

Anniversaries

Geological map of Ireland 170 years ago



RICHARD GRIFFITH'S SMALL SCALE GEOLOGICAL MAP OF IRELAND (1853)

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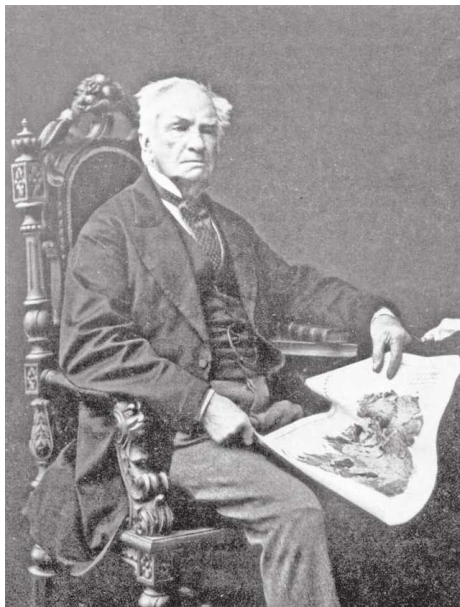


Figure 1. Richard Griffith in 1874 aged 90 holding a copy of the 1853 Surveyor's map (From Praeger 1949, plate 5).

Richard John Griffith (1784–1878) (Figure 1) was amongst the foremost geologists working in Ireland in the nineteenth century. Educated in Edinburgh, he came under the influence of Robert Jameson (1774–1854). On his return to Ireland, from 1809 he devoted his early years of his career to surveying, of both the distribution of the midland bogs that covered much of the Irish midlands, and of the coalfields of Ireland. For the latter, he drew on his geological interests and expanding expertise, and produced a number of fine reports for the Royal Dublin Society which had employed him as their Mining Engineer. Always mindful of enhancing his public reputation, Griffith secured appointment to several commissions including that charged in 1836 with advising on the proposed distribution of the railway network; its reports appeared in 1838 and 1839.

Today amongst non-geologists or historians of geology, Griffith is best remembered for heading up the Rateable Valuation surveys of the country (Smyth 2008) which are an invaluable resource for genealogists interested in the antecedents of the Irish diaspora and of those who still live in the country. Commenced in 1830 and building on the earlier 'Boundary Survey', the 'Townland Valuation' (Lee 1980) and the succeeding 'Tenement Valuation' (Vaughan 1980) covered the whole country; the final reports were published in two hundred and two volumes between 1832 and 1856. Records may be searched online at <https://www.askaboutireland.ie/griffith-valuation/>.

Based in a modest Georgian terraced house in Dublin the Valuation surveyors employed by Griffith were provided with Ordnance Survey six-inch to the mile maps that were issued between 1829 and 1842 (Andrews 1993, fig. 4). They were also issued with a slim volume of instructions that detailed the information they were to gather and how they should assemble the data. The first issue of the *Instructions* was published in 1833 and was followed by several updated editions of increasing length and detail up to 1853 (Griffith 1833, 1839, 1853). The last edition included a small-scale geological map that is the subject of this anniversary account (Figure 2).

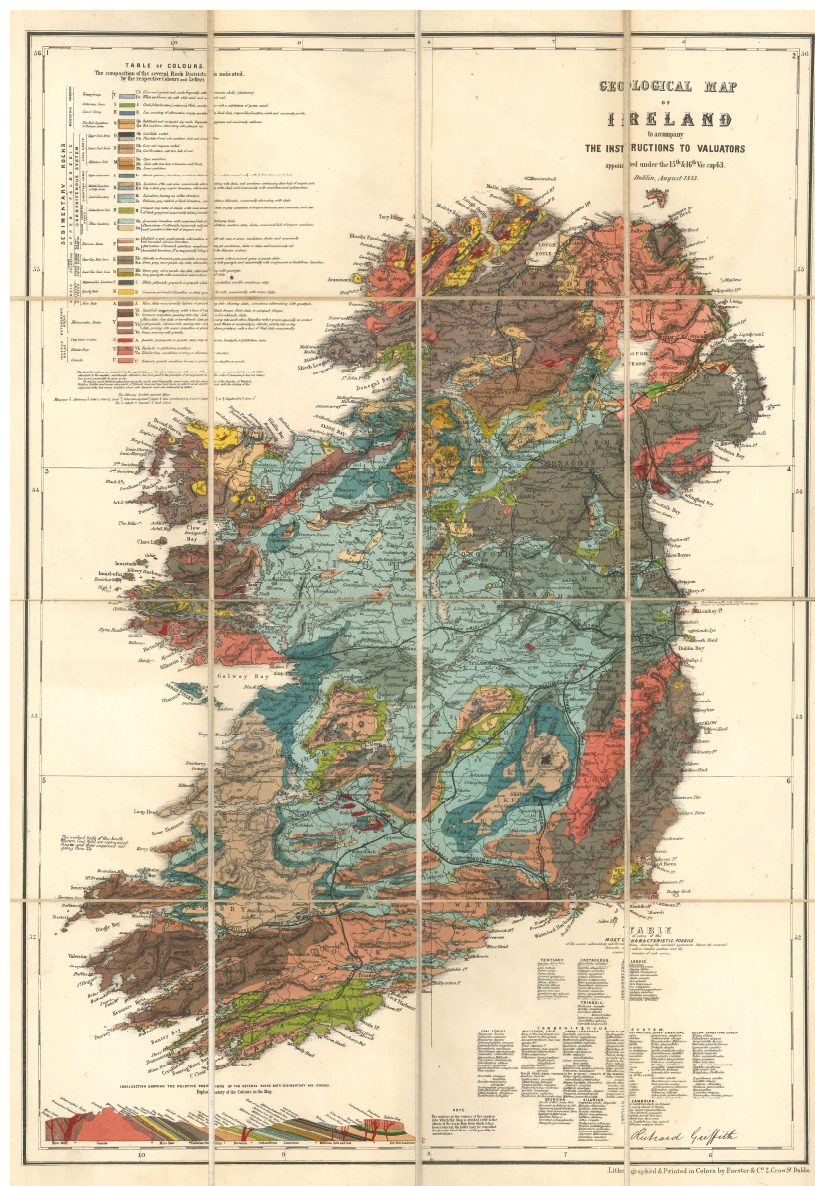


Figure 2. Geological Map of Ireland, August 1853 issued with the *Instructions to the valuator and surveyors appointed ... for the uniform valuation of lands and tenements in Ireland* (Author's copy (PNWJ) formerly in the library of J. Thackray).

The Geological Map of Ireland illustrated here (Figure 2) that was included with the *Instructions* is dated August 1853 and is one of three variants of this map. Needless to say, the geological information depicted was based on that provided in the large scale map originally published by the Railway Commissioners in 1839 and which Griffith continued to modify until 1855 as he was provided with new geological information (see Herries Davies 1977 for a comprehensive and definitive assessment of the various issues).

The map measures 36.8cm wide by 54cm tall and shows the location of major towns, inlets, hills and mountains (that are depicted by hachuring) as well as railways including some such as the Mullingar to Cavan line that was still to be opened. Geological boundaries are clearly marked and lithologies are indicated by different colours. 'A Table of Colours', printed in the northeastern quadrant, provides a legend, comprising a stratigraphically ordered column of 37 different colours and hues which identify different lithological units with metamorphic rocks and igneous rocks at the base. Subdivisions are indicated by two letter abbreviations, e.g., I = Lower Limestone, Ia = Ordinary grey, reddish or black limestone, sometime dolomitic, occasionally alternating with shale, Ib = Limestone having an oolitic structure.

Beneath this table are symbols indicating mines of fourteen different ores. Printed in the southeastern quadrant is a 'Table of some of the Most Characteristic Fossils' listing diagnostic fossils found in various geological periods or in the case of the Carboniferous, six subdivisions. Underneath this table is a printed facsimile of Griffith's signature.

At the bottom of the southwestern quadrant is an idealised cross section through all the geological units to show their relative positions. On this variant of the map no scale is provided (but is 1:1,126,400 or 9/16ths of an inch to 10 miles), while the other two variants have printed scale lines showing English miles and Irish miles. The numbers of each of the six sheets of the larger quarter-inch map, from which the 1853 map was derived, are provided so that, according to an explanatory note printed on the map, users can obtain greater details through consultation of these (copies were available in the Office of the Valuation Survey).

In all editions of the *Instructions* information was provided on soil types and how they might be recognised and described. The quality of the soil was an important factor that fed into the valuation calculation of land. Interestingly, in the editions of the *Instructions* there are no specific requests to gather geological information on the solid geology. Why then, include a geological map in 1853? Griffith's narrative (1853, p. 14-15, 17) links it as an aide to the recognition of soil types and by extension collection of soil data: 'It is of the utmost importance that the valuator should carefully attend to the mineral composition of the soil ... and a reference to the Geological Map will frequently assist his judgment in this respect.' (Griffith 1853, p. 17). A soil map, even very generalised, would probably have been of greater value than the geological map. Nevertheless, it would have aided surveyors in assessing soil quality, which Griffith linked to the underlying bedrock. A secondary reason for its inclusion in the 1853 volume, we suggest, was to aid geological collecting by the surveyors. As Herries Davies (1980) outlines, Griffith as early as 1830 showed the surveyors a manuscript version of a geological map that he had compiled. He also instructed them to make notes on the geology of the ground that they covered and in particular to collect fossils. Herries Davies (1980, p. 17) concluded 'it is clear that ... that an unofficial if rudimentary geological survey of Ireland was being conducted within the Valuation Office'. Essential to this enterprise were the efforts of surveyors such as Patrick Ganly (Archer 1980a, b) whose geological activities remained undercover and whose expertise and input to the subsequent maps were only publically acknowledged by Griffith many years later in May 1869 when he stated, probably rather uncomfortably, before a House of Commons Commission that Ganly had worked on revising geological boundaries (Griffith 1869, p. 49). As Archer (1980) has shown Ganly's input was far greater than simple lithological delineation. During the survey it is probable that Griffith wished to keep these activities covert and so explicit instructions on geological data and specimen acquisition didn't appear in open view in print in the *Instructions*. The large fossil collection formed the basis for two monographs authored by Frederick M'Coy in 1844 and 1846 that were privately printed and distributed by Griffith (Wyse Jackson and Monaghan 1994).

In a survey estimating land value considered from a modern perspective, it is perplexing that some geological features of economic value such as the location of mines and quarries have been underplayed in Griffith's surveys. In the 1853 *Instructions* valuers were requested to include the location of quarries on the field maps (Griffith 1853, p. 8, paragraph 18), but in the Survey's published record volumes there is infrequent mention of quarries in the printed tabulated returns. For example Henry Bruen owned the only granite quarry of depth in Co. Carlow, but the return for his holdings in the townland of Leagh/Ballybeg simply notes that the 'land' is worth £90 annually. Surely quarrying or mining activity or its potential would have elevated the value of his land and thus the tax return? However, from the outset land taxation was to be determined on the agricultural value of land alone. Griffith in 1869 explained that extractive industries were considered to devalue land: 'when the valuers

come into a field, they required to go into every quarry to deduct it out of the arable land, and to put a smaller price upon the land injured by spore [spoil] around it' (Griffith 1869, p. 48).

The 1853 map certainly assisted the valuers in the field as they were required by him to take the dip of the strata encountered in quarries, a requirement not explicitly stated in the *Instructions* but revealed to be the case years later (Griffith 1869, p. 48). This structural information was passed to him directly, together with any specimens that had been unofficially collected, but no identifiable geological data was published in the official reports of the Valuation surveys. The information gathered no doubt informed modifications to his geological maps that culminated in the final edition of the large-scale geological map of Ireland published in 1855.

Coincidentally the *Instructions* map was not the only small-scale geological map of Ireland published in 1853. The economist William Bullock Webster included a simplified rendering of the country's geological foundations in the second edition of his book *Ireland considered as a field for investment or residence*. Its inclusion demonstrates the authors' contention, which mirrored Griffith's, that the nature of the geological bedrock had some economic value through influencing the productivity of the soils that developed over different lithological types.

Are there reasons why only the 1853 *Instructions* contained an instructive map and the earlier editions didn't? Griffith had published a small-scale geological map in 1838 in the *Atlas* that accompanied the report of the Railway Commissioners that appeared the following year. This map could have been included in the 1839 *Instructions* but no volumes have been located of this edition in which this is the case. Perhaps there being a geological map already available in the *Atlas* didn't merit the cost of reprinting and hand colouring it for use elsewhere? Alternatively, given the 1838 map was colour washed, it would not have been easy to use in Irish weather and would not have lasted long in the field. By 1853, colour litho-printing allowed for a more robust colourfast map to be provided.

In terms of Irish cartographic history Griffith's 1853 map is significant as it is the first to have been printed in colour – both the lithography and printing were carried out by the firm of Forster & Co. at their premises at 2 Crow Street in central Dublin. Copies were then tipped as the frontispiece into the *Instructions* that had been printed by the well-known firm of Alexander Thom at its premises on the other side of the River Liffey that bisects Dublin.

While undoubtedly Griffith made a major contribution to the understanding of the geology of Ireland, his were not solitary labours and it is now known that he received considerable assistance in the assembly of 'his' geological maps (Archer 1980a, b; Herries Davies 1983). Griffith's lack of open acknowledgment at the time of their publication between 1838 and 1855 demonstrates his position in the hierarchy of Irish public society, in this case as Director of the Valuation Survey. At that time, it was not normal to credit those persons employed at lower grades on public enterprises, and no doubt Griffith saw nothing wrong with this state of affairs. He held firm to his conviction that he conceived the project to produce the Geological Map of Ireland and so he was due full credit for its production. This fed into his ruthless ambition for preferment, and in this he was successful when he was created a Baronet in 1858 and thus entitled to use the longed-for prefix 'Sir'.

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