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“Small scale maps of the Western front”

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Small Scale Maps Of The Western Front

John L Cruickshank

In *Trench Maps*¹ and *Topography of Armageddon*² Peter Chasseaud has described the large scale maps produced of the Western Front during the Great War. These, however, were not the maps with which the British Expeditionary Force was sent to France in 1914. Initially only small scale maps were available. These were printed before and during the war in substantial numbers, and have survived in private hands in greater numbers than have the larger scale maps. Thirty years ago trench maps may have turned up for pence in bookshops in the cardboard box under the table. My experience is that this does not happen now. The small scale maps do still appear occasionally. I know however of no accessible description of these series and their history; this paper is very much a preliminary attempt to provide one.

Pre-War Development

The origin of the Western Front Small Scale Map series provides a clear example of the complex inter-relations of the Ordnance Survey and the Geographical Section General Staff, with Charles Close involved on both sides. The GSGS was created (as the Topographical and Statistical Depot of the War Department) during the Crimean War when British military mapping of the area chosen for war, and the holdings of Russian maps that might be used to remedy this, were found to be non-existent³. Forty-five years later the preparedness of the minuscule Intelligence Department of the War Office (as it was then called) to fight the Boer War was little better. The maps actually used by the British forces in South Africa were not the unsatisfactory compilations of the IDWO and Ordnance Survey (IDWO 1367), but the copies of Jeppe's map of the Transvaal ordered by the

Transvaal government from Switzerland, which, by chance, were intercepted as they passed through Cape Town. No soldier, senior or junior, had thought to go to Stanfords to buy a few copies before they left. The scandal resulting when this became known led to some searching questioning by the Royal Commission on the South African War when it took evidence in December 1902.

Charles Close had been sent from Ordnance Survey to South Africa in January 1900, but was then invalided home in July 1900 with enteric fever^{4,5}. Following the publication of the Royal Commission's Report (1904)⁶, and Lord Esher's resultant creation of a modern General Staff, he was appointed head of the new Topographical Section General Staff in 1905. He built up the organisation vigorously. *The Textbook of Topographical Surveying* 1st edition⁷ came out the same year (not cited in Freeman) and in 1906 the first edition of the War Office *Manual of Map Reading and Field Sketching*⁸ was published (anonymously, but clearly written by Close, also not cited in Freeman). Both the Textbook and the Manual include a wide range of reproductions of overseas maps and clearly the push was on to provide TSGS (after 1907 GSGS) editions of mapping of any possible area of military action. The provision of map printing facilities within the new War Office (occupied November 1906) became part of this drive.

⁴ Charles Frederick Arden-Close, 1865-1952, T.W.Freeman, 1985, *Geographers Bibliographical Studies* 9, pp 1-13.

⁵ *A Man for his Time? Sir Charles Arden-Close*, C.I.M.O'Brien, Sheetlines 34, pp 1-7.

⁶ *Royal Commission on the South African War*. 1904 report: Cd 1789, Minutes: Cd 1790, 1791, 1792

⁷ *Textbook of Topographical and Geographical Surveying*, C.F.Close, 1905, HMSO, London

⁸ Successive editions and reprints of the *Manual of Map Reading and Field Sketching* (1906, 1912, 1914, 1921), HMSO, London, have been extensively consulted throughout.

¹ *Trench Maps, a Collector's Guide*, P. Chasseaud, 1986, Mapbooks, Lewes.

² *Topography of Armageddon*, P.Chasseaud, 1991, Mapbooks, Lewes

³ *The World in Maps*, W.W.Jervis 1936, George Phillip and Son, London.

The possibility of British involvement in a European war became a subject for active military planning from 1905⁹. The likelihood of any German attack on France being through Belgium was recognised. The production of maps of Northern France and Belgium was an obvious priority. The technology for producing facsimiles of monochrome maps had been extensively developed during the nineteenth century and was well established. The copying of colour printed maps was an unsolved problem, and could only be achieved, in the absence of the original reproduction material, by the time consuming process of redrawing the map and separating the colours in the process. Initially reproductions of the monochrome French 1:80,000 General Staff Map (*Carte de l'Etat-Major*) were produced with English marginalia, for example sheet 32 *Beauvais* printed at the Ordnance Survey 1909 without a GSGS number. Part of sheet 33 *Soissons* 1909 is reproduced by Chasseaud (1991 p 12), although the caption is not strictly correct.

More elaborate efforts then followed. The multicoloured Belgian 1:100,000 map was redrawn at the War Office, copper plates were photoetched at Ordnance Survey, and then printed at the War Office. This was GSGS 2364. From the dates on the early sheets they were produced between 1910 and 1912. A single sheet map of Belgium and the North East of France at 6 miles to the inch (1:380,160) was prepared (GSGS 2517). At the same time the northern sheets of the 1:80,000 map of France were revamped by overprinting longitudes from Greenwich and guesstimate contours. This contoured map was GSGS 2526.

The Belgian 1:100,000 series GSGS 2364 was laid out as ten full sheets (of which sheet 4 *Maeseyck* was not initially printed) together with a small sheet 7A of Mons (an afterthought, it does not appear on all the early indexes). The projection was polyconic. The sheetlines were the graticule. The sheets were completed to the margin where they covered non-Belgian

territory. They did not quite cover the entirety of Belgium along the French frontier as can be seen in Figure 1.

The 1:80,000 series of France with contours and Greenwich longitudes, GSGS 2526, preserved the sheetlines and numbering system of the *Carte de l'Etat-Major*, except at the junction with the Belgian series and at the coast. Here a number of non-standard sheet sizes were created to avoid small scraps of coastal land on separate sheets, and to mesh with the Belgian sheets (see Figure 1). Sheet 8 (originally *Douai*) became a portrait format sheet titled *Lille* (1912), to avoid having to produce a separate sheet 5. This had the effect of creating a gap between the two series which was covered by the additional Belgian sheet 7A *Mons*. French sheet 24 also was altered to portrait format; however this produced a far more convincing fit with the Belgian series. The magnetic variation diagrams preserve the dates of the uncontroled maps. The contoured French series did not extend further south than Laon, and totalled sixteen sheets. South of this the uncontroled maps remained current, were issued, and have survived to enter private collections.

GSGS 2517 of Belgium and North East France at 1:380,160 was a very elaborate layered map. Drawn on a conical projection with two standard parallels, with sheetlines based on the Paris meridian but a graticule based on Greenwich, It had 14 separate layer shades including four depths of sea. The map was drawn at GSGS then photoetched at Ordnance Survey. The plates originally bore the date 1910, but all copies seen have had this rather transparently altered to 1912. The 1914 additions to the *Manual of Map Reading and Field Sketching* 1912 refer to this as "the strategical map", and state that it was only issued to the Staffs of Corps and Divisions.

Secrecy was in vogue¹⁰ and these maps were not publicised even in the 1912 edition of the *Manual of Map Reading and Field Sketching*, which contained the same example plates of European maps as the 1906 edition despite a very different selection of non-European maps.

⁹ *British Military Intelligence, 1870-1914*, T.G.Fergusson, 1984, University of America Publications Inc., Frederick, Maryland.

¹⁰ Official Secrets Act, 1911

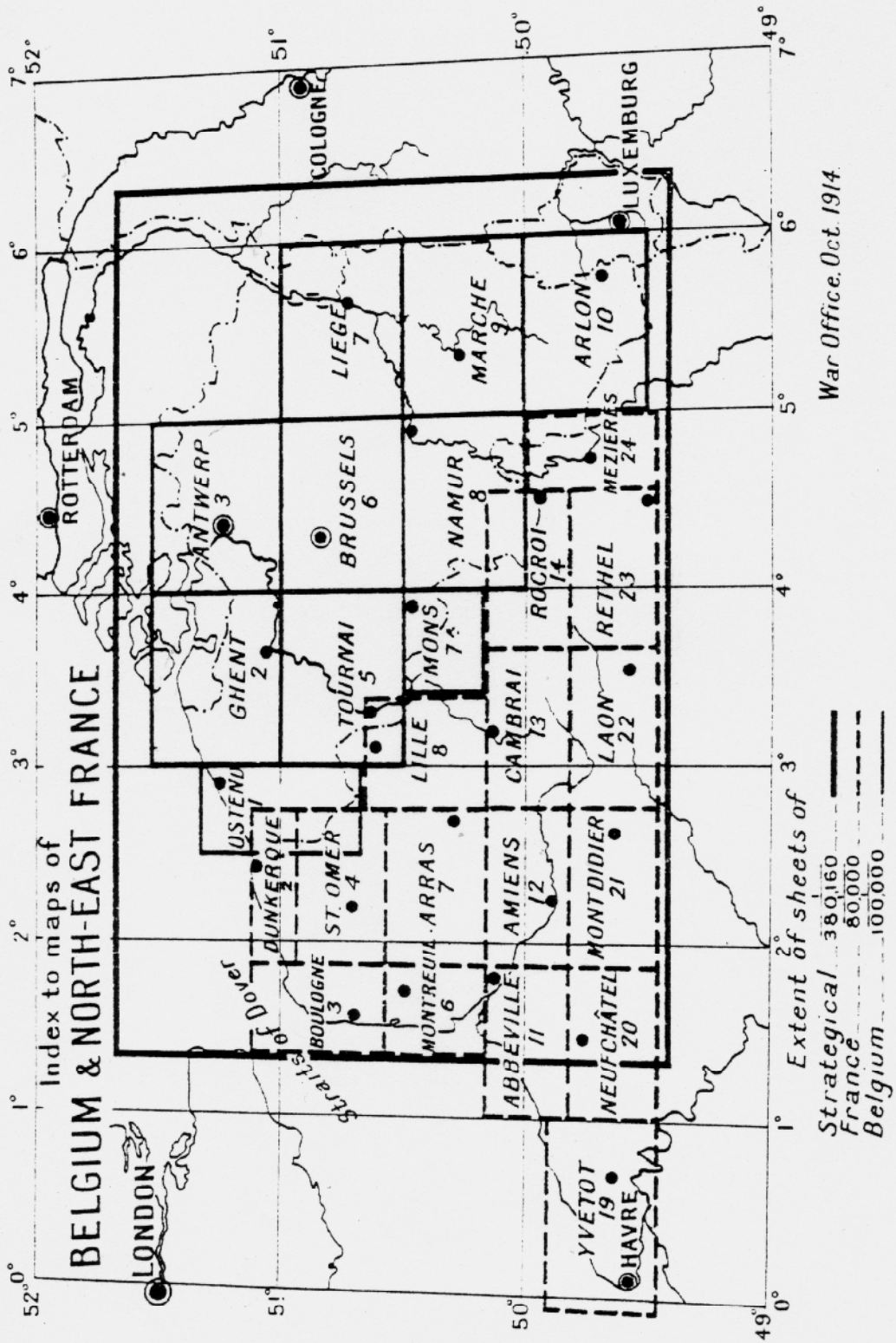


Figure 1 Index diagram of 1914 states of GSGS 2364 and 2526

The posting of Charles Close from GSGS to be Director-General of the Ordnance Survey in 1911 seems to have brought development of these series to a halt. Even after the war they were clearly regarded as Close's creation¹. One can speculate whether sheet 4 of Belgium would have been printed if his posting had been delayed.

The Outbreak of War

The mapping available at the beginning of the war is described and illustrated in the October 1914 additions appended to the 1912 *Manual of Map Reading and Field Sketching*. Huge numbers of copies of the Manual with Additions were printed at various dates through the war. Copies with print codes in 1914 and 1915 include as plate 25 an index map showing the 1914 state of GSGS 2364 and 2526 (see Figure 1). The example plate 11 of the German 1:100,000 series is no longer the pre-war one of Neheim but a gridded map of Coblenz, by implication representative of the projected GSGS series. The French 1:80,000 example plate however was not updated from the uncounted 1906 map of Mouzon. The contoured 1:80,000 was not illustrated until the 1921 edition, five years after the map was superseded!

In addition to the maps described above, a further series (GSGS 2733 & 2738) at 1:250,000 covering France, Belgium and part of Germany was produced in 1914, and also described in the 1914 additions to the Manual. Four sheets (nos. 1, 2, 4, & 5) covered Belgium on the Belgian Bonne projection as GSGS 2733. The French sheets (GSGS 2738) reproduced the French Service Geographique de l'Armée 1:200,000 Type 1880 maps, each covering the area of four 1:80,000 maps, and hence lay obliquely to the Belgian sheets as shown in Figure 2. The Belgian sheets were prepared at the War Office with August 1914 imprints. The French ones bear Ordnance Survey imprints and judging by the marginal index diagrams were produced later in 1914. The series as a whole was titled "North- West Europe", which betrays a limited view of the size and shape of the continent!

Surviving maps are almost all folded with direct printed integral cover panels on the reverse including an index map. The cover panels frequently record a later stage of the development of the series than that recorded on the face. This implies that the maps were stored as flat sheets after printing and only had the cover panel printed when folding for issue. The earliest covers seen group the sheets into "Sets" presumably issued together. For example Set C included Belgian 1:100,000 sheets 2, 3, 5, 6, & 7; Set A was Belgian sheet 1 with French 1:80,000 sheets 2, 3, 4, 6, & 7; Set D included Belgian sheets 7A, 8, & 9, with French sheet 8, and Set P included sheets of Germany east of Belgium. Initial provision of these maps was generous; Hedley² quotes that three or four hundred thousand maps were apparently lost in the retreat from Mons.

When the British Expeditionary Force started to use the maps problems rapidly arose. While the Belgian 1:100,000 map was good, most of the ground it covered ended up in German hands very rapidly. The French 1:80,000 map was found to be grossly out of date, inaccurate and the height representation wrong. Woodland representation was intimidating and obscured any other information. Despite attempts the map could not be enlarged satisfactorily. While the war remained mobile these things had to be coped with. For the Battle of the Aisne in September 1914 an isolated new French "Type 1900" 1:50,000 sheet existed and was used (Chasseaud 1991). However when the British section of the Western Front settled down more or less at the junction of the Belgian and French mapping systems it became clear that the only practical course was to replace the French series with new maps compatible with the Belgian series.

War-time Development

Sheet 4 of the Belgian 1:100,000 series was produced in February 1915 by the War Office. The index diagram in the margin does not include any sheet numbers or sheet 7A *Mons* suggesting that some at least of the preparation of the sheet

¹ Discussion in *Geographical Journal* 54, p25
W.C.Hedley, 1919, ,

² *Ibid.*

had been done in 1910 with the others. The first addition to GSGS 2364 was sheet 5A *Hazebrouck* produced by Ordnance Survey early in 1915. The use of a suffix rather than a brand new number suggests that at this stage wholesale extension of the series had yet to be planned. Shortly after this, Sheet 7A was dropped and replaced by a new full size sheet 11 *Lens*, also produced by Ordnance Survey. Judging by the sequence of sheet diagrams Sheet 12 *Valenciennes* seems to have been issued at the same time bearing a War Office imprint dated May 1915. At this stage the design of a numbering system for further additions to the series was clearly an issue and sheet diagrams include two unnumbered unnamed sheets eventually to be 18 and 19.

Through 1915, 1916 and 1917 further 1:100,000 sheets were issued, now on a sheet numbering scheme extending the existing series in an organised and extendible way (see Figure 3). With the exception of sheet 13 *Calais* (OSO 1917) all of these bore War Office imprints giving month and year. Sheets 22 *Soissons* (January 1917), 1A *Dunkerque* (February 1917) and 13 *Calais* were the last new sheets. Sheets 20 *Rouen* and 23 *Reims* appear, as in preparation, in the index on the margin of one state of the 2nd edition of sheet 12 *Valenciennes*, but seem not to have been completed (but see below for GSGS 4336).

The new sheets were not based on any new survey. The resurvey of the Western Front did not start until 1915 and did not cover extended areas until much later. However comparison of the old and new shows that the 10 metre contours of the new maps were completely new, owing little to the 20 metre contours of GSGS 2526. How much this represents a drawing room exercise based on the 1:80,000 spot heights and hachures, and how much the new levelling of France was used is unclear. Construction of contours from the hachured map had been studied by the French General Staff. The drawing of the map was thought to allow a semi-mathematical construction of contours based on reconstructing gradients from the intensity of the hachuring, and manuals were

produced describing the process (for an English version see Maxwell¹). Nevertheless at best this was intuitive, to the point that it was described as an after dinner entertainment, particularly when trying to apply it to the larger scales.

The production of the new sheets allowed the contoured 1:80,000 map to be abandoned. The April 1916 printing of the *Manual of Map Reading and Field Sketching* includes the same text as before but on an erratum slip is a note that the French 1:80,000 series was superseded, and a new Plate 25 dated May 1916 shows only the then current state of the 1:100,000 series.

The October 1914 Additions to the *Manual of Map Reading and Field Sketching* stated that new railways had already made the Belgian maps out of date. Second editions were eventually produced of 1:100,000 sheets 2 (1916), 5 (1917), 5A (1916), 8, 11 (1916), 12 (April 1916) and 17 (October 1916) with updated railways and in the case of sheet 12 at least, updated canals.

Three 2nd edition 1:100,000 sheets (5, 5A, 11) are known in states with hill-shading (in the style used for the contemporary British 1/4" maps), although unshaded states also occur. There is no comment about this addition either on the cover or the margin of these sheets and in low relief country (particularly when the map is grubby) its presence is easily overlooked.

Different layouts of the marginal information exist for several 1:100,000 sheets. The original layout includes extensive reference lists in a broad south margin. A second version has a much reduced south margin, and the reference list and index diagram are in the east margin. No obvious reason for this is shown and it appears that both styles were in use for both the first and second editions of sheet 11. Both styles exist with and without hill shading. Parallel sets of the reproduction material clearly existed for both editions. Sheets with only War Office imprints seem generally to retain the original style of margins. Ordnance Survey productions or reprints often (but not always) seem to have the modified style. This layout does fit the map onto a smaller sheet of paper.

¹ *The Military Map – Elements of Topography*, G.Maxwell, 1918, Enlarged Edition, Macmillan, London

Whether this indicates economy or the dimensions of different printing machines I do not know.

An addition to the marginal information was made in both of these layouts when instructions on using a crude map reference system based on the graticule were given. The text assumes a knowledge of the system of squaring used on trench maps and seems to have been added at some stage later than October 1916 (when sheet 17 was printed without it). All sheets with 1917 imprints that I have seen include it. The addition of this note to the marginalia did not lead to any change in the imprint dates on the maps. When present it does suggest a later date of printing than October 1916. It frequently occupies the space previously occupied by a list of GSGS sales agents.

The 1:250,000 map also evolved as the war progressed. The initial sheets of the map were felt to be over-generalised². In February 1915 sheet 1 was reissued by the War Office in an extended and revised version covering part of the area of sheet 4 as far south as Valenciennes. Initially this bore the number GSGS 2733b but the suffix soon disappeared. I have not established the sequence of production of outlying 1:250,000 sheets, however sheet 1A produced by Ordnance Survey in 1917 is interesting in providing 1:250,000 mapping of south-east England including London long before this scale was accepted for civilian use!

Derivatives

Outline versions of the 1:100,000 mapping were prepared for overprinting of tactical information³, and for the First Army, Second Army and Third Army Areas special outline sheets were prepared (GSGS 3151 etc.). However, not all the outline versions carry GSGS numbers: examples seen of this include an outline print of sheet 11 and the outline First Army Area 2nd Edition. *Special Railway Maps* were produced with coloured railways on an outline base. These went through multiple

editions (a dense but changing network of railways was built to supply the trenches). *Road and Bridge Maps*, *Maps of Water Supply* and *Battle Situation Maps* (often called *Enemy Order of Battle Maps*) were similarly produced.

During the summer of 1917, because of the difficulty of transferring information between the gridded large scale maps and the ungridded 1:100,000, gridded 1:100,000 outline maps were produced using reductions of the 1:40,000 map assembled to form large composite sheets. GSGS 3621 *Cambrai* was a portrait format sheet produced in this way by Ordnance Survey in September 1917 which remained in use until the end of the war. It covered the area where sheets 11, 12, 17, and 18 met. Similarly, GSGS 3654 was an untitled outline base map in landscape format of much the same area produced by Ordnance Survey in April 1918. Both were used as bases for printing *Battle Situation Maps*. The writing is tiny but the grids match those of the large scale maps.

The range of 1:100,000 derivatives was huge and I have certainly not reviewed even a representative selection. As with trench maps the base maps were prepared in England but over-prints were prepared and printed in France. After the establishment of the Overseas Branch of the Ordnance Survey in April 1918 many were printed there. Most of these editions must have had very restricted circulation and currency. They have survived in even more restricted numbers.

Derivatives of the 1:250,000 map also exist. One particularly interesting derivative is the *Flying Map* which was produced as separate 12" squares of the map (presumably to fit the map case used in aircraft) each with a compass rose on the face, and only one north margin containing the scale, sheet number and printing information. These were produced by Ordnance Survey for the Admiralty War Staff, Intelligence Division as AWS(ID 1073) in 1916. The index map shows 43 sheets. I assume they were intended for Royal Naval Air Service units. Other experimental flying maps at this scale

² *Manual of Map Reading and Field Sketching*, 1921

³ *Ibid.*

were produced with unconventional colours but were rapidly abandoned⁴.

The End

Full intercompatibility of the maps of the Western Front was never achieved. The system of "squaring" of British large scale maps of the western front was based on the metric rectangular sheet lines and Belgian Bonne projection of the large scale maps, but was in yards and separate for each sheet. The 1:100,000 map was a series of graticule sheets with polyconic projections. The 1:250,000 was drawn to two different Bonne projections, one Belgian and one French. The problem of providing orthomorphic maps and grid systems for the Western Front attracted a good deal of thought⁵ ⁶, but in fact the small scale maps remained ungridded, and unco-ordinated with the large scale series. Perhaps an additional reason for the absence of grids on these maps is that squared maps during the early period of position warfare were seen primarily as artillery maps. More general use of grid reference systems only developed secondarily. Plans were well advanced in 1918, following the unification of allied commands early in the year, to discard the different yard grids (and for the Belgians to discard their metric theatre grid), and to adopt the French Lambert Zone I grid across the whole Western Front. The Armistice led to the abandonment of this. However by the cessation of hostilities the obsolescence of all British mapping of the Western Front was clear⁷ ⁸ ⁹.

Eventually, when rearmament came in 1938 for the next European war, new British mapping of northern France was prepared. Even then much of France had not been resurveyed since the nineteenth century, so existing materials

were recycled¹⁰. GSGS 2364 was revamped with revised sheet numbering as GSGS 4336. This series included two sheets that would have been 23 and 24 in the Great War series, but discarded the old sheets 14 and 16. GSGS 2516 did not reappear, but the original 1:80,000 French mapping remained current for much the country in an enlargement to 1:50,000 ("Type 1889"), and therefore was used for GSGS 4040 A&B at that scale. The sheets of GSGS 2738 south and west of Paris were revised and reissued. Those of the Western Front area were replaced by GSGS 4042 of France, Belgium and Holland, based on GSGS 2733 with substantial revision and new sheetlines. GSGS 2517 remained available.

After the Great War the small scale maps were rather ignored when the cartographic achievements of the war were being described. The large scale surveying and mapping of the later part of the war had required such immense effort that even Charles Close¹¹ dismissed the earlier small scale maps. Winterbotham wrote extensively but largely ignored them, perhaps because he spent the entire war in France and was not involved in the production of small scale maps in England. Some post-war reprinting of the maps did take place, notably for the many volumes of the *Official History of the War*. The most accessible retrospective of the small-scale Western Front maps is probably in the *Manual of Map Reading and Field Sketching* (1921), which includes example plates of the main series. It is also a prospectus for the post-war development of the British System of metric gridded maps.

¹⁰ *France*, 1944, Naval Intelligence Division, Geographical Handbook Series, and indexes in, for example, *Through-way Town Plans of France 1944*, GSGS Misc 77(1).

¹¹ Articles "Maps", C.W.Close, 1922, 1926, 12th and 13th editions, Encyclopedia Britannica.

⁴ Ibid.

⁵ *Map Projections*, A.R.Hinks, 2nd edition, 1922, Cambridge University Press

⁶ *Maps and Survey*, A.R.Hinks, 2nd edition, 1923, Cambridge University Press

⁷ Ibid.

⁸ *British Survey on the Western Front*, H.S.L.Winterbotham, 1919 *Geographical Journal* **53** pp253-276

⁹ *Geographical Work with the Army in France*, H.S.L.Winterbotham, 1919, *Geographical Journal*, **54**, pp12-28

Acknowledgement

Throughout this article I have relied principally on the maps in my own collection, supplemented by the maps of the Liddle Collection of the University of Leeds. Peter

Liddle, its keeper, has allowed me great freedom to explore this major collection.

For purely practical reasons I have not consulted the Public Record Office. Clearly a far more definitive account would have resulted had this been possible.

APPENDIXGSGS Numbers of Selected Maps of the Western Front and Surrounding Areas

(From various sources)

2364	Belgium & later France 1:100,000 1910
2516	France 1:80,000 (contoured) 1911
2517	Belgium and NE France ("Strategical Map") 1:380,160 1910/12
2731	Index to Maps of Belgium and NE France (Book index of names on pre-1914 1:100,000 and 1:80,000 sheets)
2733	North West Europe (ie Belgium) 1:250,000 1914
2733b	Used for early prints of sheet 1&part4 of 2733
2738	France (North West Europe on covers) 1:250,000 1914
2739	Germany 1:100,000
2740	Germany 1:250,000
2742	Belgium and France 1:20,000 1914
2743	Belgium and France 1:40,000 1914
2758	Europe 1:1,000,000 1915-1945
2813	Index to GSGS 2364 1916
2847	Germany 1:200,000 1917 & 1919-1936
3024	Western Theatre of War 1:1,000,000 1915
3062	Belgium and France 1:10,000 1915
3134	First Army Brigade Trench Maps 1:10,000 1915
3151	Second Army Area 1:100,000 Outline 1917
3621	Cambrai 1:100,000 Outline Sept 1917 (from 1:40,000)
3654	Lens, Valenciennes, Amiens, St Quentin 1:100,000 Outline April 1918 (from 1:40,000)