

The Geological Story of Leinster Coal



Coal Measures and Ice Ages

Every visitor to the Burren is struck by the way the landscape is sculpted into a series of gigantic terraces: a Brobdingnagian stairway of nine great steps and a larger number of intermediate ones. The major terraces – which are found wherever the Lower Carboniferous limestone occurs, not just here in the Burren – are separated by what old quarrymen used to call Clay Wayboards (Figure 1): a thin shale between the major limestone terraces representing a prolonged period during which the sea had retreated and estuarine conditions prevailed. Sometimes you can even see fossil rootlets in the shale. But it is only with the advance of Plate Tectonic theory in recent decades, and in particular our ever-increasing ability to reconstruct palaeogeographies, that we have come to understand why there was this regular oscillation in global sea level. It was because of repeated glaciation in Gondwana, the great southern supercontinent which at this time straddled the South Pole. I find it fascinating to reflect that the terracing which is such a defining feature of the Burren is directly due to the pulse of an astronomical heartbeat to which the earth was responding 330 million years ago, as it drifted into and out of a series of Ice Ages.

And this did not end with the ending of the Lower Carboniferous. The rocks of the succeeding Upper Carboniferous comprise a series of cyclothem, a regularly repeating

sequence of rocks that again record a succession of global rises and falls in sea level. When sea level was high marine or deltaic sediments were laid down, but as they fell these were succeeded by the steamy coastal swamps in which grew the luxurious tropical vegetation whose accumulated remains were compressed in the vice of succeeding geological ages to produce coal. This fossil fuel powered the Industrial Revolution, in the process returning to the atmosphere the vast quantities of CO₂ that had been sequestered and locked away for hundreds of millions of years.

The thickness of the various components of the cyclothem varied with local geographical and ecological circumstances, and this of course determined which parts of Europe were endowed with the fossil fuel that made it possible for any particular place to become a focal point for industrial development once that Revolution got into its stride. And – unfortunately or otherwise – in only a few places were the coal seams in the cyclothem that had been laid down in Ireland of any great thickness.

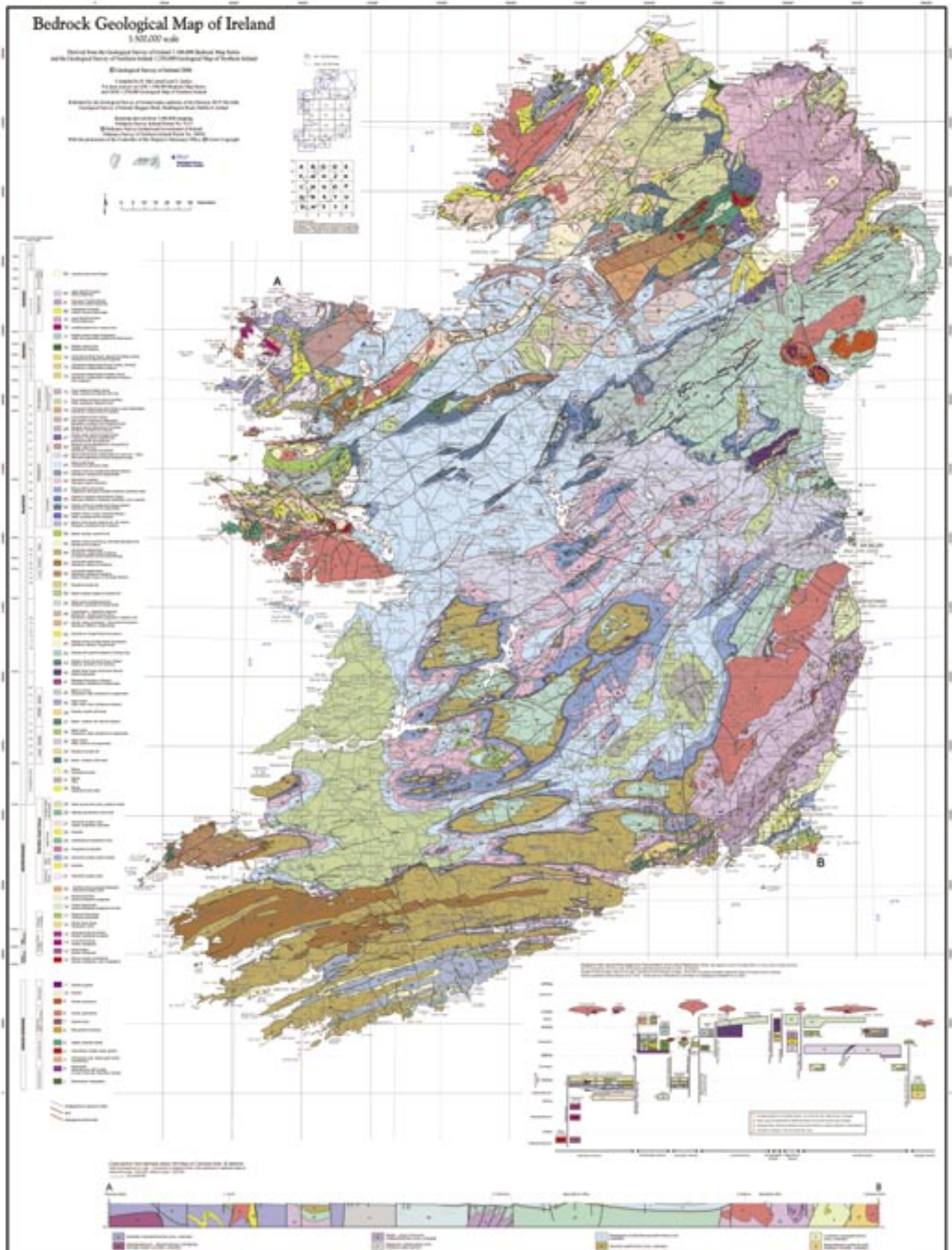
The Human Story of the Leinster Coalfield

The largest area over which the Coal Measures outcrop in Ireland is the uplands of north Kilkenny, south Laois and north-east Tipperary – an area very loosely referred to as the Castlecomer Plateau (Figure 2). And as is the

case with any area where the rocks have been mined or quarried, the human story of their exploitation is another aspect of the fascination of geology.

Underground coal was discovered in the Castlecomer Plateau area in the early 18th century – by accident. Sir Christopher Wandesford had been mining iron for a considerable time before this, and the time came when “by degrees they were gone deeper, at last in lieu of ore they met with sea coal. ... There be enough in this mine for to furnish a whole country.” Well, it didn’t work out quite that way; the first seam discovered, the so-called Three Foot Coal, turned out to be the most important one, and had been nearly worked out by the time Richard Griffith wrote his detailed account of the Leinster Coalfield in 1814. Griffith’s account painted a picture of a very bleak landscape indeed: “wild and dreary, the greater part being uncultivated, and nearly uninhabited.” The presence of coal had been known to local people long before this. Bits of coal were to be found lying all over the place, and the local blacksmiths used to come and gather these long before the mine was discovered.

The mining methods employed were grossly inefficient, but because they were labour intensive and highly profitable to the influential coal middlemen they were able to remain in use until the industry began to decline. Pits were dug twenty or thirty metres apart at the surface, giving the landscape the appearance of a shell-blasted battlefield, and making for appalling working conditions, particularly in winter. Each pit was then worked by a team of thirty to fifty men, who could raise perhaps twenty or thirty barrels of coal to the surface in a day. These pits varied in depth between twenty and fifty metres, and might run for sixty to eighty metres underground, leaving coal pillars at intervals to support the roof. The working life of a pit was usually between six months and a year, and it could take nearly as long as this to sink in the first place. While it was in operation the mine had to be worked continuously to prevent flooding, so the men worked round the clock in ten-hour shifts by candlelight, winter and summer, in all weathers. Since there were no steam engines in most of the collieries to raise the water, it had to be bucketed up with a windlass. The rope to the windlass was the miners’ lifeline; if it broke and was not quickly >>



replaced, as sometimes happened, the miners underground faced death by drowning.

The miners lived under appalling conditions, and violence was a part of everyday life. They lived in sod-built huts for the most part, with stones on the roof to keep it from being blown away in the harsh winds of these hills. Their food was wheaten bread, but most of their money seems to have been spent on whiskey. In appearance they were wretchedly clad and filthy, such of their children as survived to an age of awareness running naked about them. Few of the men survived to fifty years of age, consumption of the lungs claiming most of them long before this.

For working under these appalling conditions the men received a wage that was several times that paid to agricultural labourers. There were 1,200 or so men at work in the mines in the early 19th century, and they were receiving 1/8d to 2/2d in 1814, four times the wage of a farm worker. Later in the century, when the number of miners had grown to four thousand or so, they could earn up to 3/5d a day, at a time when day labourers were getting 10d.

Every attempt to change their inefficient working methods was fiercely resisted by the colliers, because this would weaken the influence of the middlemen – the so-called “Master Colliers” – and lead to redundancy among the workers: and the only alternative to work in the mines at the time was, for the great majority, destitution. An attempt was made about 1830 to break the hold of the Master Colliers. Miners were brought in from the Durham coalfield, and the Contract System – whereby pits were leased to the middlemen, who then engaged teams of labourers to raise the coal at great profit to their masters – declined. Improved ventilation methods and deeper pits were introduced, and a general pattern of rationalisation and retrenchment began to take affect.

Transport costs were so high that Leinster coal found it difficult to compete in Dublin with British coal. In 1802 you could buy some kinds of Welsh coal in Dublin for 3/- a ton, whereas Leinster coal was £1 a ton: but the Irish coal was anthracite, whereas the British coal was bituminous. It was mainly used for malting, and the soft coal or culm, which sold for about a quarter of the price of anthracite, for the burning of lime and brick-making. The hard Leinster coal was not generally suitable for domestic use, but because stone coal was so dear, and turf so scarce in the plateau area, an excellent substitute was made by mixing powdered culm with a quarter part clay or mould, and squeezing the mixture into balls three inches (7.5cm) in diameter. These were put on the fire wet, and they burned extremely well, making a more lively and pleasant fire than ordinary coal. (Michael Conry wrote a fascinating account of the stone crushers used to make culm powder in the 2006 issue of Extractive Industry Ireland).

Coal production was declining in the decade before the famine. By 1845 the workforce in the Laois end of the coalfield was down to 700 or so, and the number of working pits to four. The workmen at this late period were still known for their “irregular and inconsiderate habits ... and the district is frequently disturbed by broils and tumults, so that police stations are thickly distributed throughout this portion of the county.”

The mining of Leinster coal is a thing of the past. The plateau area is again a wild and wonderful place, though no longer the “nearly uninhabited” area of Griffith’s time. But the story is still there in the landscape, waiting to be unearthed and packaged as an element in rural tourism – the newest strand in the multifaceted resource that is geology. ■

**John Feehan
MA, MSc, PhD
Brief CV**



John Feehan is a senior lecturer in the School of Biology and Environmental Science at University College Dublin, where much of his research and teaching centres on environmental heritage evaluation and management. A geologist by profession, Dr Feehan is a recipient of the Annual Environmental Merit Award of the Chartered Institution of Water and Environmental Management, and of a special award from Bord na Móna for his work in communicating environmental values. He is a regular contributor on matters relating to environmental heritage to Sceal na Móna, Bord na Móna’s in-house magazine. He played a key role in the establishment of the Community Bogland Reserve at Killaun, County Offaly, opened by President Robinson in 1992.

Dr Feehan is well known in Ireland for his television work on the natural and cultural heritage of the Irish landscape, for which he received a Jacobs Television Award. He has researched and written extensively on many facets of Ireland’s environmental heritage and history, recently co-authoring the definitive textbook on Ireland’s peatlands. His recent History of Farming in Ireland has been widely acclaimed. Dr Feehan lectures on Environmental Interpretation at both undergraduate and postgraduate level on the Landscape Architecture programmes at UCD, and also contributes to the masters’ programme in Ecology and Religion at Dalgan Park. He has written the Offaly Biodiversity Strategy on behalf of Offaly County Council, and is currently compiling an inventory of the county’s significant geological sites with Donal Daly of the Geological Survey.

He has been the author to many publications to numerous to list in the space available.

Important Announcement -

IMQS Moves Address

The Irish Mining & Quarrying Society has recently moved headquarters from Waterloo Road to an office in the UCD School of Geological Sciences. All correspondence should be sent clearly marked for the attention of the Society to:-

Irish Mining & Quarrying Society
UCD School of Geological Sciences
University College Dublin
Belfield, Dublin 4, Ireland
Tel: +353 1 7162085 Fax: +353 1 2837733
Email: info@imqs.ie www.imqs.ie

