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"James Gardner 1808-1840"

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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.

James Gardner – surveyor, computer, publisher and engraver 1808-1840

David L Walker [1]

Appointed to the Ordnance Survey in 1808, James Gardner played a very active role in the trigonometrical survey of Great Britain until 1822. In 1818 he observed and in 1820 he published a panorama of the Grampians [2] that invited this writer to question whether Gardner had himself calculated the distances and mountain heights shown in the key to this remarkable engraving. Helpful advice from Richard Oliver answered this by reference to Brian Harley's research into the minutes of the Ordnance Board, quoted below. This led the writer to find James Gardner in a recent study of pre-1850 map engravers,[3] and as a result to seek out and record more of Gardner's talented and versatile career.

Surveyor 1808-1822

After his appointment by Colonel William Mudge in 1808, on the recommendation of the civil engineer John Rennie,[4] James Gardner was soon engaged in the triangulation of northern England and the Scottish borders.[5] Between 1813 and 1818 Gardner, sometimes with the then Captain Thomas Colby, triangulated from the Mull of Kintyre to the Moray Firth,[6] and after this, was engaged on the secondary triangulation of English counties.

He was again observing with the 36-inch theodolite in 1821 and 1822 for the re-triangulation between Greenwich and Paris, for which Colby, now Superintendent of the Ordnance Survey, and Captain Henry Kater acted as Joint Commissioners (for Britain). Of Gardner's participation, Kater later wrote that 'to the talents, zeal, and exertions of that gentleman, on various occasions of difficulty, we were very much indebted.' One of these occasions was in October 1821, when the survey party in Boulogne was unable to observe the lamp at Fairlight in Sussex, and dispatched Gardner with M Matthieu (the Joint Commissioner for France) to put things right. 'On their arrival at Calais, finding no packet ready to depart, their anxiety led them to cross in an open boat, in weather so tempestuous that they were nearly lost' – after which they very soon

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[1] The author is a retired civil engineer who for 25 years has been using the 1832 Reform Act map of Greenock for family history research without appreciating the significance of the note that it was engraved by James Gardner, Regent St.

[2] David L Walker, 'A view of the Grampians observed in 1818 and published in 1820', *Sheetlines* 100, 23-26 (2014).

[3] Laurence Worms and Ashley Baynton-Williams, *British map engravers; a dictionary of engravers, lithographers and their principal employers to 1850*, London: Rare Book Society, 2011, 251-252.

[4] *17th Report of Commissioners of Military Enquiry*, British Parliamentary Papers (House of Commons), 1812 (5) IV, 168-9.

[5] Captain Alexander Ross Clarke, *Account of the observations and calculations of the principal triangulation etc*, 1858,vi.

[6] David L Walker, 'The initial triangulation of Scotland from 1809 until 1822', *Sheetlines* 98, 9-11 (2013).

improvised a repair to the lamp at Fairlight and the observations were duly completed.[7]

Computer 1819-1834

After the sudden death in 1819 of Simon Woolcot, civilian observer and mathematician since joining the Ordnance Survey in 1799, James Gardner was appointed Colby's senior assistant in the Tower, and his salary increased from £105 to £205 per annum. Colby explained later that this required Gardner to tackle the greater than usual arrears of trigonometrical computations accrued from Woolcot's observations and Gardner's own [8] (and probably, although Colby did not say so, from Colby's expeditions in 1819 and 1821). This confirms that Gardner had made himself perfectly capable of calculating the distances and mountain heights shown in the key to his panorama of the Grampians.

To succeed William Faden, Colby recommended that Gardner should be appointed official map-seller to the Ordnance Survey from 1 April 1823, and Colby sought to overcome the previous conflict of interest by contracting that Gardner would not sell maps which competed with Ordnance Survey maps. As the contract also required Gardner to find a dwelling and a 'handsome shop' in the West End, he was granted an allowance of £100 a year for three years. In addition, as two years' computations still remained, Colby obtained the Board's agreement that Gardner should remain on the Ordnance Survey establishment until these were finished.[9]

In 1824 Gardner's reputation remained such that he was invited with Colby and Kater to give evidence to the Spring Rice Committee on the best means of providing a general survey and valuation of Ireland.[10] According to JH Andrews, Kater and Gardner as witnesses took up points of principle and left the details to Colby (although he was the one in charge!).

In 1825 Colby advised the Ordnance Board that Gardner was still needed, for laying down secondary trigonometrical points as well as computations, and so he was continued on the establishment at his original salary. Colby was 'desired to state how long he is of the opinion it may be necessary to retain Mr Gardner at that salary', but this request [11] apparently was overlooked until in 1834 an Ordnance Board committee, finding that he was paid £105 a year for occasional computations, 'considered the services performed by Mr Gardner for his salary to be nearly nominal and therefore proposed that it be discontinued.' [12]

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[7] Henry Kater, *An account of trigonometrical operations in the years 1821, 1822 and 1823, for determining the difference in longitude between the Royal Observatories of Paris and Greenwich*, Phil Trans R Soc. Lond, 1828, vol 118, 154-155.

[8] *Board of Ordnance Minutes*, The National Archives, WO 47/1203, 29 March 1825, 2919.

[9] *Board of Ordnance Minutes*, The National Archives, WO 47/1053, 26 February 1823, 1782-86.

[10] JH Andrews, *A Paper Landscape: The Ordnance Survey in 19th century Ireland*, OUP, 1992 and 2005, 22-26.

[11] *Board of Ordnance Minutes*, The National Archives, WO 47/1203, 29 March 1825, f 2920.

[12] *Report of a Committee appointed by the Master General and the Board to examine into the whole English survey*, Ordnance Office and War Office Correspondence: Engineers 1842-1849, The National Archives, WO 44/614, 31 January 1834, 13.

Publisher 1823-1840

Gardner after 1823 combined three roles: Ordnance Survey 'computer'; sole agent for the sale of Ordnance Survey maps; and map-seller and/or cartographer of non-competing maps. However Rob Wheeler's analysis [13] of the purchase of an Ordnance Survey map from the Gardner agency by the Town Clerk of Lincoln in 1825 suggests that this purchaser, at least, was confused over the agency's relationship with the Ordnance Survey.

Over the 1820s and 1830s, maps of many different types came to be published by James Gardner from his premises in Regent Street, as listed recently by Worms and Baynton-Williams.[14] Perhaps the first (in 1825) and certainly the most ambitious of his maps was that of the world 'projected, compiled and drawn by James Gardner' on Western and Eastern Hemispheres, each 48 inches in diameter. Presented in the same way as Aaron Arrowsmith's earlier map published in 1808, but updated, corrected and enlarged, a careful comparison left this writer spell-bound both by the coverage of Arrowsmith's map, and by the quality of Gardner's modifications, including his notes documenting subsequent exploration.[15]

Fittingly, Gardner in 1830 was one of the founder members of the Royal Geographical Society, as was Colby. Francis Herbert [16] describes how the Society at that time brought explorers and travellers together with the surveying professions (Royal Engineers, Admiralty hydrographers and civilian surveyors), and with cartographers, engravers, publishers and map-sellers, and he mentions James Gardner as one of the acknowledged expert cartographers and engravers who produced maps for the Society Journal.

Gardner remained as the Ordnance Board's sole agent for the distribution of maps to the trade until in 1840 he asked to resign on leaving his residence in Regent Street, and was succeeded by John Arrowsmith in Soho Square and Grattan & Gilbert in Paternoster Row.[17] Worms and Baynton-Williams record that James Gardner senior became semi-retired in 1840 and his son, also James Gardner, managed their map-selling business until 1850.

A curious episode took place in 1847. Professor Airy, the Astronomer-Royal, asked for copies to send to Otto Struve, the Russian astronomer and geodesist, of the best examples, in Airy's opinion, of the depiction of relief by the Ordnance Survey. In response, Captain Yolland provided the Irish Railway Map, as

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[13] RC Wheeler, *Buying an Ordnance Map, 1825*, Sheetlines 69, 36-37 (2004).

[14] Laurence Worms and Ashley Baynton-Williams, *British map engravers; a dictionary of engravers, lithographers and their principal employers to 1850,* London: Rare Book Society, 2011, 251-252.

[15] *[The World in Hemispheres],* projected by James Gardner, dissected on 8 sheets each 630 mm square, 1825, British Library, Maps 920.(297.). This may be compared with Arrowsmith's map by searching Arrowsmith 1808 and Gardner 1825 on the David Rumsey website *www.davidrumsey.com/luna/servlet* .

[16] Francis Herbert, 'The Royal Geographical Society's Membership, The Map Trade and Geographical Publishing in Great Britain 1830 to ca 1930', *Imago Mundi*, vol 35, 1983, 67.

[17] WA Seymour (ed), *A history of the Ordnance Survey*, Folkestone: Dawson, 1980, 100.

requested and as referred to below, but said he was unable to provide 'a specimen of relief shading of the north of Wales – as the plate belongs to, and is in the possession of Mr J Gardner, Map Seller, Regent Street.'[18] Richard Oliver suggests that this was probably a specimen prepared by Gardner of hill shading/hachuring *only*, without other detail.

Engraver and Lithographer

Worms and Baynton-Williams describe Gardner as 'Engraver, cartographer, lithographer, publisher, map and globe-seller'. Throughout the 1820s others are named as the engravers of his publications, but in the 1830s James Gardner himself was in many cases shown as the engraver. So had he added this skill to his other accomplishments, or had he put his name to the work of an employee (or his son James)? In 1838, as referred to below, the Royal Geographical Society recorded that 'a curious statistical map of Ireland has been engraved by Mr Gardner', which may suggest that Gardner himself was the engraver. The nineteenth century British Museum catalogue names James Gardner the Elder as engraver for five maps and James Gardner Junior only once. However, the question remains undecided, and in any case 'his' engravings are more notable for their usefulness than for their technical quality.

In the 1830s the Great Reform Act and the Municipal Corporations Act created a need for the definition of constituency boundaries, which was met by several Boundary Commissions in the various ways described by Richard Oliver.[19] It was then that James Gardner was first named as a map engraver, perhaps under the patronage of his Ordnance Survey colleagues.

Lt Thomas Drummond, who had joined the Ordnance Survey in 1820, and was associated there with several scientific innovations, was nominated in 1831 to chair the boundary commission for England and Wales, charged with collecting statistics to determine which boroughs should survive, and with defining boundaries that contained sufficient electors. Lt RK Dawson, also from the Ordnance Survey, was 'sent for on [his] recommendation',[20] became a commissioner, and signed most of the borough maps published for England and Wales, many of which are attributed to the Ordnance Survey.

In the commission's reports,[21] 'Engraved by J Gardner, 163 Regent Street' appeared first on the map in volume two of the boundaries of metropolitan boroughs. Similar maps can be found on-line (via *Explore the British Library* on the British Library website) as the Reform Act map of the Metropolitan

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[18] Letter from Capt Yolland to Professor GB Airy, 24 September 1847, Cambridge University Library Manuscripts, RGO 6/417, item 13, f 121.

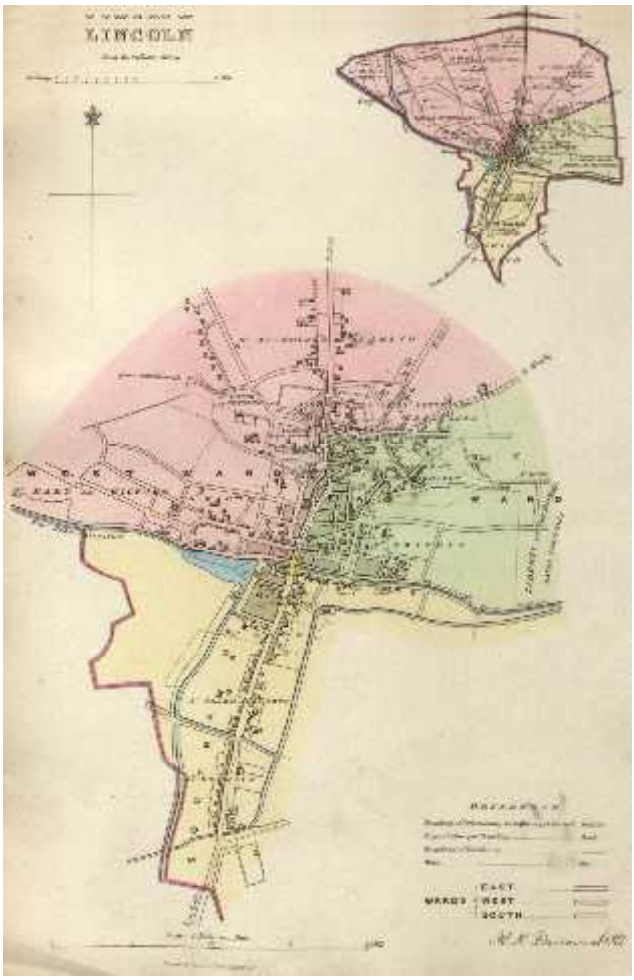
[19] Richard Oliver, *The Ordnance Survey in the Nineteenth Century*, London: The Charles Close Society, 2014, 108-110.

[20] JF McLennan, *Memoir of Thomas Drummond*, Edinburgh, 1867, British Library, 10817.cc.16

[21] Commissioners [appointed to inquire into the] proposed division of counties and boundaries of boroughs etc, Reports, BPP (HC) 1831-32 (141) XXXVIII-XLI [maps also available in British Library Maps 145.c.27.(1.)]

Boroughs,[22] and (on the same plate re-used) as the map defining the jurisdiction of Robert Peel's Metropolitan Police.[23]

By 1832, with Drummond heavily involved in controversy over his 'rotten borough' statistics, determination of the boundaries of county constituencies was delegated to a group of commissioners supported by RK Dawson; and of cities, burghs and towns in Scotland to three commissioners including Captain Pringle, another Royal Engineer with Ordnance Survey experience. On four of the 26 county maps.[24] and on 29 out of the 71 plans of the Scottish towns [25] the engraving is attributed to J Gardner, Regent St.



[by kind permission The National Archives]

In 1835-36 the Municipal Boundaries Commissioners for England and Wales commissioned a fresh set of maps, once again supervised by RK Dawson. Some of these, including the maps of Lincoln [26] (*left*), bear the imprint 'Engraved by James Gardner, Regent Street.'

In 1835 Thomas Drummond had become Under-Secretary (chief civil servant) for Ireland, where in 1837 he also chaired the Irish Railway Commission. This created more work for Gardner, who engraved four plates for the Commission's railway atlas (*overleaf*).

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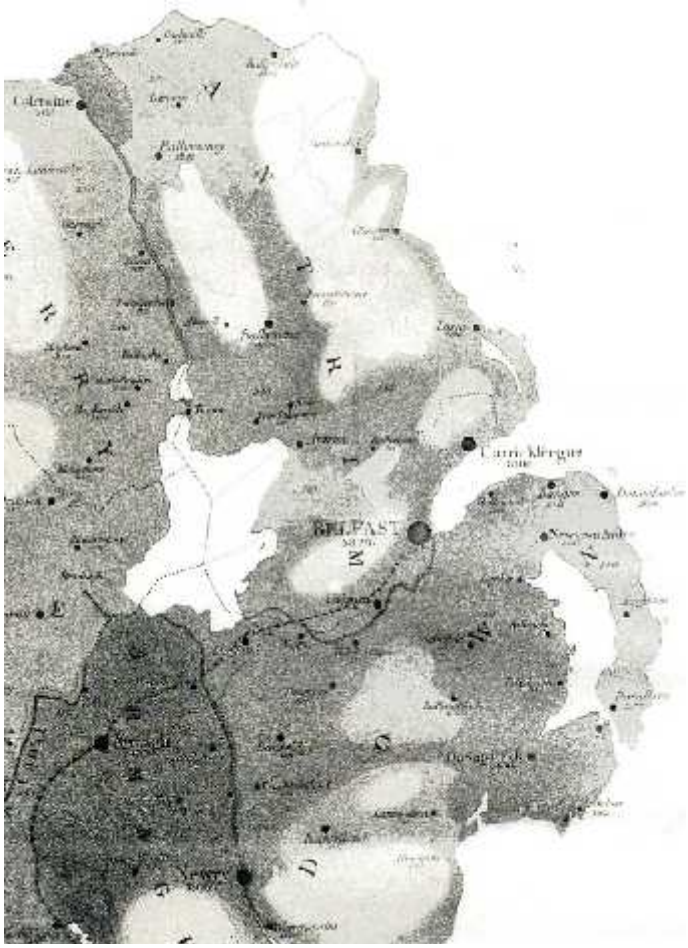
[22] *Metropolitan Boroughs*, Robt K Dawson Lieut RE, Engraved by J Gardner 163 Regent Street, 1832, British Library Maps Crace Port.1953, Collection subset Scanned maps and views.

[23] *Jurisdiction of the Metropolitan Police (Government Plan)*, Engraved by J Gardner 163 Regent Street, Robert Kearsley Dawson surveyor, Third edition 1837, British Library Maps Crace Port.1955, Collection subset Scanned maps and views.

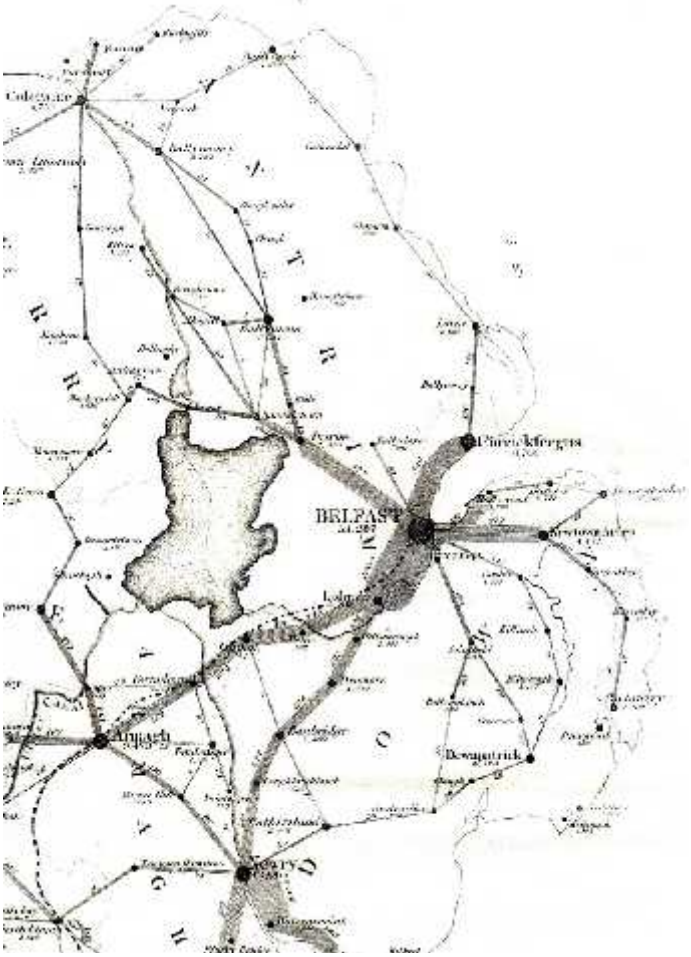
[24] Commissioners [appointed to inquire into the] proposed division of counties in schedule F of the Reform Bill etc, Report, BPP (HC) 1831-32 (357) XLI,337 [also in British Library Maps 145.c.27.(4.)].

[25] Commissioners [appointed to inquire into the] proposed boundaries of the several cities, burghs and towns in Scotland etc, Report, BPP (HC) 1831-32 (408) XLII [these plans are also available on-line in the maps section (*maps.nls.uk*) of the website of the National Library of Scotland].

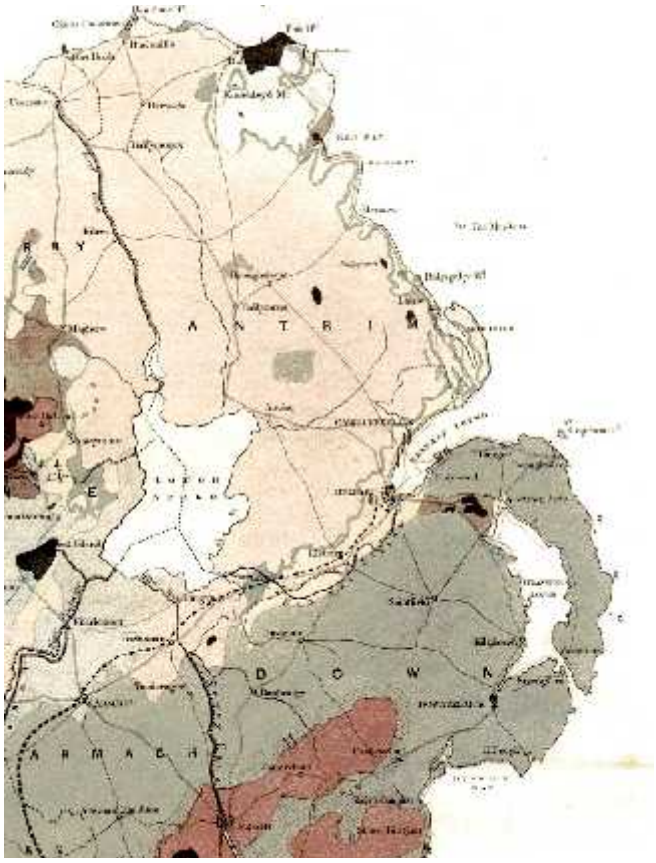
[26] *Lincoln*, Municipal and Parliamentary Boundaries Commission, The National Archives, Draft Maps and Plans, 1835-36, T 72/17/21 [Also published in Commission Report vol 2, BPP (HC) 1837 (238) XXVII; available in British Library Cartographic Items Maps 27.e.27; and reprinted in DR Mills and RC Wheeler (eds), *Historic Town Plans of Lincoln, 1610-1920*, Lincoln Record Society, 2004].



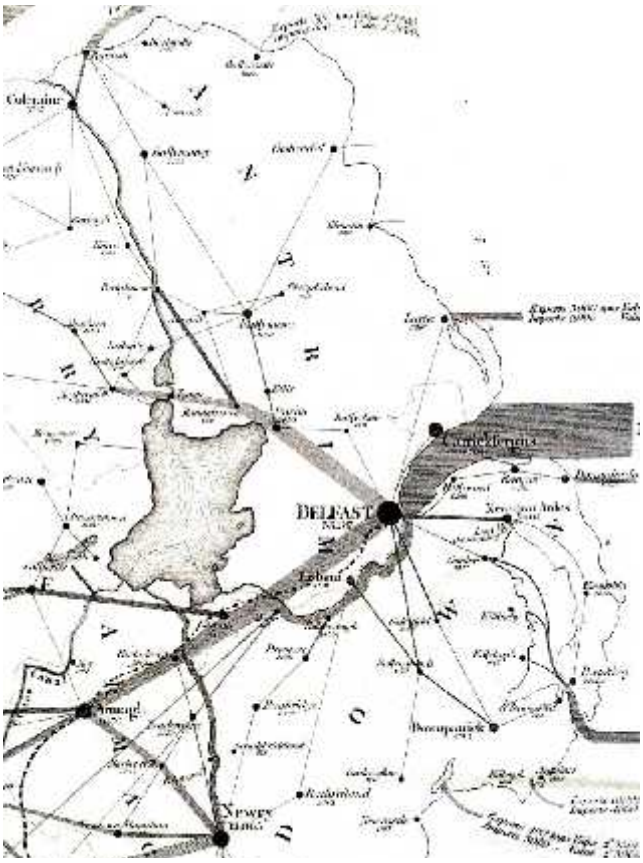
II Density of Population (by Lt Harness)



III Quantities of Traffic (by Lt Harness)



V Geological Map (by Richard Griffith)



IV Numbers of Passengers (by Lt Harness)

Extracts from plates engraved by James Gardner in Atlas to accompany the Second Report of the Commissioners appointed to consider and recommend a general system of railways for Ireland, *HMSO, Dublin, 1838* *© The British Library Board Maps 145.e 29 (also kept in The National Archives MPD 1/147)*

Drummond, who was very familiar with the progress of the Ordnance Survey triangulation, had charged Thomas Larcom, the Ordnance Survey chief in Ireland, with compiling a quarter-inch map based on the recently completed triangulation. Although Colby had at first refused an Ordnance Survey imprint, because the topographical detail for southern Ireland came from unofficial sources, he had to accept its publication under the auspices of the Railway Commission and its subsequent adoption by the Board of Ordnance.[27]

Drummond's Commission was, of course, promoting rather than recording the construction of Irish railways. With this in mind, at a reduced scale of ten miles to the inch, Larcom's map was adapted to provide the basis for three statistical maps and a geological map, all engraved by Gardner, for the Railway Atlas that, rather late in the day, accompanied the Commission's Second Report.[28] After the Atlas in 1838 was communicated to the Statistical Society of London, and mentioned in a report to the Royal Geographical Society,[29] these maps were forgotten until a discussion at a Royal Geographical Society symposium in 1934 and a more extensive study published by AH Robinson in 1955.[30] By reference to geographical sources, Robinson claimed that, notwithstanding their deficiencies, the maps of population density and traffic flows were notable as the first of their kind. This he attributed to an effective combination of the innovative and ingenious minds of Drummond, Larcom and Henry Harness, then a lieutenant in and eventually the colonel-commandant of the Royal Engineers.

The Irish Railway Atlas was by no means the only example of the effective visual display of quantitative information by James Gardner. The rich variety of maps and plans listed by Worms and Baynton-Williams as published by Gardner, and in some cases said to be engraved by him, include illustrative maps and plans for geographers, geologists, engineers and a meteorologist, and include some that have been judged worth republishing in recent years. A general chart showing the principal tracks of HMS Beagle 1831-6 was engraved by James Gardner on behalf of Darwin's Captain Fitzroy. This originally accompanied Robert Fitzroy's published narratives of his voyages and has appeared over subsequent years in several places, most recently in 2011.[31] More complex and just as enduring, Bradshaw's *Map and Sections of the Railways of Great Britain*, another map that Gardner published in 1839, was reprinted as recently as 2013.[32]

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[27] JH Andrews, *A Paper Landscape: The Ordnance Survey in nineteenth century Ireland*, OUP 1992 and 2005, 184.

[28] Irish Railway Commission, *Atlas to accompany Second Report of Railway Commissioners*, HMSO, Dublin, 1838, British Library Cartographic Items Maps 145.e.29 and The National Archives MPD 1/147.

[29] Capt J Washington, *A sketch of the progress of geography …[and of the Royal Geographical Society] in 1837-8,* Journal RGS, 1838, vol 8, 237. This made the statement referred to above that 'a curious statistical map of Ireland has been engraved by Mr Gardner'.

[30] Arthur H Robinson, *The 1837 maps of Henry Drury Harness*, Geographical Journal, vol CXXI, 1955, 440-450.

[31] RD Keynes (ed), *The Beagle Record*, Cambridge University Press 1979 (paperback 2011), 22-23.

[32] Julian Holland and David Spaven, *Mapping the Railways*, Collins, 2013, 36.

Conclusions

When James Gardner in 1823 applied to the East India Company to succeed Aaron Arrowsmith as its map-seller and geographer, he wrote of himself [33] that his fifteen years of employment with the late General Mudge and Major Colby had provided 'the amplest means of becoming acquainted with the scientific principles upon which maps should be constructed, [and] the manner in which they should be delineated' and 'that he [had] not suffered the opportunities presented by his situation to pass unimproved'. While he failed to secure the post with the East India Company, Gardner's zeal for self-improvement demonstrably continued after 1823 to provide the basis for his remarkable career.

Although, after quoting from a few of Gardner's letters to Colby, Charles Close[34] regretted that 'That is almost all we know about James Gardner', it is now apparent that Gardner enjoyed a much more varied career than other trigonometrical surveyors. He apparently earned the trust of a remarkable number of the most original minds of an enterprising age, and moreover remained on good terms with Thomas Colby for more years than other officers of the Ordnance Survey. His readiness to work at the same time for the Ordnance Survey, for various Government commissions, and on his own account, seems to be an example in the 1830s of the situation described by Richard Oliver [35] as 'an ill-defined area where official and commercial cartography interacted with each other.'

Acknowledgements

The writer thanks Laurence Worms and Ashley Baynton-Williams for their inspirational dictionary of British map engravers; Richard Oliver for his generous advice; and the librarians of the map rooms of the British Library, Cambridge University Library and the National Archives for their knowledge and their patience.

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[33] Memorial by Mr James Gardner, 29 April 1823, British Library, IOR E/1/150, 477-479.

[34] Col Sir Charles Close, *The Early Years of the Ordnance Survey*, 1926, reprinted with a new introduction by JB Harley, David and Charles Reprints, 1969, 79.

[35] Richard Oliver, *The Ordnance Survey in the Nineteenth Century*, London: The Charles Close Society, 2014, 109.