“Early Military Map Surveyors of the Board of Ordnance”

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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.
Early Military Map Surveyors of the Board of Ordnance
Rose Mitchell and Emma Down

Military map surveyors and the early history of the Ordnance Survey have long been subjects of historical study. Recently, The National Archives (TNA) undertook a two week cataloguing project to add to our knowledge of some of the Draughtsmen involved.

Details of the careers of more than two hundred of these men now enhance the online catalogue Discovery, using information from a card index compiled mainly by Peter Penfold, holder of TNA’s first specialist map post and the first head of the Map Department, created in 1977. It is not known exactly when the card index was compiled, but it was probably over a period of time in the 1960s and 1970s.

The index related to War Office record series, which include appointment and establishment books, reports, correspondence, and registers of plans. Piece descriptions, which were previously very brief - for example ‘Establishments 1783-1805’ - now list men’s names together with dates and brief details, such as posts to which they were appointed. The card index includes 325 references of individual appointments relating to 227 men, dated between 1722 and 1817. The data refers to eleven piece numbers within five War Office series:

- WO 34/206 Monthly Reports of the Drawing Room at the Tower 1778-1782 among papers of Baron Amherst, Commander in Chief 1712-1786;
- WO 44/517 Correspondence between the Ordnance Office and the War Office, this volume dated 1816-1819;
- WO 46/10 Ordnance Office out-letters, this volume dated 1775-1777;
- WO 55/419 Register of Artillery Pensions, Ireland, dated 1831; and WO 55/2281 Index of Correspondence about Ordnance Plans and Drawings 1700-1819.

The men whose careers are detailed in these volumes were the early cartographers of what we now know as the Ordnance Survey. They set the framework and standards for national mapping, which would be used throughout Britain and the British Empire. Some became well known, while others were less recognised.

Most men started their careers in the Drawing Room at the Tower of London. This was formally established in 1752, in the Board of Ordnance, which provided supplies for the army, including maps. Prior to this the relationship between the Drawing Room and military operations was somewhat informal, with Draughtsmen often being appointed through social connection.1 This is mirrored

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in the index cards with professions of the fathers of twenty men also listed alongside their own appointments.

*Figure 1: a plan of the Drawing Room at the Tower, 1792, WORK 31/156*

From summer 1752 a classification system was introduced in the Drawing Room, with a Chief Draughtsman to oversee five classes of Draughtsmen. A number of these appointments are now listed in the piece descriptions. While some men made a career in the Drawing Room and stayed there for many years, more than half gained promotions in other departments of the Ordnance and the Army, often within the Royal Engineers. In 1800 the civilian staff of the Drawing Room officially became the Royal Corps of Military Surveyors and Draughtsmen and were absorbed into the Army. The Corps was disbanded in 1817 but many of the men were retained to work on the Trigonometrical Survey. Many of the maps and plans they produced throughout their careers are now housed in the collections at The National Archives.

A notable cartographer who appeared in the project data was Robert Dawson, the father of Robert Kearsley Dawson, who oversaw the Tithe Survey of England and Wales and compiled the detailed instructions for the production of the tithe maps. Dawson the elder was renowned for his depictions of relief and topography, which he evidently passed onto his son.

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2 Marshall, ibid.
Dawson largely owed his place in cartographic history to another man who features in the index, William Gardner, who saw Dawson’s talents in the 1780s and who arranged for his employment by the Board of Ordnance. Gardner is perhaps better known for his work with Thomas Yeakell, also listed in the card index, and their work for the third Duke of Richmond on his large estate at Goodwood in Sussex. Here Gardner and Yeakell honed their map-making skills, as evident in their survey of the County of Sussex in 1778-1780.

The Duke of Richmond ensured that Yeakell and Gardner were employed among the Draughtsmen in the Tower of London. Gardner went on to oversee the production of the first Ordnance Survey maps, almost certainly influenced by his work with Yeakell on the map of Sussex. He attained the positions of Chief Draughtsman and later Chief Surveyor.

As well as finished maps, there survive ‘foul plans’ made by some of these men, rare survivals of the working plans or sketches from which the final map developed. The extract by Thomas Yeakell (figure 3) shows topography and roads around Wormshill near Sittingbourne in Kent, with a drawing in the margin of a church in both plan and elevation. The margins of these rough sketches also bear pen-wipes and doodles, words and calculations giving a glimpse into the mapmaking process outside the Drawing Room. Foul plans made by some of the other cartographers have also survived, including Dawson’s Isle of Wight (MR

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4 R Mitchell and A Janes, Maps their untold stories, (Bloomsbury, 2014), p.92, with larger colour image of sheet from Hampshire to Arundel, p.93.
1/489) and Charles Budgen’s plan of Hampshire, commonly referred to as ‘Budgen’s Rough Plans’ (MPHH 1/220 and MPH 1/580) (figure 4 below).

Figure 3: part of a field sketch by Thomas Yeakell with a church, 1778-1780. MPH 1/773/23

Figure 4: extract of sheet 4 from Budgen's rough plans of Hampshire, showing the area around Havant and Emsworth with Emsworth Common to the north, 1798. MPHH 1/220

A useful study of relationships between foul and fair copy manuscript maps and related engraved maps in The National Archives was made by Ivan Parr while working at TNA; the lists include much work especially by Yeakell and Gardner.5

Another individual whose appointments are listed in the volumes was John Peter Desmaretz, from the earlier period of the Drawing Room; he was appointed assistant Draughtsman in 1725, and the earliest date assigned to him in the card index is 1741 as Deputy Draughtsman. Like Yeakell and Gardner he spent much of his time out of the Drawing Room; he worked on a number of projects to develop harbours and dockyards, and to improve fortifications on the south coast of Britain. Many of his plans and surveys are held in TNA’s collections, including those for Landguard Fort and fortifications at Great Yarmouth, for harbours at Portsmouth, Sheerness and Shoreham-by-Sea, and for work in Senegal. Desmaretz was involved, along with Andrew Frazer and William Roy, in designing new channels at Dunkirk when Britain was responsible for the destruction of fortifications there in 1763. Whilst in the Tower, however, he was involved with training some of the new recruits, including the Durnford brothers and William Twiss.

Twiss was appointed to the Ordnance Office in July 1760, but later moved to the Royal Engineers, eventually gaining the rank of General. Most of his career was spent working on military defences, including work abroad in Gibraltar and Canada, as well as in Britain. In 1804 the first Martello Tower was built following a recommendation from Twiss, Captain WH Ford and Sir David Dundas to the Secretary of State for War. Twiss subsequently oversaw a number of the defences built on the coastline of south and east Britain to protect against possible invasion from France. TNA holds letters and reports by Twiss, and plans signed by him.

Occasionally the card index listed postings abroad. One of these appointments was that of Francis Assiotti to Minorca in 1780, from where he produced the map (figure 5 opposite). Although it has many aesthetic qualities, including the maritime-themed cartouche, it gives a distinctive nod to military endeavours. The insets detail the entrance to the Mediterranean and the settlement of Georgetown, now named Es Castell after the adjacent fort of St Phillip’s Castle. Assiotti is also known for his ‘List of Maps and Plans Belonging to the Right Honourable the Lords Commissioners for Trade and Plantations’ which he compiled in 1780 (CO 326/15). This inventory is often used by historians to trace the movement of maps.

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6 Marshall, ibid, pp.22.
7 Some of Desmaretz’ earlier work: Landguard Fort MPH 1/362, MPHH 1/703, MR 1/1167/1-2, WO 78/1410; Great Yarmouth MPH 1/1098/36-39; Portsmouth MPHH 1/291; Sheerness MPHH 1/112; Shoreham MR 1/906 and MR 1/935/2, Senegal MPF 1/142.
8 Some of Desmaretz’ work on Dunkirk: WO 124 Papers concerning the demolition of fortifications at Dunkirk, including correspondence from Desmaretz and Andrew Durnford; plans and profiles at MPF 1/177, MPF 1/270-271, MPF 1/330, MPF 1/331, MPF 1/358, MPFF 1/1, MPH 1/82, and MR 1/203.
9 Hewitt, ibid, pp.101-102.
10 Reports by Twiss for works at Dover and Shorncliffe are in Home Office Correspondence, HO 42. Plans linked to Twiss include those for works at Woolwich (MPH 1/480), Shorncliffe (MPH 1/1168) and Brighton (MPH 1/363).
Figure 5: ‘General Plan of the Island of Minorca’ by Francis Assiotti, 1780
WO 78/5647
Some of the men recorded in the card index are also listed in an article by Douglas W Marshall published in 1980. The project cross-referenced the card index data with the Draughtsmen listed by Marshall, finding 155 men who appeared in both lists. For these men, a reference to Marshall’s article has been included next to the name in the online catalogue data. Information about the same man may differ, and often the new data added is fuller. For instance, Marshall lists Jabez Anderson with a brief note that he had appointments in the period from about 1799 to his death, thought to be about 1810. The military surveyors card index project adds these details, drawn from a volume of correspondence about Draughtsmen: ‘Appointed extra Draughtsman on trigonometrical survey, p.162. Reached 2nd class, p.249. Died in foreign service between 1806-1817’.  

More than seventy men listed in the card index do not appear in Marshall’s article. The work of some of these men appears in TNA’s online catalogue Discovery. Some of the plans are described as copies made by cadets in the Drawing Room as a training exercise. One noteworthy man who does not appear in Marshall’s list, but is included in the card index is Reuben Burrow, noted as ‘Mathematical Master [in the Drawing Room at the Tower], 1776’. He was assistant to Neville Maskelyne and accompanied him on his trip to Schiehallion in Scotland in 1774 for an experiment to establish the density of the Earth. While Maskelyne undertook his observations and calculations, Burrow made a detailed survey of the mountain. The data from the trip was passed to Charles Hutton, professor of mathematics at the Royal Military Academy in Woolwich, to calculate the volume of the mountain. During this work Hutton used contour lines on his maps, instead of the traditional hachuring then used by British mapmakers, which became one of the distinctive features of the Ordnance Survey maps we know so well today. Burrow later travelled to India where he was mathematical teacher to the engineers’ corps in Bengal, and worked on measurements which enabled the length of an arc of the meridian along the Tropic of Cancer to be calculated by Isaac Dalby, who had assisted William Roy with the Greenwich to Paris triangulation.

A number of other sources of evidence for early military mapmakers’ careers may be found at TNA beyond the records of the Board of Ordnance and of the War Office. For instance, William Roy’s Commission as Colonel, dated 29 August 1777, is at OS 3/410, while his will of 1790 is among probate records of the Prerogative Court of Canterbury at PROB 11/1194/32. Desmaretz’ will is at PROB 11/942/278, and that of Twiss at PROB 11/1726/206.

This project has helped draw detail on the careers of some of the early cartographers of the Ordnance Survey, based on a partial card index. Many more names are contained within these volumes, reports and registers, so it is hoped this project may pave the way for further enquiry and research.

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11 Marshall, ibid, 40.
12 WO 55/2281; page numbers refer to this volume.
13 WO 55/3381, 92. The card index gives his name as Burrows.
14 R Hewitt, ibid, 63.