The radical polychromy of the Museum Building at Trinity College Dublin did not emerge Minerva-like from the brow of Benjamin Woodward, but rather from an imbrication of architecture, geology and engineering (fig. 2.1). While much is known about developments within these disciplines in the early Victorian period, relatively little is known of their relationship. How did geology and engineering come to influence architectural design and production? Why was it that structural columns of polished, polychrome, local limestone first appeared in architecture in Dublin in the 1850s? What was the impact in Ireland of this

avant-garde polychromy? Louise Caulfield has shown the wealth of Ireland’s coloured limestone and its burgeoning exploitation in the period: this essay seeks to discover connective tissue between contemporary science, industry, politics and aesthetics. Though the polished ‘marbles’ of the Museum Building owe much to the developing taste for Byzantine, Romanesque and Venetian architecture discussed by Andrew Tierney in this volume, this precocious interior is also indebted to industrial entrepreneurship and a patriotic commitment to realize the economic potential of Ireland’s natural resources. Without the quarrymen, engineers and stone merchants who developed methods of extraction, transport and production, polychrome stone architecture on such a monumental scale was inconceivable. The conditions that made possible William Manderson’s marble contract at the Museum Building were decades in the making. Yet the role of materials and technology in architecture has traditionally been relegated to secondary status, the means to an aesthetic end, as reflected in Nikolaus Pevsner’s controversial statement “The modern movement did not come into being because steel-frame and reinforced concrete construction had been worked out. They were worked out because a new spirit required them.” Can this be said of the Museum Building’s resplendent polychromy? Was ‘radical marble’ merely the handmaiden of a new approach to architectural design? While the impact of Ruskin, of the Great Exhibition and of mid-century texts on polychromy were clearly factors in the novel use of coloured stone in the Museum Building, this contribution argues that economics, politics and science played a significant and underestimated role in the emergence in Ireland of a taste for polished and coloured stone.

Though the quarrying of granite and grey limestone for building purposes was widespread in eighteenth-century Ireland, the exploitation of coloured limestones was confined to small-scale extraction for monuments or inlaid elements in chimneypieces. The inventory of a Dublin stone yard made by the measurer Bryan Bolger in 1801 includes pieces of Cork red and Connemara green, together with a range of coloured continental marbles, which were doubtless employed in detail rather than entire items. From the 1820s the quarrying of Irish serpentinite marble and slate developed significantly. The commercial slump following the Napoleonic wars, potato famines in 1816 and 1821, together with fears for the effects of post-Union absenteeism, rendered employment of the poor a pressing political issue, resulting in grand-scale investment in public works and the

encouragement of private investment across all sectors, including mining and quarrying. From the early 1800s the Dublin Society promoted an intensive survey of the coal districts of Ireland, and employed an itinerant mineralogist. As one London stockholder put it in 1824 ‘Ireland, to compensate for the loss of government ... must be made a commercial country’. This was a period of ‘inordinate passion’ for speculative investment in Britain and Ireland and the formation of many joint stock companies including the Hibernian Mining Company.

6 A further factor of potential relevance for stone exploration in the period was the effect of the Napoleonic wars in preventing the import of continental marbles, resulting in geological exploration in Scotland in search of coloured stone capable of taking a polish. Account of quarries of marble in the north of Scotland’, Scots Magazine, 2 Jan. 1815, pp 93–6. 7 G.F. Mitchell, ‘Mineralogical and geological’ in J. Meenan & D. Clarke (eds), RDS: the Royal Dublin Society, 1731–1981 (Dublin 1981), pp 154–66. 8 PRONI MIC 63916, Mr Gregory to the knight of Kerry, 29 Dec. 1824.
and the Mining Company of Ireland.\textsuperscript{9} Open face quarrying provided ideal prospecting ground for the identification of minerals and metals, and engineers were extensively employed in assessing the potential of private estates. Quarries established by local landowners in the post-Napoleonic period were surveyed and leased including the slate quarry at Valentia Island established by the 18th knight of Kerry in 1816, which decades later continued to employ ‘every able-bodied man on the island’\textsuperscript{10} (fig. 2.2). The Mining Company of Ireland, established in 1824, 

\textsuperscript{9} Noel P. Wilkins, \textit{Alexander Nimmo, master engineer, 1787–1831: public works and civil surveys} (Kildare, 2016), p. 264. \textsuperscript{10} R.B. MacCarthy, ‘The estates of Trinity College Dublin in the nineteenth century’ (PhD, University of Dublin, 1982), p. 293.
employed up to 700 men and boys at its slate quarry at Portroe near Killaloe in Co. Tipperary (fig. 2.3) where engineers and experts in quarrying and dressing of slate were brought from Wales with the aim of introducing the Welsh system. Welsh quarrymen were also employed at Valentia and boasted to their Penryhn associates of the consistent high returns on the Co. Kerry slate.

As Louise Caulfield has shown, the quarrying of Connemara serpentinite was initiated in this period by local landowners, John D’Arcy at Streamstown and Richard Martin at Ballinahinch. D’Arcy evidently lacked business acumen and initial plans for the export of Streamstown marble were hampered by underestimation of transport costs and market value. In 1825, Thomas Weaver, a Freiberg-educated mining geologist to the Avoca copper mines, and engineer to the Hibernian Mining Company, compiled an extensive report on the Connemara serpentinite, which formed the basis for the company’s leasing of the D’Arcy quarry (fig. 2.4). Both the D’Arcy and Martin quarries were examined and information assembled on the viability of extraction and transport, and the relative quality of the different beds of stone. The Company records provide rare insight into the process of introducing the green marble to the building and sculpture trades in London and into the very problems that would face William Manderson in fashioning the Connemara marble columns of the Museum Building. Weaver reported that Richard Martin had reached an agreement with a London contractor for supply of his stone. Prices per ton or 12 cubic feet were cited, beginning at £6 for blocks and slabs ‘between 2 and 7 feet in length, by not less than 1 foot broad, and of indeterminate thickness’ with, importantly, an additional £1 for every additional foot in length. An identified seam of white ‘statuary’ marble was estimated to fetch £12 per ton for blocks of 12 to 14 feet in length with an extra £2 for every additional foot beyond 14 feet, ‘So that a column 20 feet in length would be worth £24 per ton … What length of column may be obtained … can scarcely be judged of with certainty until the bed be properly laid open’. Thus the challenge of obtaining sufficiently large blocks of serpentinite and marble for structural purposes was clearly identified before the quarries were fully operational.

Consultation with architects, builders, artists and leading patrons was an integral part of the testing process and essential in introducing Irish stone to the British market. Knowledge of newly opened quarries spread quickly. In 1825, John Nash’s builder Joseph Browne visited two Irish quarries in search of

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11 Reports of the Mining Company of Ireland from April 1824 to December 1854 (Dublin, 1855) in which Report of the board of directors… for the half year ending January 5th 1826, p. 6. 12 University of Limerick, Special Collections, Dunraven Papers, D3196/F/3/1, ‘Letter of Edward Sabine describing the working of the Penrhyn slate quarries in comparison with the possibilities of the Valenta slate to Lord Adare’, 28 Apr. 1835. 13 Peadar McArdle, Dissenting spirit: Thomas Weaver, geologist and mining engineer (Dublin, 2018). 14 NLI MS 658, Hibernian Mining Company letters and minutes, Report of Thomas Weaver, 16 Dec. 1825.
stone for the Marble Arch at Buckingham Palace, neither of which met with his approval. According to his grandson, the 18th knight of Kerry in his efforts to promote the Valentia quarry ‘interviewed many builders and contractors of note. [Thomas] Cubitt etc etc, who formed favourable opinions of the quality of the slate’, which he considered significant in procuring contracts for the National Gallery, the British Museum and Windsor Castle. G.P. Gregory, the London-based secretary to the Hibernian Mining Company, commented critically on John D’Arcy’s arrangement with the London contractor William Jolliffe for delivery of granite to the construction site at London Bridge ‘by which I think he must lose money’. Later that year Gregory sought an opinion on the Connemara green marble from ‘a reputable sculptor’ in London who voiced two principal objections ‘1st It is too hard for working advantageously and 2nd it is not the fashion’. Another sculptor consulted by Richard Martin thought differently, proclaiming the green marble harder and more susceptible to a high polish than the Italian, with less flaws than Devonshire marble, and most suitable for chimneypieces. In the following year Gregory’s successor was unhappy with samples sent to London from the Streamstown quarry and consulted Thomas Cubitt regarding three varieties of the marble. Unfortunately, Cubitt’s response was not copied into the company’s records. Mrs Georgina Blake, owner of the Merlin Park black limestone quarry, was particularly enterprising in managing to submit a petition and sample ‘marble’ to George IV during his visit to Ireland in 1821, resulting in the king’s instruction to his architects to employ the Galway stone.

A major impetus to quarrying all over Britain was the rebuilding of the Westminster Parliament following a devastating fire in 1834. A royal commission was established to choose stone for the building. Petitions came from quarry owners and architects all over Britain and Ireland including one from Limerick, which called for the ‘fostering hand of British enterprise’ to draw Ireland’s ‘most beautiful marbles’ and make them ‘sources of wealth and happiness’ and ‘superb ornaments’ at ‘one third the price of foreign productions’. These were the words of an English architect, William Bardwell, then employed in Co. Limerick, who lent his support to quarry-owner Jeremiah Naughton’s petition of 1839, underwritten by a group of local MPs and landowners including Daniel O’Connell and Thomas Spring Rice in a ‘certificate, verifying the superiority,

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as to durability and cheapness, of Limerick marble and Clare limestone.\textsuperscript{23} Charles Barry rejected the Ballysimon stone, considering it ‘sombre’ (Spring Rice reputedly said privately that the colour was ‘abominable’).\textsuperscript{24} Barry and his fellow commissioners made the calamitous choice of a magnesian limestone, which was quarried from both Bolsover in Derbyshire and Mansfield in Nottinghamshire, of which there proved an insufficient supply, and which was substituted for by the perishable and, more importantly, indiscriminately worked, Anston stone from Yorkshire.\textsuperscript{25} A further petition from the ‘operatives of Limerick and its vicinity’ cited the ‘variance … of so many scientific men’ to Barry’s choice and quoted a letter from the civil engineers and architects of southern Ireland, including Sir Thomas Deane, testifying to the strength and ‘good colour’ of the Ballysimon limestone. This public debate about a building ‘of such magnitude and national importance’ served to fuel a patriotic interest in native building materials that had been prevalent since the eighteenth century.\textsuperscript{26} ‘You will do well to recommend … use of all the marbles of Ireland … I would have it the epitome of the kingdom and all its natural rarities’ wrote Sir John Perceval in 1722 of Castletown House in Co. Kildare, Ireland’s first prodigy house of the eighteenth century.\textsuperscript{27}

\textsuperscript{23} NLI, Five printed letters tied to the Andrews report.
\textsuperscript{26} J. Kemmy, ‘Limerick stone’, 24.
In the report on the Ballysimon limestone that accompanied the parliamentary petition, one of the chief merits proposed was the quarry’s situation within ‘two miles and a half of the harbour or shipping place, and close to the main road … the contiguity of the road affords a ready transit to the quay’. Then, as now, transport was one of the principal cost factors in the stone industry and easy access to shipping was of the first importance. Likewise, at Killaloe, proximity to transport networks was considered key to commercial viability (fig. 2.5a). The some 20 square miles of slate was situated about midway along the River Shannon and the counties on its banks were considered ‘legitimate markets’ together with the interior of the country reached by means of the canals.28 Though the company struggled against local opposition to gain direct access to a quay on the river and encountered much industrial strife, it eventually managed to strike a deal with the City of Dublin Steam Packet Company to ship its slates to Dublin and beyond. Charles Wye Williams (fig. 2.5b), engineer and managing director of the Steam Packet Company, was instrumental in linking the slate quarries to the Shannon.29 Williams was a vociferous champion of industry and commerce as the answer to Ireland’s economic and social problems. In an 1831 essay on the ‘State of Ireland and the want of employment’, he rejected speculative political remedies proclaiming ‘My politics are trade and commerce. These are the great pioneers of civilization, and will continue to be so in all ages and in all countries’.30 Williams’s friend, Alexander Nimmo, the public works engineer for the western region of Ireland, was of similar mind, and in 1825 wrote to the knight of Kerry about the proposed Louth–Liverpool navigation, ‘now the greatest object of the policy of this country and likely to produce effects more important and valuable than all of the political schemes of Union and conciliation which the workmen, or rather the talking men of your shop have been at for centuries’.31 In the mid-1830s Nimmo, Wye Williams and the knight of Kerry were involved in a proposed transatlantic steam packet from Valentia, eloquently described by Nimmo as ‘a depot … for the western world: a matter which will do wonders for the whole of the west of Ireland’.32 During the 1820s, engineers were employed concurrently in public works and private enterprise. In seeking to engage Nimmo, Richard Griffith and John Kilally, the three chief public works engineers in the south and west of Ireland, the Hibernian Mining Company sought to outdo its competitors ‘with

so much strength of talent and knowledge'. 33 As public works engineer for the western region and contractor to the Hibernian Mining Company Nimmo was familiar with the Martin and D’Arcy quarries. Griffith had been mining engineer with the Dublin Society and was then working on his large-scale geological map of Ireland, which was finally published in 1839. It was Nimmo who built with public monies the pier at Cloonisle for the shipment of Martin’s marble that promised ‘to introduce a new source of employment into Connemara’. 34 This spirit of entrepreneurship enabled by a burgeoning civil engineering culture was of fundamental importance for Ireland’s stone industry. It was Nimmo’s friend Charles Wye Williams who established the first centrally located marble works which manufactured stone from the southern and western counties of Ireland, and it was the erstwhile manager of Williams’s manufactory who supplied the coloured marbles for Deane and Woodward’s Museum Building.

Knowledge of the properties of slate and dimension stone was not confined to contemporary engineers, architects and quarrymen. On the contrary, there is good evidence of serious lay interest among the aristocracy, clerics, and gentleman-scientists in geology and building stone. From the 1700s there was a considerable network of geological interest in Ireland: both the Royal Dublin Society and the Royal Irish Academy fostered enquiries into Ireland’s geological structure, and various societies such as the Geological Society of Dublin (and its successor the Royal Geological Society of Ireland), founded in 1831, did likewise. 35 As well as in the capital, Limerick, Cork and Fermanagh appear to have been particularly lively centres of interest in geological enquiry; in the latter county William Willoughby Cole, who later succeeded as earl of Enniskillen, was a frequent host to geological visitors and developed his own fossil museum at his seat at Florence Court, much to the displeasure of his father. 36 The papers of the earls of Dunraven from the 1820s onward testify to a thorough-going social geology among the landed classes of the south-western counties with lectures in country houses, quarry visits, after-dinner discussion and examination of geological specimens. A decade before A.W.N. Pugin designed chimneypieces for Adare Manor in the mid-1840s, crafted in local red and grey limestone, the parents of his client had consciously chosen to promote local masons and carvers as key protagonists in their building programme and, significantly, employed a range of coloured limestone, grey, yellow, red and brownish red, from local quarries for discrete parts of Adare.

Manor. While the south and west fronts were completed by Philip C. Hardwick in 1850, building accounts for the 1830s indicate the conscious employment of variegated stone. The recently cleaned elevations exhibit a most remarkable arrangement of coloured limestone with some eight different types of white, red and black ‘ashlars’ displayed in a cabinet-like fashion in the gables of the entrance and garden fronts (fig. 2.6). This precocious handling of local stone is the earliest thorough-going instance of structural polychromy in Irish Victorian architecture.

In her diary for June 1833 Caroline, countess of Dunraven, recorded the comings and goings of her husband and his scientific
guests: ‘the gentlemen went off geologizing’; ‘a great deal of geological talk all evening’; ‘we looked at Edwin’s specimens and amused ourselves in his room till near late’. Precisely what effect the Dunraven’s sought to achieve in these patchwork polychrome façades is unclear. The dominant pink and white tones are at once redolent of northern Italian Gothic façades and of local medieval buildings such as the cloister at Askeaton Friary, later described by George Kinahan of the Geological Survey of Ireland as ‘a pinkish-greyish stone, in places yellowish … used for the beautiful pillars of the cloisters of Askeaton Abbey, built by the earls of Desmond … in the fourteenth or fifteenth century’. An ancient tower of distinctly red hue at Croom near Adare Manor was captured in a contemporary watercolour among a collection of drawings associated with Benjamin Woodward (fig. 2.7). The Dunravens were friends of the De Vere Hunts, a literary family and friends of Tennyson and Richard Monckton Milnes, both of whom visited the family seat at Curragh Chase in Co. Limerick from whence some of the limestone for Adare was obtained. Monckton Milnes Venetian poems of the 1830s, much admired by his Irish friends, and later cited by Ruskin, atmospherically described the city’s time-worn marbles: ‘the universal sheen of marble amber – tinged like some enormous baldaquin gay-chequered and deep’. Yet beyond aesthetic intent, the Adare Manor façades and interior chimneypieces wrought from polished local stone exhibit a thorough-going

interest in geological display. In _Memorials of Adare Manor_ published in 1865 by Caroline and her son the 9th earl, mention is made of these quarries though more precise identification is given in a manuscript memo of 1862 that traces the source of the stunning salmon pink marble in Caroline’s private quarters to a quarry at Dunaman near Kilfinny (fig. 2.8). Contemporaries were clearly aware of the Dunraven’s assiduous pursuit of local geological specimens and Kinahan notes the small-scale and non-commercial nature of their experiments.

Pugin’s patron, the 9th earl of Dunraven, who studied astronomy at Trinity College Dublin with William Rowan Hamilton, shared his parents’ geological enthusiasm. In 1843, he wrote to the soon-to-be director of the Geological Survey in London, Sir Henry De la Beche, expressing his pleasure at his impending visit to Dunraven Castle. A long-standing correspondence with the distinguished scientist Edward Sabine includes the aforementioned letter from the Penrhyn slate quarries written by Sabine in 1835 to inform Lord Adare of its comparison to the Valentia slate quarry. The Dunravens were strong supporters of the rival Killaloe slate quarries and owned extensive lands in a slate-rich region of Wales. The extent (four pages) and seriousness of Sabine’s letter suggest more than an academic interest in the subject. Clearly Adare and Sabine had visited the Valentia quarry together. Later, in 1838, Adare and his wife would spend two months on Valentia. Sabine was at pains to point up comparisons and contrasts and to comment on the relative proportion of high quality slate at each location, noting the extent of intractable ‘green tough rock’ lamented by the workmen at both sites. The knight of Kerry was also preoccupied by these seams of green stone and wrote to Alexander Nimmo for his opinion on its potential value.

The Dunraven Papers and contemporary newspapers attest to a lively public interest in geology in the cities of Limerick and Cork. The Dunravens attended public lectures in Limerick by the geographer and geologist William Francis Ainsworth. The earliest known public display of marbles in provincial Ireland is recorded in Limerick in 1842 when the sculptor and marble mason William Manderson presented to the museum of the Philosophical and Literary Society a ‘handsome case’ containing ‘specimens of marble from 16 counties’ ‘beautifully polished’. Manderson also presented objects of Irish marble to the Museum

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of Economic Geology in London, and together with the Limerick engineer Joseph Long sent displays of polished Irish marble to the Great Exhibition of 1851. Sir Thomas Deane, evidently a geological enthusiast, lent to the National Exhibition at Cork in 1852 a case of ‘fossils from the mountain limestones of Ireland’. Fourteen miles upstream of Limerick at the southern end of Lough Derg lies the picturesque town of Killaloe, the shipping point for the Killaloe slate quarry, which also played a key role in the narrative of Irish Victorian polychromy. Killaloe was the headquarters of the Shannon Steam Navigation Company as well as the site of Killaloe Marble Works (fig. 1.14), managed from c.1840 by William Manderson. Charles Wye Williams lived for a period at Castle Connell, a short distance south of Killaloe. Then, as now, the town was a popular yachting venue, an activity strongly promoted by the Navigation Company. In 1839 ‘sites for cottages, beautifully situated, commanding a view of the lake’ were advertised with plans of the properties by ‘Messrs Pain’. James and George Richard Pain were then the leading architects in the Limerick region.

James Pain was based in Limerick where he was employed in various projects, including bridges, for the Shannon Navigation Company which brought him into contact with the chief engineers of the region. He was employed by Lord Dunraven at Adare during the 1830s and knew both the knight of Kerry and Alexander Nimmo.

Pain’s apprenticeship in London may provide the key to William Manderson’s appearance in Killaloe. Pain trained in the London office of the Prince Regent’s architect, John Nash, and came to Ireland about 1812 to supervise the building of Nash’s design for Lough Cutra in Co. Galway. He settled in Limerick and his brother and design partner, George Richard, married and lived in Cork until his untimely death in 1838. Nash provides the common denominator between the Pain brothers and William Manderson as Manderson’s father, with whom he worked, was among Nash’s principal craftsmen on the royal buildings including Buckingham Palace and Carlton House. This was no mean achievement as Nash sought high standards in materials and craftsmanship for his interiors in which polished marble was extensively used. Manderson senior was also employed in dismantling the valuable stone fittings at Carlton House, many of which found their way to Windsor Castle. Pain may well have been the conduit by which Wye

Williams came to appoint Manderson as his under-tenant at Killaloe. Though no records of its impetus are forthcoming, the establishment of Wye Williams marble works was undoubtedly informed by the knowledge of quarries and stone-cutting gained by Alexander Nimmo and his fellow engineers during their prospecting for the Hibernian Mining Company. In 1824, the company secretary considered the best mode of working the Connemara marble ‘would be to erect a sawing mill at the quarry and export the marble in slab’. Gregory also noted that D’Arcy had shipped specimens to Liverpool and made reference to Sir James Jelf’s patent of 1822 for sawing and polishing marble. The patent for sawing ‘jams, mantles, for chimneypieces, and other purposes’ was described as ‘a fixed frame, on which the block, or blocks, are laid and secured, and of a sliding frame, to which the cutting tool is attached. This cutting-tool is a plate of metal, formed with grooves and elevations, which, by repeatedly traversing to and fro with the aid of sand and water, grinds the surface of the marble slab to the form of the cutter’. At Killaloe in 1838, Lady Chatterton noted blocks of Irish and European coloured marble, found the machinery ‘very curious’, and described a series of eight saws simultaneously dividing a block of marble into slabs, the gain being in terms of number rather than speed of execution. William Manderson appears to have taken over the Killaloe marble works in the year after Lady Chatterton’s visit and received plaudits during the 1840s for his increased employment of the local population.

This was precisely the moment when the young Benjamin Woodward, then 24 years old, was employed as a novice engineer on the Shannon navigation, by the engineer William Stokes who was engaged in bridge design from the mid-1830s. In 1842, Stokes published a guide to the Shannon and Lough Derg dedicated to, among others, Charles Wye Williams. Woodward was certainly resident there in August 1842 when his future client and collaborator Henry Wentworth Acland mentioned leaving ‘the Shannon and Mr Woodward next week’. As Frederick O’Dwyer has shown, Woodward’s introduction to architecture was achieved through antiquarianism and measured surveys of medieval buildings. An apprentice of Alexander Nimmo also had artistic ambitions and was recorded by William Rowan Hamilton as ‘an artist’ who ‘draws, paints, models etc’. A collection of drawings related to Woodward’s autograph survey of Holy Cross contains a number of undated survey drawings of buildings on islands in the Shannon, including Friar’s Island at Killaloe (fig. 2.9), observed fleetingly by Lady

Woodward appears to have had an interest in the process of stone-cutting: in 1851 the engineer and inventor Bewick Blackburn, then manager of the Valentia Slate Company, sent to the Great Exhibition 'a roof ridge carved in slate by machinery designed by Benjamin Woodward Esq., Architect'. A visitor to the Valentia Slate Yard in 1852 observed a boy cutting segments from 'a great piece that we could make nothing of without explanation. It had large round holes cut out, as if with a monstrous cheese-taster, the slab being an inch thick: … It was for the ridge of a house: and in a moment we saw that the pattern was like that of many barge-boards of ornamented cottages'.

Unfortunately, the records of Manderson’s marble works do not survive and other than the Trinity Board’s dissatisfaction with the jointing of the columns
in the Museum Building, we have no record of the problems he encountered in achieving Deane and Woodward’s exemplary interior. However, something of his experience is communicated by the remarkable documentary record of a Belfast marble manufactory from the 1870s, the firm of John Robinson and Son, which, like that of William Manderson, dealt principally in headstones but supplied all manner of other marble fittings from monumental baths to columns and pavements, delivered by cart, train or steamship throughout Ireland and England.67 Though Robinson worked chiefly for Ulster architects, he also took Dublin orders and in June 1877 received a request from Sibthorpes to execute a monument in Armagh limestone, possibly the brown and purple variegated stone used in the Museum Building (fig. 2.1). While eager to take up the commission Robinson explained that ‘altho [sic] we work the Armagh limestone a little we could not undertake to estimate for this work in that material. there would not

67 PRONI D1386, Papers of John Robinson & Son, The Ulster Granite, Marble and Stoneworks Ltd, 1873–1928.
be the slightest chance of getting stones half the size of some required and the stone is very bad and full of joints etc, we had a small job of £150 in it sometime ago for Mr Lynn and lost heavily after a delay of 18 months for some stones not 15 cubits as the quarries are only worked for limeburning we think it would be useless to estimate ...”68 In the following year Robinson replied to the request of London sculptor Thomas Woolner explaining that Irish green marble of ‘a really good quality is very scarce at present’ and offering ‘choice Cork red’ as a cheaper option.69 What is perhaps most striking in Robinson’s records is the high cost of Irish ‘marble’ by comparison to Italian competitors. In a list of prices for marble chimneypieces in 1877 ‘Sicilian’ marble ‘cost 5% extra if made of first quality vein ... in best Galway Black Marble 10% more than Sicilian and 5% more than vein. Italian dove coloured marble same prices as Galway Black’. Columns

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68 PRONI D1386/1/4, Letter book 1877–9, ff 96–7. 69 Ibid., f. 792.
were dearer again, 15% extra for ‘Cork red’ and 30% extra for ‘Galway green with shafts in two or three stones . . .’70 These high prices, corroborated by accounts of the 1870s for the vigorously polychrome Cahermoyle House in Co. Limerick, clearly demonstrate the exemplary standard set by the Museum Building.71

70 Ibid., f. 197. 71 TCD MS 4305, Edward O’Brien of Cahermoyle (sic), County Limerick, papers regarding building, decorating etc of Cahermoyle House.
Deane and Woodward’s Museum Building is the first instance of the structural use of Connemara green and Cork red and as such was the catalyst to widespread employment of these materials in Ireland, Britain and beyond. The earliest impact is evident in University Church in Dublin designed by John Hungerford Pollen in 1855 for John Henry Newman in which shafts of coloured stone support the gallery, pulpit and choir and pilasters punctuate the marble revetment of the nave (fig. 2.10). From 1859, the younger Pugin used Cork and Galway together in the Church of Saints Peter and Paul in Cork (fig. 2.11), and together with George Ashlin in the Church of Saints Augustine and John in Dublin, begun in 1863 (fig. 2.12). Here shafts of Veronese-like Cork red add to the promiscuous eclecticism of a building dependent on French and British Gothic models.\textsuperscript{72} In 1876, James Joseph McCarthy designed Cahermoyle House in Co. Limerick for Edward O’Brien who had been a student and resident at Trinity College, during construction of the Museum Building.\textsuperscript{73} Cahermoyle is a round-arched design

\textsuperscript{72} I am grateful to Frank Keohane for identification of various sites in Co. Cork.  \textsuperscript{73} Gearoid Hayes, ‘Cahermoyle House, Co. Limerick’ (MPhil project essay, Department of History of Art & Architecture, TCD, 2017).
complete with an arcaded double-height court in local red limestone with Caen stone walls and capitals. Though McCarthy is best known as the Irish Pugin, from the late 1850s he produced a number of projects in the Italian Romanesque manner including the neo-Pisan Cathedral of the Assumption at Thurles in Co. Tipperary, built from 1865 to 1872 for Patrick Leahy, archbishop of Cashel. Here McCarthy supported the nave arcade on shafts of Cork red and the sanctuary ambulatory on shafts of Galway green, Kilkenny black and white Carrara marble (fig. 2.14). The structural polychromy was spectacularly echoed in a monumental tabernacle salvaged from the Gesù in Rome when a new neoclassical tabernacle was installed there (1841–3) (fig. 2.13). This was acquired on Leahy’s behalf by the well-connected Tobias Kirby, a friend of Pope Leo XIII and rector of the Irish College at Rome. A domed octagon with a columnar pedimented frontispiece is richly inlaid with coloured marbles with bronze and brass fittings and details including shafts of verde antico framing a brass monogrammed door panel. Originally set against the high altar, the back of Giacomo della Porta’s design was of plain tufa. To accommodate the view from McCarthy’s ambulatory a matching columnar façade was crafted by a Roman marmista named Filippo Leopardi who, reportedly, substituted ‘Galway green’ for verde antico. This seems to have been a fiction intended perhaps to appease a vociferous local criticism of Leahy’s foreign acquisition on account of the ‘injury’ to native artists. McCarthy’s use of polychromy in the Thurles ambulatory is echoed and amplified in a project by James Franklin Fuller for the estate chapel of Kylemore Abbey in Co. Galway (1878–81) in which much effort was invested in displaying the gamut of green, red and black Irish stone throughout the entire body of the church (fig. 2.15). Among the most spectacular examples of native polychrome stone in the period, Fuller was most likely following William Burges’s chancel design at the Church of Christ the Consoler at Skelton-cum-Newby in Yorkshire in 1871 in which banded polychrome colonettes of Galway green and Cork red were employed. Burges had developed an understanding of Irish marbles during his work on St Fin Barre’s Cathedral in Cork city in the 1860s. Here the architect’s desire to use native coloured stone, in this case exterior banding and columns of red sandstone, was thwarted by a conservative building committee, an encounter that serves to point up the radical character of the Museum Building commission more than a decade earlier. Burges marshalled a group of English architects to support his case for the use of coloured stone including George Gilbert Scott,

74 Irish Builder, 29 (1 Sept. 1877), 254. 75 Joseph Danel Cahill Mascheck, ‘The original high altar tabernacle of the Gesù rediscovered’, The Burlington Magazine, 112:803 (Feb. 1970), 110–13. 76 Irish Architectural Archive, Patterson, Kempster, Shortall, quantity surveyors, Bo6/6, Bo7/6, Bo8/7, Bo9/4, Bo10/5, A06, ‘Memorial Church at Kylemore County Galway’.
John Raphael Brandon, James Piers St Aubyn, Benjamin Ferrey and J. Hayter Lewis, ‘professor of architecture to London University’. 77 Scott considered the red sandstone ‘just the thing it requires to warm up its otherwise too cold tone of colour’ while Ferrey proclaimed the sandstone ‘absolutely necessary to impart an agreeable colour to large masses of monotonous white stone’. Ruskin’s disdain for the ‘streaky bacon’ of roguish structural polychromy was apparently shared by a majority of the building committee who objected to ‘all external colour’ and Burges had to be content with the use of polished marble columns and fittings for the sanctuary (fig. 2.16). 78 While the marble halls of the Museum Building

were at the cutting edge of contemporary polychromy, the traditional granite and Portland envelope of the building with its discrete polychrome roundels reflects a conservatism in the use of external structural polychromy in Irish architecture. Wall veils of blue limestone, red sandstone, Portland stone or granite discretely ornamented with colour were far more common than the vigorous banding and quoining of Butterfield et al.

The use of Cork and Limerick red for the shafts of nave arcades became increasingly common in the 1860s. In the affluent Dublin suburbs of the Pembroke estate a number of prominent buildings employed the newly fashionable, mottled red stone including Pugin’s and Ashlin’s Church of the Sacred Heart at Donnybrook of 1863–6 and Thomas Henry Wyatt’s St Bartholomew’s, Clyde Road of 1864–7. Wyatt solved the short-block problem by employing moulded bands of Bath stone on the structural columns in the manner of Early English colonettes. Many provincial examples include Pugin’s and Ashlin’s Church of the Holy Cross at Tralee in Co. Kerry of 1866–71 and J.J. McCarthy’s Church of St Mary at Rathkeale in Co. Limerick of 1866–73. From the 1880s, the principal competitors in Britain of the Cork and Limerick quarries in the provision of red stone were the Devonshire limestones⁷⁹ and the Peterhead granite from Aberdeenshire. The latter had several advantages over the polished limestones, not least its availability in large blocks for monolithic shafts, an ability to take a high and enduring polish, durability on the exterior of buildings and cheaper costs due to economies of scale, partly through the employment of prison inmates in some quarries in the district.⁸⁰ Nevertheless, clients continued to employ more costly and problematic native materials culminating in the great swan song of Victorian ecclesiastical architecture, St Colman’s Cathedral at Cobh in Co. Cork built from 1875 to 1902. Here two varieties of Cork red were employed in conjunction with Galway green: Midleton red for the columns of the nave and the more rarely used grey and red conglomerate from the same locality in the framing of the confessional boxes (fig. 1.12). In Britain, Cork red was used in numerous buildings, including the Foreign and Commonwealth Office, London, and Westminster Cathedral, while Connemara was widely used in Britain and in the United States.⁸¹

⁷⁹ An early and dynamic use of Devonshire marble was that by Butterfield in 1874 at All Saints Church, Babbacombe in Torquay where the structural columns of the nave are of drums of five different marbles; see G.M. Walkden, ‘Devonshire marbles – the greatest British decorative stones?’, Geology Today, 32 (2016), 135–42.
By 1880 the cross-party and ecumenical economic patriotism of the past had been overtaken by a burgeoning nationalist politics that affected most aspects of cultural production including the choice of building stone. Two successive and highly-charged competitions for the National Museum and Library of Ireland complex on Kildare Street resulted in the appointment in 1884 of Thomas Newenham Deane & Son and stimulated public interest in the employment of native stone.82 The ill-judged use of Mountcharles sandstone from Donegal for the façades proved to be as problematic as the employment of Anston stone at Westminster.83 Inside the entrance rotunda and rear vestibule and stairhall of the museum, Deane and Son returned to the encyclopaedic use of Irish ‘marble’ columns pioneered three decades earlier at the Museum Building of Trinity College (fig. 2.1) and augmented these with a number of Italian varieties. By the time that Cobh Cathedral was completed in 1902 debate about the use of native stone had moved on from the ill-assessed use of Mountcharles sandstone from Donegal for the façades.


2.17 Cork red limestone and Connemara marble in the GPO (General Post Office), Dublin, rebuilt 1924–9.
stone had become heated and there was high criticism of the extravagant use of Portland stone in the new Royal College of Science (1904–11) executed by Thomas Manly Deane to the designs of Aston Webb. The grand-scale employment of native Stradbally limestone in R.M. Butler’s University College on Earlsfort Terrace (1912–19) seems as much a case of politics as economy. By the time of its completion Irish politics had ‘changed utterly’ and in the post-revolutionary reconstruction of the General Post Office, the Custom House and the Four Courts the use of native stone was imperative. In the GPO (fig. 2.17), pilasters of Connemara marble and counter fronts of Cork red lend to the reconstructed rebellion site the atmosphere of a grand and luxurious hotel lobby. Now used for cladding, the once-politicized native limestones would soon be supplanted as a structural material by concrete and marginalized as a relic of imperialism by modernism. In the commemorative site of national revolution the radical and patriotic polychromy of mid-Victorian Ireland had reached its zenith.

85 Casey, Dublin, pp 145–6.