.5, 4.25] and ‘Golf Links’ [SE 3.25, 1.75].

NS-3 only has ‘Hospital’ [SW 1.5, 3.75] and ‘R. Range’ [SE 2, 1.5].

NS-3 only has ‘Old Windmill’ [SW 6.5, 2]; NS-3 only has ‘Isolation Hospital’ [SE 4.25, 4.25].

NS-3 only has ‘Seven Springs’, east of crossroads [NW 1, 2] and ‘Oxleaze Fm’ [SE 1.25, 3].

‘Lydney Ho’ on NS-2 is ‘Old Park’ on NS-3 [SE 2.5, 0.75].
NS-3 only has ‘Smithy’ [NW 1.5, 2.5] and ‘Mildenhall Borders’ [SE 0.5, 5.5].

NS-2 only has ‘The Laundry’ [SW 0.5, 0.25] and ‘School’ at Thatcham [SE 0.5, 3.75].

NS-2 only has ‘Windmill’ [as well as Windmill Fm] [NW 0, 0.25]; NS-3 only has ‘R.Range’ near California [SE 0.5, 2.5].

NS-3 only has ‘Sanatorium’ at Wellington Coll. and ‘R.Range’ to south [SW 1, 1.25] and ‘Inn’ at New Bedford [NE 0.75, 3.25].

NS-3 only has ‘Golf Course’ [south of The Waffrons] [SW 3.5, 2]; ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [SE 2.5, 2.5].

NS-3 only has ‘Explosives Works’ [NW 2, 0.5] and ‘Brick Works’ [SE 0.75, 3].

NS-3 only has ‘Cemetery’ [SW 3, 0.5]; NS-2 only has ‘Smithy’ at Hoath [SE 3.5, 2.5]; NS-4 uses station symbols.

NS-2 only has ‘Windmill’ [SW 2, 5.5]; NS-3 only has numerous unfenced third-class roads around Lydden [SW 5.25, 5]; NS-4 uses station symbols.

NS-3 only has ‘Isolation Hosp.’ [SW 1.25, 1.5]; ‘Rectory’ on NS-2 is ‘Manor Ho’ on NS-3 [SE 2.5, 1.75].

NS-3 only has ‘Oare Post’ [SW 3, 1.5] and ‘Golf Links’ [SW 5.5, 1.5].

NS-3 only has ‘Way Wick’ [NW 1, 0.25] and ‘Cemy.’ [NE 0.25, 3.5].

NW of Midsomer Norton, ‘Colliery’ on NS-2 is ‘Colliery (Disused)’ on NS-3 [NW 0.25, 4.25]; NS-3 only has ‘Rifle Ranges’ [NE 2.75, 1.5].

NS-2 only has ‘R.Range’ at Market Lavington [NW 4.75, 4.75]; NS-3 only has ‘Pumping Sta’ [SE 0.25, 0].

NS-3 only has ‘Reservoir’ [SW 1, 4], ‘Observatory’ [SW 0.5, 3.5] and ‘Hospital’ [SE 3.25, 5].

NS-3 only has ‘Worle Moor’ [NE 1, 0.5] and ‘Inn’ [SE 2.25, 0.75].

NS-3 only names ‘Comp Wood’ [NE 3, 3].

At Yateley, ‘Potley Hill Ho.’ on NS-2 is ‘Yateley Grange’ on NS-3 [NW 0.75, 0.5]; NS-2 only names ‘Gravett Farm’ [SE 0.25, 0].

At Edenbridge, ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [SW 3, 2.5]; NS-2 only names ‘W.Works’ [SE 1, 5.5].

NS-2 only has ‘Brick Works’ at New Hythe [NW 2, 0.25]; at Charing, NS-2 has ‘Windmill’, NS-3 has ‘W.Works’ [SE 1, 5.5].

NS-3 only has ‘Old Manor’ west of Ashford [SW 0.5, 1.5] and ‘Water Works’ at Wingham [NE 1.3]; NS-4 uses station symbols.

NS-3 only has ‘Golf Links’ east of Sandwich [NW 5.5, 1] and an extensive grid of unfenced roads north of St Margaret at Cliffe [SW 6, 3.5]; NS-4 uses station symbols.

NS-3 only has ‘Wireless Tel. Sta.’ at Hartland Point [SW 1.5, 1.5]; NS-2 only names ‘Woodville’ [SE 1.5, 0.25].

On NS-3, mileages ‘1’, ‘2’, ‘3’, ‘4’, ‘5’ are added on road SSW from Barnstaple [SW 3, 4.5 SW 2, 1]; NS-3 only names ‘Mole’s Chamber’ [NE 4, 3].

‘Dry Hill’ on NS-2 is ‘Elsworthy’ on NS-3 [NW 1.5, 1.5]; NS-3 only names ‘Washford Cross’ [NE 1, 1.5].

NS-3 only shows windpump east of Doniford [NW 1.25, 0.5]; north of Puriton, ‘Brick Works’ on NS-2 is ‘Brick & Tile Wks.’ on NS-3 [NE 3, 0.5].
NS-3 only has ‘Chilton Moor’ [NW 0.75, 0.75] and Edington Heath [NW 1.5, 1], and ‘Priddle’s Hill’ [SE 0.25, 5].

NS-3 only has ‘Brick Works’ north of Maperton [SW 1.25, 1.75]; east of Chicklade, ‘Inn’ on NS-2 is ‘Chicklade Bottom Fm’ on NS-3 [NE 0.5, 5.25].

NS-3 only has ‘R.Range’ [SW 0.25, 1], and ‘Down Barn’ [NE 4, 3.5].

NS-3 only shows ‘Golf Course’ at Rache Court Down [NW 0.75, 4.25] and ‘Hospital’ east of Winchester [SE 1.5, 4].

‘Preshaw Farm’ on NS-2 is ‘Wind Fm.’ on NS-3 [SW 3.5, 0.75]; NS-3 only shows ‘Longmoor Camp’ [SE 1, 5].

At Churt, ‘Paper Mill’ on NS-2 is ‘Flock Mill’ on NS-3 [NW 2.25, 2.5]; at Billingshurst, ‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [SE 0.5, 2.25].

‘Northbreach’ on NS-2 is ‘Northbreach Manor’ on NS-3 [NW 0.25, 0.75]; NS-3 only has ‘North End’ [NE 0.5, 1.25].

NS-2 only has ‘Old Windmill’ at Ashurstwood’ [NW 1, 2.5] and ‘Windmill’ at Lamberhurst [NE 0.25, 3.25].

NS-2 only has ‘Observatory’ at Silver Hill [SW 3.75, 2.5] and ‘Windmills’ at Appledore Heath [SE 1, 5].

NS-2 only has ‘Windmill’ at The Leacon [NW 0.75, 5]; NS-3 only has ‘Golf Course’ ENE of Hythe [NE 5.5, 3.5]; NS-4 uses station symbols.

NS-3 only has ‘Rifle Range’ [N 2.5, 0.5]; NS-4 uses station symbols.

NS-3 only shows three buildings at Wrangle Point [SE 0, 0.75].

NS-3 only has ‘Golf links’ at Bude [SW 0.5, 0.5]; NS-3 only names ‘Gammarton Cross’ [NE 0.25, 0.25].

NS-2 has ‘Holy Well’, NS-3 has ‘St Mary’s Well’ [SW 1.75, 0.25]; NS-3 only has very small patch of park immediately south of Beech Hill [SE 0, 2].

NS-3 only has ‘Dart Raffe Moor’ [NW 0.5, 5.25] and Staple Cross and Staple Court Fm [NE 2.5, 2.5].

NS-3 only has R.Range [SW 1.25, 0.75]; ‘Ely Water’ on NS-2 is ‘Eleigh Water’ on NS-3 [SE 2, 3.75].

NS-3 only has Gallows Down [SW 0.25, 5.5]; NS-2 only has rough pasture on Poyntington Down [NE 0.75, 1.5].

NS-2 has [Black]‘MORE VALE’ at top of map [centred on NW 5.5, 1.25]; NS-3 has ‘BLACKMORE VALE’ written on curve across west of map [centred on SW 5, 6]; NS-3 only has ‘Rifle Range’ [SE 1.25, 2.5].

At Witchampton, ‘Abbey Barn’ on NS-2 is ‘Abbey Buildings’ on NS-3 [SW 3, 1.25]; ‘Black Barrow’ on NS-2 is ‘Black Barrow (Tumulus)’ on NS-3 [SE 2.5, 4].

NS-2 only has ‘Ch’ at Cemetery east of Romsey [NW 8.25, 1.25]; NS-3 only has ‘Hampton Park’ and straight streets to north [NE 5.5, 5].

NS-3 only has ‘Newgate’ [SW 3.5, 0.5]; on S-2 name ‘Chidham’ is above ‘Ch’, on NS-3 it is below and ‘Smithy’ and ‘L.B.’ are added [SE 1.25, 0.25].

NS-2 only has ‘Windmill’ [SW 4.5, 1.0]; NS-2 has ‘Windmill’ × 2 SE of Arundel, NS-3 only × 1 [SE 5, 2.25].

NS-3 only has ‘Hospital’ [SE 1.25, 1.5]; where NS-2 has ‘Hill’, ‘Windmills’, NS-3 has ‘Hospital’ [SE 3.75, 2].

‘Windmill’ on NS-2 is replaced by ‘Site of Battle (1264)’ [SW 0.5, 5.25]; NS-3 only has ‘L.B.’ and ‘Ch’ at Wallsend [SE 1.5, 1].

NS-3 only has hatched buildings and ‘Golf Course’ at Bexhill [SW 4.0, 3.0, 4.5, 3.5]; NS-2 only has ‘Windmill’ south of Rye [NE 3, 1.25].
NS-3 only names Jury’s Gut Sewer [NW 1.5, 1.75] and ‘Cemy’ [NW 4.75, 0.25]; NS-4 uses station symbols.

NS-3 has ‘C.G.S.’ at Boscastle [SE 7, 2.25] and ‘Brewery’ [NE 1, 5.25].

NS-3 only has ‘Greena Moor’ [SW 2.5, 6]; east of Bratton Clovelly, NS-2 has ‘Rectory’ and NS-3 has ‘Domons’ [SE 1.25, 3.5].

NS-2 only has ‘Ford’ at Okehampton [SW 6, 5.25]; NS-3 only has ‘Headless Cross’ [SE 0.5, 1].

‘Downes Fm.’ on NS-2 is ‘Downes Head’ on NS-3 [NW 4, 3.25]; NS-2 only has ‘Rifle Range’ at Topsham [SE 6, 1.75].

NS-3 only has ‘Chanters Ho.’ [NW 1.25, 5.75] and ‘Golf Links’ [SE 1, 5].

At Bothenhampton, church with tower is shown with ‘Ch’ in Roman on NS-2 and in gothic on NS-3 [SW 7, 5]; NS-2 only has ‘Inn’ and ‘Smithy’ at Maiden Newton [NE 3.25, 4.5].

‘Drownes Fm.’ on NS-2 is ‘Downes Head’ on NS-3 [NW 4, 3.25]; NS-2 only has ‘Rifle Range’ at Topsham [SE 6, 1.75].

NS-3 only has ‘Chanters Ho.’ [NW 1.25, 5.75] and ‘Golf Links’ [SE 1, 5].

NS-3 only has ‘Cemetery’ at Oakdale [SW 5, 4.75] and ‘Toll Ho.’ near Christchurch [SW 5, 4.75].

‘Windmill’ on NS-2 is ‘Old Windmill’ on NS-3 [NW 2.25, 0.25 and NE 1.5, 0.25].

NS-3 only has ‘Telscombe Cliffs’ and streets [NW 1, 1] and ‘Golf Course’ [NE 5.75, 1.25 and 5, 2.25].

NS-2 has ‘Lud Cliff Castle’, NS-3 has ‘Ludcliff Castle’ [SE 2.75, 1.25].

NS-3 only has ‘Obelisk’ [SW 4, 0.5]; ‘Brockabarrow Downs’ on NS-2 is Brockabarrow Common on NS-3 [SE 2.5, 4.75].

NS-3 uses station symbols.

NS-3 only has ‘Friar Waddon Dairy Ho.’ [NE 0.75, 0] and ‘Higher Barn’ [NE 0.5, 1.75].

NS-3 only has ‘Westham’ [NW 1, 3.5] and ‘Tower’ [NE 1.75, 4].

NS-3 only has ‘Hospital’ [NW 0, 0.25], and NS-3 only has rough pasture on Ballard Down [NW 5.5, 2.25].

NS-3 only has ‘Smithy’ at Mottistone [NE 7, 0.5]; NS-2 only has ‘Smithy’ at [NE 2, 4.25].

Old Park [NW 0.5, 5] on 1 line on NS-2, on 2 lines on NS-3; NS-3 only has ‘Reservoir’ [NW 4.5, 0.25].

‘Explosives Factory’ on NS-2 is ‘Explosives Works’ on NS-3 [SW 7.5, 3.25]; NS-3 only has ‘Bissick’ [SE 1, 1.5].

NS-2 only has ‘Smithy’ at Gluvian [NW 0.25, 1.75] at Fowey [SE 4.5, 2.5].

NS-3 uses station symbols.

NS-3 only has ‘Pendeen’ [SW 3.25, 3.25]; ‘Dynamite Works’ on NS-2 is ‘Explosives Factory’ on NS-3 [NE 2.5, 5.5].

NS-2 only has ‘Chimney’ at Rescudinnick [NW 1, 4.25]; NS-3 only has ‘Trethern’ and ‘Polhendra’ [SE 3.25, 4.75].

NS-2 only has ‘Smithy’ at Tregoney [NW 1.25, 1.75]; NS-3 only has ‘Tumulus’ west of Chapel Point [NW 6.5, 3.25].

NS-3 uses station symbols.

‘Smithy’ on NS-2 is ‘Smy.’ on NS-3 at Strete [NW 3.75, 0.25] and East Prawle [SW 0.25, 5].

‘North Channel’ on NS-2 is ‘North West Channel’ on NS-3 [NW 5.5, 5]; NS-3 only has ‘Wireless Tel. Sta.’ on St Marys [NE 7.5, 5].

At Lands End NS-2 has ‘Hotel’, NS-3 has ‘Hotels’ [NW 1, 3]; NS-3 only has ‘Hendra’ [NE 1.5, 0.75].

NS-3 only has ‘Workhouse’ at Helston [NW 3, 1]; at Coverack NS-2 has ‘Mills’, NS-3 has ‘Mill’ [SE 7.75, 5.25].
To the south of Stratford upon Avon, where I live, is, or rather was, the most complex array of detached county areas in the United Kingdom (Ross and Cromarty perhaps excepted), and Worcestershire especially seems to have literally exploded across the face of the map, so many are the individual pieces. How many thousands of times, I ask myself, have I driven between Stratford and Alderminster, five miles down the road towards Oxford, and forgotten the fact that my journey would once upon a time have started in Warwickshire, moved into Gloucestershire, then through Warwickshire and Worcestershire once again before ending up in one of the detached areas of Worcestershire?

It will be no surprise that such excess leads to places where not two but three counties meet. Many such meeting points take place on watercourses. For example, there are four such along the Knee Brook and other waterways west of Tidmington. Another is on the River Stour just above Preston. Perhaps because these locations are on significant watercourses, no additional means of identification evolved. But this is not so at two other local conjunctions. At the meeting point of Gloucestershire, Worcestershire and Warwickshire south of Bidford, just to the west of the roman road (SP 102479) was recorded the ‘Three Shire Elm’ on the Old Series map. By the time of the New Series it would appear that someone had planted more trees, since from then on ‘Elm’ has become ‘Elms’. Dutch elm disease notwithstanding, it is still so marked on the Explorer map today. Amidst the clump of trees growing there in what is now quite an extensive copse are several dead elms (figure 1).

Perhaps the tree at another conjunction of the same three counties is younger, but for whatever reason its existence is not recorded on the Old Series map. But from the one-inch New Series onward the ‘Three Shire Ash’ has been noted near Coombe Farm, to the south west of the Stratford to Banbury road some two miles out of Stratford (SP 234512). A ditch accompanies the field boundaries here, and the ash, now very old, gnarled and bent, but still growing, may be found west of the ditch, precisely on the outside of the corner (figure 2). It is virtually invisible from the east, being masked by other trees, in particular a very large and equally bent old willow on the other side of the ditch inside the corner.

There are of course many other such locations dotted around the country. Some of these are marked by stones rather than trees. The majority are not marked in any significant way on the map (not that that necessarily means that nothing is present on the ground), but among those that are I have noted the ‘Three Shire Stones’ on the Foss Way north-east of Bath (ST 796700), the ‘Three Shire Stones’, seven miles north of Banbury (SP 457524), ‘Threshire Wood’, eight miles south of Wellingborough (SP 911555), and the ‘Three Shire Bush’, seven miles north west of Grantham (SK 822428).

Finally I would like to mention another stone, one which has always held its place on the Ordnance Survey map. As in the United States of America, where there is one single point where four of the fifty states meet (Arizona, New Mexico, Colorado and Utah), there is in this country a unique location where four counties meet, Gloucestershire, Warwickshire and another of Worcestershire’s detached portions being joined by Oxfordshire. (Or I should say ‘was’ and ‘met’, since the Worcestershire portion is now part of Gloucestershire). This is at the Four Shire Stone (figures 3 and 4), about a mile east of Moreton-in-Marsh on the A.44 road towards Oxford (SP 230321). And it was so nearly met by yet another fragment of
Worcestershire as Blockley parish approached from the north west, which, however, just stopped some half a mile short. There are other places where four counties come close, such as between Tamworth and Ashby de la Zouch where Warwickshire gets to within a mile of Derbyshire, though separated by Leicestershire and Staffordshire. But only at the Four Shire Stone do four counties come to a single point.

The Americans, of course, have turned their Four Corners Marker into an important tourist attraction (figure 5), with directions to it by road from hundreds of miles away; it is a reflection of us English how modestly we mark so significant a feature of our own heritage, and how little notice we take of it. The Four Shire Stone stands between the roads to Chipping Norton and Great Wolford. I do not know when there was first a marker on the site. It has been suggested that it started as the location of a roman milestone, and as it happens we are at a place which may well be two Roman miles from where a possible roman alignment left Foss Way at Dorn. (A roman road, marked as uncertain on the third edition of *Roman Britain*, was omitted again on the fourth). A large stone, probably a monolith, was present at the time of John Leland’s survey of antiquities in about 1540, marking the place where the four shires met, and it seems that the present pillar may have been erected in the late sixteenth century, constructed of local Cotswold stone. John Ogilby recorded ‘the 4 Shire Stone’ on the road from London to Aberystwyth in his road book of 1675 (plate 2). From this very point he also started his road to Montgomery (plate 44), which at this eastern end was no more than an alternative route to Worcester. The early miles have long since ceased to be a road at all. The first impressions taken from his plate 2 demonstrate that Ogilby initially engraved no visual representation of the pillar (as depicted in the facsimile published by Alexander Duckham in 1939), but three lines resembling a stone pillar were added later (as depicted in the facsimile issued by Osprey Publications, Reading in 1971).

The pillar is surrounded by railings. One can just get to see all four faces, the Oxfordshire one being approached by squeezing between railings and the trees to the back of the stone. But the sense of English understatement is almost tangible. The site is singularly without distinction: there are no brown road signs, no car park, no visitor centre, no shop, no superficial aids to show the alignment of the approaching county boundaries – nothing whatever that reveals its unique significance. Long may it remain so.

References

Figure 1 (left): Three Shire Elms, SP 102479.
Figure 2 (below): Three Shire Ash, SP 234512.

Explorer maps © Crown Copyright, NC/00/1340
Figures 3 and 4: The Four Shire Stone

The extract above comes from John Ogilby’s road book; the diagram below shows the county boundaries in the mid-nineteenth century (as shown on the one-inch Old Series).
Wandering Wilts. in Wokingham

Eugene Burden contributes this photograph of another boundary marker: this one at the centre of the town of Wokingham, Berks., (SU 815688).

It marks the boundary of one of the former detached parts of Wiltshire. Wiltshire Way is round the corner
From the Chairman’s camera
at the Exeter meeting, 21 September

Above: Chris Board makes a presentation to Roger Hellyer after his talk. Below: Cartographic discussion continues in the pub. Clockwise from the front left, Jon Risby, Peter Stubbs, Chris Higley, Mike Cottrell, and Steve Simpson with back to camera.
Descriptive Memories
David Milbank Challis

It is very interesting after such a long time to find people enquiring into the nitty-gritty of how J B Harley’s Ordnance Survey Maps: a descriptive manual,1 was put together.

For myself, as the designer, it presented quite a challenge. The early meetings at Southampton were very bureaucratic affairs, a room full of well-intentioned civil servants, mainly with a military bearing, all with files, who knew little or nothing about book design and production, and two designers who knew little about the Ordnance Survey and only a boy scout’s knowledge of its maps. There was going to be a steep learning curve on both sides.

As with many design projects in those days at Her Majesty’s Stationery Office (HMSO) one had tremendous freedom and the ability to shape publications; much more so than in the commercial world. At that time the Ordnance Survey was trying to throw off its old image: new logo; new 1:50,000 map series; new 1:25,000 Second Series and the final phasing out of the large scale County Series maps; but its tedious committee bureaucracy and lingering military overtones still stifled radical innovation. The Manual project was regarded with suspicion, ‘letting the public see into the cupboard’; although it was intended as an update of the three ‘descriptive booklets’ last published in 1954. Luckily we managed to skirt around this as we were the ‘outside’ experts on book preparation and Brian Harley was not a man to be controlled!

A quick perusal of the book’s Preface will reveal most of the key players. There was of course, Brian, the author, who undertook the onerous task of compilation and dealing with the staff at Southampton. Miss Betty Drewitt was in charge of publishing at OS and took administrative responsibility for the Manual (which had been agreed at a high level within the organisation). Fortunately she allowed us plenty of rope, probably because there were many more pressing issues. Much of the day to day work she delegated to one of her publications officers, A A (Bert) Williams, he was an OS man through and through, was nearing retirement, saw this as his swan-song, and was very supportive of our approach. Bert was extremely knowledgeable on all things OS and if he did not know the answer, he certainly knew who did. The Plates section of the Manual was basically Bert’s own selection based on assorted views and the need to illustrate a particular range of maps, the reasons for each choice are not given in the Manual, but would be worth recollecting at some point.

The cover map had to be part of one of the newly published 1:25,000 Second Series sheets, the design was my responsibility. My colleague John Saville had already thought up the idea of using enlarged conventional signs as part of the decoration. So I combined the lighthouse symbol with a section of TQ47/57 as it covered Greenhithe where I was born, and there was a lighthouse symbol marked across the river at Stone Ness. In fact, I organised the layout so that one of the lighthouse beams highlighted the family bakery in Station Road!

Although John Saville started the design liaison process with OS, I in fact did the bulk of the design work and also saw the job through its proof and press stages. We were both employed in the large design studio of HMSO and were engaged by OS in a ‘departmental’ capacity as the book was to be published by OS and not HMSO. There was a long-running

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feud between the two departments as ‘Crown Copyright’ was vested in the Controller of HMSO. The overall production timescale was almost five years, much of it taken up by JBH compiling and verifying the text.

The design process was quite thorough. The A4 format was an early decision as it had recently become the vogue for everything ‘official’, although it was really a stationery format. Neither was it ideal for bookwork and care had to be taken with the page layout; the final two-column layout with its ‘page drop’ at the top gave a very legible text. It was set in Baskerville 169 typeface with italics, small caps and old style figures and the headings in Univers. The illustration annotation used the OS version of Univers. With the Plates it was not always practical or indeed desirable to select the ‘edge’ of the chosen sheet; in these cases the theoretical marginalia had to be created in the appropriate style.

Apart from Bert Williams, there were several other very helpful staff at OS, not mentioned in the Preface. The cartographic liaison officer was a chap called Broomfield and it was he who facilitated the production of all the text diagrams. These only came about after a discussion between Brian and myself and access to the internal Red and Blue books demonstrated that we could easily illustrate various aspects of the text. In Sheetlines 64 Michael Holroyd wanted to know how Point P was selected. As I recollect it was taken from an existing internal diagram, which I adapted to suit the page layout and make the arrangement work better. In fact I prepared a rough layout for every text diagram which the OS cartographers then drafted, they were all drawn specially for the Manual to fit given spaces and in uniform line weights. The production superintendent Campbell Ballantyne was also extremely accommodating and opened many doors at OS.

After some discussion at OS it was agreed that the Manual would be typeset and printed by a ‘book printer’ and a contract was eventually given to Oxford University Press, it was based on my detailed specification and organised through HMSO. OUP did a really good job of typesetting, proofing, printing and eventually binding. They were not responsible for two key elements: the cover paper cloth printing and endpapers which were both printed by PSG (the printing company of Rolls Royce Aero Engines). The cover was printed on cloth textured Linson paper as an exact facsimile section of the 1:25,000 map, then overprinted with a special black, blue and lime green – a seven colour production.

The other area OUP did not handle was the Plates section. Now this was a problem; the intention was that OS would naturally print the Plates as that was what they did; but the reality proved to be more tricky. Having selected the map sections, we organised the sequence and layout and agreed that we would use a common paper stock. The aim was still to try to achieve a facsimile reproduction of each map example. This led to two problems. Firstly a chart was produced detailing the ink specification for each example: it amounted to over fifty different colours including nine different blacks. This was rationalised down to 32, any less and the facsimile element would have been seriously compromised. We then produced a book imposition scheme for the Plates based on four pages to view which meant eight page folded sections. More than four to view would probably have led to considerable ‘fit’ problems when printing the sheets. Two eight-page sections (inner and outer) were sewn together to form a sixteen-page signature to match the text; there were three Plates signatures.

At this point the OS printing manager (Ken Brown?) got ‘cold feet’, he did not think the large Crabtree offset litho presses at Southampton would be suitable for the work (and he was probably right – neither were the OS used to book production work). After much angst
among the ‘brass’ OS finally agreed that the Plates should be printed by a specialist offset colour printer. A contract was organised with W S Cowell of Ipswich who had recently installed a new Roland four-colour inline offset press with a small demy format – which would be ideal. The Plates printing exercise was a real test: the origination and separated films were prepared at OS; Cowells made the plates. The most complicated section (eight pages) had four passes through the press on side A as there were sixteen colours spread over the four pages; then a further three passes for side B which required twelve colours. To keep ‘fit’ in such circumstances was a tribute to the skill of Cowell’s printers. An OS representative, J B Sleeman, was on site throughout the whole process and he recorded every day’s production in a diary (see illustrations). The Manual should be a collector’s piece for the print production alone.

In conclusion; I must say that this was one of those rare projects where a small group (of disparate individuals) is assembled and they collaborate as a team to produce a unique book. Bert, Brian and I thought we did the subject justice. It was an expensive exercise that simply would not even be contemplated in post Thatcher Britain. My only sadness was that OS failed to market it very well and that they prematurely remaindered so many copies. It is a ‘collector’s piece’ as well as invaluable source of information – just look at the state of the BL map room’s copy!

And I have those abiding memories of getting exceedingly drunk with Mr Harley, either in Newton Abbot or at Bertorelli’s in Charlotte Street – great job.

Six pages reproduced from the A5 diary that Sleeman kept during his secondment to Cowells:

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<tr>
<td>W.T.</td>
<td>Work and Turn</td>
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</table>

All other work done on press only 2 colour machine.
Letter C in question. C — this bar on the C was removed so it looked like it to be dirt. I asked for a new plate to be made with the letter C appearing as in proof C. I believe this to be bold Times Italic. New plate arrived 11/30.

Scum on both places.
New plates required.

Holes in shading place has true holes — bare of ink in middle of sheet. Suggested that P D touch this hole on rag and new plate to be made.

Started exam on printed sheets. Two girls employed on examination of printed sheets.

Page 3  Printing sequence of two sides: Sig 2* and Sig 3

Page 10  Printing sequence of Sig 3*, 16 colours, pages 42, 43, 46, 47

Page 18/19  Two pages from the daily diary notes
**A non-existent hill on the first edition of the 1:25,000 map**

*D T Donovan*

In the early 1950s I was driving in Somerset with another geologist, using the then new 1:25,000, sheet 31/75 [First Series], 1947 map for navigation. We had been recording hilltop outliers of a limestone bed in the Forest Marble Formation of the Middle Jurassic. I noticed a small hill shown on the map and exclaimed that it was surely another outlier of the limestone. My companion, who had been working in the area, did not think so, and sure enough when we drove to the hill it was not there.

The ‘hill’ in question was about 1 km NNE of the hamlet of Faulkland, its summit at about ST 742553. It is surrounded by the 500 and 525 feet contours. A bench mark is shown within the 525 feet contour at ST 74255532 but with no altitude. Bench marks were shown on this map but their heights were not given.

![Map of Faulkland area](image)

The explanation of the map states ‘Instrumental Contours are at 100 feet interval’ (from the pre-existing six-inch maps, of course) and, as is no doubt well known, the contours at 25 feet intervals, between even hundreds, were interpolated by the draughtsman.

Reference to the six-inch map, County Series Somerset XXI SW, first published 1890, provided the explanation. The height of the bench mark is 459.0 ft. This was presumably misread by the draughtsman as 559, or perhaps 549, and he drew contours to conform with it. The detail was unchanged when the map was ‘Reprinted with corrections 1951’, now numbered ST75.
Turning to the one-inch map, the hill does not appear on the New Popular Edition, sheet 166, *Frome*, [first issue], 1946 price 3/-, or on issue D, still dated 1946 but probably issued later. However, on an issue A/* with new design covers, dated 1959 but ‘Reprinted with minor changes and the addition of Public Rights of Way 1967’, the hill is there, defined by the 500 feet contour, so this map was presumably revised from the early 1:25,000 sheets.

I have not determined when the hill was removed from the 1:25,000 maps. On the 1:25,000 *Explorer* sheet 5, *Mendip Hills East*, edition A, 1994, with contours at five metres interval presumably from air survey, it has thankfully disappeared, as it has from the 1:50,000 *Landranger* series, sheet 172 (edition of 1996 seen).¹

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**Large scale topics – old and new**

*John Cole*

In *Sheetlines 61* (An introduction to the old ‘Town Series’ maps) I suggested that figure for 1:500 sheets in Ireland may have exceeded 500 and I subsequently thought that this was on the low side. The recent reprint of J A Andrew’s *A Paper Landscape* (a ‘must have’ for any student of Ordnance Survey large scale history) indicates this to be the case and ‘in excess of 900’ is likely – the true figure, as in the case of England, Scotland and Wales, being uncertain. I did not attempt a figure for the printed Irish 1:1056 and in this case the figure is also around the 500 mark.

Moving forward some one hundred and fifty years, a visit to the Ordnance Survey website produces the following corrections and additions to the 1:1250 data in *Sheetlines 24* and 56:

- Not apparently surveyed at that scale are Bagshot, Burghead and Oxted. The Annual Report for 1989-90 (page 3) specifies that the first and last named were surveyed at 1:1250 during the year.²

- Bicester (with a map number of 84) was surveyed at 1:1250 sometime after 1993.

- The number of maps for Teignmouth should read 6; for Todmorden 2; and for Easton and Fortuneswell (Isle of Portland) 2 and 4 respectively.

- It is noted from the website that six 1:2500 maps: NO 7157, 7158 (Montrose); NO 8686, 8786 (Stonehaven) and NX 0560, 0660 (Stranraer) are classified as dual scale in that only the congested detail (usually old town centres) on the maps concerned was surveyed at 1:1250 scale. This is not quite what was implied by Annual Reports, full coverage for Stonehaven at least was quoted in 1987-88. Also dual scale was applied to places such as Teignmouth, Dawlish and the Isle of Portland etc. where specific maps were at 1:1250 and the rest of the built up area resurveyed at 1:2500.

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¹ 1:50,000 First Series sheet 172, A edition, 1974, was, of course, compiled from one-inch map material and still has contours at 50 feet vertical interval. However, the mistake has been spotted and, although the other contours in the immediate vicinity are identical to the extract above, the 500′ contour line around the ‘hill’ has disappeared. – *CJH.*

² When the OS was obliged to contract out 1:1250 and 1:2500 work in the 1980s there were several disasters. Less so on the larger scale and indeed in these parts Truro and Penzance (by the same firm) were reasonably satisfactory. There was at least one accident in Scotland and I am inclined to suspect that Oxted and Bagshot have gone the same way.
A Man For His Time?
Sir Charles Arden-Close 1865–1952
C I M O’Brien

This paper first appeared ten years ago, in Sheetlines 34. It is reprinted, with the author’s kind permission, to mark the fiftieth anniversary of the death of Sir Charles Arden-Close.

Five Superintendents, or Directors General, of the Ordnance Survey appear in the Dictionary of National Biography, William Mudge (as do two of his sons), Thomas Colby, Sir Henry James, Sir Charles Wilson and Sir Charles Arden-Close, the most recent DG to be honoured with a knighthood or the Fellowship of the Royal Society. Sir Charles took the additional name of ‘Arden’ late in life but he will be referred to here, throughout, as ‘Close’. Space will only permit a brief overview of a very full life before three facets are reviewed in more detail.

Charles Frederick Close was born in Jersey on 1 August 1865, the eldest of 7 sons and 6 daughters of Major General Frederick Close, late Royal Artillery. The family lived, perforce, ‘quietly’. Nevertheless Close passed second into the Royal Military Academy, and first out of it, to be commissioned into the Royal Engineers in July 1884. His first years with the Corps included a posting to Gibraltar, two years with the Balloon Section at Chatham and a spell constructing heavy gun batteries for the seaward defence of Calcutta.

While in India he took the opportunity to transfer in 1890 to the Survey of India. That institution enjoyed great prestige and attracted some of the ablest young RE officers, many of whom devoted the rest of their careers to its service. Close was to return to Chatham in 1894 but his experience with the Survey, employed on topographical survey and secondary triangulation in Burma, left a lasting impression. For the rest of his life maps and surveys were to be central to his career.

In the following year he was picked to lead the British element of a Commission appointed to survey a section of the frontier between the, British, Niger Coast Protectorate and the German Colony of Kamerun - a frontier defined by diplomats whose knowledge of African geography was, to say the least, hazy. The survey was successfully completed though the diplomats subsequently rejected the Commissioners’ advice. Close learnt a lot about international co-operation and the need for caution in the application of new technology, under field conditions.

On return from West Africa, Close received his first posting to Ordnance Survey.

He also started work on a revised edition of the Textbook of Military Topography, (published in two volumes, 1898). In no time at all he was off to Africa again as the British leader of a much more important Joint Commission tasked with establishing the course of the Anglo-German frontier between Lakes Nyasa and Tanganyika (the present-day frontier of Tanzania with Malawi and Zambia). Close landed at Cape Town on Wednesday 27 April 1898, on his first visit to southern Africa. On Saturday he lunched with Her Majesty’s Astronomer, Dr David Gill, and obtained his support for a unified survey department for British Africa, which proposal he then put to the Governor, Sir Alfred Milner, over Sunday afternoon tea. Moving up country to Zomba (administrative centre of the Central African

1 Close quoted by de Graaf Hunter, obituary, p.327.
Protectorate) he persuaded Wahid Ali Khan, of Survey of India, who had just completed a secondment, to delay his return home for a few months. He was to undertake nine-tenths of the Commission’s plane tabling. Close wrote ‘His work was not minutely detailed and in this respect it was inferior to the German topography, but it was available when it was wanted, which the German work was not’. Nevertheless Close established excellent personal relations with his German colleagues which were to serve him well many years later.

Close returned to Ordnance Survey but by February 1900 he was once more in South Africa, in command of the first survey detachment ever despatched from OS for active war service. Close wrote: ‘while waiting at Cape Town, after a little opposition, I engaged a litho draughtsman and a litho printer and bought a litho press, stones and accessories, all ready to move up country.’

Once at the front this unit was to produce what Close claimed to be the first multi-coloured map litho-printed in the field by the British Army. Unfortunately though his men continued to make a useful contribution to operations, Close went down with enteric fever and was invalided home. His experiences re-enforced his belief in the need for a regular peacetime topographic mapping programme, convincing him that many British lives had been lost through its neglect.

Restored to health Close was appointed Instructor in Surveying at the School of Military Engineering, Chatham. He speedily set about revitalising the teaching programme. The trigonometrical course would now take place under field conditions. Printing and lithography were brought under the Instructor’s control allowing further development of the concept of rapid map production in the field to support military operations.

These activities were interrupted in 1904 by a summons to a Cape Town conference which was considering a scheme for the unified mapping of all British territories south of the Zambezi. Unfortunately while the scheme received unanimous approval it was never implemented because Imperial and Colonial governments failed to agree on the division of financial responsibility.

1905 was to be the turning point in Close’s career. Hitherto he had gained unusually wide experience but had rarely stayed long enough in one place to leave a lasting mark. Now some of that experience was to be distilled in the first edition of the Textbook of Topographical Surveying, published at 3s 6d a copy and destined, with two subsequent editions, produced in collaboration with E W Cox and H StJ Winterbotham, to serve as a field surveyor’s ‘bible’ for more than half a century. Then an unexpected vacancy occurred at the War Office and for the next six years Close was to serve as head of the Geographical Section of the General Staff during a critical, but very fruitful, period. The Section was then responsible for the provision of maps for the Army (other than in India) including those of potential theatres of war. Its head was effectively geographical adviser to both Foreign and Colonial Offices, particularly when international boundary problems arose. Finally GSGS was much in liaison with British Colonial and foreign geographical services and participated in various international congresses and conferences.

The British Army had been badly shaken in South Africa. This had stimulated a resolve to make it a well trained and equipped force, ready, at short notice, to fight a mobile war.

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2 Close, Diary, Anglo-German Nyasa-Tanganyika Boundary Commission 1898, (RGS Archives).
3 Close, ‘Fifty Years...’, ESR, II., 3.
4 Col B R Ward, The School of Military Engineering 1812-1909, Chatham, 1909, p.35.
Under Close GSGS, with some OS assistance, was to produce maps which matched this concept in scale and design and which, incidentally, met the criteria for ‘the ideal topographical map’ that he had presented to the Royal Geographical Society in 1904. Typically these were in the scale range 1:100,000 to 1:250,000, clear to read and free from clutter and, where completely new productions, showing an unmistakable house style regardless of whether they were of Belgium or Basutoland, Constantinople or Kenya. Of the first, Close’s successor at GSGS, Hedley, recorded that in 1914 ‘the original Expeditionary Force was very well equipped with maps, chiefly owing to the great foresight of Sir Charles Close’.

However we may see things in retrospect, it must not be assumed that contemporaries saw a major European conflict as inevitable. Close himself took part in many conferences and discussions with both future allies and future enemies, for example to resolve Anglo-Belgian-German boundary problems in Africa and, incidentally, identifying a mountain that a former foreign secretary had declared to be ‘a myth’. This seemed to demonstrate that reasonable men could resolve apparently intractable problems.

In 1911 Close was appointed Director General of the Ordnance Survey, which appointment he was to hold longer than any other incumbent since Sir Henry James. However when he retired from the Army (and OS) in 1922 he was still only 57 and had thirty years as an elder statesman ahead during which if anything his range of activity broadened rather than contracted. He became Secretary to the International Geographical Union and served as its President at the time of the Amsterdam Congress in 1938, working hard behind the scenes to defuse the effects of increasing world tension. He became a very active President of the RGS at the time of its centenary and the extension of its Kensington headquarters. He became deeply concerned about the rapid growth of world population and the demands this would make on resources while until his eightieth birthday he served as Chairman of the Palestine Exploration Fund. For these later years he will be remembered particularly for his writings, including The Early Years of the Ordnance Survey, The Map of England and a large number of short articles and notes in periodicals some of which were reprinted in Geographical By-Ways. At the same time he continued to correspond actively on one of his favourite subjects, map projections. (His last contribution to the Geographical Journal, ‘A Forgotten Pseudo Zenithal Projection’ appeared only shortly before his death in 1952).

It is now time to look more closely at three facets of Close’s career, the promotion of colonial surveys and mapping, the International Map project and his work for Ordnance Survey. These illustrate in turn what initiative and drive could achieve and the extent to which it was constrained by the circumstances of the times.

Close acknowledged more than once his debt to the Survey of India. When faced with African mapping problems, like Holdich before him, he saw solutions in Indian experience. This implied that only an Imperial organization could respond adequately to administrative, defence and development needs. The South African scheme failed to take off. Nevertheless when Close took over at GSGS he found a small Colonial Survey Section (two officers and

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7 Colonel Hedley, contribution to discussion on Lt Col H S L Winterbotham, Geographical work with the Army in France’, GJ, LIV (1919), 12-28.
9 See e.g. Colonel Sir T H Holdich, ‘How are we to get maps of Africa?’, GJ, XVIII (1901), 590-601.
four NCOs) in being. Originally destined for Jamaica, financial problems caused Close to arrange re-deployment in South Africa, where it mapped the Orange Free State at 1:125,000, latterly under the command of H StJ L Winterbotham (very much a Close protégé). In concert with a senior Colonial Office Administrator, H J Read, Close arranged for the setting up of a three-man ‘Colonial Survey Committee’, the third member of which would be the Director General of the Ordnance Survey. Within weeks a despatch went out to Colonial Governors advising them that in future maps must be produced at specified standard scales (including 1:250,000 cover of each colony or protectorate). Annual reports of progress would be required and provision made for training natives of the colony (the Indian example was quoted). Topographic maps surveyed or compiled overseas should be sent first to GSGS for scrutiny and any necessary editing before they were passed on to OS for printing.

Very considerable progress was achieved before 1914 despite the lack of central (Imperial) funding, though the considerable autonomy enjoyed by Governors (one declared topographic survey to be ‘a luxury’)[11] made it difficult to secure uniform progress.[12] Even so by 1914, 84 officers and NCOs were serving overseas on secondment but the outbreak of war saw them recalled to their regiments while many of their civilian colleagues were diverted to war work. After the war the Committee was re-constituted but lacking the driving force of Close and Read, and with continued pressure for economy, much less was achieved. Nevertheless its formative years show how Close, recognizing that high powered schemes were not practical politics could achieve results through a combination of diplomacy and the prudent use of limited resources.

In 1891 Professor Albrecht Penck proposed the production of a map of the world at a scale of 1:1,000,000, at the International Geographical Congress at Bern. His proposal was welcomed by many and succeeding congresses settled many relevant issues, such as altitudes to be expressed in metres, longitude referred to Greenwich and standard sheets to extend 4º in latitude and 6º in longitude. Several countries produced sheets at 1:1M scale and GSGS even commenced a hachured 1:1M map of Africa (GSGS 1539) on what subsequently became International Map (IMW) sheet lines. Congress delegates, however, had no power to commit their respective governments to participation.

Several distinguished British geographers, including Close, attended the 1908 congress at Geneva. Interested delegates were invited to an informal dinner at which a five-man committee (including Penck and Close) was formed.[13] At a subsequent meeting, on a lake steamer, this group drafted proposals which were to form the basis of all subsequent decisions. Returning to London, Close called on the Foreign Office and persuaded it that Britain should invite representatives of the leading nations to London to put the project on a formal basis. The meeting took place in November 1909. It entrusted GSGS, that is to say Close, with the drafting of all resolutions, so that the project was launched in harmony and light. Finally at the Paris conference in 1913 the British Government was empowered to set up a Central Bureau at OS headquarters, Southampton.

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10 Mr Lyttelton to The Governors, High Commissioners and Commissioners August 24 1905, Colonial Office Confidential Print, African No.777. Survey of British colonies and protectorates; Correspondence, pp 16-18.
13 Geographical By-Ways, 112.
Over the next few years a number of countries produced pilot sheets but no extensive areas had been covered before war intervened. It was quickly apparent that small scale planning maps would be needed. On the strength of a telephone conversation between Hinks of RGS and Hedley of GSGS, the former society was launched into the compilation of what became quasi-IMW cover of Europe as well as parts of the Middle East and Africa. Sheets could only conform to the official specification so far as data and resources permitted. Close’s attitude was ambiguous. While OS made a significant contribution, fair drawing as well as printing many sheets, he would not have this acknowledged for fear of prejudicing its peacetime role as Central Bureau. The later history of IMW is outside the scope of this paper but it is notable that the major contributors have been the American Geographical Society and various military agencies rather than national civil cartographic services, few of whom gave it much priority.

When Close took up the Director General’s post at Southampton his previous OS service amounted to only a couple of years or so. (Compare this with Henry James’s 27 years, or even Charles Wilson’s ten years). Nevertheless he felt that he had the measure of the Survey and knew what had to be done. In 1897 he had found it ‘an exceedingly well organised department’ for the production and revision of large scale plans, faithfully executing procedures introduced by Colby seventy years before. Little thought was given to training for overseas service or for war and when Close commented unfavourably on the state of the trig records his chief minuted ‘In spite of our inferiority we seem to have done pretty well hitherto’.

Clearly things had progressed by 1911. Not a few officers and men had served overseas while colour printing was now the norm for small scale maps. It was though characteristic that Close opened his first OS Annual Report with a ‘General review of the operations of the Ordnance Survey and of the work which lies before it’. He identified four groups of duties:

1. The completion of the 1:2500 map of Ireland and the revision of each sheet of Great Britain once every twenty years. Plans at larger, ‘town’, scales should be prepared or revised when required.
2. The preparation of official small-scale maps. No one-inch sheet should be more than fifteen years out of date when issued to the public.
3. Training surveyors for service in colonies, protectorates and self-governing dominions.
4. Providing specialised mapping services for various Departments of State, for example to show the density of London traffic.

He described some tasks pending, drawing attention to the unsatisfactory state of contouring of areas above 1000 feet. He concluded: ‘The Department which ignores its scientific duties tends to fall into routine and to adopt a habit of accepting methods which are supposed to be just good enough, but which, as a fact are never good enough in the long run.’

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14 ‘We might have occasion in the future to invite a chastened Germany to join again’, Winterbotham to Hinks, 6 October 1914 (RGS archives).
15 E Meynen (compiler), *International Bibliography of the ‘Carte Internationale du Monde au Millionième’, (International Map of the World on the Millionth Scale)*, Bibliotheca Cartographica, Sonderheft 1, Bad Godesberg, 1962, reviews the project up to that date, crediting GSGS and OS (and by implication Close) with the publication of the very first sheet in the series, SH 34, *Kenhardt*.
16 Close, ‘Fifty Years...’, *ESR*, I, 199.
17 *Ordnance Survey Annual Report*, 1911/12.
Like a good regimental officer, Close had first to secure a square deal for his men. Pay and terms of service for civil assistants were reviewed, evidently to their satisfaction. Scientific work was revived and the second geodetic levelling launched. The Irish 1:2500 was completed while Close directed his thoughts to the amelioration of the difficulties caused by the plethora of meridians employed for the county series maps and plans of Great Britain, a task hindered by the loss of trig records. In the end only five out of 43 meridians were eliminated before financial stringency terminated the project. The demand for larger scale plans for valuation and land registration was met by photographic enlargement from 1:2500 to 1:1250 rather than by any revival of the old ‘Town Scales’.

However all hopes of maintaining the large scale revision programme were destroyed by the First World War, through loss or diversion of manpower. Finally in 1918, in response to the Select Committee on expenditure, it was decided that the more thinly populated counties could only be revised once every 40 years.

For contemporary map users, as for present day collectors, Close’s most significant impact was on small-scale map production. He was not a cartographic radical. As late as 1916 he advised against the inclusion of cartographic drawing in a training scheme devised by the RGS on the grounds that first quality work could only be obtained by engraving on copper and one of his steps on taking over at Southampton had been to ensure that the Irish half-inch would be so produced. (Nevertheless by 1919 he was ordering preparation for a new, hand-drawn one-inch map of Scotland). Looking at Close’s influence on the small scales it can be seen to progress from an initial experimental stage, largely using existing engraved base material but enhancing this by the imaginative use of colours. The best known example was the Killarney one-inch, even though, as Winterbotham unkindly pointed out, it owed its success as much to the finger of God as to the hand of man. From such experiments, for example from the Keswick extract in the second edition of Close’s Textbook we can get some idea of what might have been achieved but for a regrettable incident on the streets of Sarajevo. However in retrospect the 1914 prototype ‘Popular’ of Aldershot (South) was more significant. Despite its use of existing base material it seems more in keeping with Close’s ‘ideal topographical map’ of 1904/5 and the clean austerity of his GSGS productions.

There was no point in producing maps which were not used so the next step was to promote sales. A confidential committee made a wide-ranging set of recommendations, including the more rigorous enforcement of copyright, a more effective network of agents and placing maps in attractively designed covers which would afford better protection in use. The war delayed action but once peace returned Close invited Ellis Martin to join the Survey with rather dramatic consequences for how its products were seen by the outside world.

It is impossible to do justice here to Close’s and Ordnance Survey’s contribution to the allied cause in the First World War. Its men were the backbone of the survey units in France, while back at Southampton millions of maps were printed for field use. Close was denied the opportunity to go on active service. Instead he was the back-up man, called over to France once or twice to give advice and encouragement to men like Jack and Winterbotham whose careers he had advanced, otherwise minding the shop with dwindling resources, faced with

19 Note dated 26 November 1916, (RGS archives).
20 Textbook of Topographical and Geographical Surveying, by Colonel C F Close, revised by Captain E W Cox, London, HMSO, 1913, Plate XXIV.
new problems such as the re-definition of parliamentary constituency boundaries and meeting the first wave of demands for post-war economy.

In 1918 peace could be welcomed but many of its consequences could not. The impending separation of the Irish Survey would mean a reduced establishment but further cuts were demanded by the Treasury. Close seems to have accepted the first wave of economies as part of the necessary sacrifice which all must bear to pay for the war. What he resented was the second round, the notorious ‘Geddes Axe’ of 1922, as he felt OS was one of the few departments to make genuine economies in the earlier phase and should have received credit for this.

Close’s last years in office were clouded by increasing staff discontent. Nonetheless he did not give up. New small-scale maps appeared, such as the English ‘Popular’ one-inch, the layered quarter-inch and an increasing number of Tourist and District sheets. An Archaeology Officer and a Research Officer were appointed. The former, O G S Crawford, was to make a major contribution to the Survey’s public image as a forward looking organization despite the hard times.

In retirement Close did not forget his obligation to the Survey and through speech and writing sought to foster a positive view. His final contribution was perhaps his far seeing evidence to the Davidson Committee in which he linked present and future demands for maps to demographic trends. He opposed any changes in map scales unless the metric system was to be made obligatory in which case ‘very soon we should find ourselves obliged to re-contour Great Britain’: prophetic words.

It remains to re-assess our man. Most witnesses present him as mild mannered, a father figure to his staff who would go to great pains to avoid a row. Correspondence suggests that nonetheless he could sometimes be insensitive or even tetchy. In 1911 his presidential address to Section E of the British Association was seen as almost treasonable by the RGS’s inner circle for its criticism of the intellectual aspirations of geographers. Years later as the Society’s President he could drive the Secretary to distraction by authorising the re-arrangement of the New Map Room furniture in Hink’s absence. The impression received is of a man considerate of those around him but who, if he felt something should be done, went ahead, regardless of whether a few eggs might be broken. Consequently in a long and active life he marked up a remarkable range of achievements.

Standing back a couple of decades these achievements may seem to dim a little. His fine schemes for African mapping only bore limited fruit. The International Map project never really prospered as a collaborative venture. His scheme for consolidating the county series maps and plans petered out for lack of funds but could be said to be flawed because of deficiencies in the original data. Finally had Close not co-operated so conscientiously in the post-1918 economies might the blow of the Geddes Axe have been blunted?

If we look today for physical evidence of Close’s career we can find all but one sheet of his engraved Irish half-inch map still in print and that massive blockhouse on the corner of Exhibition Road that houses the RGS lecture hall, where Close’s name has joined those of other giants of the past. We can though take a more detached view of the man and his works. If we see him as the last of the giants it is because he was a man of his time and his time was one of change. In his memoir he contrasts his relationship as DGOS with his first Permanent

22 Close to Hinks, 12 September 1928: ‘There was a need for immediate action’, (RGS archives).
Secretary, an administrator of the old school, who never interfered in the internal running of the Survey but whose experience could always be sought when needed, with his less happy relations with his successors. Many years later Winterbotham was to caricature this change, contrasting the Victorian DG ‘X’, corresponding with fellow members of the scientific elite, with his Twentieth Century successor ‘Y’, embroiled in the petty minutiae of office. In this new world the simple direct approach, such as dropping in on Cecil Rhodes to secure the use of the British South Africa Company’s telegraph network, no longer worked as it had.

Despite this Close offers us a legacy. High flown language can be translated into practical action by dedicated men. Concentration on immediate tasks should not be allowed to obscure a broader vision. But above all he must be remembered as a man who through speech and writing, and by imaginative moves, such as his invitations to Martin and Crawford, caused Ordnance Survey to be seen as more than a worthy, but dull, body beavering away behind the scenes. Rather it was to be recognised as a national institution which if it could sometimes generate irritation, as well as respect, from its public could equally stir a loyalty which, when threats were perceived, would generate letters to the press and questions in Parliament.

Acknowledgments

This sketch of Sir Charles Arden-Close’s professional career was first presented at the British Cartographic Society’s annual symposium at Southampton in September 1991. Its author is very grateful to Charles Lane and the members of the BCS Programme Committee for inviting him to take part in their OS Bicentenary session. He would also like to acknowledge the help he received from Mrs Christine Kelly, Archivist to the Royal Geographic Society, and Mrs Pat Poppy, OS Librarian, as well as advice and encouragement freely given, as always, by Mrs Yolande Hodson.

Sources and references


His wide ranging interests earned him many obituary notices, probably the most useful of which is that by J de Graaf Hunter in Obituary Notices of Fellows of the Royal Society, Volume 8, November 1953. A later memoir by T W Freeman, Geographers Bibliographical Studies, Volume 9 (1985) emphasises his geographical interests. Both de Graaf Hunter’s and Freeman’s bibliographies are very incomplete.

Close’s years as Director General are discussed in W A Seymour (ed.), A History of the Ordnance Survey, Folkestone, 1980.

His performance as historian of that organisation was assessed by J B Harley in his introduction to the David and Charles reprint of The Early Years of the Ordnance Survey, Newton Abbot, 1969.

Close’s wide ranging interests have lead to collections of his papers being deposited in a number of institutions. Those consulted for this paper included:


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Ordnance Survey: Correspondence on map projections (mostly post-retirement).
Submission to Davidson Committee.

After thoughts
This paper was first presented more than a decade ago. Notably it predates Yo Hodson’s *Popular Maps* (1999) which would inevitably have influenced my assessment of Close’s contribution to OS map design. The intervening years have, significantly, also seen the retirement of the last sheets of his Irish “Half Inch” from the active list. It is easy for a collector to be biased by products which have given him pleasure, such as the pre-1914 OS experimental sheets and some of GSGS’s products from the previous decade. I would not wish to revise my view of Close as a man but in a new century he seems far more distant than when I wrote my account.

Epsom, 10 November 2002

**Puzzle Corner**
David Archer asks, “Why is the *Popular Edition of England and Wales*, sheet 17, *Isle of Man*, sometimes found dissected in plain brown covers, roughly A4 in size, with *Sheet 4* printed on the front top right corner and an index diagram on the rear cover?”

The answer will be given in the next issue.

Aidan de la Mare provides the solution to his intriguing puzzle from Sheetlines 64.

The map celebrating the two prominent CCS members is the Ordnance Survey six-inch *Town Map of Portsmouth*, published 1933, print code 1000/40, comprising parts of Hampshire Sheets 75 NE, SE; 76 NW, SW; 83 NE, SE; 84 NW, SW.

This may be a poor thing compared to the earlier coloured edition, but is full of interest for the extraordinarily complete military coverage that had been absent from one-inch maps for many years, and would continue to be absent for many more to come. All the more remarkable for being on sale to the public in 1940 for 1/-. The only areas showing security deletions are Priddy’s Hard at Gosport (which seems to have suffered a very long standing deletion from almost all maps until its recent disposal for building houses and flats), and Forts Southwick and Widley on the Portsdown Hills, which are shown in outline only and unnamed. The adjoining forts and just about every military installation on Portsea Island are shown in detail and named; one would think this map was a gift to the enemy of the time. The six-inch sheets of this area have been closely studied by Dr Yolande Hodson for security deletions², but I do not think the results have been published. As for the two road names, I must ask a local historian of Portsmouth to shed some light on their origins.

The 1981 map of Higley Quadrangle, SE of Phoenix, Arizona, was published by the US Geological Survey in their 7.5 Minute Series. According to USGS, Higley was named about 1910 for S W Higley (no relation!) of the Phoenix and Eastern Railroad. – CJH.

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¹ *Sheetlines* 7, 13.
It is easy to forget that there are human stories behind some of the maps living in peaceful retirement on our shelves. I began to collect maps about thirty years ago as a postgrad. En route to the Computer Lab, I would drop into David’s bookshop and happened to arrive there one morning just as a whole box of various 1914-18 War GSGS maps of France and Belgium was being unpacked for sale at 2/-, or by that time it may have been 10p, each. On a student grant, I could only afford to buy one example of each series, including a single 1:10,000 trench map, GSGS 3062 sheet 57c SW3, Longueval.

My mother had a half-brother, Alf, who had been killed in the first war, but I knew no more about him than that. In 1993 we were clearing my aunt’s house and came across Alf’s last letter from France, a very vivid account of life during preparation for the Somme offensive of July 1916. There was also a letter from the Imperial War Graves Commission referring to his remains being reburied.

Resisting the temptation to start ‘Further to your letter of 19 May 1926…’, I wrote to the now, Commonwealth War Graves Commission asking for more information. They put me in touch with the Royal Regiment of Fusiliers regimental area secretary for Warwickshire, Brigadier J K Chater, who very kindly sent me an extract from the War Diary of the 14th Battalion, Royal Warwickshire Regiment, describing the attack on 22 July in which Alf was killed:

a new line running from the Southern corner of HIGH WOOD S.E. … The Battn takes over the right half of the above line from about S 10 B 4/4 to about 100° S.E. of road junction S 10 D 8/8 … The enemy’s line of trenches from En corner of HIGH WOOD S.E. on far side of road as far as S 10 B 9/8, & on near side of road from this point to road junction … 14th. R.War Rgt on the Right, to attack from the point where enemy’s line crosses road point S 10 B 8/9 to road junction S 11 C 5/8. …

At 9.50 p.m. the attacking Cos, A on the Right, B on the Left, advanced from their trenches, in two waves, under cover of the Artillery bombardment. At 9.55 p.m. both waves were seen to extend, from sections in file formation, into line preparatory to lying down until the artillery lifted at 10 p.m. As the extension was in progress, the enemy opened an overwhelming Machine Gun & Infantry fire. Our Troops were cut to bits & although supports were thrown in they received the same treatment, & it soon became a question of organising our original front line to meet a possible counter attack. … It would appear that our artillery had not ranged accurately on the enemy's trenches.

The diary goes on to record the battalion’s casualties, 40 killed, 200 missing and over 240 wounded. On the next morning patrol work took place to recover the dead and wounded and the battalion was relieved. A week later, reinforced by a fresh draft of 213 men, ‘physically good but have received but little training’, the battalion returned to the line and

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1 Presumably that morning I was ahead of the young undergrad later to become our revered Hon. Sec.
2 The Commission now has an excellent website at www.cwgc.org which allows one to search for the details of individuals killed in World War I and later conflicts.
attacked again. ‘The Battn advanced to the attack 14 officers & 454 other ranks. They came out 8 officers & 289 other ranks. The behaviour of all ranks was beyond praise.’

I suddenly realised that High Wood, and the map references mentioned in the diary, were all shown on the one trench map that I had bought over twenty years earlier! Perhaps not quite so remarkable a coincidence once you consider the huge amount of fighting that took place in this small area, but none the less, I now knew exactly how Alf had died, to within five minutes, when, and, to within 200 metres, where.

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3 The method of squaring used is similar to that described for the neighbouring 1:20,000 sheet in *Sheetlines* 63, 40. Note, from the two references to the German trench crossing the road, how easy it is to reverse the final figures, though the resulting error will be less dramatic than transposing easting and northing in a modern six-figure reference.
OS maps on your PC

Chris Juden

Memory-Map is a piece of software for displaying maps on a PC screen and plotting routes on them. It’s marketed in the UK by EVO Distribution (tel: 0870 740 9040, www.memory-map.co.uk, who’ve done a deal with Ordnance Survey that gives you access to 1:50,000 Landranger at a quarter the cost of printed maps.

The basic package, Memory-Map Discoverer, costs £59.95 and includes a simple road map of Great Britain (courtesy of Geographers A-Z). You’ll obviously be wanting something more detailed and this comes on Memory-Map Cartography CDs at £24.95 each. The OS 1:250,000 Road Maps (previously called Travelmaster) are okay for cycling and all eight are on one CD. However, that’s not much of a saving on the £31.92 they’d cost individually and a lot more than the same mapping bought as a motoring atlas.

Memory-Map becomes interesting when you move up the scales to 1:50,000 Landranger. It takes twelve discs to cover the country in this level of detail and the cost compares very favourably with the seventeen Landrangers (total £101.83) on average covered by each one. Or you can buy all twelve for the price of ten and show an even greater saving: the whole of Great Britain for under £250 instead of over twelve-hundred on paper or the five thousand it previously cost to buy Landranger on CD!

Ordnance Survey’s commercial interests are safeguarded by the fact that the files on these CDs are in Memory-Map’s unique QuickChart format. They cannot be read except by Memory-Map software, which does not allow you to view or print any more than can be shown on the computer screen. The printing feature nevertheless exploits the full resolution of your printer, so the results are far better than a screen shot and it’s worth zooming out to get more on the paper. However it’s virtually impossible to print maps of a precisely defined scale or area, or with the paper oriented any other way than east-west. These printouts are very handy on the bike despite these limitations – only beware that printer ink is seldom waterproof!

Memory-Map is not only about cheap access to maps, it is mainly for plotting routes. This is done by clicking ‘waypoints’ with a mouse. Memory-Map computes the compass bearing and distance of each leg and for the whole route, any number of which can be filed away for future use, published on a website and e-mailed to friends – who can download the free Memory-Map viewer. In fact, if all you want to do is view maps and other people’s routes, this is all you need in addition to the relevant Cartography CD.

The more advanced Memory-Map Navigator software costs £99.99 and can link, via PC, to a GPS. This will transfer routes to the memory of a handheld Garmin unit (handlebar mounts are available) so you can easily follow them ‘in the field’. Conversely it’ll import your track log from the GPS, to view on the screen exactly where it was you went. Alternatively it can link PC and GPS live, adding an ‘X-marks-the-spot’ to your on-screen map. You’ll see exactly where you are en route, or how far and in what direction you’ve strayed off it!

Of course you will not want to lug a laptop around on the bike, but Memory-Map Navigator also works on a Pocket PC. In theory you could slide one of these compact devices into the transparent pocket on top of your handlebar bag (with either an integral GPS card or wired to a handheld inside the bag) and watch the map scroll by, perfectly in synch with the
real world passing beneath your wheels! The power consumption of pocket PCs is a bit of a problem though; few will run like that for a whole day’s ride, but our more ingenious members may well overcome that with a hub generator or solar panels!

Could this be the end of paper maps? Possibly, but the screen, even of a desktop PC, is small for route planning and made smaller by low resolution. For maps to look as clear on screen as the printed version you have to display at about twice the scale. So your fifteen inch monitor gives only a postcard-sized map view. Zoom out to see more and Landranger soon becomes fuzzy, at which point another keystroke switches to the basic A-Z mapping, or OS Road Map if you’ve also bought and installed it, neither of which depict the finer points of cycle route planning. The solution is to place a few arbitrary waypoints in a straight line A to B on the road atlas view, and use these as a rough guide when zoomed into Landranger. But spreading a large-scale map (or three) out on the dining-room table is always better. A good run of lanes will often be found some miles off beam, that nevertheless constitute a shorter, easier and/or more scenic way to avoid the main roads.

One possible advantage of digital maps over paper is the ability to scroll across them without falling off the edge – assuming you’ve loaded enough data. Well actually you can’t quite do that on Memory-Map. Landranger data comes in 20km tiles (a quarter of a map) and you can see only one at a time (unless you open another screen ‘window’; which is no better than abutting two paper maps). However an update to Memory-Map which should be out by the time you read this (and which is free to registered users) should make scrolling seamless and may have improved the printing options. Talking of updates, maps get revised and registered users might expect a good deal on new discs for old.

Although Memory-Map is written in USA and marketed in Europe by EVO Distribution, this software doesn’t look anything like so useful for cycling outside Great Britain. Their website has for sale no Memory-Map cartography of French IGN, Dutch ANWB or German BVA mapping. Instead it looks like you can download files from various other places, in several other formats supported by Memory-Map. However the coverage is patchy to say the least. Alternatively you can always scan your own paper maps.

Obviously these are early days for retail digital mapping. It seems that our Ordnance Survey is ahead of other countries and Memory-Map are not the only people licensed to publish OS maps on CD. Anquet Maps (www.anquet.co.uk) offer a similar kind of package, more clearly dedicated to ramblers. They’ve targeted National Park areas in a set of five CDs that give you a patchwork of Landranger mapping that covers only about one quarter of the country in total. These CDs cost more, at £35, but each one does cover the entire country on OS Road Maps and includes the Anquet map-reading software so no other purchase is necessary. The Anquet software does not yet work with GPS (though that is soon to be enabled by a free update) or on a pocket PC, but it’s ahead of Memory-Map in other respects. Scrolling is already seamless, it automatically switches to Road Map when zooming out (and you can set the scale point at which it does that), there is much more control over printing you can choose the scale, paper orientation etc) and it’ll tell you more about your routes – i.e. plot a height profile and calculate the time it’ll take to walk using Naismith’s rule. The latter may seem irrelevant to cyclists, but the latest Anquet update allows you to change the factors used by the formula so it may be possible to tweak it to output cycling times. Explorer 1:25,000 mapping will be added once the OS have completed this more detailed series, but until Anquet are able to offer national Landranger coverage, their product will be of limited appeal to cyclists.
This article originally appeared in the October/November issue of Cycle Touring & Campaigning, and is reprinted with kind permission. Chris Juden adds:

Since writing that, Memory-map have solved their tiling problem with mergetiles, which lets you create one big tile that covers the whole area you’re currently interested in. But that’s not such an elegant solution as Anquet and I can see one’s computer becoming clogged with mergetiles, which are HUGE files, created at various times to cover various planned journeys.

I’ve now had a better look at the Anquet product and although its automatic tiling is not so quick to scroll as a Memory-Map mergetile, I find this approach more straightforward. And I’ve used Memory-Map enough to discover further limitations. Route creation is easy enough: the problems arise when you want to change or re-use parts of routes to create new ones. Since Memory-Map won’t let you split a route (still not available in version 3.0.1), you’ll generally have to start over.

Anquet’s two-stage route-making process initially seems more complex, but is actually simpler. First you have to click out some ‘paths’ between ‘waypoints’, which is a term Anquet reserves for important places where other paths might branch off. (Paths also have intermediate waypoints, to mark their twists and turns and for navigating by GPS, but Anquet calls them ‘nodes’ and doesn’t bother you unnecessarily with them.) Then you can make a route, which could be just one path but generally you’ll daisy-chain several. At every new waypoint the next available paths are highlighted. With Anquet it’s easy to change routes by selecting alternative paths and to split and branch a path simply by clicking a new waypoint. Pretty soon you’ll have a whole network of your favourite paths, from which you can click and go on any number of new routes!

Anquet still sell the £35 National Park CDs, but anyone who bought them in the hope of filling the gaps one day for a similar price, will be disappointed. Those who waited can now buy the whole of Great Britain on Landranger in two CD sets, North and South, at £120 each.

Kerry musings

David Archer

“I’m not finding anything these days.”

“So why don’t you look for something else?”

“I would if I could think of something.”

So runs a typical conversation that I have had with OS map collectors over the past seventeen years. All the interesting maps have gone, nothing is coming up and they are becoming bored searching and not adding to their collections. They get a lot of pleasure in just looking for the maps they want, but do need to find the occasional choice item to maintain their interest. My suggestion is to start one or more mini-collections of material that is fairly readily available. If you cannot find what you want, want what you find.

Most collectors usually have a rough, if not firm idea of what sort of collection they are building. Once things start getting tough, they initially widen their scope within their area of interest, and only later do they consider something different. For example, some start to build
a set of the Popular Edition of England and Wales, then when they are twenty maps short, they start on print codes for those they have and, when new ones become scarce, they start on the different formats: paper, cloth, dissected, book fold. If they can’t find what they really want, they want what they do find, making the most of what is available. The alternative is to give up looking. Stop collecting Ordnance Survey maps? Never.

So, what else could one collect that is inexpensive, easily recognisable, available from a variety of sources, and will probably not dry up in the near future, even if everyone starts looking for it? Preferably something that embraces the whole range of OS maps, of all eras.

A lot of our members will tell you that the current OS output is an excellent subject to collect. Rod Sladen’s presentation at the 1997 AGM gave an indication of the great variety found in the 1:50,000 series. This family of maps will be of tremendous interest to collectors in the future as it probably has more depth of interest than any series so far. By which I mean different specifications, different cover designs, a vast number of one-offs, errors and prematurely withdrawn maps galore. It has also lasted longer than any of the one-inch coloured series, with no sign of being replaced.

Or, you might consider labels and stamps. This is an area that has not been overworked so far. Gummed labels have appeared on many series when used to change the price of a map, and appear on Thirds, Populars and Fifth Editions to change cover titles. For example Perranporth stuck over the printed cover title Truro and St. Austell on English Popular Edition sheet 143. The most common sort of labels are those placed by retailers. Most members will have seen lovely small labels, in a variety of colours giving the seller’s name and address. Much larger ones are found inside the folded map, pasted onto the cloth backing. One of my favourites is a very nice red and blue text on white for Forster Groom & Co., Ltd., Military and Naval Publishers and Booksellers which advertises a variety of their products including ‘Maps specially drawn & printed for manoeuvre purposes … Regimental dinner invitation cards … the “War Office” Stylo pen …’ Other largish labels can be found for Cornish Brothers, Agents by appointment for the sale of Ordnance Survey maps; John Smith & Son (Glasgow), Ltd., Official agents for Ordnance Survey maps and William Porteous & Co., Glasgow, Survey and motoring maps. Though be warned, this could easily lead to collecting maps in agents’ covers. The Seventh Series is very fertile ground for a variety of labels (including Ordnance Survey/Superseded stock/Non net) in different colours and styles, often with one partially stuck over another, and for various rubber stamps (Field H.Q. Library), notably price changes. I have always refrained from collecting these as there are just so many that space might become a problem, but cost would not be great.

Most rubber stamps are on covers rather than maps and have a variety of shapes and designs. The white covers, up to about 1920 seem to be the most fruitful source of interesting possession stamps, usually in an oval design: Ordnance Survey/Drawing & Reproduction/Map Library; General Staff/Bermuda/17 Oct 1908; General Staff/Western Command/18 Aug 1909 and Officer in Charge, Electric Lights & ???/Humber Defences, with a stamped text Capt. C.B.R.B/ O. i/c E.L. & T. Humber Defences, and Secret stamped in red. Other white covers have an unadorned text: Board of Trade/Timber Supply Dept./Reconstruction Branch; Army Motor Service. Various stamps can be found on maps, Supplied for the public service and Mobilization are fairly common. Colouring Department/O.S.O. Southampton/6 APR 1937 with two sets of initials in manuscript is a style that is harder to find.
When in a bookshop, having looked in the map box and scanned the topography shelves, a very fruitful and inexpensive source of goodies is the box of guides and pamphlets. Why not start a collection of period OS advertisements in booklets? The rear outside cover of *Stonehenge today and yesterday* 1927, is an advertisement for Ordnance Survey archaeological publications. *The rambler’s handbook*...1933 has on the top half of page six the Fifth Edition hiker illustration with advertising text on the lower half of the page. Interestingly, virtually the same advertisement appears on the first page of *The Midland ramblers’ handbook* 1938. Five years on and no change in advertising copy. Why? What other publications did the OS use? You are almost certain to find something no other member has, and will be helping to amass a collection that can be used to study the history of OS advertising.

Ward Lock guides have OS adverts and coloured OS map extracts, as mentioned previously in these pages. In fact, collecting publications containing map extracts could be quite fruitful. Consider the *Homeland Handbooks*. These small booklets with orange covers appear to have commenced in 1897 and continued well into the twentieth century. They originally had small black and white extracts of OS maps but by 1927 Bartholomew maps were favoured. Observant purchasers might have noticed that whilst the unidentified OS extracts were from the 360 sheet one-inch series (the dreaded marbly jobs), in later editions of the booklets, suggestions for current mapping of the area was given as either the Third Edition large sheets or Popular Edition. With over 95 volumes in the series there should be plenty to both look for, and find.

Many members will have a copy of the 1946 edition of the small booklet *Map reading for the countrygoer* (have a look on your shelves now). This contains a full-page OS advertisement and also, a list of six footpath maps which one can collect (*Charnwood Forest* being the most difficult to find), prompting the collecting of other footpath maps, some of which were produced by the OS. The 1964 edition is without adverts but does have a list of the National Forest Park Guides. Some early 1950s guides have a pocket at the back, containing a largish coloured Ordnance Survey map of the area. This easily found, and usually inexpensive series has distinctive green covers with a black and white drawing, but not all have OS map extracts.

Got the idea? Mini-collections are out there just waiting to be formed. The fun is in collecting something that few people have ever considered. And should you enquire after my current collecting interests, well, I’m gathering information and examples of linen makers’ marks, found on the back of cloth maps. A little esoteric, but full of opportunity. It might even be found to have some relevance to Ordnance Survey maps.

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*A Merry Christmas from the Editor*

These turkeys, as used in a current OS advertising campaign, demonstrated a novel folding method and are, of course, © Crown Copyright NC/00/1340.
Here is a summary of just a few of the topics covered in the ordnancemaps Internet discussion group over the past months.

Members may wish to check out http://www.yahoogroups.com/group/ordnancemaps which contains an archive of past emails to the group.

**Landranger spine numbers.**

One of the criticisms of the ‘new’ Landrangers was that the sheet number on the spine was in magenta on a silver background and difficult to read. In August, Jon Risby noticed that the sheet numbers on the spine, whilst still being magenta, now had a white shadow between them and the silver grey. The number on the front remained unchanged in being on a silver grey background.

**999 mobile calls put lives at risk.**

Lez Watson noticed this item from the 17 August 2002 Burton Mail, the evening newspaper for south-east Staffordshire and south Derbyshire:

People’s lives could be put at risk through vital lost seconds if 999 ambulance calls are made over mobile phones rather than land lines, the Mail can reveal. The risk comes after it emerged high-tech call handling equipment used by an ambulance service – costing millions of pounds – can only pinpoint calls made via a land-line. Mobile phone users should carry Ordnance grid references to enable mercy men to find their location to speed up response times, a Council meeting has been told.

A reply from Jim Hewett pointed out that manufacturers could incorporate a global positioning devices in a mobile and with a little bit of computing it should be able to come up with a grid reference. It should be possible to transmit its position during every call but this could, of course, be a bit embarrassing if you were trying to say you were somewhere else.

**OS Select**

In September discreet advertisements appeared at the back of the Saturday Times Magazine (and possibly other magazines) for Ordnance Survey OS Select. (Note: This is an Ordnance Survey product where YOU can have your own Landranger Map printed with the centre of your choice.)

The catchline was ‘Fed up with Living on the Edge?’ along with a small extract of the edge of an OS map with a place name of ‘My Villag’ – the end of the name being truncated by the border of the sheet.

It looked pretty realistic as if it was based upon a real place. Investigations by David Miller identified it as being Silverstone, not too far from the middle of Landranger 152.
Motorways

Take a look at [http://www.ukmotorwayarchive.org](http://www.ukmotorwayarchive.org) if you are interested in the history of motorways.

The Centre

The BBC website ran a series of articles on the centres of Great Britain, England, Scotland, Wales and Northern Ireland as calculated by the respective Ordnance Surveys who used the ‘centre of gravity’ method. This determines the point at which a cardboard cut-out of the area would balance on the tip of a pencil or pin – its centre of gravity. Please note that there other methods to calculate the centre and these produce different locations.

Here are the Centres:

**Great Britain:** SD 64188.3 56541.43. This is on Brennand Farm, about seven kilometres north-west of Dunsop Bridge.

**England:** SP 36373.66 96143.05 is in a paddock at Lindley Hall Farm, owned by Charles and Margaret Farmer.

**Scotland:** NN 66784.93 71599.4 is between Blair Atholl and Dalwhinnie.

**Wales:** SN 79728.22 71704.43 is on farmland near Cwmystwyth.

**Northern Ireland:** 54° 36' 27.277" N, 6° 41' 35.323" W. This is Annaghone townland, near Cookstown

See [http://news.bbc.co.uk/1/hi/uk/2271914.stm](http://news.bbc.co.uk/1/hi/uk/2271914.stm) for the full articles.

Letters

**Field documents**

After reading the article by John Cole on the early years of the National Grid twenty-five inch map in the August issue of *Sheetlines*, I thought that I would like to add a few observations from my own experience of post-war Ordnance Survey.

Cole states that zinc plates were used as field documents until about 1946, but I was gridding blank plates throughout 1948 and used them in the field until 1952 at least. Certainly, the butt-jointed plates that succeeded them were easier for edge comparison, but they had the disadvantage of frequently falling out of their sketching case onto their comers. The resulting damage, though usually minor, nevertheless made them difficult to fit together afterwards. Another disadvantage was that detail that had not been penned in had a tendency to rub off if the surface of the BJ plate became damp through condensation or rain. In winter too, the plates could become very cold to the touch.

I also spent three years in Air Survey Branch at Chessington working on many plans using the Chelmsford method of Graphic Resurvey. After completing a 1:2500 plan, all detail that could be accurately identified from air photographs was penned in, whilst doubtful detail was left in pencil for the field surveyor to check. Cole is correct in saying that County Series detail was used for areas in shadow or dense vegetation, but such detail was always left in pencil for the field surveyor’s attention. I cannot vouch for the system being scrapped over
cost, but it was widely held at the time that for certain types of terrain, the Chelmsford experiment lacked the accuracy of ground survey methods. Graphic methods of air survey were eventually phased out in the mid 1950s and were replaced by the more accurate stereoplotting machines.

Not all post-war 1:2500 survey was carried out on plastic or metal National Grid field documents. The Archaeology Division of the Ordnance Survey used paper copies of pre-war County Series 1:2500 plans from 1947, when the Division was re-formed, until 1983, when it was taken over by the Royal Commission on Historical Monuments. These plans were cut and pasted into kilometre squares (known as Antiquity Models) and used to survey antiquities such as hill forts, Roman camps and other types of earthworks, by surveyors specialising in archaeological surveys. The work was carried out well ahead of the field survey programme; consequently astrafoils and other types of document in use at the time were not readily available for use by Archaeology Division.

Eric Waight

In support of the 1:25,000 map

I originally became aware of the existence of the Charles Close Society through Richard Oliver’s excellent and very useful *Ordnance Survey Maps: A Concise Guide for Historians*. Having joined the society I have become aware that Richard has two bees in his bonnet which he airs at every opportunity, twice in the latest, August 2002, issue of *Sheetlines*:  

1. The 1:25,000 map is a bad thing and ought never to have been produced;
2. A 1:100,000 map would be a good thing and should be produced.

I make no comment on the 1:100,000 map, but as for the 1:25,000, Richard can be as dismissive as he likes about the ‘howls of protest’ from the Ramblers Association and others, but I defy him to navigate himself around the footpath network with only the 1:50,000 map. Basically, without the 1:25,000 map a large part of the footpath network would be inaccessible.

Apart from this, I actually like the 1:25,000, it has sufficient detail to be interesting and would certainly be the map I would take to a Desert Island. As an insurance policy, lest the Ordnance Survey harkens unto the voice of Oliver, I am collecting all the *Explorers* (the OS will be pleased to know they have assured sales of at least one copy of every sheet).

Are there any more defenders of the 1:25,000 map out there?

Roger N Holden

Hanging around

I was admiring an Old Series one-inch map of West Hampshire recently and noticed that the location of a gibbet was marked at Parley Common. A check on the Landmark website, [www.old-maps.co.uk/](http://www.old-maps.co.uk/), revealed that the 1:2500 County Series map of 1890 indicates the location and is marked with a small cruciform symbol against which is the legend ‘Site of

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4 pp 14 and 38.
5 ibid, p47.
Gibbet’. My interest aroused, some more hours were spent combing the internet to see whether other gibbet-related locations have survived to appear on modern OS maps. The macabre fruits of this labour are listed below:

- ‘Caxton Gibbet’, near Cambridge (TL 297607)
- ‘Combe Gibbet’, Inkpen Hill, nr Hungerford, Berkshire (SU 363621)
- ‘Gibbet Firs’, East Parley, Hampshire (SZ 095997)
- ‘Gibbet Hill’, Coventry (SP 311746)
- ‘Gibbet Hill’, near Hindhead, Hampshire (SU 903361)
- ‘Gibbet Hill’, near Knaresborough, North Yorkshire (SE 361598)
- ‘Gibbet Hill’, Warwickshire (SP 528808)
- ‘Gibbet Moor’, Derbyshire (SK 282708)
- ‘Gibbet Post’, Leicestershire (SK 360045)

Apparently the sites for these gruesome devices (along with their close cousins, the gallows) were often at the edge of counties or away from habitation. I wonder whether any gibbet experts in the CCS can shed more light on the subject.

Fraser Donachie

Delamere makes a comeback

Delamere Forest is a name known to numbers of Charles Close members, some indeed having probably gleaned it from my writings. So it was that I almost shot from my chair when the name suddenly appeared on my television screen during September.

I have an interest in transport matters second only to that in cartographic matters, and so I regularly watch Ceefax pages 432 to 436 detailing cancellations and other problems on the national rail and London transport systems. It was 434 that recorded another of the unprecedented number of landslips which have occurred on our railways this year, with its heavy though sometimes localised downpours during otherwise dry periods. This one had closed ‘the railway through Delamere Forest’, causing diversion of trains between Chester and Northwich for a couple of days.

For the uninitiated, Delamere Forest was the original name of an early triangulation station, generally known in later years simply as Delamere, which was the origin (co-ordinate zero) for all the one-inch maps of England and Wales from the second generation of the Old Series, north of the Preston-Hull line, right through to the Popular Edition, plus the Popular Edition of Scotland and most smaller scale maps of the same period. Situated on Pale Heights, a hill to the south of the main forested area, it had been occupied as a primary station in 1803 and 1842 and was the effective hub of Ordnance Survey mapping for the best part of a century. Its accepted geographical position from Clarke is 53°13'17.274" N, 2°41'03.562" W on the Airy spheroid.

Brian Adams

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1 Clarke, A R, *Account of the observations and calculations, of the principal triangulation; and of the figure, dimensions and mean specific gravity, of the earth as derived therefrom*, London: Ordnance Trigonometrical Survey of Great Britain and Ireland, 1858.
**Vivat Berceria**

When county boundaries were altered in 1974, we were assured that the changes were for administrative purposes only and that the traditional counties would remain. This was a sop to traditionalists, which was promptly forgotten when the changes were made. Some traditionalists fought back successfully: Rutland became an administrative county and Humberside disappeared, despite the bridge which was meant to unify the parts of Lincolnshire and East Riding (some loyal Yorkshiremen moved houses so that their sons could be born in, and play for, Yorkshire).

Berkshire was less successful. In the 1974 changes, the administrative county lost its County Hall (in Abingdon), the birthplace of King Alfred, the founder of Berkshire (in Wantage), Faringdon, Wallingford, the White Horse, Wayland’s Smithy, the Blowing Stone and, of course, the Berkshire downs.

Now the administrative County has been abolished. All we have left is the traditional County with its traditional boundary along the River Thames. This was the northern frontier of Wessex held by King Alfred against its powerful neighbour Mercia. The county boundary almost goes through the centre of Oxford. Oxfordshire does not like this and Mercia tries to overcome – temporarily, I hope.

Tradition is discouraged nowadays, it may even be racist, but it still means something to some of us.

_Eugene Burden_

See page 35 for the author’s photograph of a Berkshire boundary marker.

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**Studying the map**

You have to believe that I did not pose for this photograph. It was taken while on a walking holiday in the Swiss Alps: I had sat down for a rest and to identify the surrounding peaks using my _Landeskarte der Schweiz_. My wife took the photo and, not being a member of the CCS did not appreciate the similarity with Popular and Fifth Edition covers!

Like Bill Batchelor (Sheetlines 64) I too have three ‘M’ loves: mountains, maps and my wife, Myrtle, all three combining in their own way to compose this photo.

_Walter Paterson_
New maps
Jon Risby

This list covers small scale maps published between 26 July 2002 and 25 November 2002. They are listed by series, and in sheet number order. The columns are as follows: Sheet No. / Title / Edition / Copyright date / Full revision date / Latest revision date / Date of publication. There is also a list of those maps due for publication by OS up to 31 January 2003 (in order of their proposed publication).

After the list of OS maps is a résumé of maps published by Alan Godfrey between August and November 2002.

Landranger

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<th>Edition</th>
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**Explorer – new edition**

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Irish maps

General Maps
Belfast Pocket Guide 07/2002
Holiday Map North 08/2002

Discovery maps – new editions
71 Kerry 2nd Edition 08/2002

Street maps
Cork 07/2002

Forthcoming Maps
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140 Quantock Hills A1 18/12/02

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436 Beinn Dearg & Loch Fannich 04/12/02
443 Ben Kilbreck & Ben Arnine 04/12/02
419 Grantown-on-Spey & Hill of Crombie 18/12/02
444 Helmsdale & Strath of Kindonan 18/12/02
417 Monadhliath Mountains North & Strathdearn 24/12/02
423 Elgin, Forres & Lossiemouth 24/12/02
430 Loch Monar, Glen Cannich & Strathfarrar 24/12/02
432 Black Isle 24/12/02
431 Glen Urquart & Strathglass 15/01/03
434 Gairloch & Loch Ewe 15/01/03
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440 Glen Cassley & Glen Oykel 15/01/03
441 Lairg, Bonar Bridge & Golspie 15/01/03
442 Assynt & Lochinver 15/01/03
447 Ben Hope, Ben Loyal & Kyle of Tongue 15/01/03
445 Foinaven, Arkle, Kylesku & Scourie 22/01/03
437 Ben Wyvis & Strathpeffer 29/01/03
439 Coigach & Summer Isles 29/01/03
448 Strath Halladale & Strathy Point 29/01/03
450 Wick & The Flow Country 29/01/03
446 Durness & Cape Wrath 05/02/03
451 Thurso & John O’Groats 05/02/03
### Alan Godfrey Maps

Details of Alan Godfrey’s reprints from Alan Godfrey Maps, Prospect Business Park, Leadgate, Consett, DH8 7PW, tel. 01207 583388, fax 01207 583399, [http://www.alangodfreymaps.co.uk/](http://www.alangodfreymaps.co.uk/).

The columns are as follows: County / Sheet number / Title / Date of map / Month of issue.

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