



Sheetlines

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

This edition of *Sheetlines* was published in 1994 and the articles may have been superseded by later research.

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



SHEETLINES

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August 1994

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Charles Close Society — Future Meetings

Annual General Meeting 1995

The 1995 AGM will be held on Saturday, 13th May, 1995. Following suggestions at this years AGM, the meeting will be held outside London; after studying the distribution of members throughout the country, your Committee are seeking a suitable venue in the Midlands

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Midlands Informal Evening Meeting — 9th September, 1994

An informal meeting has been arranged for Friday, 9th September, 1994 at St Saviour's Church Meeting Hall, Main Street, Branston, near Burton upon Trent, starting at 1900, until about 2130.

Please bring one or two maps or other Ordnance Survey ephemera for show and discussion. Branston village is about two miles south of Burton upon Trent, best approached from the A38 interchange along the A5121. The church is on the south side of the road at Grid Ref. SK 225 212 (*Landranger* Map 128); the Meeting Room is the new extension to the church. Further details if required from Les Watson, 54, King Street, Burton upon Trent, DE14 3AF (Tel; 0283 541303)

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CCS Lake District Meeting ,Shap Wells — 22nd October, 1994

The main day of the Shap Meeting will be on Saturday, 22nd October, 1994, commencing with coffee being served from 1000. Yolande Hodson will talk about Lake District Mapping from 1045, with ample opportunity for discussion.

A buffet lunch will be served at 1300, and the meeting will continue after lunch with either a continuation of the morning session and/or a general discussion on members' own maps. The afternoon session will end about 1700 with tea

Because many members will be travelling from afar and might wish to make a full weekend of the meeting, an additional programme is also being arranged:

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

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

Sunday 0800–0930 Breakfast; 1000, Walk and/or visit to local Stone Circles /Henge Monuments led by a member of Cumberland and Westmoreland Antiquarian Society

Cost: for Saturday Meeting — £5.00 morning coffee and biscuits, buffet lunch, afternoon tea and biscuits.

for accommodation and dinner, prices held at 1993 level, ask for full details.

Continued inside rear cover

For full programme and/or to book your self in for the day or the weekend contact:

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Editorial

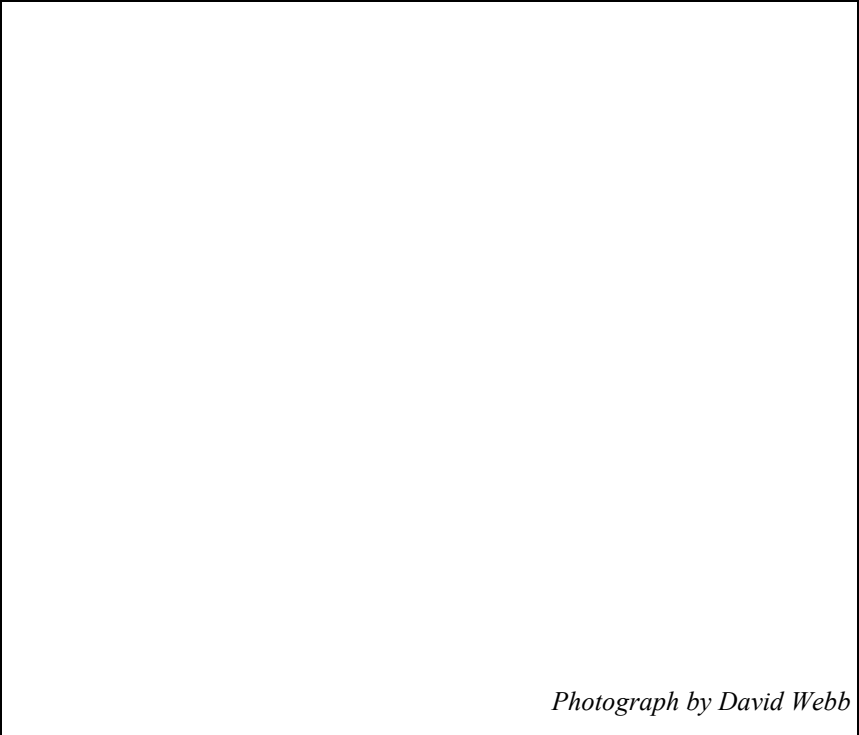
No doubt many of you are adding to your collection of Ordnance Survey maps during the summer, which at mid July still has two months to run (and hopefully with lots of sunshine), but sooner or later we all think about how we keep what we have bought, catalogue our collections, and even improve the quality of some of the maps through cleaning and repair. The autumn is probably the time when we undertake such activities, so a part of this issue of *Sheetlines* covers these particular subjects. The three articles are aimed at the amateur collector, not the professional who is presumed to have all the facilities at his/her fingertips.

In collecting Ordnance Survey maps and ephemera the majority of us probably concentrate on the past rather than the present. The items which we have represent some record of history — the changing countryside, villages and towns, roads and railways, and changes in cartographic techniques. Without reasonably well maintained collections, the monographs published by THE CHARLES CLOSE SOCIETY might not have been, or published with greater difficulty, or less complete; that is a very good reason why we should undertake the activities enumerated in the opening paragraph. But it is true also of maps currently being issued. It was therefore very pleasing to include Richard Oliver's article on the 1:50,000 in the last edition of *Sheetlines*, which in 50 years time will prove a boon to our successors. Don't forget that today's maps also need care and preservation, probably even more so since they are all paper based.

Since the last issue of *Sheetlines* the 1994 Annual General Meeting has been held in London, attended by some sixty members. The Society welcomes Rob Wheeler as the new Honorary Secretary, but in doing so we must also give a sincere 'Thank You' to David Archer for his hard work whilst occupying the position.

Chris Board, Chairman of the Publications Committee, presented Richard Oliver with a leather bound copy of his book *Ordnance Survey Maps, A Concise Guide for Historians* in recognition of its importance and its contribution to the Society.

The talk given by Brian Adams before the AGM is reproduced in this edition of *Sheetlines*; those of us who were there have a permanent record of his presentation, and members who were not present have the opportunity to share some of the experience and knowledge of a hydrographic cartographer.



Photograph by David Webb

Marginalia

Recycling Ordnance Survey Maps:

A number of members have brought to my attention the use of redundant Ordnance Survey maps as personal stationery, and indeed the Society has itself had compliment slips printed on the clean side of such paper. The chances that you will get a bit of map covering your own area, is quite slim, but it is always fascinating to avidly study the reverse of a letter rather than worry about the actual content! It also adds something to the idea of steaming open an envelope, in order to preserve the maximum area for study.

The stationery is produced by Geo and can be obtained from W.H.Smith and probably other stationers; it can also be obtained from a variety of charity organisations through their mail order catalogues.

Typically the NSPCC Christmas Catalogue (received at the end of July!): £2.99 for 40 sheet

The Oxford Seminars in Cartography:

Dr Elizabeth Baigent has written to extend a welcome to Society members to a new series of seminars in which distinguished speakers discuss all aspects of cartography and which has been established at the Bodleian Library, Oxford. In the academic year 1994–95 Dr David Fletcher will speak on the estate maps of Oxford Colleges (24 November, 1994), Miss Barbara Bond will speak on the occasion of the bicentenary of the Hydrographic Office to coincide with an exhibition in the Bodleian (spring 1995), and Dr Emilie Savage-Smith will talk on Islamic celestial

The Godfrey Award:

Although too late for this year, it is pleasing to record that Alan Godfrey Maps in association with the British Cartographic Society has instituted an annual award for a Librarian who has, in the opinion of the judges, furthered the **Use, Appreciation and Understanding of Maps** in an exceptional way. The award is open to any librarian in Britain, Ireland, the Isle of Man and the Channel Isles, working in any type of library, and is not restricted to members of the BCS. For this year, nominations had to be

writing pad (8¾" x 6¼") and 20 envelopes, and £3.45 for 100 envelopes (40 at 3½" x 5⅝", 25 DL, 25 C6, and 10 C5), from NSPCC Trading Co Ltd, P.O. Box 39, Burton on Trent, DE14 3LQ.

The MENCAP Christmas catalogue, has the same items plus a Geo Memo Box, which is approximately 300 sheets 5¾" x 4" in a storage box (suitably covered with map) with a hole for a pen (not supplied, but do the Ordnance Survey do a 'freebie?'), at £2.99. MENCAP Ltd, P.O. Box 36, at the same address.

In both cases postage is extra, at £3.35 up to an order value of £69.99, free of postage for orders of £70 and above.

Doubtless others of the Charity Societies catalogues will also include such items.

mapping in the middle ages. The seminars will often include illustrations by original material from the Bodleian and the University's Museum of the History of Science. The dates of the second and third seminars have not yet been finalised (but they will be in the spring and summer respectively); all seminars will start at 1700.

Any member who would like to be put on the mailing list should write to:

Dr Elizabeth Baigent, St Hugh's College, Oxford, OX2 6LE.

submitted by 15th July, but unfortunately your editor had not received the appropriate leaflet before the last issue of *Sheetlines* went to the printers.

The award is a Wood Carving especially commissioned from Ralph Williams, together with a cheque for £250, and will be presented at the annual dinner of the BCS in September, which is being held at Manchester University.

Ellis Martin's painting of Boulters Lock:

John Taylor has raised a question in respect of the ensign which is being flown on the Salter's(?) steamer in Ellis Martin's cover for the Tourist Map *The Middle Thames*.

The unusual item is that the steamer is shown by Ellis Martin flying a Blue Ensign, instead of the correct (sic) Red Ensign. The Blue Ensign is reserved for the Royal Naval Reserve, but merchant ships may fly this ensign if the captain and a certain percentage of officers are members of the RNR.

John lived in Reading throughout the war and has spent much time in the area since; he has

Hoise by one's own petard!

Your editor made some comment on the accuracy of map references when transferring them from the map to the real ground in *Sheetlines* 39. John Smith has taken me to task for the statement elsewhere in that issue that the accuracy for the length of Roy's original base line is to +/- 10 cm, which is equated to 0.32808

never seen a Salter's steamer, nor those owned by Maynard's Launches at Caversham, fly anything else other than a red ensign. Even allowing for the fact that the boats were steam driven in the 1920s–1950s, he doubts if there were ever more than five in the crew including the “purser and barman”, and very much doubts if the “captain” was an RNR officer.

Was the painting of the Blue Ensign an error on the part of Ellis Martin, or artistic licence?

ft. Now, John goes on to say that 0.32808 ft implies a measurement of between 0.328075 and 0.328085, an accuracy of 0.000005 ft, which is actually one and a half thousandths of a millimetre! So an accuracy of +/- 10 cm should be shown as an accuracy of +/- 0.3 feet (or 4 inches) in imperial measure.

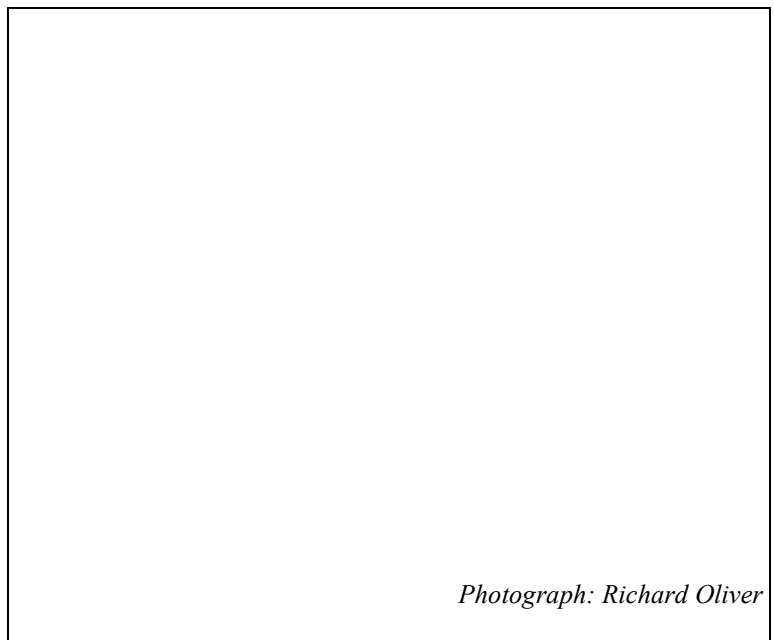
A Historic Moment!

The opportunity arose at the 1994 AGM to gather together the past and present editors of *Sheetlines*.

The photograph shows, reading anti-clockwise, seated Yolande Hodson (1981–3), Ian O'Brien (1987–90), Richard Oliver (1990–3), Richard Dean (1983–7) and Lionel Hooper (1993–).

Not really a Puzzle:

In the last issue of *Sheetlines*, at the bottom of page 5, is an uncaptioned reproduction of two maps, each centred on Charfield, Gloucestershire, and each part of the 1:50,000 sheet 172, *Bristol and Bath*. The left hand map is from the First Series using Times Roman and Gill Sans lettering; the right hand map shows the use of Univers type face on



Photograph: Richard Oliver

the Second Series for comparison, and illustrates the change mentioned in Richard Oliver's article *Twenty Years of the Ordnance Survey 1:50,000 map* (p7, right hand column, line 3 *et seq.*).

General Roy's Second Base Line:

Les Watson suggested that it is possible that General Roy cared not to chain over the Royal Military Canal just south of Ruckinge, but Ian O'Brien writes that as the General died in 1790

and the excavation of the canal started about 1804, this should not have presented him with a problem!

Ordnance Survey Topics

Ordnance Survey policy on reference systems and geodetic transformations

The development of GPS (Global Positioning System) and similar modern electronic survey systems provide positional coordinates for ground detail which cannot be related satisfactorily to existing systems such as the British National Grid. This has opened up the possibility that in the long term the National Grid and similar systems may have to be replaced. Following discussion at a public meeting in London on 10 December 1993, Ordnance Survey has adopted the following policy:

(1) To retain mapping in the National Grid (OSGB36) referencing system *for the time being*.

(2) To review periodically the possibility of changing to another system, such as

Cartographic concepts study, 'white roads' and small scale digitisation

Most readers will be aware that Ordnance Survey has been conducting a study of 'Cartographic concepts'. According to OS Information Paper 4/1994, 'Input to the study from Consultative Committee members has been almost entirely from one interest group and does not represent the wide range of user requirements which OS seeks to satisfy.' There are no prizes for guessing which interest group this may be! In practice not that many members of the interest group contributed (and one of those has since left us), and the almost complete lack of contributions from certain other bodies is frankly scandalous. One regrets that the laws of libel and the conventions of discretion prevent names being named, but the cynic might cackle with glee were the outcome of

ERTF89 (European Terrestrial Reference Frame 1989), taking into account customer demand and the views of mapping communities.

(3) To make widely available at no cost a compact transformation for converting coordinates anywhere in Great Britain to and from OSGB36 to an accuracy of 2 metres.

(4) To provide a bulk transformation service for converting user datasets.

(5) To provide a comprehensive geodetic transformation advisory and consultancy service.*

* Paraphrased and condensed from OS Information Paper 1/1994.

this study to be that the 1:25,000 was scrapped outright and any intermediate scale topographic map at 1:100,000 or 1:125,000 regarded as no more than the rambling delusion of an ex editor of *Sheetlines*. It would be personally inconvenient, but intellectually elegant.

The study has been divided into two parts: the first, to cover the next five years, and to be constrained by existing methods and technology; and the second to cover the longer term, and assuming that more small scales digital data will be available. Put in practical terms, it looks as though we might stand a chance of a national 1:100,000- 1:125,000 map in the long term, but not before the turn of the century; and a suggestion of mine that a 1:63,360 version of the 1:50,000, in New Popular-type covers and stripped of the tourist information, be produced, to be offered to *Daily Telegraph* columnists and those of similar taste, is unlikely, to say the least.

(Better to have loved and lost... At least the suggestion was made.) Associated with this, OS, the Countryside Commission and the Countryside Council for Wales are studying the gathering of 'better centralised data on public access by right or by express arrangement over areas of land and along routes other than public rights of way'. This will include 'white roads', which at present on 1:25,000 and 1:50,000 mapping may be *de facto* public highways or private roads.

Incidentally, one OS member of staff remarked to me recently that, to judge from recent issues of *Sheetlines*, one would think that OS was going flat out to produce

1:25,000 and 1:50,000 digital mapping, whereas in practice these are some years off. I am glad to correct this false impression, which arose partly because of the impression given by OS information papers announcing the cartographic concepts study in the first place. One reason for 1:50,000 digitisation being delayed is that, unlike for the larger and smaller scales, there is no great demand for a vector database at this scale, and at present it is cheaper to continue revising by analogue means that to incur the cost of digitising the data. (Digitising effectively means redrawing, and the redrawing of the 1:50,000 to produce the Second Series was only completed in 1987.) However, digital methods are being used for some 1:50,000 revision, in that the new detail is 'drawn' digitally, printed on film, and spliced onto the old analogue drawing.

Coastal Zone Mapping

Brief mention was made in *Sheetlines* 36 (pp 1, 20) of the prototype Coastal Zone Map, a 1:25,000 of the Solent produced jointly by OS and the Hydrographic Department. Reaction has been positive, and many potential users expressed interest in a digital version. Work is in hand on a sample, at 1:25,000 of the Swansea area, combining 1:25,000

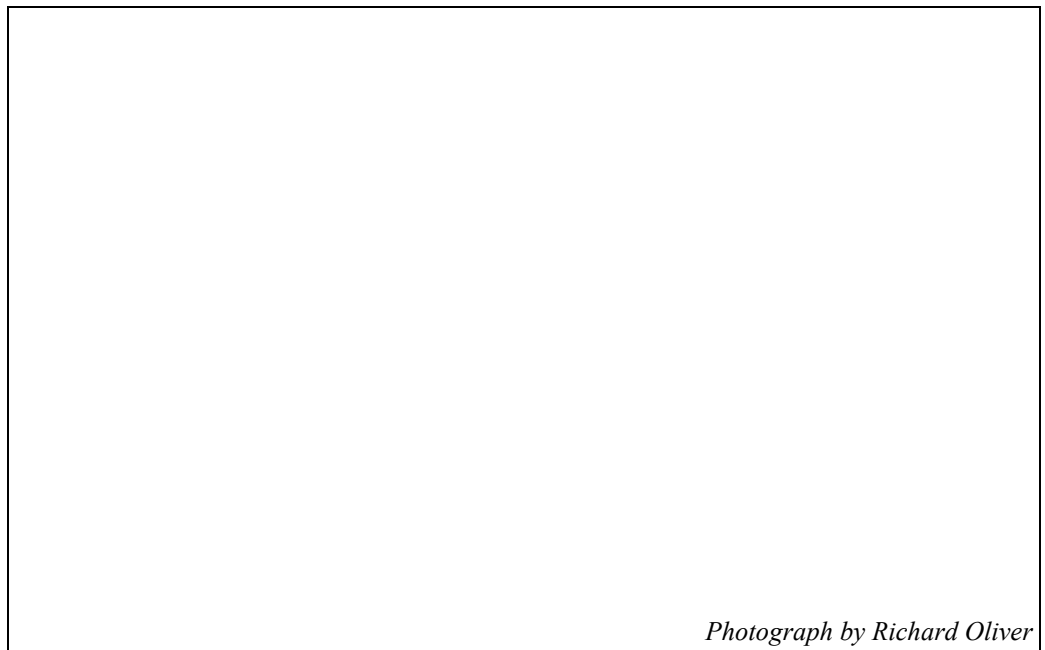
Richard Oliver

Hydrographic data with various OS datasets. The specification will be similar to the graphic map, but will include field boundaries, and will be suitable for GIS and available in a number of digital formats.†

† Paraphrased and condensed from OS Information Paper 4/1994.

More AGM

A view of the Map Market on the afternoon following the AGM. (What is it that David Watt has seen, but which someone else is studying?)



Photograph by Richard Oliver

Profile — Rob Wheeler

Rob Wheeler was appointed to the post of Honorary Secretary at the 1994 AGM

Our editor, being concerned to dispel the myth that all Committee members are professional cartographic historians, able to distinguish the work of individual engravers from a poor photocopy seen at ten paces in failing light, sent his gremlin along to interview your new secretary:—

Does your work involve maps? Not particularly. I am a mathematician, applying mathematical and scientific methods to systems of human devising, as opposed to physical systems. The discipline is called Operational Research; it grew up in the Second World War, being applied to military operations, but has since been extended to civil government, industry and commerce.

When did you become interested in maps? About the age of ten I had the ambition to be a map-maker; I changed my mind when I was told that I had to be a neat draughtsman. My interest in maps remained, though, stimulated first by railways, and later by the work of local historians such as the late W.G. Hoskins. The idea that by looking at the pattern of features on a modern map one can discern changes which occurred many centuries before I found immensely piquant. For example, one could see where the main roads to Market Harborough (Leicestershire) were diverted from their former course to Great Bowden when the former was created as a C13 new town. I say “could”

because urban expansion and changes to roads in the last couple of decades often make it difficult now even to discern the pattern of the 1950s from a modern 1:50,000 map.

So your interest is in the content rather than style? Broadly, that is true. But one needs to know what date (and standards) particular features on a map are revised to and, for that, one needs to understand the map as a document. The Old Series One-inch maps provide a good example where it can be useful to be able to distinguish the engraving styles of different periods.

Does your own map collection reflect your interests? Because my interests are fairly widespread, I aim to have as wide a coverage as possible, to as large a scale as possible, and going back as early as possible. This is inevitably constrained by cost and storage space so, whilst I recognise that the larger scales provide the better historical source, I generally have to rely on libraries for these and content myself with One-inch coverage at home. It would be good to have, say, Six-inch coverage of Leicestershire, but it would also be good to have 1:50,000 coverage of Belgium and I probably lack space for either.

At the mention of non-Ordnance Survey maps, the gremlin turned magenta and disappeared in a puff of smoke, thereby concluding the interview.

Work in Progress — Request for information

Tim Nicholson is engaged in a study of the One-inch/mile New Series, first revision (second edition) colour printed map of 1897–1904 and its reprints of that period and later, before its sheets were progressively replaced by the Third Edition small and large sheet series. Tim is also studying the various "specials" derived from these maps, and would be very glad to hear from anyone who has, or knows of, examples of these. He is

particularly keen to have details of *Southern District Manoeuvre Map* 1896, and (if they were printed in colours) *South Eastern District Manoeuvre Map* 1896 and 1897, and *Salisbury and Surrounding Country Manoeuvre Map* 1898.

**From Eighteen Minutes West to Longitude Zero —
episodes from the lives of a cartographer and a meridian**

Brian Adams's talk given before the Annual General Meeting at Birkbeck College,
on Saturday, 14th May 1994, with some adaptation to appear in print;
however much of it remains addressed directly to the reader.

It is an ancient Mariner, And he stoppeth one of three. - S.T. Coleridge

I shall come to Coleridge later; meanwhile at figure 1 is a simplified map, based on the Ordnance Survey Popular Edition with some special symbols. The dot and circle indicates the blue plaque (not yet installed) "Brian Was Born Here", the event occurring sixteen months after that of the other local celebrity also in action today¹. It was here, in longitude 0° 18' 00" West, as I hoped you guessed, that I started looking at maps at quite an early age, and fairly soon drawing maps. I cannot really put a date to this beginning, but very early on I had tucked in to the pages of my *Comparative Atlas* freehand pencil maps of the home countries and the continents, one feature of which was that the small countries were drawn bigger so you could see them better; this already typified my life long approach in that I did not leave them off, I made sure they were on. My ploy was part of the Art of cartography, the Greenwich Meridian shown across the map is part of the Science of cartography, and I make a serious point here that both these facets are important and neither should ever be forgotten; this is something the electronic cartographers in particular should keep in mind, even in such a basic operation as the placing of names. Having mentioned electronics, I interpolate here that my piece excludes the last ten years or so, and some of my remarks may not strictly apply today.

My geographical education also began early; both my parents were Fenfolks, so we used the line out of Liverpool Street regularly, and one of my first questions was "Where is Ponders Beginning?", to which I never received a satisfactory answer! One of the first things I remember being taught, though I do not remember why, was 'Jillingham in Kent, but Gillingham in Dorset', but it was not until I was working with a Geordie that I was instructed of

the difference between Bellingham in metropolitan Kent and Bellinjam in Northumberland; this is a reminder that you cannot fully comprehend the country simply by looking at a map of it, though anyone with a good eye for country can get a good visual impression of it from a decent map. Here I submit that the older maps, the New Series or Popular Edition say, give a better view than the modern ones do; there is no doubt that the human cartographer put something indefinable, instinctive, into his or her drawings that the machine simply cannot.

It was not long before I was bought my first Ordnance Survey map, 106 *Watford*, purchased on a shopping trip to Ealing, one of the 90% of all known places lying across the join of two sheets (that is a figure mathematics cannot explain), and showing single line connections from Bushey & Oxhey to Croxley Green Junction and Watford High Street²; this I believed implicitly at the time although my father said it was wrong, and I only fully accepted it to be an error when we passed a train going the other way there. So I learnt fairly early on that the Ordnance Survey could make mistakes, then we purchased 85 *Cambridge*, only to find that my mother's village six miles north of Cambridge was off the map; we therefore got the adjoining sheet, 75 *Ely*, which also included my father's village, but this had no colour on the stations and showed the Great Eastern Railway! We next bought 114 *Windsor* showing the other half of Ealing, as well as the favourite excursion spot of Kew Gardens, and thus I was learning fast about Ordnance maps whilst continuing to draw maps of all sorts my-self, and when, at the end of term, we were told to take a book to read while the teacher was marking papers, I would take a couple of maps to look at.

By then I felt well qualified to undertake my first major project, the Ordnance Survey of ‘Doggy Land’, mapped as you might guess at one inch to a mile with some town plans, the first of which was drawn on what is known technically as a non-permanent medium; the reader might call it the steam on the kitchen window. I realise now that at that tender age I was unaware of the principles of triangulation, so the maps can not have been as good as I thought they were; I was also unaware of the provisions of the Copyright Acts, so, as like all the best Ordnance Surveys all the records were lost during the war, it is no good going round to the British Library and expecting our batch of members there to turn out copies. I am hoping this confession does not render me liable to prosecution, but having recently constructed some index maps for the British Library I am trusting that honour is more or less satisfied!

I now move forward to a time when three of the more senior members of the Charles Close Society were all at school together — our long-serving first chairman Peter Clark, first secretary and past-president of the British Cartographic Society Ian Mumford, and myself. Ian Mumford and I started on the same day, Peter Clark a year later. I joined Ian in 2A after one term, but I had started in 2B under a gentleman called ‘Slogger’ Logan, and on that first day Slogger informed 2B “I remember when I taught the Astronomer Royal in this very room”, and I have been somewhat hooked on the Greenwich meridian ever since. The Astronomer Royal in question was Sir Harold Spencer Jones, who subsequently took the observatory to Herstmonceux and put it on atomic time. The school was Latymer, Hammersmith, marked on figure 1 by a cross crosslet, sometimes known as the Latymer Cross, there being fourteen of these on the full Edward Latymer coat-of-arms³. While I was at Latymer we had a new master, one ‘Doc’ Briault, and whilst he taught us Geography, from time to time I taught him about Ordnance Survey maps!

Readers familiar with my writings should realise that the sides of the map at figure 1 are parallel to the meridian of Delamere, $2^{\circ} 41' 03''$.562 West from Greenwich. The much missed Guy Messenger⁴ took me to task, saying

that such an accurate position was meaningless on a One-inch map; with that I agreed, but I explained to Guy that I was not quoting a position on a map but that of the triangulation station which was specifically the origin of the projection and co-ordinates used to construct most medium and small scale Ordnance Survey maps before the adoption of the National Projection. However, for my present purpose it will be sufficient to say that Delamere is $2^{\circ} 41'$ west of Greenwich, whence Greenwich is $2^{\circ} 41'$ east of Delamere; but on the map the Greenwich meridian runs at an angle of $2^{\circ} 06'$ to the side⁵. This is known as the convergence of the meridian⁶, and it is specific to the map and the place being considered; were the map on a different projection the angle would be different, whilst if we follow the Greenwich meridian on the Popular Edition from the area of figure 1 up to the Shetlands the convergence increases to $2^{\circ} 20'$.

I feel I now need to insert a brief word on academic Britain in wartime, not so much forgotten as not remotely thought about; the evacuation of school children is fairly well known, but most of London University was also evacuated, one college being scattered all round the Welsh coast, whilst three colleges and a medical school had the great good sense to go to Cambridge. Here, as in every university town, academia, especially male academia, was very tightly controlled by a body called the Joint Recruiting Board; you had to get their permission to go to college in the first place, they controlled what you did when you got there, and where you went when you finished. So it was that I became a London University student in Cambridge, thereby getting the best of both worlds, and came under the aegis of the Cambridge Joint Recruiting Board and particularly its chairman “That man Snow”; you may know and maybe like his work as C.P. Snow, but you will gather that we did not like him at all. Now because of the way warfare was developing, Snow issued an edict that all male students in certain disciplines had to do a Radio course; the stupid thing about this was that those of us in our final year just did the first year of the Radio course. Then, having sat finals but not

knowing the results, we all passed before Snow and a couple of his acolytes and were classified as for Research, Forces, or Industry (which included everything else), and those including myself designated for 'Industry' had our names passed to the Ministry of Labour to find us jobs; this was the way things were done in wartime.

Having been sent for interview to a number of radio firms and turned down, because they all took the same attitude "We could give you a job on the bench making radio sets, but it wouldn't be fair to you", the Ministry of Labour wrote to me to say "Perhaps you would like a mathematical job"; what I said and what I wrote back were in two entirely different languages but they both meant "Yes", and so I was sent for an interview at the Ministry of Aircraft Production for a job in the middle of Salisbury Plain, which was a major centre of the war effort. However, on the morning I was going for this interview a letter came, forwarded by my college, saying that the Hydrographic Department wanted a mathematician for an Admiralty Cartographer. My mother looking over my shoulder said "Sounds perfect, doesn't it?"; indeed it did sound perfect — I had been drawing maps all my life, and these people wanted to pay me for doing it! £266 15s a year which was quite a goodly sum at that time. So, having been offered the post on Salisbury Plain, I wrote to the Ministry of Aircraft Production to say that I was interested in this other job, adding very naively but for once apparently successfully that, because cartography was something I was very interested in, I should be even more use to the country doing that than their job, sat back, and nothing happened. Eventually I wrote to the Hydrographic Department, who wrote back and said "We asked the Ministry of Labour if you were available, and they said 'No'". So I told them what I had done and that I had heard nothing to the contrary, they interviewed me and accepted me on the spot, and after I had been working there for seven months, I received a letter from the Ministry of Labour, addressed to me at the Hydrographic Department, giving me permission to take the job! I am not alone in sometimes wondering which side the Ministry of Labour was on?

I should explain that at that time the Hydrographic Department employed just one professional mathematician, and it was because he was due to retire that they had advertised for another one; although I was taken on to replace him, the only time this person ever spoke to me was when he came round to say 'good-bye'. However, at the same time the Department was employing a totally amateur mathematician who was far more active, far more use to the Department than the aforementioned professional. This was J.C.B. Redfearn, and I tell you that the initials 'JCB' represented a power in the Hydrographic Department long before Mr Bamford started making his machinery. Also, this was the period between D-day and VE-day, and you will understand when I mention it that, as opposed to the military cartographers, the Hydrographic Department's stint of 24 hours a day, 7 days a week activity was largely over once the Normandy landings were completed. Hence they were already turning their attention to the Far East, and starting a programme of gridding or re-gridding the charts of strategic ports and coasts, Chinese rivers, and so on. And so, although as the mathematician I was destined for the section dealing with special charts, navigational diagrams and geodetic records, on my arrival at the wartime Admiralty in Bath, I was grabbed by the Far East section to assist in their gridding programme. The important thing about this was that the then Deputy Chief of the Far East section was the aforementioned J.C.B. Redfearn, and so, not only was I able to learn the mathematics of surveying and cartography from *the* expert, he had me literally at his elbow where I could advise him and check his more advanced developments, which he had previously to send to others outside the Department.

Now the Charles Close Society is for the study of Ordnance Survey maps, Ordnance Survey cartography; I was a hydrographic cartographer, so is there a difference? On the mathematical side not much — surveying computations are exactly the same, and although we use

different projections, which means different formulae or different tables, the calculating techniques are essentially the same (and I fear the results would be all Greek to many readers); drawing techniques are the same, but what of the content? You may have read that a map of the sea is called a chart; however, there is rather more to it than that. Let me take you back you a holiday in the Isles of Scilly, and the morning I took the launch to St Martin's. Figure 2a shows the route we followed as we cruised into Crow Sound, through the Eastern Isles to see the baby seals and sea birds, and then turned sou'west; I was on my favourite perch on the stern and a lady sitting next to me said "I thought we were going to St Martin's"; I said "We are.", and she replied "Why are we going away from it then?" I have to admit a fair question for a landlubber, we were going away from St Martin's; but figure 2a is the map and it depicts what you can *see* — figure 2b is the chart; it depicts what you *cannot* see, and without going into the niceties of hydrography I said to the lady "There's only a foot of water across there." "Oh, I see" she said, adding "It's a good job he knows that." Well, I am sure that the reader is aware that underwater dangers abound all around the Isles of Scilly, and no boatman would last an hour if he did not know what was below the surface.

Some explanation of the chart symbols is given on figure 2b, which belongs to the pre-metric era; the soundings show the depths of water below the level of Low Water Spring Tides, so that at any given time the actual depth of water is the sounding *plus* the height of the tide above that level. The firm coastline is the line of Mean High Water Springs, and the hydrographer uses the expression 'drying' for any feature between High and Low Water Springs, although at Neap Tides it may never dry out or may never get wet, if it lies near the bottom or top of that range respectively. The cross symbol for an underwater rock (not an underwater church, despite appearances!) is the oldest hydrographic symbol, dating at least back to the fifteenth century. The reader will observe that, even without venturing across the one foot patch, the voyage of *Kingsley* that morning

involved some very accurate manoeuvring, local knowledge being essential.

Some time before that holiday in Scilly, one of my colleagues wrote to the Ordnance Survey to tell them that they showed a church on the wrong side of the road, and they wrote back and thanked him. But if you were going to church, even an unfamiliar one, on a Sunday morning, you would not go into the field on the left (see figure 3) because the map marked a church there; you would go into the ecclesiastical-looking building on the right. However, if the patch of underwater rock were charted on the wrong side of the channel, a ship would steer to the eastern side, have her bottom holed, and the crew and passengers would be lucky to escape with their lives. Yet such an error can arise from so simple a fault as putting a tracing down the wrong way up, and this is the reason for the checks and procedures which have arisen during two hundred years of Admiralty charting. The reader should also be able to see the obvious need for such a danger to be charted as soon as its existence is discovered, which is why chart plates are corrected continuously, charts already printed are corrected daily by hand from Admiralty Notices to Mariners, and ships at sea are notified of serious new dangers by radio navigational warnings, supplemented by weekly editions of Notices to Mariners. And I add that this awesome responsibility of not endangering lives does not lie upon Ordnance Survey cartographers, let alone Mr Bartholomew's and others'.

To return to our Sunday morning walk, a single glance at the map would tell you exactly where you were when you passed the side turning or the bend in the road; but you cannot tell from looking over the side of the ship that you have just passed the swatchway or that it is now that you must swing to port. So to find out where you are on the chart you have to fix your position by angles or bearings to objects ashore, or maybe by a Decca Navigator fix⁷. You then know that you are, say, just at the turn in the channel and steering 015°; but the tidal stream is running at 240° and there is a gale blowing on your starboard beam, so which direction are you in fact going? You cannot and must not guess;

that dangerous rock is ahead of you and you have to take another fix; what this amounts to is that the chart is part of your navigational set, a navigational instrument in its own right, and this is the vital difference between a chart, marine or aeronautical, and a map.

Going back to things in the Hydrographic Office itself, it was Redfearn's preoccupation in the late forties to persuade the department to adopt the Transverse Mercator projection, not then for its charts but for its surveys, because it was his contention, quite rightly, that the very basic methods used by the Naval surveyors for their computations at that time totally hid the quality of their observation work. It was in the course of compiling a handbook to expound the benefits of the Transverse Mercator projection to the Naval Surveying Service that he became dissatisfied with some of the formulae which the military men had developed for that projection, and he delved deeply into them himself. He duly developed what Derek Maling has described as 'Redfearn's formidable expressions ... from his classic paper on the Transverse Mercator', which have a particular significance to the Charles Close Society as the formulae for the National Grid. Seen in the illustration (figure 4)⁸ are those for the conversion of latitude(ϕ) and longitude(λ) to easting and northing, and there is a fairly similar pair for the conversion of rectangulars (easting and northing) to geographicals (latitude and longitude), with others for the calculation of convergence, scale factor, etc.. They are what is known as 'convergent infinite series', which means that in theory they go on for ever with increasing powers of λ , but they are cut off where shown because the terms get rapidly smaller in value despite seeming bigger on the paper; the last terms shown in the formulae are already near enough zero⁹.

My involvement in these formulae was, firstly to check Redfearn's workings thus far (and there was a minor arithmetical error in one of the complex terms), and then to derive two more terms in each expression in order to make absolutely sure that nothing was being ignored which could possibly affect results than by more than a few millimetres (on the ground that is, not on a map). Redfearn sent my workings to Harry

Brazier of the old Colonial Surveys for checking, checking being a vital ingredient of any mathematical process (and, yes, there was a minor arithmetical error in one of the complex terms). What I really want to bring home to you is that these formulae, these 'formidable expressions', were derived by a man who had no formal mathematical education beyond elementary school, which in his day meant age 14, rather below today's GCSEs. Redfearn taught himself these higher reaches of mathematics simply because, just like all CCS members, he was interested in maps and all that went into them. So reader, you could do it too; you doubt it? — well, you might surprise yourself.

Members are certainly aware that to map the curved Earth requires a projection, but I cannot emphasise too strongly that the actual process embodies the use of the projection formulae; without the projection, without these formulae, there could be no triangulation, no survey, no sheet lines, and with no survey and no sheet lines your Ordnance Survey map would be a blank sheet of paper, and the Society would not have lasted thirteen years discussing blank sheets of paper! So when you see the mention of a projection in *Sheetlines* please don't knock it, it is vital to the actual existence of the map you are interested in; turn on if you must, but maybe glance through the item twice, even thrice, and hopefully get the general idea, and if you would like to discuss it my address is in the Membership List.

Before leaving the projection formulae I tell you that the Hydrographic Department, in other words Redfearn, used them to produce their own National Grid conversion tables a year before the Ordnance Survey published theirs. Meanwhile, it was about this time that the OS began to issue the National Grid co-ordinates of Retriangulation stations on a regular basis, and Redfearn's natural inquisitiveness led him to compute some of their geographical positions to compare them with their positions in the old Principal Triangulation; he was probably the only person in the country outside the Ordnance Survey capable of doing so at that time. He found that there was a fairly regular difference between the old and new positions of around 2¼ metres, but an

enquiry about this directed initially to the Astronomer Royal¹⁰ elicited a much more startling fact, which I now explain from square one. The Royal Observatory at Greenwich was founded in 1675 for the specific purpose of “finding the so-much-desired longitude of places for the perfecting the art of navigation”, in other words, so that British ships carrying British trade around the world could find out exactly where they were. The actual problem of “discovering the longitude at sea” was finally solved by John Harrison in 1759, but an essential component in the matter was the installation of Bradley's transit instrument in 1750, superseding a less permanent transit set up by Halley in 1721¹¹.

I may need to explain exactly what a transit instrument is —it is a telescope so mounted that it can only rotate in the north-south meridian, and it is used to time the passage of heavenly bodies across that meridian; from such timings differences of longitude can be determined, and this is why the geographical positions of observatories listed in the Nautical Almanac or elsewhere are the positions of their transit instruments. In the particular case of Greenwich, the meridian through the observatory transit is the meridian of zero longitude. One result of the particular construction and use of the transit telescope is that it does not have the familiar dome above it, but a simple slit in the roof and upper walls of the building housing it. So Bradley's transit marked longitude zero until 1816, when it was replaced by Pond by a bigger instrument on the same mounting; then in 1850 G.B.Airy, later Sir George, decided on some reconstruction at the Observatory and in the following year erected a further new instrument in a different situation (see figure 5). In those days many countries had their own zeros both for longitude and for time, and to eliminate the confusion caused by this practice an international conference was held at Washington in 1884, which decided that henceforth Greenwich, that is the Airy transit, would be the international zero.

The attentive reader will have remembered that three years ago we were celebrating the bi-centenary of the Ordnance Survey, which grew

from an earlier operation to connect the observatories of Paris and Greenwich, which takes us back a long, long time before 1851. So indeed, Roy's original triangulation was connected to Bradley's transit at Greenwich, and the later observations of the Principal Triangulation were made into Pond's on the same site, and it was from the accepted astronomical position of that site that positions were derived throughout the old triangulation. The final calculations of that triangulation were commenced by William Yolland in the 1840s, but were completed by A.R.Clarke in the late 1850s and published in 1858, seven years after the installation of the Airy transit. Whilst there were good reasons why Yolland's inevitable use of the Bradley-Pond meridian as the zero should have been retained in Clarke's 'Account', it is very much a mystery why Clarke made no reference whatsoever to the new instrument, not even in a postscript. His silence on that point probably contributed to the fact that when the Airy transit was first connected to the Retriangulation in 1949, it came as a total shock to the Ordnance Survey that its longitude was found to be not zero but 0.4 second East, equivalent to a displacement of about eight metres.

An enquiry into this revelation elicited the facts which I have related above and a report by Colonel Shewell¹², one of the Survey's more responsible officers, concluded that “the discrepancy cannot and should not be covered up”, but his superiors did nothing to tell anyone about it until Redfearn discovered it for himself two years later. But the forgotten change from Bradley-Pond to Airy only accounted for about $5\frac{3}{4}$ metres, leaving an apparent error in the Retriangulation position of the Airy transit of $2\frac{1}{4}$ metres, the same discrepancy that Redfearn found between old and new positions in the area. To understand this I need to explain something about the adjustment of a triangulation, and I hope the reader will continue to bear with me in this. Why does a triangulation need adjustment? — mainly because it involves observing objects 30, 50, even 100 miles away through the atmosphere, and the atmosphere does very funny things to rays of light, especially near the ground, so

that a ray from a distant point does not reach your theodolite at the angle it started from.

My diagram figure 6 shows what is termed 'Figure 1' of the Principal Triangulation, and as I have explained all the observed angles are wrong, or shall we say 'not quite right', and they are not consistent with each other. What we have to do is to determine corrections to all the angles to make them all consistent, with as little disturbance to the original observations as possible; the result may not be absolutely correct, but it will be as near as it is possible to get. The computation involves simultaneous equations — perhaps you remember them from school, a set of three, four, or more? But this is not school maths, it is not university maths, it is real life maths; to adjust the Figure 1 we have to solve 39 simultaneous equations, and this means working through 265 equations altogether. Having gone through those 265 equations we have only dealt with the area shown hatched in my figure 7a, which depicts all the adjustment 'Figures' of the Principal Triangulation, and you will realise at once why the whole network could not be adjusted in one go. But turning now to the Figure 2 we have to leave undisturbed the sides we have already fixed in the Figure 1 adjustment; this imposes a small constraint on the adjustment of Figure 2 which is slightly less satisfactory than that of Figure 1, and the more figures we adjust, the more constraints we have to impose on those which remain. The figures outlined with heavy lines were adjusted totally freely, without any fixed sides, and Figures 1 and 14 included the Survey's two most accurate baselines, the only ones included in the final adjustment.

Having adjusted the whole network, only then can we begin to find out where everywhere is. As I said earlier, the astronomers have given us their position of the Pond Transit, and the astronomical bearing of the ray thence to the Chingford station on Pole Hill¹³; using these data plus the distance Greenwich–Chingford from the adjusted triangulation we obtain the position of Chingford. Then from the triangle Greenwich–Chingford–Leith Hill we obtain the position of Leith Hill, from the next triangle we obtain that of Butser at the summit of the South Downs, from Butser to Dunnose on the Isle of Wight, thence to the Ordnance Survey Office at Southampton, so that they knew where headquarters was; also from Dunnose, Black Down in Dorset was fixed and three more hops arrived at Goonhilly on the Lizard¹⁴; and in a similar fashion positions were fixed all over the British Isles. But because the adjustment of the Principal

Triangulation had started from the west, the biggest constraints on the individual figures occurred in the east, and there was a slight distortion of the position of Greenwich within the finalised geometric network. Consequently, working back from Greenwich, most of the geographical positions obtained in the central and western parts of the British Isles were slightly in error.

Moving rapidly forward to the current century, the overall adjustment of the Retriangulation, which was confined to Great Britain, was done similarly to that of the old triangulation, although its figures were larger and therefore fewer (see my figure 7b)¹⁵. However, a quite separate adjustment was also made using eleven stations which were occupied in both the old and new triangulations; by this, without disturbing the adjusted shape of the new network at all, it was laid down in the position which gave the best overall fit with the old work¹⁶. Therefore the geographical positions of the new work were infused with the slight error obtaining in the central area of the old, and again, working out to Greenwich through the adjusted Retriangulation, a slight additional distortion was brought in. The sum result of all this was the 2¼ metre discrepancy we have been searching for, and for the physical meaning of this I refer you back to my figure 5. The National Grid longitude of the Airy transit, the international zero meridian, is 0"·42 East, and that of the Bradley–Pond meridian is 0"·12 East; this means that the line of zero longitude in the National Grid runs 0"·12, or 2·3 metres, west of the old Pond instrument, and if you measure it out on the ground you will find that the National Grid zero is marked by a drainpipe **d** on the plan.

One more point, you may have read or been told that meridians and parallels are imaginary lines on the Earth's surface, but some of you know better, I am sure; you have seen the Greenwich Meridian running across the observatory courtyard, and have probably stood with one foot East and one foot West, and if you did, and looked up, you would have seen the observing slit in the wall I mentioned earlier, with the small opening roof. The slit over the Pond instrument has been glassed in. Or you may have seen the meridian line running across the sea-bank near Cleethorpes or on the cliff top at Peacehaven; but if you have seen it at Cleethorpes or Peacehaven it was the Bradley–Pond meridian and not the Airy, and most of the other meridian markers of various types are on the Bradley–Pond meridian, because they have been installed using Ordnance Survey

data. But in 1984, the centenary year of the Washington conference, the Ordnance Survey offered to mark your house if the zero meridian ran through it, not to mark the actual meridian, just the house, and I am assured that for this operation they made the necessary correction to ensure that they were dealing with the international Airy meridian.

Finally, reader, I refer back to the quotation at the head of this article to remind you that it was the needs of the Ancient Mariners which led to the founding of the Greenwich Observatory in the first instance, but if you refer to the Greenwich Meridian today, it is One of Three!

Notes:

- 1 Wembley Stadium; the 1994 AGM was held on FA Cup Final day.
- 2 Shown at **a** on figure 1; these curves were always double track.
- 3 North London members will know of another Latymer School at Edmonton; it was a separate foundation under the same will of Edward Latymer, who died in 1624.
- 4 Every main speaker at the AGM referred to the loss of this revered Honorary Member.
- 5 Any divergence from this angle on figure 1 is due to the photocopier; the slope is correct on the original drawing.
- 6 Not to be confused with *convergency*, which is the angle in space between the meridians at two points on the earth's surface, an angle used in some navigational calculations.
- 7 There is no buoyage present which might have assisted positioning (it may have been removed for the winter ice-up). Also, I remind readers that I am writing of the days before GPS.
- 8 I did say they were all Greek!
- 9 These final terms have already been simplified by substituting the close approximation of unity for the ratio v/ρ ; ρ, v are the Earth's radii along and perpendicular to the local meridian respectively.
- 10 The Astronomer Royal was then ultimately responsible to the Hydrographer of the Navy, though not in the Hydrographic Department proper.
- 11 Halley (1740–42), Bradley (1742–62), Pond (1811–35) and Airy (1835–81) were Astronomers Royal; Spencer Jones was in office 1933–55.
- 12 Subsequently Brigadier.
- 13 On this hill due north of Greenwich (see my figure 1) Pond erected a meridian mark which remains there today, together with a Retriangulation pillar; the latter is within a few inches of the Airy meridian. The Principal Triangulation station was a buried mark, lying $13\frac{1}{2}$ feet almost due south of the meridian mark.
- 14 Well before modern technology made Goonhilly a household name I walked across these Downs, feasting off the thousands of blackberries with a total absence of other human beings. It is salutary to recall that over a hundred years earlier, but in mid-winter not blackberry time, the area had been occupied by an intrepid party of Ordnance Trigonometrical Surveyors.
- 15 Work on Figure 5 was halted by the outbreak of the Second World War but the need for good positions around London led to its southern half being adjusted in its entirety, with the northern part following.
- 16 In the course of proposing a vote of thanks for the talk at the AGM, Ian O'Brien remarked that this somewhat controversial procedure was a typical British compromise, introduced by the architect of the Retriangulation, Major (ultimately Brigadier) Martin Hotine. Hotine, subsequently Ian's chief, was also self-taught in the higher realms of mathematics.

Discoveries and explorers: new Ordnance Survey maps from Ireland and Britain

by Richard Oliver

Ordnance Survey of Ireland, 1:50,000 *Discovery Series*, Sheets 1, 2, 3, 10, 11, 30, 37, 38, 56, 75. Dublin, Ordnance Survey, 1993. Price £4:25 each in UK.

Ordnance Survey of Ireland, *Oileáin Arann, The Aran Islands*, 1:25,000. Dublin, Ordnance Survey, 1993. Price £4:25 in UK.

Ordnance Survey of Northern Ireland, 1:50,000 *Discoverer Series*, Sheet 36A. Belfast, Ordnance Survey of Northern Ireland, 1993. Price £4:25 in UK.

Ordnance Survey [of Great Britain], *Explorer maps*: 1, *Kielder Water*; 2, *Chiltern Hills North*; 3, *Chiltern Hills South*; 4, *Mendip Hills West*; 5, *Mendip Hills East*. Southampton, Ordnance Survey, 1994. Price £4:50 each in UK.

The development of the 1:50,000 scale by the Ordnance Survey of Great Britain (OSGB) from *circa* 1969 onwards was described in *Sheetlines* 39, and previous Ordnance Survey of Ireland (OSI) 1:50,000 and 1:25,000 mapping has been reviewed at some length in earlier issues. In the Republic of Ireland, the 1:50,000 scale was officially adopted, as a replacement for the 1:63,360, following a review in 1964 of the Republic's mapping needs; but for a long time it looked as though it was destined to remain no more than a policy, although *circa* 1966 considerable work was undertaken on a 1:50,000 of the Dublin area.¹

In Northern Ireland things proceeded somewhat differently; the new scale was formally adopted by the Ordnance Survey of Northern Ireland (OSNI) in 1975, with the 1:63,360 Third Series being replaced by a 1:50,000 'First Series' between 1978 and 1985. Subsequently it was named the Discoverer Series, and this appears on the integral cover of all reprints. It derived stylistically from the OSGB Second Series, but with two important differences: it used hypsometric tinting ('layers'), and Times Roman rather than Univers was used for the names of larger towns and for townlands. A distinctive local flavour was thus grafted onto an import from 'the mainland'. The eighteen Northern Ireland 1:50,000 sheets were numbered discontinuously from 4 to 29, as part of an all-Ireland series, at first projected in 96 and then later in 89 sheets, agreed with the Ordnance Survey of Ireland (OSI), and it has been generally understood in Great Britain that the OSNI

sheets were being produced to a joint specification agreed between OSNI and OSI: a point of some significance in view of later developments. Unlike the OSGB 1:50,000, which started as a six-colour map but went over to four-colour process printing in 1978, the OSNI map was designed from the outset for four-colour printing.

Since the split into three Ordnance Surveys in 1922, the 1:63,360 of Northern Ireland had been fully revised twice, but the corresponding maps of the Republic had been largely neglected; by the late 1960s most of the republic was covered by a 'black outline' edition, last revised between 1898 and 1913, plus four district maps, of Cork, Dublin, Killarney and Wicklow, which were serviceable for many purposes, but less than ideal for such activities as mountaineering. Though it would have been quite practicable to produce a revised 1:63,360 from the black outline material, rearranged on more convenient sheetlines, it would have been expensive, and with the 1:50,000 adopted as policy it would have been a questionable makeshift. It would be much more satisfactory to start with a clean slate. For a long time almost all OSI resources were devoted to the 1:2500 and 1:1000 scales. By the mid-1980s pressure for production of a

¹ P.G. Madden, 'Proposed mapping policy for the Republic of Ireland', Conference of Commonwealth Survey Officers, 1967, Paper J2.

replacement for the 1:63,360 was growing: the lack of a good modern topographic map was hindering the development of parts of the tourist industry, and in 1986 work began on the 1:50,000 map. The long delay was not all loss; in the early 1970s the French national mapping agency, the Institut Geographique Nationale, had flown 1:30,000 scale aerial photography of the whole republic, and digital mapping had developed to a stage where it offered considerable production economies over analogue mapping, as well as flexibility in the final output.

The first OSI 1:50,000 sheet to appear, 78, *Kenmare*, seems to have been published in Ireland in 1988, but only became known in Britain early in 1990. Sheet 78 proved a great surprise, given that observers had expected that the style of the OSNI sheets would be followed by OSI. The only things in common between the two were the scale and the sheet size, which conformed to the OSI standard of 80 cm left-right by 60 cm bottom-top within the neat line. Otherwise, it was wholly different from anything that the topographic map buying public had been offered in Ireland or Britain. Roads were uncased, the relatively few names were in a 'computer' typeface, area 'tints' were produced by single or cross hatching, and certain categories of information were either simplified, such as woodland, or else omitted, such as foreshore. There was no layer tinting, but the very prominence of the contours, printed in a good strong brown such as OSGB had not produced for years, made this an effective 'relief edition'. In fact it was called 'Preliminary Edition', with a note that it was to be published later 'in accordance with standard specifications', which no doubt helped deflect any criticism of the discordance with the OSNI style. The new map was reviewed favourably in these pages by the then editor, who observed, justly, 'If a choice has to be made between accelerated production of such preliminary editions and the publication of "standard" sheets this reviewer hopes that all priority be given to the former until such time that all Ireland can be found on this scale.'²

In the next few months two more Preliminary Editions were published, of Sheets 54 and 56; 54 was also made available in an alternative version with a roughly co-extensive satellite map on the back. Nothing extra was charged, at any rate in Britain, for the 'satellite' version, though to compare the two properly it was desirable to

purchase a copy of the 'conventional' version as well. (Was that the idea? The 'terrestrial' side of the double-sided issue was very weakly printed, particularly the contours, and there was some 'show-through'.) Various modifications to the design were made with these two sheets, including the replacement of a four-panel semi-Bender by a conventional Bender fold. (The early issues of the standard version of Sheet 56 were semi-Bender; the 'satellite' and later issues have been conventional Bender.) In 1991 Sheet 78 was republished in a 'First Edition' as part of a 'Rambler Series', with more drastic modifications to the design (and to its sheetlines), but retaining the uncased roads and the general look of the earlier sheets. On the back was multi-lingual tourist information. The 8" x 4" Bender fold was replaced by a 9" x 4" fold which gave a less squat look to the folded map. About the same time two 1:25,000 sheets also appeared.³ In 1992-3 six more Preliminary Editions were published, in the general style of the 'Rambler' 78, though with further modifications to the design, including the introduction of yellow infill for larger built-up areas, and the omission of any mention of later publication to 'standard specifications'. Although the sheets were not appearing very quickly, it looked as though the Irish Republic was going to be covered in a very different style from Northern Ireland.

But there was something odd going on. Those sheets which included part of Northern Ireland had *cased roads* in the 'six counties' part. If casing was possible there, why not in the twenty-six counties? Indeed, why not an altogether more 'conventional' map? The new mapping was welcomed by some, including your reviewer, but honesty compelled the admission that it was 'a connoisseur's map'; other reactions from British observers varied from 'lukewarm to actively hostile'.⁴ If there is any justice in this world, the Preliminary Edition of Sheet 78 and the 'Satellite' version of Sheet 56 will in due course become sought-after collectors' items, as is the *Killarney* map of 1913, but so, it is to be hoped, will be the 'First Edition' of Sheet 56. Sheet 78 in its 'Rambler' form is *sui generis*, as Sheet 56 and nine further Preliminary Editions,

² Review by C.I.M. O'Brien, *Sheetlines* 27 (April 1990), 19-20.

³ For review of Sheet 78 by C.I.M. O'Brien, see *Sheetlines* 31, p.37; of the 1:25,000 sheets, by Richard Oliver, see *Sheetlines* 32, pp 52-3 and 34, pp 50-1.

⁴ *Sheetlines* 34, p.50.

published nearly simultaneously, are part of the 'Discovery Series'.

The Discovery Series will be a discovery indeed for those who have been repelled by the style of the earlier OSI 1:50,000 sheets, and who thought that the 'Rambler' 78 was a harbinger of national cover. (One comment was 'Ah, I think I shall start going to Ireland again.')

Here is an almost wholly 'conventional' map, with not only cased roads but also layer tints, and anyone who can get on with the OSNI and OSGB 1:50,000s ought to be able to get on with this. It needs no special pleading. That said, we have a map with as distinctive a style as had the earlier sheets, which for general looks can compare with any mass-market maps at present on offer on Europe. OSI's printers have completely turned the tables on those who remember the later (1940s-50s) printings of the 1:63,360 'fully coloured'. I understand that the map is printed in four colours, but it is a far cry from the strident cyan, yellow and (particularly) magenta which have marked - one can hardly say distinguished - some British four-colour essays. (One thinks particularly of some of the OSGB road atlases produced around 1983.)

It is possible that this change is due in part to public reaction and comment; possibly it is due to a new map publishing system recently installed by OSI. At any rate, the main changes from the earlier style are: (1) layer colouring; (2) urban areas in lilac-grey; (3) cased roads; (4) sans-serif similar to Univers for most names, with alternative Irish versions of English language names in italic; (5) use of green infill for 'N'-class roads; (6) depiction of woods by green tree symbols, without ground tint; (7) the use of Bookman, or a similar style, for names of larger towns; (8) boxing in of the various sections of the legend on a pale green ground; (9) new cover design with sheet number on the spine. A further innovation, not noted in the legend, on Sheets 30, 37 and 38 is the distinction between roads under and over 4 metres in width. Some marked differences remain between the OSI *Discovery* and the OSNI *Discoverer* series, in the form of what OSI does *not* show: the distinction between fenced and unfenced roads; the distinction of

churches with and without towers and spires; no rock ornament, only contours, on steep slopes; the omission of railway earthworks; smaller groups of buildings shown by black rectangles; and a much more generalised way of showing the outer limits of built-up areas, more appropriate to a 1:100,000 than a 1:50,000 map. Shown by OSI, but not by OSNI, are police stations, and various categories of woodland; and whereas OSNI uses various fancy styles for antiquities, OSI names them in ordinary type, printed in red, which I suspect many will find more readily legible. The 'Rambler' 78 included tourist information on the reverse; this does not appear on any subsequent sheet, for which I am glad rather than otherwise. I suspect that the provision of this 'tourist information' by map publishers is often more a matter of meeting, or anticipating, initiatives from competitors, than the outcome of any 'information philosophy' or altruistic desire to inform the public.⁵

Having handed out the compliments, I now venture a few mild criticisms. First, the road colours. These are blue for Motorways, solid green for National Primary Roads, pecked green with white between for National Secondary Roads, orange-brown for Regional Roads, yellow for Third Class roads, and black infilled with screened black for the rest. I understand that the last is due to a quirk in the system which it is hoped to remedy, but the choice of green for the National Roads is because this is the international colour for primary routes.⁶ This I do not dispute, but I cannot help feeling that there is a fundamental misjudgment here, of which OSGB are also guilty on the new

⁵ I do not of course mean the provision of tourist information symbols on the *face* of the map. The provision of gratuitous 'tourist information' to accompany topographic mapping can be traced back to the late nineteenth century, as exemplified by some of G.W. Bacon's county cycling maps, but I suspect the present development began in the early 1960s. A study of this would make a useful subject for a M.A. dissertation. Is any academic reader willing to push a student in that direction?

⁶ Information from OSI via John Taylor.

1:250,000 *Travelmaster* series.⁷ A red-brown-yellow sequence was worked out in 1951 by OSGB for the 1:63,360 Seventh Series, and conveys a good sense of hierarchy, no doubt because of the juxtaposition of red, a strong colour, with yellow, a weak one; brown is effectively a mix of the two. Anything more important than a red road needs a powerful, fiery colour; even the full blue used on more recent OSGB 1:50,000s for motorways is not really powerful enough: a purple would be better, regardless of the colour of motorway signs. Indeed, this is used on the French 1:100,000. (It is open to question anyway how far road-users understand or employ the concept of Primary Routes.) A possible modification to the OSI scheme might be to strengthen the green as much as possible, and to print the National Secondary roads with alternative green and brown pecks, or in red.

The other possibility is to rethink road colours completely, eliminating any use of red.⁸

As on the OSGB and OSNI 1:50,000s no distinction is made between single and multiple track railways. From the point of view of sales to railway enthusiasts this may be a misjudgment; it is open to question whether the abolition of the distinction by OSGB - which presumably was the inspiration for OSNI and thus OSI - would have been effected so easily were railway enthusiasts represented in the OSGB consultative machinery. At the request of Irish Rail,⁹ railway mileages are included; useful for railway enthusiasts, no doubt. Of more general use are the railway underbridge clearances (which for many years have been included on the Michelin 1:200,000 of France);

this mitigates the disadvantage that all road and railway intersections are shown by breaking the railway, with 'LC' added for level crossings. The railway station symbol is the customary cased red disk (*without* the black line running through the middle, which disfigures the OSGB *Travelmaster*, and suggests that the stations were added by an office-boy at the last minute), but it is very large, about 2 mm in diameter as against about 1 mm on the OSNI and OSGB 1:50,000s, and gives the illusion that the railways are drawn (or output) to a finer line gauge than is in fact the case. (The line gauge for railways appears to be practically the same on all three 1:50,000s.) Disused railways are shown similarly to those on which the track has been lifted; in both cases the symbol is liable to confusion with the footpath symbol, and I cannot help feeling that disused railways with the rails *in situ* ought to be shown as for railways in use.

A third criticism - or, strictly, group of criticisms - concerns the way in which detail in built-up areas is presented. Firstly, the purple building infill is allowed to run over water areas, obscuring them: on Sheet 75 this obscures the island in the River Suir at Clonmel (S 203221) and makes the town further down the river look like Carrick-*above*-Suir (S 400215). Secondly, the street pattern is liable to be overridden by the post and information office symbols and by white tabs for road numbers; the trouble is particularly noticeable on Sheet 56 at Bray (O 2618). These white tabs for road numbers are also allowed to override the contours.

A fourth criticism concerns the green used in the layer colouring, which is liable to overpower the woods: this fault is particularly noticeable in the eastern half of Sheet 38, where close examination shows quite extensive woodland.

However, none of this should be taken as detracting from the extremely favourable impression of the map overall. Those who wish to compare the earlier and later OSI and OSNI 1:50,000 styles will find a small area at the overlap of sheets 6, 11 and 12 which is mapped in all three styles. Those who wish to see more

⁷ Not yet reviewed in *Sheetlines*; the cartography is similar to the 1991 *Ordnance Survey Motoring Atlas*, reviewed in *Sheetlines* 29, pp.33-5, but the general effect tends to be rather heavy.

⁸ As, indeed, Philips have done on their 1:100,000 (and some other) mapping, first introduced in the mid-1970s. Personally, I have never liked the result, and I suspect that it may have hindered the sales of the mapping in its various forms. It is interesting to make a photocopy of the Philips mapping and recolour it in standard OSGB 1:50,000 colours.

⁹ OSI to Taylor.

of the Republic in the OSNI style will be interested in the most recent 1:50,000 sheet to published by OSNI. This is Sheet 36A, *Carlingford Lough*, and combines parts of Sheets 28, 29 and (otherwise unpublished) 36. It generally follows the style of the earlier sheets, except that police stations are shown in the Republic part of the map and that all the townland names in Times Roman have been removed from the portion previously published on Sheets 28 and 29. The reason for its publication, and that of Sheets 34A and 35A in due course, is mysterious; an enquiry to OSNI produced the answer that this was 'a joint decision between Ordnance Survey of Northern Ireland and Ordnance Survey Ireland',¹⁰ which increases rather than reduces the mystification. The sheet was produced by a mixture of analogue and digital means, which may account for the discrepancy of drawing railway earthworks (compare the cutting at J 051110, from Sheet 29, with that at J 044099).

OSI's first two digital 1:25,000 sheets were cartographically similar to the earlier style for the 1:50,000. *The Aran Islands* is in the style of the more recent 1:50,000 sheets, and the same comments apply to its cartography as for the 1:50,000 sheets. It is simply the 1:50,000 writ large. However, three points call for attention. First, it seems originally to have been numbered 51A, and much of the sheet lies outside the 1:50,000 sheetlines shown on published indexes, (the position is 075-099.5 km E, 200-213 km N). Second, it deviates from the standard 80 x 60 cm map area adopted by OSI in the 1960s, and used for the 1:50,000. Third, it is embellished with six photographs (four locations) on the face of the map. This may seem similar to the postage-stamp things on the OSGB *Norfolk Broads* and *West Country* maps, but these are good sized oblique air photos, keyed to the map, a definite addition to its value, and a useful way of employing what would otherwise be a mere wash of blue sea. The only drawback is that three of them are split across the primary horizontal Bender fold, so to get the full benefit of them you need to open the

map right out, which is inconvenient for those of us who like to study our maps in armchairs. It is fair to add that, compared with *Macgillicuddy's Reeks*, this is less recommendable as armchair entertainment, though, like the new 1:50,000 style, it will probably find greater favour cartographically. The Irish 1:25,000s omit field boundaries and much of the fine detail of building shapes, etc. which British map users have come to expect of this scale. It is fair to add, however, that the showing of field boundaries at 1:25,000 is by no means standard practice elsewhere; for example, they are omitted from the cartographically splendid Swiss maps at this scale. Also, the photographs on *The Aran Islands* show strikingly how *small* the fields are hereabouts; to map them at this scale would be to cover the map with a dense mesh which would probably confuse rather than enlighten. It would be nearly as bad as looking at continuous cover by glasshouses.

Field boundaries are of course an essential ingredient on the British 1:25,000 *Explorer* maps, the latest chapter in the 'two-and-a-half-inch' story. They are described in OS publicity as 'designed to cover popular, but the less explored beauty spots of the country, outside the National Parks (*sic*).'¹¹ These maps are a development of Sheet 1126, *Gower*, issued two years ago,¹¹ in that they are groupings of existing *Pathfinder* sheets, with the addition of tourist symbols. The intrusive vignettted green for National Park, etc., boundaries, appears on *Explorer* 1. The borders are infilled screened orange, and the legend is inside the separate hinged card covers. These last are an orange version of the standard picture-postcard style (H.407); it would be interesting to know whether this was chosen because (a) it matches the orange border, (b) those charged with such decisions observed that OS had no orange-covered maps, indeed that its last orange-covered series had been the Half-Inch Ministry of Transport map (H.14), and that the colour could stand revival, (c) red, yellow, blue and green had all been bagged, and orange was

¹⁰ OSNI to the writer, 14 February 1994.

¹¹ For review, see *Sheetlines* 34, pp 48-50.

about the only option left, (d) a form of scream, in a desperate effort to sell those ghastly 1:25,000 maps, which dilettante reviewers and armchair walkers *will* scream blue murder about whenever there is the *slightest* hint of this wholly redundant and pestilent scale's discontinuation, or (e), it has its inspiration in the costume of the amphibians on the photograph of Leaplish Sailing Centre on the cover of *Explorer 1*.¹²

The areas covered and the survey dates of the new maps are listed at the end of this piece. Unlike on 1126 *Gower*, no general survey or revision dates are given on the *Explorers*; we merely have 'revised for selected change' ('LIKE WHAT?!' one asks), which is not defined, and, thought about for a little, is meaningless gibberish. At the risk of being a spoilsport, I have given in the list the survey dates for the component *Pathfinders*; no doubt Ordnance Survey may object that these are misleadingly out of date, but they, and they only, are in a position to do better. I hope they will. Something else which ought to be rectified is the provision of an adjoining sheets diagram, to show those benighted areas covered as yet only by *Pathfinders*. It will be seen that sheet sizes vary, and that one sheet, 3, is back-to-back. Apropos this, and the recent republication of the Purbeck OLM as a back-to-back extending all the way from Swanage to Weymouth and Portland, I do wonder whether there are elements in Ordnance Survey who are attempting to subvert the 1:25,000 by ensuring that cost recovery on mapping of popular areas is kept down by under-pricing the maps. I *may* be wrong; I hope I *am* wrong. But, as one whose admittedly limited financial expertise is perhaps a disqualification rather than otherwise for

commenting on this weighty matter,¹³ I find the back-to-back pricing logic impossible to understand.

More *Explorers* are promised for 1995, and it would be nice to think that these small but irksome deficiencies will be rectified.

Compared with the standard *Pathfinders* at £3:95, the *Explorers* are of course good value for money, even without the survey dates, and it is to be hoped that they and the review of Cartographic Concepts being carried out by OS will lead to the standardisation of a national 1:25,000 'large sheet series'. However, I very much hope that (1) any such large sheet series will be of standard dimensions, ideally 30 x 20 km or 27 x 22 km, or a mix of the two, (2) that there will be no back-to-back mapping, and (3) that the printing will be up to the standard we have come to expect from Ordnance Survey in late years. I am sorry to say that all five *Explorers* plumb a depth not reached since the days of the 'reconstituted' sheets of the 1:63,360 New Popular Edition in the 1940s. I can only think that this is result of production from raster scanning, (digitisation on the cheap).

'Input to the [Cartographic Concepts] study... has been almost entirely from one interest group and does not represent the wide range of user requirements which OS seems to satisfy', observes OS Information Paper 4/1994. One does ones best.

¹² This is in accordance with Oliver's Theory of the Origins of OS Cover Designs, whereby inspiration is sought from the first map in a series, and thenceforth is allowed to colour all the others. It stems from a belief that the Ellis Martin 'cyclist' cover for the One-inch Popular Edition (H.11) was originally intended for the 1914 *Dorking & Leith Hill* district map.

¹³ Four years and nine months working in a bank, and occasionally adding and dividing party bills in Italian and Greek Cypriot eating houses; personal financial details can be obtained by hacking into Midland Bank account 21020188, branch 40-35-40.

OSGB Explorer maps

- 1 *Kielder Water* - 360-380 E, 580-600 N.
Replaces Pathfinders 509 (NY 69/79) and 519 (NY 68/78) (both surveyed 1977-81).
'Revised for selected change 1993'.
- 2 *Chiltern Hills North* - 470-500 E, 200-220 N.
Replaces Pathfinders 1094 (SP 81/91; 1965-88) and 1118 (SP 80/90; 1962-75), and parts of 1093 (SP 61/71; 1973-82) and 1117 (SP 60/70; 1971-81).
'Revised for selected change 1994'.
- 3 *Chiltern Hills South* - 460-480 E, 180-200 N (front), 480-500 E, 180-200 N (back).
Replaces Pathfinders 1137 (SU 69/79; 1968-77), 1138 (SU 89/99; 1960-76), 1156 (SU 68/78; 1960-77) and 1157 (SU 88/98; 1953-75).
'Revised for selected change 1993'.
- 4 *Mendip Hills West* - 340-360 E, 130-160 N.
Replaces Pathfinders 1198 (ST 45/55; 1959-79), 1218 (ST 44/54; 1967-84) and 1238 (ST 43/53; 1967-73).
'Revised for selected change 1993'.
- 5 *Mendip Hills East* - 360-380 E, 130-160 N.
Replaces Pathfinders ST 65/75; 1956-76), 1219 (ST 64/74; 1958-73) and 1239 (ST 63/73; 1971-9).
'Revised for selected change 1993'.

Cleaning, Restoration and Preservation of Maps

by David Parsons

Sheetlines 37 included a request for members to contribute their experiences and tips on the subject of cleaning, restoring and preserving maps.

Although far from being an expert, I have enjoyed some success with the cleaning and repair of maps and offer a few ideas and suggestions. Some experience at “handling” paper was developed during my six years membership of the bookbinding club at a north London grammar school. However, in recent years most of my modest success has been the result of using the products and advice available from a small company based in Oldham, called Papersafe, who supply a range of repair materials which benefit from being archivally safe.

Much of the following is, to an extent, common sense. It is, however, sometimes useful to remind oneself of a few simple guidelines. A fundamental aim of any cleaning or repair must be to ensure the continued display or handling of the map being worked on without destroying anything of the original. Should additional materials be required, then, *as far as is possible*, they should be safe archivally.

For cleaning I use a dry cleaning pad, containing a non-abrasive powder, in preference to an eraser. The pressure needed when using an eraser can result in tears and/or creasing. Many erasers contain plastic and their use can result in pieces of plastic being left in the paper itself and/or a thinning of the paper through the removal of paper fibres. The powder is squeezed from the pad which is then used to rub the powder across the surface being cleaned. The powder will change colour as dirt transfers from the paper. Once used the powder is waste; I find it useful to have a small soft brush available to clear the area being worked on as the work progresses. It will always be sensible to test a small area of the surface to be cleaned to check that cleaning is feasible.

I am sure that we have all encountered maps which have been spoilt by indiscriminate use of Sellotape or similar transparent adhesive tape; to

remove such tape, I use a plastic adhesive solvent. Whilst it is relatively straight forward to remove the actual tape, complete removal of the inherent stain can take time and patience. I have also used the solvent to remove those small sticky labels which seem to do their job just a little too well! Labels which have been stuck down using an animal or vegetable based glue are removed with a different solvent.

A problem with older maps is that of “foxing” — those little brown patches which always occur in just the wrong places. I have recently obtained a chemical called Chloramine T which is an anti fungicide. I have yet to experiment with it, but I shall try it out initially on some foxing marks in a book or document of little or no value before attempting to treat any of my older more valuable maps.

Another problem for map collectors — especially collectors of folded Ordnance Survey maps — are tears. These may be along the creases at the folds, within a segment of a folded map, or on a flat sheet. I have found that a tear in good quality paper can sometimes be repaired by carefully overlapping the torn edges and applying a small amount of water which is then gently massaged into the joint. This can form a bond when the paper dries. *One of the problems of using water is the solubility of the inks used on the paper.* Again testing a small area first is recommended. If water does not work then I use a small amount of bookbinders’ paste, carefully applied to one edge of the torn paper only.

For tears along creases I use self adhesive cloth or paper repair tape, which, of course, is not the Sellotape type mentioned above. The tapes which I use can be removed if necessary with an appropriate solvent. When working on a map, it is useful to have a flat working area large enough to enable the map to be opened out completely when carrying out repairs to the torn creases. It is also useful to have some means of keeping the torn edges in place whilst applying the adhesive tape. I always cut the tape into manageable lengths before applying it. Edges of

map segments on linen which may have lifted can be re-pasted back in place quite easily using acid free bookbinder's paste.

The above thoughts are based on some simple practical experience — I am not a trained archivist, and never will be. However I have found that good results can be obtained through patience and use of the right materials. I try to follow some simple principles:

- don't deliberately try to hide a repair
- try to protect the map from further damage which might be caused by the repair
- use archivally safe materials wherever possible.
- where possible use water based materials to facilitate the "undoing" of the repair in the future
- always aim to preserve the original in a way which allows it to be handled and displayed in the future
- use a large, flat work area
- use a range of brushes — a different one for each solvent, paste, etc..

I also spend much time studying the map to be treated in order to plan the repair, etc.. My simple maxim is: 'eyes first and foremost—hands last and least.

I mentioned above that I use the products from a company called Papersafe. It is run by

Graham Moss who has produced an excellent booklet entitled "A Collectors Guide to the Care and Repair of Books and Documents" (£4.95 including postage). This booklet contains a wealth of practical advice and describes how to use Papersafe products. Graham is also willing to offer the benefit of his many years experience. Charles Close colleagues who are not already in contact with Papersafe may wish to have the address:

Papersafe, 65, George Street, Oldham, OL1 1LX (telephone 061 628 4693).

A small A5 brochure describing their materials, etc., can be obtained direct, with a stamped addressed envelope.

Papersafe are willing to run a paper cleaning and repair workshop. The cost for such a one day workshop would be approximately £20 per head (depending upon numbers, but there is a limit of about ten), which would include a range of materials for use on the day and retention for subsequent use.

Here I must make the disclaimer that I have no connection with Papersafe other than as a very satisfied customer.

If sufficient members are interested I would be willing to organise a Cleaning and Repair Workshop; please contact me at 1 Kent Drive, Congleton, Cheshire, CW12 1SD (telephone 0260 271596).

Storage of Maps

I am not the tidiest person but I do try to keep my maps in some order and safe, so that they suffer no further deterioration. I am, therefore not an expert and I have drawn together some of the comments which I have received from members.

What is obvious is that the storing folded maps and flat maps is fundamentally different. Dealing with the latter first, undoubtedly the best method is a map chest, but there is a limit to how many may be laid one on top of another. This is because of the weight on top of a map which one is trying to remove, and we have all come across rather nice maps which are torn, or even a piece missing, at one side through being pulled out

without due thought. Map charts are by their nature large and heavy, and for amateur collectors are really not feasible unless you have solid floors and sufficient space. If you do use one on an upper floor then it would be prudent to ensure that it is close to a wall and straddles as many floor joists as possible to spread the load. The unexpected arrival of a map chest on to the dining room table during a meal could be rather distressing, especially if the maps are stained by the food!

The alternative method is rolling maps; this appears to have some of the drawbacks of flat storage in trying to roll too many together. But more importantly, it never seems to be possible

to get all the sides aligned properly and the edges become damaged to a lesser or greater degree. The rolling generates a permanent curl in the maps which can interfere in the study of the map, but if you have sufficient space to lay out more than one map when you are making any comparisons you can perhaps live with that. The advantage of rolling against flat storage is that the total map weight can be more easily distributed.

Folded maps would outwardly appear to be easier to store. But do you store them vertically, or lay them flat in a pile? Storing maps vertically allows the title to be seen, if it has that sort of cover, but early maps frequently have their covers glued to the outside of a fold, in which case the numbers on the top right hand corner can easily be accessed. However there are two drawbacks: damage to the cover itself in those where the cover is larger than the size of the folded map, and trying to get too many maps into the available space as our collections expand. Guy Messenger told me that he made up his own map containers and as many as he needed from such easily available boxes as cereal packets, with a degree of reinforcement.

For flat storage, a number of people use shoe boxes and they do come in a variety of sizes (the smaller ones always seem harder to come by). The big advantage is that the very size of the box limits the number of maps which are laid together. For myself, I discovered that *Pretty Polly* tights are delivered in boxes 4½"x9"x3½" deep and 4½"x9"x7" deep. I hastily add the discovery was made when I was shopping with

my wife in the local department store. The boxes are just the right size for most of my OS maps and each box holds some 15 maps flat. Because the box is completely white it is easy to write the contents on the outside in a nice soft pencil and to change the list if the content is changed by collection enlargement. One great advantage is that the boxes fold flat when you are not using them, unlike shoe boxes; it also makes life easier when taking twenty or thirty home. Then these boxes themselves have to be stored — old kitchen wall cabinets are an ideal depth, the shelves can be moved about and augmented, and they seem to be readily available from people (friends and neighbours?) who are refitting their kitchen. You can decide for yourself whether or not to retain the doors.

One member, John Crutchley, has had a special *fireproof* cupboard made to house his collection, which impressed his insurance company and so he has had no trouble insuring all his maps. Which does raise the question of insuring your collection — perhaps members could let the editor know of your own experience, and is there a specialist insurer out there?

One fact, which although obvious, needs to be stressed: **all maps, being paper based products, must be kept dry.** If you do store your maps. in the garage/cellar/elsewhere make sure the place is not damp, or else use copious quantities of silica gel, which comes in little bags and can be reactivated in the kitchen oven.

Cataloguing your Collection

Most people seem to have developed their own methods of cataloguing, or so it would appear when you watch avid collectors at the AGM Map Market.

There are two bases of cataloging maps — what you have, and what you want. They are not separable; if you don't have a particular map you can just list it as 'wanted'; however if you have a printing of a particular map but want any

other issues of the same map, you need to record what you have.

For easy reference, you might wish to record:

map details: sheet number, title, publication date, print date/details and, perhaps, details of revisions

map type: outline, not coloured, coloured, layers, hill shaded

map format: flat, folded paper, folded mounted or folded mounted in sections

map condition: David Archer's classification of cover and map condition is very comprehensive, using a seven point scale. However I developed mine before joining the CCS and is a five point scale:

excellent – hardly opened, like new

good – has been used very carefully

used – some wear, but no serious tears or damage

fair – well used or marked with ink or damaged

poor – I don't know why I'm keeping this!

Cataloguing methods include: listing in book form, which is not very amenable to amendments; loose leaf file pages, which, after a number of amendments, enable individual pages to be rewritten; a filing card system; or a computer data base programme. One method which has a great deal of appeal because it doesn't involve any preparatory work, but which

may be considered expensive, and even vandalistic, is to use a second copy of one of the Charles Close Society monologues, marking the entries with different colour highlighter pens to show the format of the map.

For immediate reference I have made up a series of 'sheetline maps', initially on *green* graph paper (green, because it doesn't photocopy) and write into the map area: publishing date, print details, format, condition, e.g, 29,6229,1,g, which refers to a Quarter-inch third edition sheet 7A which I have.

Although I have a toy on which I edit *Sheetlines*, I have not yet tried a computer data base program, although I know there is a Shareware program available. Perhaps members who are using any computer program would write to recount their experiences.

Personally I have found, as undoubtedly many other members have, is that initially I did not record enough information. At least if I had made allowance for future recording space, life would have been easier.

Theme and Variations: the Retitled Small Scale Map

by Tim Nicholson

Prior to the Second World War, as today, Ordnance Survey small scale maps came out of Southampton with the title on the cover reproducing, or at least echoing, the title on the map. This embraced a large area, perhaps a thousand square miles in the case of the standard One-inch Fifth Edition sheet. For its title, the OS singled out a definable region within it — say *The Dukeries* (Popular Edition sheet 46) or *Ribblesdale* (Popular Edition sheet 25) — or more often, its main town or towns, depending how many there were and the space available. There was seldom room for more than two.

From 1910 or thereabouts, many small scale maps had featured a location map prominently on the front cover, clearly showing the area they took in; but except for postwar issues of prewar maps, and the tiny, decorative, almost illegible location map on the Popular Edition cover, this aid to the buyer disappeared after 1919. Moreover, even when a cover carried a location map, it was the title that drew the eye first.

There were different ways of looking at this situation. A purely regional title such as *The Dukeries* ignored all the towns on the map, though they might be substantial. On the other hand, a title giving one or more town names did not always convey the extent of the area covered; or, regarded parochially, it could be said to favour one town rather than another. Thus a mapseller in Calne or Hungerford might have to sell a map entitled *Marlborough and Devizes*, or one in Helmsley, a map called *Pickering and Thirsk*. While his local customers would know that the map covered their town, visitors could not be expected to do so, and might be tempted to buy a non-OS map with a local title, or try elsewhere. This tendency would be particularly noticeable in popular holiday areas, where much of the retailer's custom could be expected to come from seasonal tourists.

Any of these considerations could lead to a perceived, if not necessarily real, loss of business, and in the early years of the 20th century, with a commercial instinct starting to sprout in Southampton, the OS, as well as the



From regional to local: *Forest of Bowland* district map (1934) with *Blackpool* label

shopkeeper, could be expected to do something about it. By coincidence or not, increasing commercialism at the Survey ran alongside growing diversity in the titles on a map cover. The evidence that the two developments were linked is purely circumstantial — it lies in the map covers alone, with no backing in the OS records so far released — but it is strong.

The evidence takes two main forms. In one, which seems to have appeared first in 3LSS (Third Edition Large Sheet Series) district maps, and to have been confined thereafter to district maps, the OS cover substituted one town in the title for another, or if there were one or more, added one or dropped one, or rearranged the

existing town names to switch the emphasis from one to another. For instance, the map with the cover title *Ipswich and Felixstowe District* (3LSS, 1911) could also be had as *Felixstowe District* by 1914, while copies in a postwar Arthur Palmer cover were also sold as *Ipswich*. The *Bradford* district map (1899) was offered as *Halifax* postwar. *Maidstone and Tunbridge Wells* (1928) was also seen as *Tunbridge Wells and Maidstone*.

The other way of retitling a cover, which appears to have been introduced after the First World War, was clearly easier and cheaper than printing a new one, though less tidy: a gummed label with the new title stuck over the printed title. Labels with idiosyncratic typography, probably run-up by a local printer or by the mapseller himself, are known — for instance, *Truro* (Popular Edition, sheet 143) was labelled

Western Cornwall — but most surviving covers have labels using an Ordnance Survey style of typography, seen in red on white on predominantly red covers such as those of the Popular Edition, or (usually) in blue on white on covers mainly blue, as with the Fifth Edition.

Where a map covered several important places, it might appear in many different guises. On the cover of *Sidmouth and Bridport* (Popular Edition, sheet 139) other seaside resorts and inland towns claimed attention, with separate labels for *Lyme Regis*, *Seaton and District* and *Axminster* (all 1933 reprints). The labels *Newquay* and *Perranporth* are known on Popular Edition sheet 143 *Truro and St Austell* (1931 reprint) — itself renamed since it had been called simply *Truro* — and also on the Fifth Edition sheet of the same number and title.

In the case of *Hastings* (Popular Edition, sheet 135) there was a cover labelled *Rye* as well as one printed with the alternative title. *Aldershot South* district map (Fifth Relief Edition) was to be had with a cover printed with the title *Hindhead and District (Aldershot South)*, and with the label *Haslemere District*. Although most known labels altered titles in coastal holiday areas, it could be convenient to do so in industrial towns such as *Stoke on Trent* (Popular Edition sheet 52). Oddly, this cover is known with a *Stoke on Trent* label, indicating strongly that it conceals a printed change of title on a map now reverting to use in its “home town”. A rival resort got attention when the *Hastings and Bexhill* district map (1928) was labelled *Hastings, Bexhill and Eastbourne*, while a *Gloucester* label on the cover of the *Cheltenham and District* tourist map (1931) reprint replaced the original title. And Half-Inch sheet *Norwich and Great Yarmouth* tried for a wider appeal with the label *Norfolk*, which may

have been a private effort on the part of a local agent or retailer.

Their typography suggests that most stick-on labels were supplied by the Ordnance Survey, as the altered covers certainly were; but whether at the request of local traders or regional agents or at the instance of Southampton is not known. Nor do we know the terms — minimum quantities, or whether and how much the local retailer had to pay for covers or labels.

Some map sellers, such as G.E.Arundel, bookseller, stationer and printer of Budleigh Salterton, went as far as to repackage their local One-Inch district map *Sidmouth, Budleigh Salterton and Exmouth District*, 3LSS, 1913 reprint) in locally printed covers that advertised their businesses as well as their towns. But by the 1920s, when the Ordnance Survey was striving to create a recognisable public image with a range of distinctive covers and other promotional material, such initiatives cannot have been welcome in Southampton. Nor, indeed, can they have been of undiluted advantage to the retailer, once the new OS image had “taken”; and of course they would be expensive. Major customers of the Survey, such

as the main agents Stanford and Sifton Praed, might be allowed to put the new, postwar maps into their own “house” covers, but wholesale adulteration of the image by small provincial map sellers was no doubt another matter, and by the 1930s seems to be extinct.

Variant titles for map covers, whether printed or stuck on, were soon on the way out as well. The writer knows of no retitled covers of either sort on a map dated later than 1937. On the evidence of maps seen, the OS discontinued both services before the Second World War — perhaps for economic reasons? — and map sellers have since had to make do with standard titles.

How Accurate is Ordnance Survey Mapping Information?

In his response to a query raised in *A Map in my Collection*, Peter Haigh explains why the Scottish Mountain Club publishes its own maps of the Cuillins on the Isle of Skye. The following episode illustrates an accident that arose from religiously believing the printed information on the 1:25,000 Outdoor Leisure Map sheet 32 *Mountainmaster of Ben Nevis*.

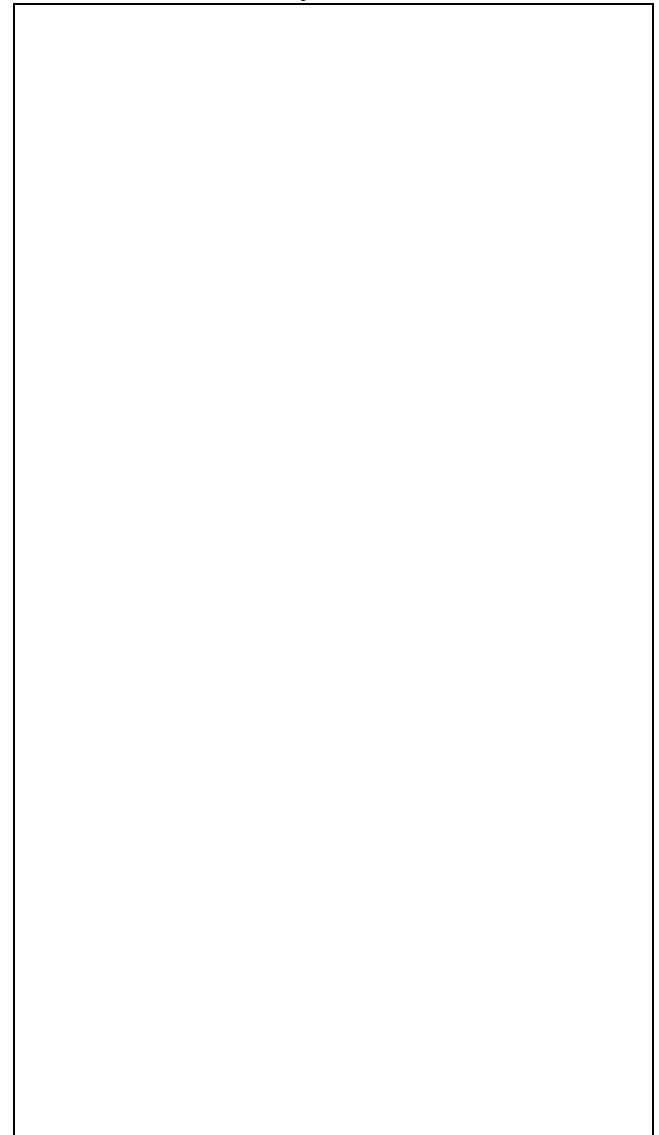
An article in the *Daily Telegraph Weekend* supplement of Saturday, June 4, 1994, reported the accident happened to Rupert Hoare, an experienced mountaineer, not only in the British Isles, but in the Himalayas and Greenland, with a total of 20 years' experience. He is a past president of the London Mountaineering Club, and a member of the Alpine Club. Rupert Hoare was leading two friends across Aonach Mor in the Ben Nevis range when heavy snow and mist blotted out the landscape. "I knew we were on a dangerous ridge and that particular care was called for," he says, "But it was a simple exercise in navigation. You just do things by the book."

The group found itself beside the wheel of a ski-tow; Rupert Hoare found the tow on the map, took a bearing and corrected it from grid to magnetic, and confidently set out with himself in the lead. Despite the poor visibility, he expected no problems for 400 metres at which point they should reach the edge of the crag. But, after 130 metres, Hoare plunged off the edge of the plateau they were crossing, falling 50 metres straight down until hitting soft snow, then sliding steeply down a further 160 metres. At the time of the article's publication he was awaiting a second operation on damaged knee ligaments.

Later he discovered that the position of the ski-tow had never been verified by the Ordnance Survey. Its actual position was 375 metres from where the map indicated he was, and thus he'd used the wrong bearing.

The incident raises the issue about the validity of Ordnance Survey mapping. The OS agrees that the map was wrong, but says that the ski tow was coloured blue, indicating that it was tourist information supplied by third parties — in this

particular case, the development plans for the Nevis Range ski company, operators of the Aonach Mor ski area. Apparently there is no legal requirement to accurately place items such as ski-tows on their (the developers) plans. And experienced climbers and walkers say that they had no idea that items shown in blue on Ordnance Survey maps hadn't been surveyed and were untrustworthy.



Hoare said "I'm not saying that Ordnance Survey is entirely to blame; we could perhaps have been roped, in which case I would not have fallen. But climbers and walkers treat information given on British maps as good information, and the map said that the edge was a much further away from where it actually was.

There was certainly nothing on my map to say that it contained anything other than extremely accurate information, and in spite of 20 years climbing and walking, I didn't know items in blue could not be trusted for bearings."

The associate editor of the walkers' magazine *The Great Outdoors* said that it was news to them that the OS maps contained unchecked information.

The *Daily Telegraph* reported 'Now the world renowned mapping agency is to drop all "tourist information" detail like the position of ski-lifts and huts from its maps to prevent similar accidents. In its defence the Ordnance Survey says that it "acted rapidly to inform and rectify" the error as soon as it was told of Rupert Hoare's fall. Surveyors were sent to correct ski-tow positions for later maps and warning signs were posted on Aonach Mor.'

'Ski-tow positions on Mountainmaster maps (*sic*) were "supplied in good faith from developers' plans", a spokesman said, adding: "With more than 750,000 units of topographical

detail updated each year, such errors must be put in perspective.'"

Other than the reported comments above, The Ordnance Survey have declined to make any further comment to Sheetlines at this time because there is the possibility of a court case, and thus the subject is sub judice.

However, the *Mountainmaster of Ben Nevis* has been withdrawn, and is to be replaced by a new 1:25,000 Outdoor Leisure Map *Ben Nevis and Glen Coe*. The map will be double sided and will show approximately 60 kilometres of the West Highland Way. It will contain tourist information normally printed on Outdoor Leisure series maps, but whether or not it will include ski-tows is yet to be seen. It would appear quite ridiculous to not include such items which are an obvious landmark in a mountainous landscape.

Lionel Hooper

Cause for Concern

David Kimber has raised an important question following his visit to the GIS 94 Exhibition held at the National Exhibition Centre, organised by the Blenheim organisation.

The aim of the exhibition was to show the latest developments in Geographic Information Systems (GIS), and the event was billed as Europe's largest and most successful GIS event. One big change has been the disappearance of Technical barriers — GIS can now be run on desktop computers, bringing the benefits within the reach of every size of organisation. The Ordnance Survey was well represented and their stand was very busy. The event was very well attended and is to be repeated in 1995.

David does not wish to debate whether it is better to look at maps on a computer screen or study them on paper. The pressure with any mapping is always to have up to date information and computerisation lends itself to this process. His concern is that as we go more

and more into the computerised mapping era, the pressure will increase to retain only those versions of maps that are of current or future use. Information of an archival nature will not be retained, leading over time to gaps in the mapping of areas. He was not reassured talking to representatives from the Ordnance Survey and other mapping organisations that sufficient computer based archives will be retained for posterity.

David suggests that The Charles Close Society for the Study of Ordnance Survey Maps should monitor developments and take an active interest in this field.

(Perhaps the Committee should develop a policy on this subject at its next meeting in October, and inform the Society's membership of its deliberations in the next edition of Sheetlines.)

David Kimber

Visit to the Ordnance Survey, Southampton, 17th June 1994

A chance for a pilgrimage to the Ordnance Survey headquarters, must be about the ultimate in CCS days out. The thirteen members who converged from all corners of the country were not to be disappointed.

The day commenced with a warm welcome from our host, Ray Tarling, then a cup of coffee and a brief chance to explore the historical section of the permanent exhibition. Although small, there was much of interest, including a chronological history of OS milestones, a collection of theodolites through the ages, a lithographic stone (appropriately for a geological map!), a couple of one-inch New Series copper plates, engraving and scribing tools (including a tin of steel gramophone needles), a fine example of the 1801 County of Kent one-inch map, a model cross-section through a triangulation pillar (I never realised there was so much to them — plenty of scope for a newsletter article) and a mock pillar complete with mounted theodolite.

A corporate promotional video entitled, "Ordnance Survey — That's where its at" and presented by Mike Harding, gave us a condensed history of OS surveying methods (including a 1791 surveyor dressed in a curious military uniform containing some distinctly Napoleonic elements!) and a guide to current and future OS products, e.g. digital in-car navigation.

The remainder of the day was structured so as to follow the full revision of a 1:50 000 sheet from field survey to finished product. Owing to our tight schedule, explanation of the field surveying process in the map production area of the exhibition was somewhat rushed. Nowadays, surveying is largely restricted to revision of existing mapping by a combination of aerial and ground survey. For the latter, the country is divided into regions whose size depends upon the rate of change in the area. For example, it takes the same number of surveyors to cover 40 000 km² in Scotland as it does 150 km² in London.

A short trip via lift and underground tunnel (for security reasons) took us to another building

where Landranger revision data is compiled. The current method involves a complex, labour intensive process of enlargement, drawing, reduction, copying, deletion, copying, scribing the new information and copying again. Most of the approximately 25 different overlays that contain the various elements (e.g. road casing, road infills, water, contours, grid, names, road numbers etc.) of a single 1:50 000 sheet are revised in this way. After correction, the overlays are combined by a remarkable feat of registration to give the four colour printing plates, i.e. black, cyan, magenta and yellow. In complete contrast was the unbelievable simplicity and speed of the new computerised revision system. This was demonstrated by creating an instant dual carriageway by-passing Bideford on a VDU display of a 1:50 000 sheet. The insertion of a roundabout at a road junction and the cleaning-up of detail at extreme enlargement amply illustrated the power of the facility.

This system is not yet fully operational, but trial revisions of Landranger sheets 93 and 190 by this technology are currently proceeding to publication.

Lunch in the staff canteen and a raid on the map shop (unfortunately no discounts!) were followed by a visit to the photographic department and a guided tour of the enormous sheet film camera. Once again, computers have greatly simplified the operation by fully controlling focus and enlargement or reduction. This was previously a time consuming art.

Next the Image Setting and Scanning Department which operates the scanner now used to digitise the photographs (sometimes staff holiday snaps! e.g. the view of Lulworth Cove for 1:50 000 sheet 194) for map covers. It was also used to scan the sections of 1:25 000 Pathfinder sheets for the pair of Wainwright Coast to Coast maps. Some of us took the opportunity to have a moan about the poor definition of these map extracts, but the problem probably lies in the final method of printing rather than the scanning.

A slight side track took us to see the Scitex computer system which converts the vector data files of true digital mapping (i.e. not scanned) to laser printed raster plots. Most of the current workload concerns production of road atlases and the Travelmaster series.

Finally, it was over to the printing and finishing department where just two presses are responsible for the entire OS map output of 11 million sheets per year. The newest press, a Nebiolo Colora 7000, is capable of producing 8000 sheets per hour, but unfortunately has been out of action for some time. It is apparently an excellent machine when working but suffers from a fundamental design fault which causes it to periodically seize up.

The remaining, somewhat older, press is currently coping with about 70% of printing requirements, i.e. all but the largest sheets.

Two more presses print map covers and promotional material. Another machine guillotines map sheets and three further machines fold maps and attach covers. The completed maps are then bundled and sent to the distribution warehouse pending despatch. Thus the revision and printing process is complete and another edition of the Landranger Series hits the bookstalls of Britain.

All too soon our visit was at an end. It was time for us to come back to reality and stop behaving like a bunch of school kids let loose in a sweet factory, constantly needing to be rounded up and chivied along. Our thanks must go to our host for organising a full day's programme of departmental tours and David Archer for arranging the visit. When can we go back to see some more?

Mike Meredith, 23.6.94

Map and Book Reviews

Edward Stanford, *A Résumé of the Publications of the Ordnance and Geological Surveys of England and Wales, with Indexes to the 1-inch Maps of the British Isles and a Supplement on Methods of Map Mounting*, London, September 1909. Reprinted Kerry, David Archer, 1994, with an introduction by Francis Herbert, pp vi, 74, A5, pbk, ISBN 0 9517579 4 6. £7.50, or £6.50 plus 42p postage for CCS members direct from David Archer at The Pentre, Kerry, Newtown, Montgomeryshire, SY16 4PD

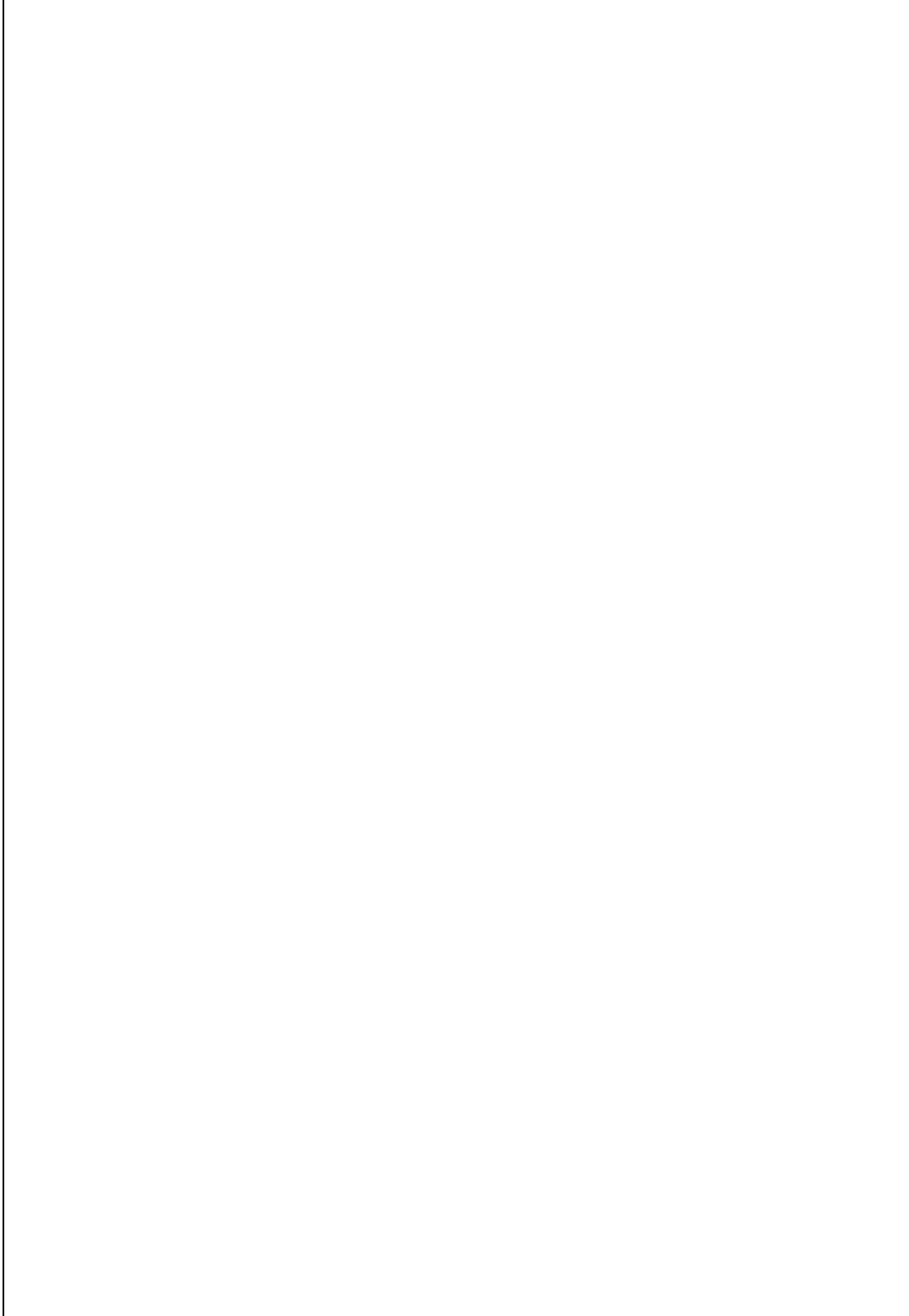
I have bought and used OS maps since I was at school, when I had a Saturday job in Whiteman's Bookshop next to Bath Abbey and was paid in Seventh Series sheets, but it was not until the early 70s that I started to collect earlier editions. Almost as soon as I came across my first sheet, the Third Edition Large Sheet Series of Reading, I realised how little I knew about the history of OS Mapping. I soon discovered Harley and Phillips' 1964 *Historian's Guide to Ordnance Survey Maps*. For several years this was my bible, lending both shape and direction to my researches. Most important of all was the chapter on The One Inch to the Mile Maps of England and Wales and its sheet line diagrams. Apart from the maps themselves, there was very little else to guide the keen amateur collector.

How things have changed! That a novice collector coming on the scene now will find almost a plethora of reference material which is both accessible and affordable is due largely to the efforts of the Charles Close Society and of one or two individuals who are also members. One such of these is David Archer, and his latest publication provides just the sort of material I could only have dreamt about in those early days.

For reference purposes, the various cartobibliographies published by the Society are clearly essential, but the 1909 Stanford catalogue provides an invaluable snapshot of a fascinating period in the development of OS maps and map marketing. I have not seen the original but the reproduction is excellent, with no apparent loss of detail, or for that matter character. A

frontispiece illustrates Stanford's relatively new premises at 12, 13, & 14 Long Acre, perhaps to emphasise the rather haughty cover exhortation to 'Please note Address. Inconvenience to customers has arisen through confusion with

The first half of the catalogue lists all 360 sheets of the "One Inch General Map", all of which had been "*.....revised since 1893, and a further revision (third edition) is now in progress.*" Reference is also made to the New



other so-called "Ordnance Map Depots" '.

Large Sheet Series in course of publication, and for both editions a remarkably clear sheet

diagram is provided, linking sheet lines for both in a way I often yearned for in my early collecting days. In all, six sheet line diagrams are reproduced, four for England and Wales (two of which relate to the Geological Survey) and one each for Scotland and Ireland. Originally tipped in to the catalogue opposite the relevant text, these are now reproduced portrait-style across two pages each after the main text.

Some 123 Stanford's One Inch Ordnance District Maps are listed, along with a list of County Maps (options Sheets - Plain or Coloured, Coloured and mounted in case, Coloured and mounted on rollers and varnished, or Coloured and mounted on spring roller; the prices range from 4s 0d for a plain sheet of London to £12 10s 0d for a spring roller mounted coloured edition of Yorkshire!). A 17 page résumé of counties lists, county by county, all available OS mapping from the one inch to a large number of town plans on a scale of 10 or 10.5 feet to the mile. It is fascinating to speculate how many of these Edward Stanford managed to sell and indeed where they are now - in my twenty years of collecting I have seen only a few.

For those interested in the Geological Survey, the listings are equally comprehensive and, apart from the "Original" and "New" Geological Editions, there is a list of Geological Survey Memoirs. These typically cover a locality such as "*Blackpool, etc.*" for prices from a few pence to a few shillings, but I can only speculate on why the list should include "*Gun Flints, Manufacture of*" at 16s 0d.

Other gems include a "*series of War Game Maps in 16 sheets... on the scale of 6 inches to a mile, embracing...Wallingford....Taplow.....High Wycombe...and Wokingham..., with contours in*

red at 10 feet intervals.", and a six inch map of Bermuda!

Perhaps the most interesting part of the catalogue, however, is the illustrated supplement on map mounting, with 17 diagrams which "*are intended to place before the public a few suggestions as to the mounting and use of maps, derived from a long experience.*" Most of us will have seen "*a Set of Ordnance Maps, mounted on linen and folding into leather or morocco boxes*" but who would not give all for a "*Bookcase, with map drawers below, and a spring-roller map above*" as illustrated — a "*useful piece of furniture in a gentleman's study or library*", or a "*Specimen set of Stanford's Library Maps mounted on spring rollers*"?

I often have difficulty in accepting reproductions of period material, but given the excellent quality of David Archer's latest effort, the sheer wealth of material it contains and the unlikelihood that most of us will ever come across an original copy, I have no hesitation in commending this one to anybody who, like me, finds OS mapping of the Edwardian era as interesting and complex as any. Much, if not all, the map information is no doubt now available elsewhere but nothing else I have seen captures the atmosphere of the time quite so effectively. David is certainly to be congratulated but we should also not forget Steve Simpson for apparently inspiring the reprint and providing the source. Can we now hope to see reprints of some of the earlier catalogues referred to in Francis Herbert's introduction, or is there somewhere, say, a Sifton Praed or Alfred Wilson catalogue awaiting a wider modern audience?

Peter Ennor

The Cartographic Journal

The two most recent issues of the *Cartographic Journal* both contain a number of articles of some interest to readers of *Sheetlines*.

Vol. 30, no. 2, (December 1993) is devoted wholly to map design, contains several interesting articles, and is notable for the extensive use of colour illustrations.

D.J. Fairbairn, *On the nature of cartographic text* (pp 104-111) explores the purpose of text on maps. It includes numerous illustrations, including the difficulty presented by capitalisation so that it is not always clear, for

example, whether 'Trout Farm' is a descriptive or a proper name. (This draws on a paper given to the BCS symposium at Aberystwyth in 1985 by the then CCS chairman, Peter Clark, which one would like to see formally published.)

C. Board, *Neglected aspects of map design* (pp 119-22) discusses sheet line systems, extrusions, map folding, back to back printing, and 'Covers: protection or marketing?' These are in fact, rather more neglected for the cartographic community generally than they are for the Charles Close Society, and it is appropriate that Member no. 2 of the CCS and President of the BCS should be the medium for drawing the matter to the attention of the latter body. The discussion centres largely on OS practice, but includes overseas examples, and makes one wish for a monograph rather than just a short article on these matters.

M. Wood, *The map-users' response to map design* (pp 149-53), explores various reactions to map design, includes some understated but choice comments on some of the map design studies which have appeared in the literature (what some of us are so philistine as to call all those ghastly articles stemming from confining two hundred American college kids in a room with sheets of lines and dots, and so cynical as to recognise as both a result and an exacerbation of the 'need to publish'), and takes in aesthetics (conspicuously lacking from most of the American-college-kid school of map design investigations). It provides a useful summary of the development of the study of the subject since the 1950s.

G. Gill, *Road map design and route selection* (pp 163-6) reports two experiments with road maps, and draws three conclusions: first, that 'the ordering of the line symbols... should be ambiguous'; second, that the colours should be distinct and unambiguous, and that the red-orange-yellow favoured in Europe provides insufficient contrast; and third, that 'where a colour convention is generally understood (e.g. blue for motorways in Great Britain) it can usefully be incorporated', but not otherwise, the experiment showing that primary routes were little understood, either on the maps or in reality. (This is very consoling for those of us who

regard the use of *green* road infill as very questionable.)

J.S. Keates, *Some reflections on cartographic design* (pp 199-201) provides a useful summary of developments since 1945, and notes that one of the potential benefits of digital cartography will be the increased ability to experiment with design before settling the specification for a map series.

Volume 31, no. 1, (June 1994) is more historically slanted.

D. Smith, *Historic maps in the investigation of development sites and the investigation of contamination* (pp 1-13), is one of the by-products of the abortive official Contaminated Land Register, formally abandoned in March 1993, but which has been replaced by individual searches which are stretching the resources of the British Library Map Library, the National Library of Scotland Map Library and others to the limit, and which look like continuing indefinitely. It is a useful summary of what mapping is available, and includes a substantial section on OS mapping, as well as shorter sections on unofficial town plans, tithe and enclosure maps, estate maps, county maps, deposited plans and marine charts. I believe this was originally to have been published as part of a comprehensive guide to sources for those searching out potentially contaminated land, and librarians and others will no doubt be glad to have this article to which to refer beginners in this murky work.

M.H. Edney, *British military education, mapmaking, and military "map-mindedness" in the later Enlightenment* (pp 14-20) describes the training for surveyors of the East India Company's Military Institution at Madras in the early nineteenth century, and considers the mathematical training of the European military academies of the period. It concludes 'The militarisation of cartography... resulted not from the increasing need for cartographic tools of war but from the manner in which maps became integral components of military thought and practice, in short from the cartographisation of the military.' A side issue worth exploring is how far the mathematical training of British Engineer officers may have disposed them

towards contours and away from hachures, an important issue in mid nineteenth century Ordnance Survey history.

K.J. Murray, *Ordnance Survey explores new heights* (pp 45-9), describes Ordnance Survey national height datasets, and the development of 'height products', including some which are still experimental. The illustrations are unfortunately rather small, and not as impressive as one would wish, but this will be useful for anyone wishing to be fairly up to date. (The article was first presented as a paper at the 1992 BCS symposium, so it is about two years out of date, in a fast-developing subject.)

Three publications on historical OS matters are reviewed (pp. 79-81): Roger Hellyer's *Ten-mile* monograph, John Andrews's *History in the Ordnance Map*, and this reviewer's *Concise Guide*. The first two reviews will no doubt help sales: the third is more dubious, and contains some curious statements, not least that for much information in the 'Points of detail' chapter there is 'no dating information whatsoever'. Of course, one is but the author, but one would have thought that this chapter is riddled with dating and sources, of a fullness rarely met with outside unpublished (and sometimes unpublishable) doctoral theses. Was the error not to put them in conventional footnote form? Was one's concision too concise, too avant garde? Were RB63 and its fellows compressed in vain? The

lack of index maps, such as appeared in Brian Harley's *Historian's Guide*, is criticised; after nearly thirty years' experience of the *Historian's Guide*, I remain unconvinced of their value. The summary treatment of small-scale mapping, notably the 1:25,000, is objected to; but if our reviewer had spent a little time in local record offices he would realise the merit of this. Small-scale OS maps do not figure largely in the concerns of local historians, and that is that. Geodesy was deliberately omitted as irrelevant to most historical uses of OS maps, and as a positive deterrent to some potential readers; the destructive effect of map projections on enquiring minds cannot be overestimated. The book is described as 'a curates egg' which 'will eventually go off', which, if true, will be most disquieting for the Society's publications sub-committee (which has just taken delivery of a substantial reprint), the numerous purchasers (many of whom have shelved it in genteel sitting-rooms; county record offices have also purchased, and anything so egg-like in their search-rooms will be as unwelcome as fountain pens and cream buns), the Society's publications manager (who must handle every copy), and those members of the Society who are helping to store the stock, who doubtless have neighbours to consider, and who will not care for this ammoniacal abutment.

Richard Oliver

The History of the Countryside, Oliver Rackham, London, Dent, 1986, pp. xvi, 445, illustrated, £8.95 paperback.

This book was reviewed in *Sheetlines* 28 (September 1990) by one 'Bill Badger', who strongly recommended it "...to all those who not only collect and use maps, but also feel the urge to go beyond the paper to the real landscape." John Smith of Eastbourne draws attention to the paperback edition of the book being available from Bibliofile Books, 21 Jacob Street, London, SE1 2BG (telephone 071-232-1927). The cost is £5.99 for the paperback edition, plus £2 postage and packing. The usual credit cards are accepted. (*It was still available as at the third week July — editor.*)

New maps

Ordnance Survey of Great Britain:

New publications between 1 January and 30 April 1994 included:

Conventional paper maps:

1:50,000 *Landranger (2nd Series):*

23 (B, 2/94, revised 1992);

31 (A1, 4/94);

55 (A1, 4/94);

57 (A3, 3/94);

74 (A2, 1/94);

79 (B, 2/94);

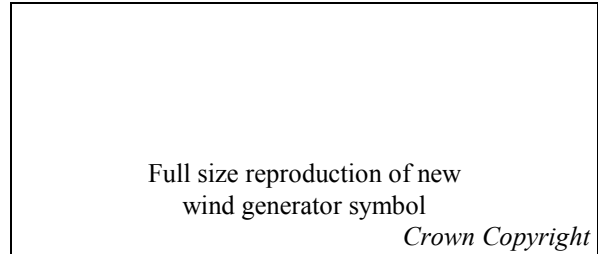
81 (A3, 3/94);

95 (A1, 4/94);

106 (B2, 2/94);	108 (B1, 3/94);	114, (A2, 2/94);	115 (B3, 3/94);
116 (B, 1/94; revised 1992);	121 (B, 4/94; revised 1991-2);		123 (A2, 2/94);
126 (A4, 2/94);	135 (A2, 2/94);	138 (A2, 1/94);	150 (B1, 2/94);
161 (A3, 3/94);	164 (B1, 3/94);	180 (B, 3/94; revised 1992);	
183 (B, 1/94; revised 1991-2);	184 (B, 2/94, revised 1992);		191 (A3, 2/94);
196 (B1, 3/94).			

(Sheets 32 and 89, both edition B, have been published subsequently.)

Sheets 183 and 184 introduce a 'Wind Generator' symbol, in the form of an enlarged version of the long-established (since 1903) windpump symbol.



1:25,000 *Explorer maps*: (first publications, all edition 'A'):

- | | |
|--------------------------------|---|
| 1, <i>Kielder Water</i> | (replaces <i>Pathfinders</i> 509 and 519) |
| 2, <i>Chiltern Hills North</i> | (replaces <i>Pathfinders</i> 1094 and 1118) |
| 3, <i>Chiltern Hills South</i> | (replaces <i>Pathfinders</i> 1137, 1138, 1156 and 1157) |
| 4, <i>Mendip Hills West</i> | (replaces <i>Pathfinders</i> 1198, 1218 and 1238) |
| 5, <i>Mendip Hills East</i> | (replaces <i>Pathfinders</i> 1199, 1219 and 1239) |

1:25,000 *Outdoor Leisure Maps*:

- | | |
|---|--------------------------|
| 33, <i>Coast to Coast Walk, St Bees Head to Keld,</i> | (OS ISBN: 0-319-26046-1) |
| 34, <i>Coast to Coast Walk, Keld to Robin Hood's Bay,</i> | (OS ISBN: 0-319-26047-X) |
| (£4:99 each; co-publication with Michael Joseph Ltd.) | |

1:25,000 *Pathfinder* (2nd Series): revised sheets:

468 (NS 42/52); 916 (SP 69/79) (both edition B).

Plandex:

The 'Plandex' (Index to OS Large Scale Maps and to Superplan), which for many years has been produced in analogue form, and which has worn its years heavily, has recently been replaced by a digitally-generated version which shows analogue and digital availability at 1:10,000, 1:2500 and 1:1250 scales. Whilst the 'image quality' is decidedly improved, the comprehensibility has suffered in one respect, in that the 1 km grid lines have been removed from sea areas. It is published on a subscription basis, at £26:00 for the first year, and £13:50 for subsequent years, which by present-day Ordnance Survey standards for such a thing is decidedly modest.

Further information should be sought from: Jean Strutt, Ordnance Survey, Romsey Road, Southampton, SO16 4GU, (telephone 0703-792309; fax 0703-792835).

Ordnance Survey of Ireland

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

'Preliminary edition': Sheets 1, 2, 3, 10, 11, 30, 37, 38, 75.

'First edition': Sheet 56.

Ordnance Survey of Northern Ireland

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

First publication: 36A.

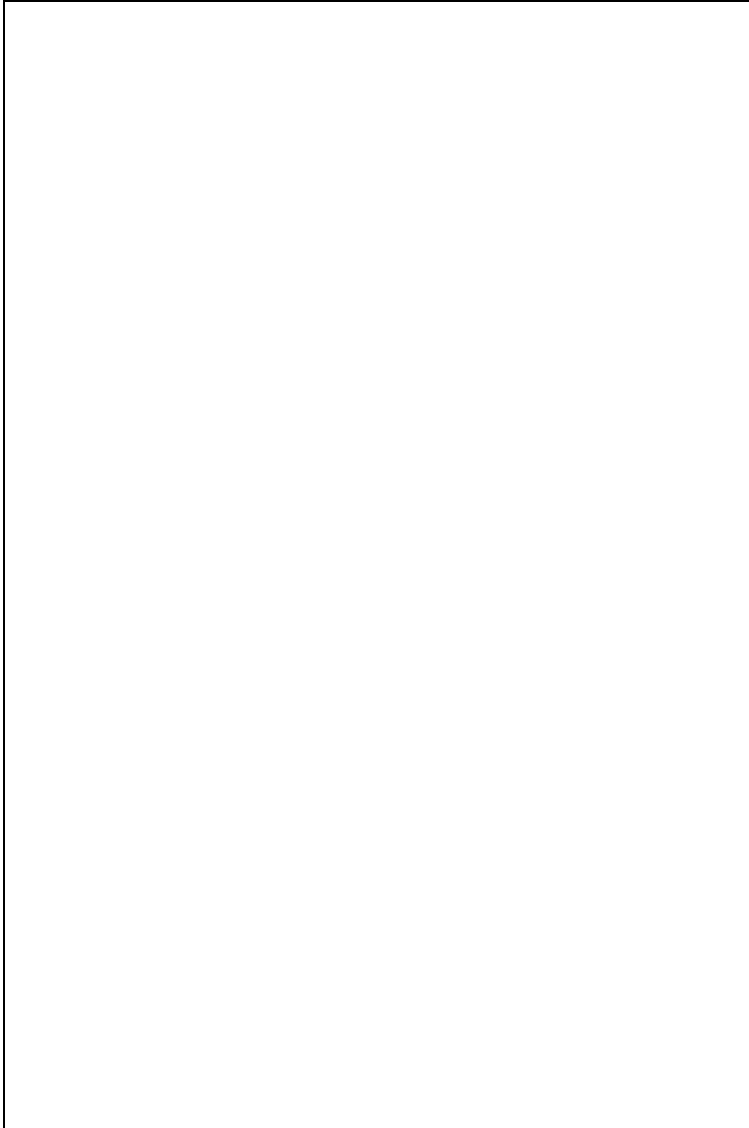
‘Reprinted with amendments’: Sheets 4, 5.

The Godfrey Edition:

(Publication has continued as usual; it is hoped to include a list of recently-published towns in the next *Sheetlines*.)

Richard Oliver

A Special Map:



Brighton, and 7th July, Portsmouth – Winchester – Andover– Basingstoke– Portsmouth. The timings of arrival at various points along the route was given, as well as the places where sprints and hill climbs were to be staged. Apparently, the first issue of the map showed the wrong route (according to *Cycling Weekly*), with it passing through the village of Paddock Wood. The copy of the map which I have shows the Tour route passing through the villages of Sissinghurst, Goudhurst, Horsmonden, Brenchley and Matfield, and then just touching the southern outskirts of Paddock Wood before turning south along the B2015 to Pembury and into Tunbridge Wells. However, according to Tunbridge Wells Borough Council, the route by-passes Paddock Wood and runs through the villages of Sissinghurst, Goudhurst, Horsmonden, Brenchley and Matfield before arriving at Tunbridge Wells. So I don’t know which copy of the map I have.

The price of either version was/is 99p, paper, ISBN 0-319-00416-3

(Since writing the above I have checked with the Ordnance Survey to see if there are any copies still available; they do not have any in stock. At the same time I enquired about the error in the first batch. The misprinted route was shown looping through Paddock Wood, but an easier way of identifying the first issue is that Folkestone is mis-spelt! I have the first version.)

Lionel Hooper

Ordnance Survey produced a Souvenir Map for the English stages of the Tour de France — *Le Tour en Angleterre*. It is part of the Travelmaster Road Map 9, *South East England*, being the southern third of the map. Marked on the map in yellow overprint are the stages of each of the two days the tour was in England; 6th July, Dover– Canterbury–Tunbridge Wells–

A Map in my Collection — Queries and Answers

A map in my collection — 2

Peter Haigh writes about the Scottish Mountaineering Club's Map of the Cuillins, about which Vic Harris asked in *Sheetlines* 38 (p58). Peter has identified the map concerned as being advertised on the dust jacket of the SMC General Guide of 1933. He has also sent some background information which undoubtedly will be of interest in the light of the accident recorded elsewhere in this issue of *Sheetlines*.

The Scottish Mountain club was formed in 1888; it was very sceptical of the accuracy of surveying by the Ordnance Survey of the Scottish Highlands (and the Cuillins in particular) — not without good reason, as later surveys have shown. The first SMC guide to Skye was published in July 1923 and Peter has the 'phototype reprint 1931'. The acknowledgments include thanks '.. to Mr Howard Priestman for his excellent sketch map, based on his own photographic triangulation'. Unfortunately the map is missing from the slip case at the back. His own map of the Cuillin was

purchased in the mid-60s, and is presumably merely a reprint of the 1923 map. It is in black only, with no paths and no submarine contours. The land 'contours' are annotated with an unusual sanitation clause: 'The contours, as drawn, are in outline only and do not represent either any given contour line or series of contour intervals.'

The SMC currently publish a map of the Cuillin dated 1987, based on the OS Six-inch maps published in 1966. It has additional rock features sketched in; some of the contour lines are omitted on steep ground.

Peter adds that the current OS 1:25,000 map of the Cuillin is of limited value on the hill on a misty day. The rock features, as drawn, completely obscure the contour lines and it is almost impossible, even on the dining room table and with good lighting, to discern which way up they are meant to be. Finding the ridges on the map whilst walking this notoriously cloudy isle thus no easy task.

A Map in my Collection — 4

Regrettably the Editor omitted to credit this request for further information on The Souvenir Coronation Motoring Map of England and Wales and apologises profusely.

Tim Nicholson writes that this particular map is a recycling of an earlier atlas with the same base from the same publisher, *The All-Weather Map of England and Wales*, of which he has Book I (South Eastern England). The two atlases share the same first leaf, which confirms their single origin. The binding and modified OS Quarter-inch/mile maps are identical to those described in *Sheetlines* 39. Book I contains 17 map leaves and three leaves of preliminary matter, each measuring 11¼" by 7", between covers of rigid, metal-reinforced, laminated card in bottle green, with lighter green lettering on the front cover that includes the legend "Map Produced by the Ordnance Survey,

Southampton". There are four large scale exit maps of London, whilst on the inside of each cover and on the backs of 14 of the maps are glossy, striking, full colour advertisements for such products as Gibbs' shaving cream, Remington typewriters, Van Heusen collars, Meltonian car polish, *Punch* magazine, Barclay's lager, Schweppes mineral water, Philips bulbs, and Flatavan caravans. Local hotels and Gillette razors are advertised in the margins of the maps.

The maps may be dated with fair precision from what they say about the state of work on the arterial roads round London. The Lenham by-pass in Kent was opened to traffic on April 27th, 1927, and is shown thus. The Kingston by-pass, opened to traffic in October that year, is shown still under construction. This suggests that the maps were prepared between May and September 1927. If they were published in the

atlas as soon as they were ready, a publication date of late 1927 is indicated. The year is borne out by the registration numbers of some of the

motor vehicles shown in the advertisements, which include the figures "1927".

A Map in my Collection — 5

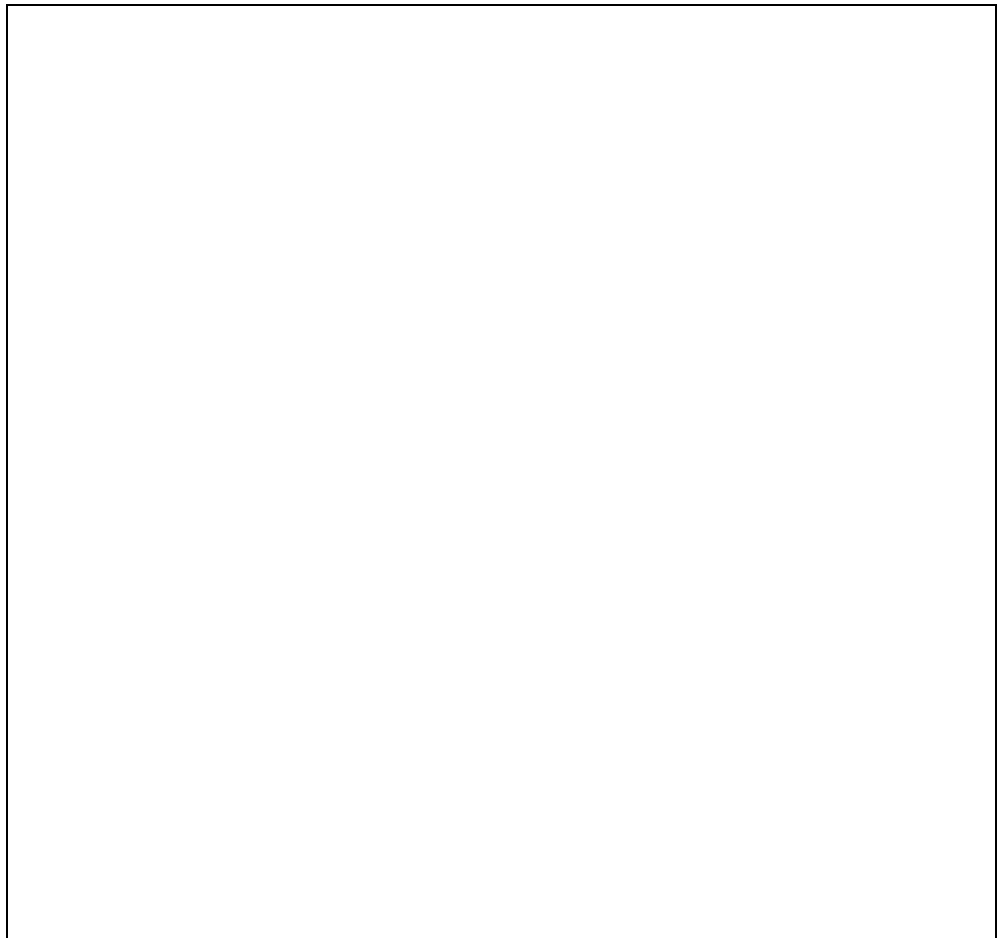
Donald Binns describes a map which he has: headed "Ordnance Survey of England : Chapel-en-le-Frith : Sheet 99", while at the base is "Printed from an electrotype taken in 1887 : engraved and published at the Ordnance Survey Office, Southampton, 1887". It is dissected and mounted on cloth, in Stanford's covers with a list of the main places on the sheet handwritten on the front cover. He has assumed it to be one of the New Series, or Second Edition of the One-inch Map.

Most of the sheet is of Derbyshire, but Cheshire comes in to a small extent on the western edge, and at the north east corner is a

small part of Yorkshire. His query concerns the Yorkshire area, which is completely blank, This was obviously intentional as the indication *To Sheffield* is printed on the blank area, whereas elsewhere, such indicators are placed in the margin. Blank areas on larger scale maps are common as these were based on county sheet-lines and meridians; it is puzzling to find a blank on a One-inch map, based on national sheetlines. Why did this happen? Did it happen elsewhere? Was there a separate edition of Sheet 99? There is no explanation of the omission on the map itself.

A Map in my Collection — 6

Mike Meredith asks not about a particular map but about 'official' notations in pencil in the south east corner of maps *Mounted in Sections*. The marks appear to start during the life of the One-inch Third Edition LSS and stop during the New Popular Series. They also appear on the corners of maps of other scales. Mike suggest that perhaps could be the mark of the dissector, but why? They seem to be virtually universal over the period described, so there must have been an official instruction to add them.



A List of 1:50,000 editions, 1974 – 1994

Additions and corrections:

Sheet 115 Caernarfon and Bangor A/*/* (Major roads revised 76) (Walter Paterson)

Twenty Years of the Ordnance Survey 1:50,000 Map

In his article on *Twenty Years of the Ordnance Survey 1:50,000 Map* Richard Oliver raised the issue “Why 1:50,000 rather than 1:62,500?” and implies that the military were unreasonable in rejecting such a solution. Ian O'Brien writes that this overlooks the point that post-1945 British military mapping activities were not conducted in isolation, but in close co-operation with our allies (NATO, etc.) and these had agreed to certain common standards. In so far as these were relevant to civilians, they were summarised in a document entitled *Standard Cartographic Practices Recommended for International Use for Land Maps* presented to the Second Regional Conference of the United Nations for Asia and the Far East (1958) which specified the use of the scales 1:25,000, 1:50,000, 1:100,000, 1:200,000, 1:250,000, 1:500,000 and 1:1,000,000 for any new topographic map series. It is possibly of relevance that by the time the OS moved on this issue, all the other European NATO countries had current 1:50,000 series. West Germany had produced a completely new series at this scale, apparently to meet the NATO requirement. It may also be of interest, if less relevant, to note that Sir Charles Close in his submission to the Davidson Committee, argued strongly against OS adoption of 1:62,500, even though he

admitted responsibility for introducing that scale to the African Colonies.

In a footnote Richard criticises the Ordnance Survey's tardy adoption of the four colour process printing. Whilst Ian claims no inside knowledge to 1:50,000 mapping of Great Britain this does have the disadvantage that the separate elements of the map are not to be found on separate sheets of reproduction material. This is a significant disadvantage where maps are likely to be printed by other agencies. For example, the maps we produced at Overseas Surveys might be printed initially at Southampton, but subsequent reprints would be carried out at Nairobi, Dar Es Salaam, Khartoum, etc., etc..*1:50,000 Series sheet name title changes:*

Bill Henwood wrote at the same time as Richard Oliver was producing his magnificent list of the 1:50,000 Series maps, pointing out that in the twenty years of the life (so far) of the 1:50,000 over 50 of the sheets have been renamed, some more than once. He compared this with the fact that both the Popular Edition of England and Wales and the Seventh Series each only suffered two changes of sheet name in their twenty year histories. Bill is preparing a list of name changes which will be published in *Sheetlines* in due course.

1:50,000 and 1:25,000 listings:

Richard Oliver writes: My list of 1:50,000 editions published in *Sheetlines* 39 seems to have been greatly appreciated, and it brought lists of corrections and additions from several members, which I am still working through, and which I hope will be published in *Sheetlines* 40. However, the correspondence also brought to light a

potential duplication of effort, in that several members had independently prepared 1:50,000 lists of various degrees of detail, all unknown to each other. This suggests very strongly that the Society should consider compiling a list of members' 'research interests', in order to save members from embarking on costly or time-consuming work

which may turn out to have been performed elsewhere already. (There is no suggestion that the Society should ‘police’ or ‘permit’ research, as one speaker at the AGM seemed to fear!)

This therefore seems the proper time and place to announce that Roger Hellyer and I are working on the OS 1:25,000 family. The final form, scope and timing of publication have yet to be decided, but a monograph covering the National Grid Provisional Edition-First Series family may be expected. For the Second Series (‘Pathfinders’) I propose to publish a summary list, similar to that for the 1:50,000, in *Sheetlines*, which should serve

(a) to help collectors seeking to fill gaps, and (b) to indicate which sheets were never published, and which were published but were later withdrawn in favour of Outdoor Leisure maps. However, has any reader already anticipated us to any degree?

Students of the ‘new maps’ column elsewhere in this issue of *Sheetlines* will see that for the 1:50,000 the scope of this has been increased to cover *all* new coloured editions, instead of just the fully revised ‘new letter’ editions. I propose to do the same for the 1:25,000 once the summary list has been published.

A "new" old retailer

David Ellis has supplied some interesting information about the partners of the company Burghope and Strange of Burnley in response to Tim Nicholson's question in *Sheetlines* 39. Enlisting the assistance of local historian Ken Spencer, he was directed to the appropriate areas of Burnley Central Reference Library: Slater's directory of 1865 is the first with a reference to either Burghope or Strange. It lists William Burghope at 38, St. James Street, the main shopping street in Burnley. Burghope & Strange were together at that address in 1868; in about 1896, and from then until approximately 1905, the firm was Burghope, Strange and Anderson. George Anderson was there alone in 1908. That particular firm was at Parsonage Mill in Burnley until quite recently, and is now at Standish Street.

William Burghope, a partner in the firm for 20 years, came originally from Congleton, but left Burnley in 1867 to live in Malvern, because of his wife's ill health. He returned occasionally to Burnley in connection with the business. He died in August, 1890, and an obituary was

published in the Burnley Express 9th August, 1890. Alfred Strange was probably a local man — there is a Strange Street in Burnley and about five local families are listed in the local telephone directory — but his obituary in the Burnley Gazette (29th October, 1904) made no reference to his association with the company, concentrating on his good works and emphasizing the esteem in which he was held in the town.

Burghope & Strange did a lot of printing in their day; they were partners in printing the Electors' Lists (with Henry Eastwood, for example, in 1897–8) and they did all the Burnley Literary and Scientific Club (of which Strange was a prominent member) transactions right from 1874 to the end of the 1920s. However, the local reference librarian tells us that they do not hold any copies of Burghope & Strange maps, and would like to receive photocopies of any B&S maps (in default of being given any originals). Indeed they have very poor coverage for the period 1851–1890.

War Department Land on Salisbury Plain

Richard Evans has a state of the Two-inch/mile map not mentioned in Tim Nicholson's article on the Military "Special" Two-inch/mile

map *War Department Land on Salisbury Plain*, 1899–1914, in *Sheetlines* 39. Direct printed on cloth and dated 1905, it has information

intermediate between that of the 1903 and 1906 printings. Most of the black 1906 additions are there — the Larkhill Camp satellite and Fargo, Rolleston, Bustard and Pond Farm Camps on the western Plain, and the new camp at Windmill Hill on the eastern Plain; but not the Amesbury light railway extension to Bulford Camp. The minor alterations to the red overprint are present. The roads are burnt sienna — a brownish–orange — not the yellow wrongly described as burnt sienna in the original article, nor the red of the 1906 map.

Tim Nicholson himself has now acquired the 1904 reprint of the One–inch/mile *War Department Land on Salisbury Plain* map of 1898. As suspected, the latter is based on the New Series first revision (second edition) map. It covers a greater area than the 1899 Two inch map (parts of sheets 282, 283, 298 and 299), with sheetlines different also from those of any other One–inch composite map of the time, “civilian” or military. Its civilian features are those of the standard map. The only addition is

the boundary of WD land, in solid red, which is the same as on the 1898 Two–inch map. No attempt whatever is made to update military information to the standard of the 1903 Two–inch or Half–inch maps. There is no sign of Bulford or any other camp or range, nor of the Tidworth or Amesbury light railways. In fact, by 1904 it was, by comparison with the 1903 maps and its Third Edition successor of 1906, almost completely useless.

Donald Clayton writes that the aeroplane sheds shown on the 1911 map would, at that time, certainly have been those of the British and Colonial Aeroplane Company, later to become the Bristol Aeroplane Company. The sheds were set at Larkhill on land leased from the war office for use as a flying school; the sheds (three initially) were erected in June 1910, The British school was taken over on 2nd June, 1914, for RFC manoeuvres, based on Netheravon. (Reference: *Bristol Aircraft since 1910*, C.H. Barnes, published by Putnam, London, 1970)

Small Scale Maps on the Western Front

Peter Chasseaud writes that John Cruickshank’s article on small scale mapping in France and Belgium (*Sheetlines* 39) was a most useful and interesting introduction to this relatively neglected area. Several years ago, he had himself studied and listed the details of the small scale maps, formerly held at MCE, MRLG (Tolworth) and now at PRO (WO 297).

Peter makes the following observations:

a 1:80 000 of France (GSGS 2526): some of the sheets were enlarged at the OS in September/October 1914 to 1:40,000 and printed in quarter sheets (e.g. GSGS 2741 *Rocroi*). These appear to have disappeared without trace, not even proof copies surviving. He would be most interested to hear from any one who can give further details, or who knows the whereabouts of such a sheet. John states that my caption to the *Soissons* sheet in *Topography of Armageddon* is ‘not strictly accurate’, but does not explain why! Perhaps John can give some indication of the nature of the inaccuracy.

b The “sets” of 1:80 000 and 1:100 000 scale sheets were prepared as part of mobilisation stores, and were issued in 1914. It is recorded that movement in the early weeks of the war was so rapid that the maps remained unissued in bulk in battalion transport. It was soon recognised that the “set” idea was misconceived, and that it was impracticable for officers to carry the 26 sheets issued on mobilisation.

c A most unusual composite sheet of French 1:80 000 (reduced to 1:100 000) and Belgian 1:100 000 of the frontier region and the BEF’s concentration area (OS 1913, no GSGS number) was printed in very small numbers; a copy can be found in PRO MFQ 233. They were distributed to corps, divisions, brigades and units, and are extremely rare today.

d GSGS numbers: John gives a few of these at random, but nothing like the whole picture. In the course of his researches, Peter has compiled an index of over 750 single sheets

relating to 1914–18 with different GSGS designations.

The development of these small scale series is fairly well described in various sources, including *Report on Survey on the Western Front*, War Office, 1920, and *File on the History of MI4* at Chatham, class no. 355.486, Accession No. 8785.

Ian O'Brien writes that John Cruikshank's article covers very welcome new ground neglected, as he points out, by contemporary interest having been focused on artillery survey, which of course was critical in securing the allied victory in the end. As MacLeod was to write (*Empire Study Review*, 1932) "In effect the war was fought on 1:20 000 and 1:10 000 maps". Looking at John's comments on pre-war development the following points occur:

Boer War Mapping: In addition to Jeppe's map the British Army had Ward and Outlepps *Imperial Map of South Africa* largely compiled for the Field Intelligence Department from farm surveys. Ian's copy of the *Kimberley* sheet bears the warning ***This map is not to be considered as absolutely accurate!***

Close Bibliographies: Ian pointed out the limitations of Freeman's and de Graaf Hunter's bibliographies in his article on C.F. Close in *Sheetlines* 34. However he is doubtful about the

Peter Chasseaud will be publishing a History of Field Survey on the Western Front in the near future, and would be pleased to correspond with any members about these Western Front maps.

attribution of anonymous official publications to him unless we have positive evidence that he wrote them. We have this in the case of *The Textbook of Military Topography* of 1898, but Ian is unaware of any comparable evidence in the case of the *Manual of Map Reading*.

Pre-war GSGS mapping: John comments critically on the omission of examples from the 1912 *Manual*. Quite apart from the fact of producing such maps usually involved breach of someone else's copyright, there is the point that the Belgium 1:100 000 was only one of a number of such mapping projects undertaken, which included, for example, a splendid 4 sheet 1:100,000 map of Zealand (with the defences of Copenhagen in red) and the two sheet "One-inch" map of Constantinople and surrounding countryside (both about 1909). Presumably open publication could have involved exposing intelligence sources.

...and finally

There have been no requests for *Small Adverts* for this edition of *Sheetlines*, but I am always willing to include them.

Thank you to all those members who have sent in cuttings and small snippets of information. They are greatly appreciated although they may not always be used in the following issue of *Sheetlines*. So please continue to let me have them.

Of course, there is requirement for longer articles, but I ask contributors to include suitable illustrations please. In respect of illustrations, can I stress that I need the *best possible* photocopy as in the process of printing every thing is reduced from A4 to A5. Further, it would be *very* useful if, at the same time as you obtain your photocopy, you also obtain an A4 to A5 or equivalent reduction as it is often necessary to make this reduction to get the right size for publication. Every photocopy process decreases the quality. Twice through the A4 to A5 process means that the final size of the illustration in *Sheetlines* is half size, which is usually legible.

As *Sheetlines* goes to press it is with great sadness that we must record the death of Professor Eila Campbell, one of the early members of the Charles Close Society. An Obituary will appear in the next issue of *Sheetlines*.