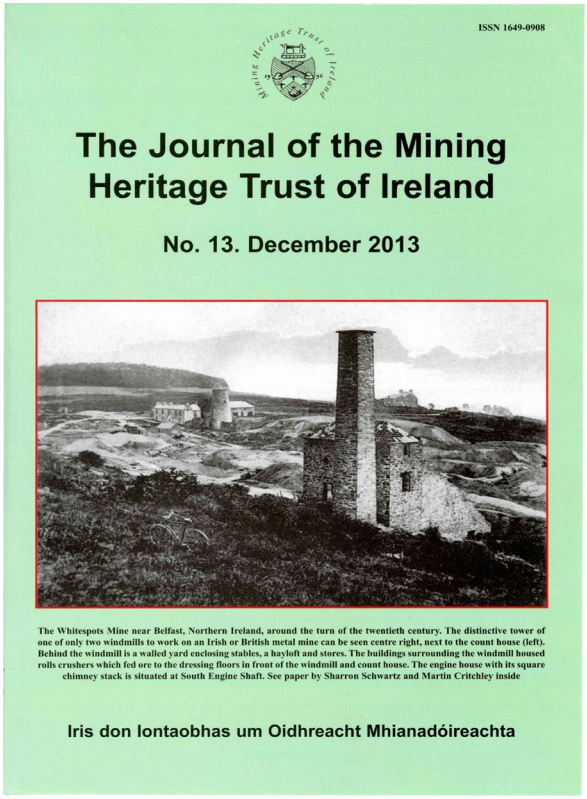


Schwartz, S. P., Critchley, M. F. (2013) 'A history of the Silver-Lead Mines of County Down, Northern Ireland' *Journal of the Mining Heritage Trust of Ireland,* **13***,* pp. 23-95

A HISTORY OF THE SILVER-LEAD MINES OF COUNTY DOWN, NORTHERN IRELAND

Sharron P. Schwartz and Martin F. Critchley

Abstract: County Down in the north east of the province of Northern Ireland does not immediately spring to mind as being within a metalliferous mining region of any note, but a number of workings for argentiferous galena occurred in a main lode and minor extension structures that penetrate the Silurian slates and sandstones. Records show mining activity from at least the turn of the eighteenth century. The Newtownards Mines at Conlig and Whitespots were the most successful lead producers, working the only major lode in County Down and in the decade 1848-1858, the Whitespots Mine accounted for almost 40 percent of all lead produced in Ireland. Moreover, located close to the rapidly industrialising Belfast region, these mines were locked early on into an extra-regional economy, utilising steam engine technology and attracting investment from Manx and English capitalists, employing skilled migrants from across the Irish Sea and exporting large quantities of lead ore. Making use of new documentary evidence, this article builds on, and revises, an earlier account of the Newtownards Mines by Andrew Woodrow in 1978 and presents an account of several smaller, short-lived enterprises, at Ballydargan, Dundrum, Rathmullen, Tullyratty and Castleward. *Journal of the Mining Heritage Trust of Ireland, 13, 2013, 23-95.*

GEOLOGY

The geology of County Down is story of the development of two great oceans almost 400M years apart. One was the Iapetus, which split the northern part of Ireland from the southern part and closed during the Ordovician to Silurian periods (460M - 420M years ago). The second is the modern day Atlantic Ocean which started to form about 56m years ago as North America split from Europe. Metamorphosed sediments relating to the first ocean (Iapetus) form the underlying bedrocks of most of County Down and these have been intruded by two sets of volcanic and igneous rocks during the final phase of the closure of the Iapetus and the opening of the Atlantic. Between these two great geological events there were a number of tectonic events which shaped the geology of the county. The Hercynian Orogeny in the middle to late Carboniferous period (340-290Ma) was caused by the jostling of numerous micro plates in Europe. In Ireland much of the lead-zinc mineralisation is associated with this tectonic event. Another tectonic event was rift development prior to the development of the Atlantic Ocean during the Triassic period (240Ma) and a small fault bounded block of rocks from this event form the northern end of Strangford Lough.

The rocks from the Iapetus Ocean are part of the larger Southern Uplands-Down-Longford terrane which stretches SW into Co. Monaghan and NE into Southern Scotland. The terrane is an accretionary prism of Ordovician and Silurian turbidite sequences comprising greywacke, sandstone, siltstone and mudstone. The rocks are the lithified ancestors of the sediments which were deposited in the Iapetus Ocean. Closure of the ocean during the Silurian due to northwestward subduction of the oceanic plate, resulted in the Caledonian Orgeny.

Following the Caledonian Orogeny, in the late Devonian and Carboniferous periods, the Down region was the site of the deposition of arenaceous and calcareous sediments in tropical sea basins. Nothing remains of these sediments (except a very small exposure of Carboniferous limestone on the northern shores of Strangford Lough) due to subsequent erosion. Towards the end of the Carboniferous and during the early Permian period, plate tectonic activity to the south of Ireland during the Hercynian Orogeny subjected the area to WNW compression. This compression resulted in reactivation of the old Caledonian faults.

During the Palaeogene period (66-23Ma) there was extensive volcanic activity associated with the opening of the Atlantic Ocean giving rise to the enormous flood basalts of the Antrim coast and the Giant's Causeway. In County Down there are no flood basalts, but an extensive series of dykes (mainly striking NNW-SSE) and a sill (horizontal) intrusion forming Scrabo Hill. At Newtownards one of these dykes has been emplaced along the fracture of the mineral vein but some 300M years after the emplacement of the minerals. Also associated with this event was the intrusion of the Mourne Mountains Complex in the southern part of the county, comprised of five

intrusive phases of granites. There are no known economic mineral deposits associated with the Mourne Granite, however, the source of alluvial gold found in streams draining the intrusive complex is still elusive (GSNI 2008).

The dominant economic metal mined in County Down was lead and associated silver which occurs as veins in the Ordovician and Silurian rocks. There are no known economic mineral deposits associated with the Caledonian Orogeny in the county, however, extensive gold anomalies occurring in proximity to the Orlock Bridge Fault have been identified in soils and stream sediments east of Belfast in the Holywood and Newtownards areas and gold exploration programmes are targeting these faults as conduits for mineralising fluids. Further west along the same structure, potential economic gold mineralisation has been found near Clay Lake in South Armagh.

The most important lead deposit is just north of Newtownards and occurs along an exposed escarpment running through the townlands of Whitespots and Conlig in the Barony of Ards Lower. Here the mineralisation is associated with a N6°W-oriented breccia zone comprising fragmented country rocks of Silurian greywacke and shale. This fault does not match the typical 015 degree orientation of Caledonian faults and Russell and Haszeldine (1992) regard the vein as one expression of a notional 'geofracture' (vertical mega-joint through the crust) one of four they claim to have identified in Ireland. However, this hypothesis is not accepted by many geologists. Galena is the main metallic mineral at Newtownards with minor sphalerite and chalcopyrite; silver is present in minor amounts as isomorphic silver sulphide (argentite). The gangue is mostly baryte and dolomite although pre-mineralisation chalcedony and post-mineralisation calcite are also present (Moles and Nawaz 1996). Based upon Pb isotope data from Conlig galena, Griffith and Wilson (1982) give ages of 350 Ma (Hercynian) to the mineralisation. Sulphur isotope values from Newtownards sulphides and baryte (Parnell 1995) are similar to values from sulphides and baryte in vein-hosted mineralisation of presumed Carboniferous age elsewhere in the British Isles (Pattrick and Russell 1989).

One unusual aspect of the Newtownards vein is its post mineralisation intrusion by a dolerite dyke during the Palaeogene period. There is no economic mineralisation associated with the dyke but Harmotome, a rare barium zeolite mineral, has been found within it (Moles and Nawaz 1996). Minor lead deposits, such as Dundrum, Tullyratty and Castleward do not appear to have clearly defined vein structures. Workings at these mines ran NE-SW along the strike of the rocks and the mineralisation may be little more than tensional openings in the cleavage or boudinage (extension) structures and hence of limited extent, which the nineteenth century operators would discover to their cost.

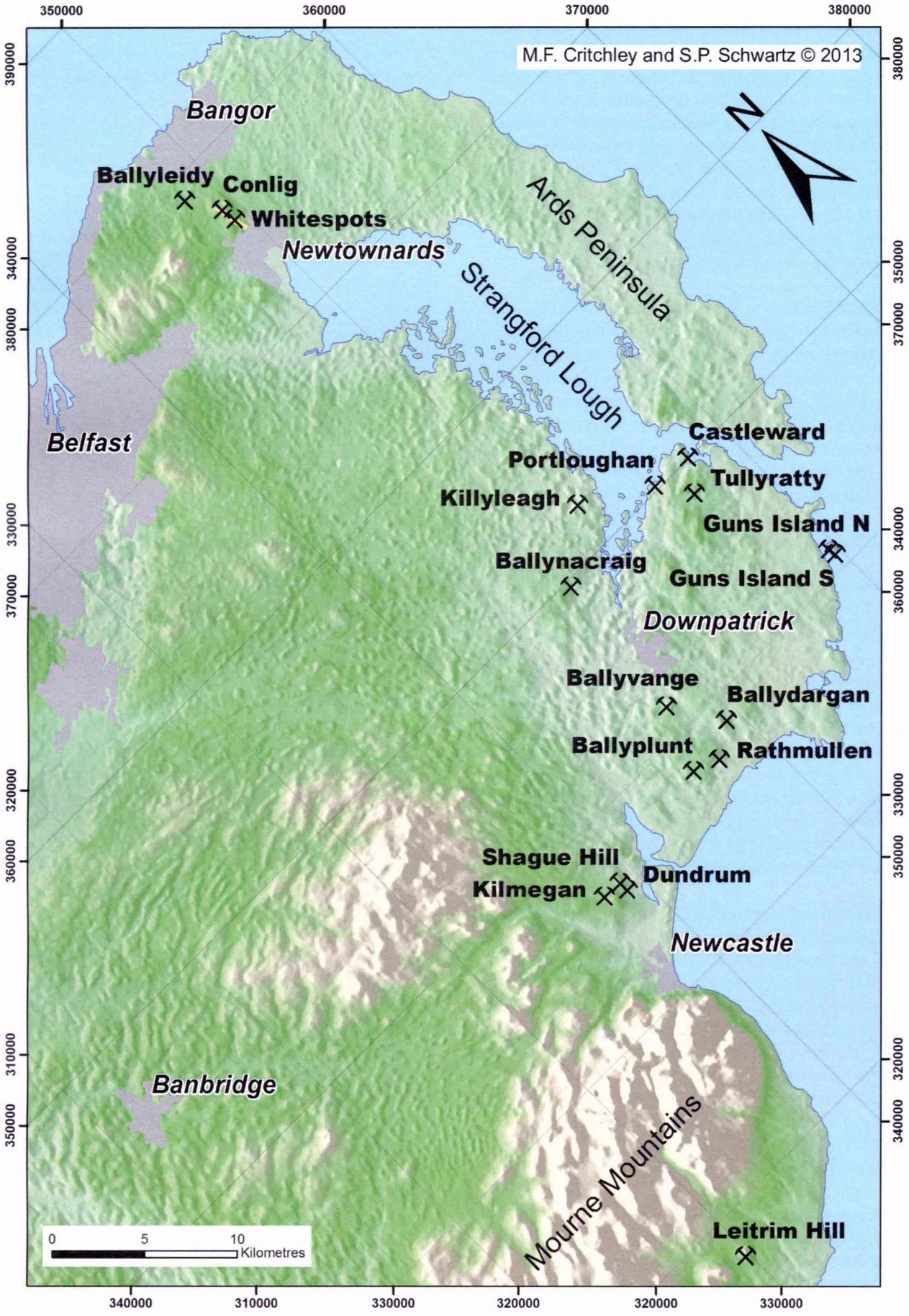
EARLY LEAD MINING IN DOWN

Lead mines have been wrought in County Down from at least the late seventeenth century and were probably opened well before this date by Plantation settlers seeking sources of silver, for, as Claughton and Rondelez (this journal, 5) note, 'the mineral resources of Ireland were in several cases explicitly named as one of the motives behind the Plantation efforts of the late sixteenth and early seventeenth century'. Indeed, in 1652, Dutch physician, Gerald Boate (1604-1650), referred to a very rich silver lead mine in Ulster, one of only three he states to have been found in Ireland and which yielded a pound of silver to every 30lbs pound of lead (Boate and Hartlib 1652, 141). This is equivalent to 1,500 ounces of silver per a ton of lead, a very high grade when the best silver producing lead mines in the nineteenth century typically only had grades of 10 to 20 ounces of silver per ton of lead. The mine he described as being in County Antrim. However, as he had not set foot in Ireland by the time he was compiling his *Natural History*, relying instead on second hand information about the country's mineral resources, and as no silver-lead mine has yet been located in Antrim, could it be that he was, in fact, referring to a mine situated in neighbouring County Down?

Of further interest is the fact that Rowland White, the son of Baron White of the Barony of Dufferin, located on the south west shore of Strangford Lough, County Down, which, down to the early sixteenth century was an outlying part of the Pale, was a keen promoter of mining. Apparently, he wrote three books on the subject (Hamilton 1860, 325) before he died of the plague in London in 1572, having made losses in mining which he had tried to recoup (Canny 1977, 441). This of course begs the question of where exactly he was actively involved in mining: was this in County Down, and if so, where? Perhaps is it no coincidence that the earliest reference to lead mining in County Down that we have uncovered is related to an account settled in July 1701 between the Reverend Hans Hamilton and his son, Sir James Hamilton (1559-1643) of Killyleagh and Bangor, the founding father of the Ulster-Scots, over arrears due 'on the deficiency of Ringhady' and includes a reference to the losses incurred 'by working in the Mines' (PRONI Ward Papers Ringhady). Killyleagh is situated in the Barony of Dufferin and Griffith noted in 1854 that lead mines had previously been exploited there (Morris 2001, 31).

An article published years later in the *Downpatrick Recorder* (1837) throws more light on the antiquity of lead mining in the Barony of Lecale. It mentions Ballydargan, which lay on the Ward's Estate, stating that for a short time, about 40-50 years before, 'some 30-40 tons of ore was raised' (DR 1837). However, a mine in Ballydargan townland was at work over half a century before the 1780s, as letters dating to the early 1720s from Magnus Prince of Killough to Judge Michael Ward of Castle Ward (1683-1759), then resident in Dublin, demonstrate. Killough, formerly known as St Anne's Port, was developed in the 1720s by Judge Ward (father of the first Lord Bangor), as the Wards did not own the more convenient ports of Ardglass or Strangford and thus developed Killough to serve their estates. Prince had inspected the Ballydargan Mine in March of 1724 and comments on the man Ward had selected to run the operation:

> I don't think it was possible for yow to have found any fitter for our purpose than this miner yow have sent. He is very modest, sober, diligent and even anxious to



Map 1. ***The approximate locations of the main lead mines and major trials of County Down, Northern Ireland***

> have the work go on and as careful as any of ourselves could be to prevent unnecessary expenses lest it should discourage us to go on. He has the pouder in his own keeping for I am convinced it could not be safer anywhere, but at the rate [he] goes on we will soon need more, for he has at least three and often four blasts a day, and two ounces at least to every blast that I can be sufficient judge of, for he does with cartridges of brown paper well pinched. Had I not been here they had been idle for a week for all their tackle was wrong but I went round and got materials for a new windlass and all other things necessary so that except one forenoon they have been constantly at work.

Prince asked Ward to send, at the first opportunity, 'half a hundredweight of the same pouder for it's very good, 40 yards of rope for the windlass made cable ways of 3 inches and ½ thickness'. The thing that was most urgently needed however, was 'a quarter of a hundred weight of blistered steel, and make some honest smith choose and try a piece of it in the fire'. The problem was sourcing high quality metal, Prince complaining that '... there's none here but is downright trash and that's our greatest hindrance at present'. He stated that it was safe to leave it with the miner (PRONI Ward Papers Killough). In May of 1726 he reported to Ward once more on the mine. It seems the want of iron had been remedied, with one 'Ja. Fettus' having told him it had been shipped:

> ... but youl do well to send a hundred weight of pouder with the first occasion to this port [Killough] or Portaferry for they have not at present much above a pound weight and Parkinson will make us pay a good rate for what we shall take from him'. I would also as soon as yow can have yow send a new rope not that it is gone but it is so saokt with water it will not last the time it would do by drying and taring it once a month. If yow take care of this I hope we shall want no more iron or ropes until we be at our wits end. Yow must also send some tarr about half a barrell with the rope.

Prince ended his letter by stating that as he would probably not have occasion to visit the mine at Ballydargan again that summer, and therefore hoped '... it would make yow the more mindfull of what I recommend to yow at present' (PRONI Ward Papers Killough). Obviously this mine was being quite rapidly developed via a vertical shaft and the length of the rope for the windlass, over 36 metres, suggests a quite substantial undertaking. The fact that the rope was noted to have been saturated with water suggests that the workings were very wet. The exact location of Ward's mine has been lost, Traill and Egan (1871) not noting it on OS field slips, suggesting that the shaft had been long in-filled.[1]

Other ancient workings noted in the newspaper report of 1837 are Ballyplunt on the estate of Sergeant Woulfe (the then Attorney General of Ireland) which 'was opened about 50 years ago' and also at Ballynacraig on the estate of J.W. Maxwell in the parish of Inch, that was 'wrought upwards of 50 years ago and abandoned', the deposit probably exhausted:

> Above a stone of the ore was dug out of the ruins of an old corn mill, on the south side of the Annacloy River, where, according to tradition, it had been deposited by the miners [of Ballynacraig] in the progress of their work, and while the mill was in a working state for the purpose of having it broken and washed.

Of greater antiquity were workings at Ballyvange crossroads 'on the Dublin road', which were said to have been 'partially opened from 50-100 years ago, but long neglected and the openings filled up', while those at Sheag [Shague] Hill above Dundrum 'were wrought at a very remote period' (DR 1837). Irish historian, Walter Harris (1686-1761), in his history of Down (first published in 1744), reveals more about the Dundrum workings:

> ... Lead Ore was found on the Lord Blundell's Estate, about half a mile west of Dundrum, among the rocky Grounds, a little under the surface. The Stratum over it was near three Feet thick, and consisted of a dry sulphurous kind of Matter, which seemed to be a Compound of Clay till, and Sulphur; the Ore was about a Foot thick in the middle of the Vein, till it was sunk about 18-20 Feet, and then it grew less, and so continued gradually to diminish till the Shaft was wrought about 60 Feet [over 18 m] in hard Rock, and then the Vein was not above two or three Inches thick. Upon this Discouragement it was dropped, after near 500*l.* was spent on it.[2] The Ore was discovered in several other Places of this Estate, which are believed to be sundry Branches spreading from a main Body of a Vein, which if discovered, might well reward the Labour and Charges; for the Ore upon Experiment afforded a Proportion of pure Lead... one Drachm from two Drachms ten Grains (Harris 1757, 189).

Harris also notes that below the quay at Killough 'parcels of a rich Lead Mine are found interspersed among the Rocks, between which also fine Veins of the same run'. However, the ore, '... extremely heavy, full of Sulphur and very bright' lay within 'the half tide', and therefore '... it cannot be wrought but to great disadvantage'. Thorough trials had, however, been conducted on this ore, probably by Judge Michael Ward, who owned the land. One sample was ground to a powder, put into a crucible and placed into a furnace 'which was kept red hot for some Hours'. Another sample of the same weight and material was mixed with an equal weight of potash and underwent the same experiment. The contents of the first crucible retained their same weight with no separation, but the contents of the second

1 The possible working identified by Traill and Egan in Ballydargan townland is a quarry in which galena was discovered while excavating stone to build nearby Oakley House (see below).

2 Based on labour or wage inflation, this sum would amount to around one million euro and is indicative of a very significant investment. The Blundell's acquired the Dundrum Estates in about 1627. The lead mining on Shague Hill occurred in the hundred years after the Cromwellian Conquest (1649–53) during the lifetime of either Sir Francis Blundell (1643-1707), or his son, Montague Blundell, 1st Viscount Blundell (1689-1756), who succeeded his father in the baronetcy in 1707. Montague made a lot of money from trading shares in the South Sea Company.

> ... sparkled greatly in the Fire, and separated the sulphur in foetid Scoriae at the Surface, and left in the bottom in weight two Drachms and ten Grains of pure Lead; so that above half appears to be Metal, which denominates it a rich Ore (Harris 1757, 188).

Over half a century later Donald Stewart noted the lead mine 'on the high hill above Dundrum Bay' which he stated had been wrought many years ago but had been neglected after the shaft had fallen in (1800, 62). The Reverend John Dubourdieu in his *Statistical Survey of the County of Down* (1802, 12-13) repeats Harris' information about the Dundrum mine and the showing of lead at Killough that he said remained unwrought. He adds that lead ore had been found at a number of other places in the half century that had passed, including several veins near Portaferry and two veins 'lately discovered on the estate of Lady Roden' in the townland of Ballydargan which he notes 'promise well'. Of greater interest is the information Stewart provides about a lead mine in the hill of Conlig, between Newtownards and Bangor, which was not mentioned by Harris. This, he states

> ... seems to have had the fairest trial of any mine in the county; many tons of lead were raised from it some years ago, and a considerable sum expended by the proprietors, and a company, who undertook it; but, after various attempts, it has for the present time been given up.

According to him, a vein of the same kind of ore had also been trialled on the Ballyleidy estate of Sir James Blackwood to the northwest of the mine workings sited in the townland of Whitespots.

Indeed, of all the areas in County Down to produce lead, the townland of Whitespots is undoubtedly the most famous. In 1776 metallic appearances were observed close to the highest part of the escarpment and adjacent to a small bog-lough which prompted the Lord of the Soil, Robert Stewart (1739 –1821), to institute a trial.[3] Unsurprisingly, given the success of contemporary Scottish lead mines and the reservoir of skilled labour that undoubtedly existed there, a Scotsman by the name of Moore was engaged as mine manager. He sank a shaft on the eastern side of the hill, eight fathoms deep and then drove west for 17 fathoms (about 31 metres) obtaining several tons of blue ore (galena) and green ore (pyromorphite). This operation seems to have been short-lived, retarded and finally abandoned due to 'the pressure of water' (NLI, Hibernian Mining Company Papers).

However, Robert Stewart did not give up on the idea of mining the Whitespots deposit and in 1780, on the advice of celebrated engineer, John Smeaton (1724-1792)[4], a mining company was formed to more effectively trial the lode. In addition, the company planned to inspect the adjacent townland of Conlig and also that of Ballyleidy to the north. In the latter townland, some lumps of ore had been turned up by the plough by James Armstrong in a field belonging to Sir John Blackwood. The mining company consisted of five partners including the representatives of some of the most powerful Ulster-Scots landed dynasties: Robert Stewart, within whose estate Whitespots lay; Robert Ward (1754-1831) of Castleward (a descendant of Sir James Hamilton)[5] who owned the adjacent townland of Conlig; Sir John Blackwood (1721-1799) of Ballyleidy House and Estate[6] and the Reverend James Hamilton Clewlow, the incumbent of the Bangor Abbey Church of Ireland from 1772 until his death[7]. The final partner was one James Millar Esq., noted to have been 'of Melville in the County of Mayo' who was included as he was obviously considered by the partners to be well versed in mining, but of his background we have been unable to discover anything definite (Registry of Deeds). A later transcription made from what was believed to have been his meticulously kept day-book (PRONI, Journal of the Bangor and Newton Co. *et seq.*), reveals him to have been highly literate and with a working knowledge of mining. He was, for example, able to dial. The terminology he uses throughout his day-book hints that he had possibly cut his teeth mining somewhere in northern England, for amid generic mining words and phrases he uses dialect terms commonest in the Northumberland-Durham region which include 'lock holes', 'rider', 'sticking', 'sole' and 'whinstone' (see Hooson, 1747 and Mackenzie 1825, 94-98). However, he also uses terms such as 'grass', 'kindly' and 'whim', terms associated particularly with Cornish mining (Fay 1920), suggesting that he might have been in contact with men from that region of western Britain at some point

3 Robert Stewart was the son of Alexander Stewart, a wealthy linen merchant, who had married his cousin Mary Cowan, inheritor of a fortune from her brother who had been the Governor of Bombay. They family moved to the Ards Peninsula where they bought the estate of Mount Pleasant from the Colville family for £42,000 in 1744, changing its name to Mount Stewart. Robert Stewart held the office of Member of Parliament for County Down between 1771 and 1783 and was created 1st Baron Londonderry in 1789. In 1895 he was created 1st Viscount Castlereagh and the 1st Earl of Londonderry in 1796. He held the office of Representative Peer between 1801 and 1821 and became the 1st Marquis of Londonderry in 1816.

4 Smeaton, widely regarded to have been the father of civil engineering, won the Copley Medal in 1759 for his research into the mechanics of waterwheels and windmills and is famous for explaining the fundamental differences and benefits of overshot water wheels versus undershot water wheels. He also made significant improvements to Thomas Newcomen's atmospheric engine and his most powerful 'fire engine', was commissioned by the Yorkshire Copper Company and erected at their Chacewater Mine in Cornwall in 1775.

5 Robert Ward was the third son of Bernard Ward, 1st Viscount Bangor. Due to the insanity of his elder brother, Nicholas, the family estates were divided between Robert and his older brother, Edward. Robert inherited four townlands in the Barony of Ards, including Conlig. In 1800, when the Royal Downshire Militia was divided, Robert Ward became the first Colonel of the South Down Regiment and was resident at Bangor. Ward appears to have been a sharp character, responsible for stripping the contents of the family seat at Castle Ward following his brother Edward's death in 1812 and installing his insane brother, Nicholas, in a small house in Downpatrick. His nephew, Edward Southwell Ward, son of Edward, became the 3rd Viscount Bangor and eventually took up residence at Castle Ward.

6 Sir John Blackwood, First Baron Dufferin, was the eldest son of Sir Robert (1735-1802) Blackwood, 1st Baronet. Sir John was an opponent of patronage and is said to have declined an Earldom and Marquisate, citing his family motto – *Per Vias Rectas* (By Straight Paths). He represented both Bangor and Killyleagh as an MP and played a key role in the 1798 Rebellion, being described as a friend to the United Irishmen. He would then have found himself on the opposing side to Londonderry and Clewlow, his former partners in the Bangor and Newton Mining Company.

7 James Hamilton Clewlow was the son of Reverend James Clewlow and Mary Traill, a descendant of James Traill (1595-1663) of Killyleagh. He was an ardent Loyalist during the 1798 Rebellion.

during his career.[8]

On 23 October 1780, an indenture of lease (Registry of Deeds, Dublin) was made between the Right Honourable Bernard Lord Bangor and the Honourable Robert Ward, his son, letting one or more parcels of land '... contiguous to the eastern side of the river known by the name of Bayanstown River which runs between the lands of John Crawford Esq.of Crawford's Burn and the lands of John Strickland in the Corporation of Bangor between the [scutch] mill standing upon said river and the sea, provided the whole shall not exceed one acre Cunningham measure'[9] to be used for the processing and smelting of minerals.[10] The lease, given at a yearly rent of one peppercorn for a term of 31 years from 1st November 1780, included rights of egress and regress for workmen, horses and carriages between the parcel of land and the high road leading to Bangor, with the benefit of the water of the Bayanstown River from the foot of the existing mill down to the sea:

> ... also a privilege of building and creating on or near the bank of said river, mills, machines, engines, furnaces, kilns and other buildings for stamping, washing, calcining, assaying, smelting and otherwise operating upon ores, minerals and slags and of refining, and manufacturing the metals which shall be produced therefrom whether raised and taken out of the premises aforesaid or brought from other place or places and occupying and enclosing for such purposes as also for the heaping and sorting and processing ores, minerals, slags and metals and the materials, tools, implements and other things necessary for the said several works.

A smelting house containing a small blast furnace fuelled by charcoal and using and quicklime (NLI, Hibernian Mining Company Papers) was built by the mining company. We can now definitively state that it was sited about 5.5 km to the west of Bangor, at Stricklands, where Patton (1999, 200) speculated there might have been a former lead smelting mill. Indeed, the extant remains of this smelter (see Figs. 1 and 2) are depicted occupying a site above the appropriately named Smelt Mill Bay, in an undated etching and an oil painting dated to 1887 when the buildings were quite ruinous. The smelter was wisely sited, for here the toxic fumes would have been blown out to sea and would not have caused harm to the people, livestock or crops that existed cheek by jowl with the mine workings had one been erected at Whitespots.

The following day (24 October 1780), two land leases were granted in trust for a period of 21 years by Robert Stewart and Robert Ward in Whitespots and Conlig respectively to James Millar, the five partners agreeing '... to erect themselves into a Company by the Style and Name of the Bangor and Newtown Mining Company' (Registry of Deeds, Dublin). Stewart and Ward were to receive a royalty of 1/8th part of metal ore and 1/10th part of coal '... that shoud be raised and laid upon the Bank' within these parishes. In order to provide sufficient capital to place the mines in working order, the five partners were required to deposit £200 each with Belfast merchant and banker, Waddell Cunningham (1729–1797), a dubious character famously described by Theobald Wolfe Tone as a 'lying old scoundrel', who had made a fortune out of shipping and slavery in the Americas. Cunningham was to pay four per cent interest and Millar was given authority to draw on this capital by bills of exchange. To their credit, the partners agreed that any monies drawn against the total sum of £1,000 would be repaid from the profits made from the sale of ore, thus maintaining a contingency fund, an admirable and unusual business practice in the contemporary mining world that was dominated by the Cost Book system, where profits were usually regularly distributed as dividends to shareholders and adventurers[11].

James Millar was entrusted with the running of the mining venture:

> [he]... shoud [sic] have the Direction of all the Mines, Buildings, Smelting Mills and other works intended to be carryed [sic] on and that he shoud [sic] give his whole time and skill to conduct same to best advantage and that he should have power to buy all Tooles, Engines and Utensils necessary for carrying on said workes and to Employ and Discharge all miners and workmen as he thought proper but subject to such orders as should be entered into by the major part of the Partners assembled at their stated meetings.

The partners agreed that Millar would pay the miners 10 shillings each per week, and each labourer 5 shillings per week. He also had the authority to 'give premiums to the workmen to encourage them to carry on the work as he shoud [sic] think useful for same'. However, unlike later mining ventures where the Mine Captain received a regular annual income, Millar was paid a percentage of the smelted ore:

> ... [the] said James Millar shoud [sic] have one sixteenth part of all Smelted Ore and other Mines and Minerals (the eighth part being deducted as aforesaid) which should be produced out of said works for his skill and trouble in the direction and superintendence of same over and above his share as partner.

8 'Lock holes' is a Northumberland dialect term for 'vugs'(from the Cornish language 'fooga' meaning cave), crystal filled cavities in fissures and lodes.

9 A Cunningham Acre is an Ulster measurement, also known as a Scottish Acre. One Cunningham Acre was the equivalent of 1.3 English Acres.

10 The terms of the partners' agreement stated that the ore had to be smelted into a metallic substance, so Millar could be paid his wages. A blast furnace resembled a blacksmith's forge and was provided with an artificial blast of air generated by bellows that were operated by either man or water power. In neighbouring Britain it was unusual to be using charcoal at that date, as the cost would have been prohibitive, and we therefore speculate that wood was most likely sourced from the estates of one of the partners. Lead produced by the Bangor and Newtown Mining Company would probably have been sold 'to the best advantage' to merchants in nearby Belfast. The site of the smelter is now occupied by housing.

11 Under the Cost Book system, shareholders and adventurers met every quarter at the mine's 'Count House' (office), to approve the accounts and to share out any profit or loss. This system meant that profits were not ploughed back into the company, hence there were never any reserves left for lean times. Cost Book Companies eventually disappeared after the 1860 Companies Act limited the liability of individual shareholders.

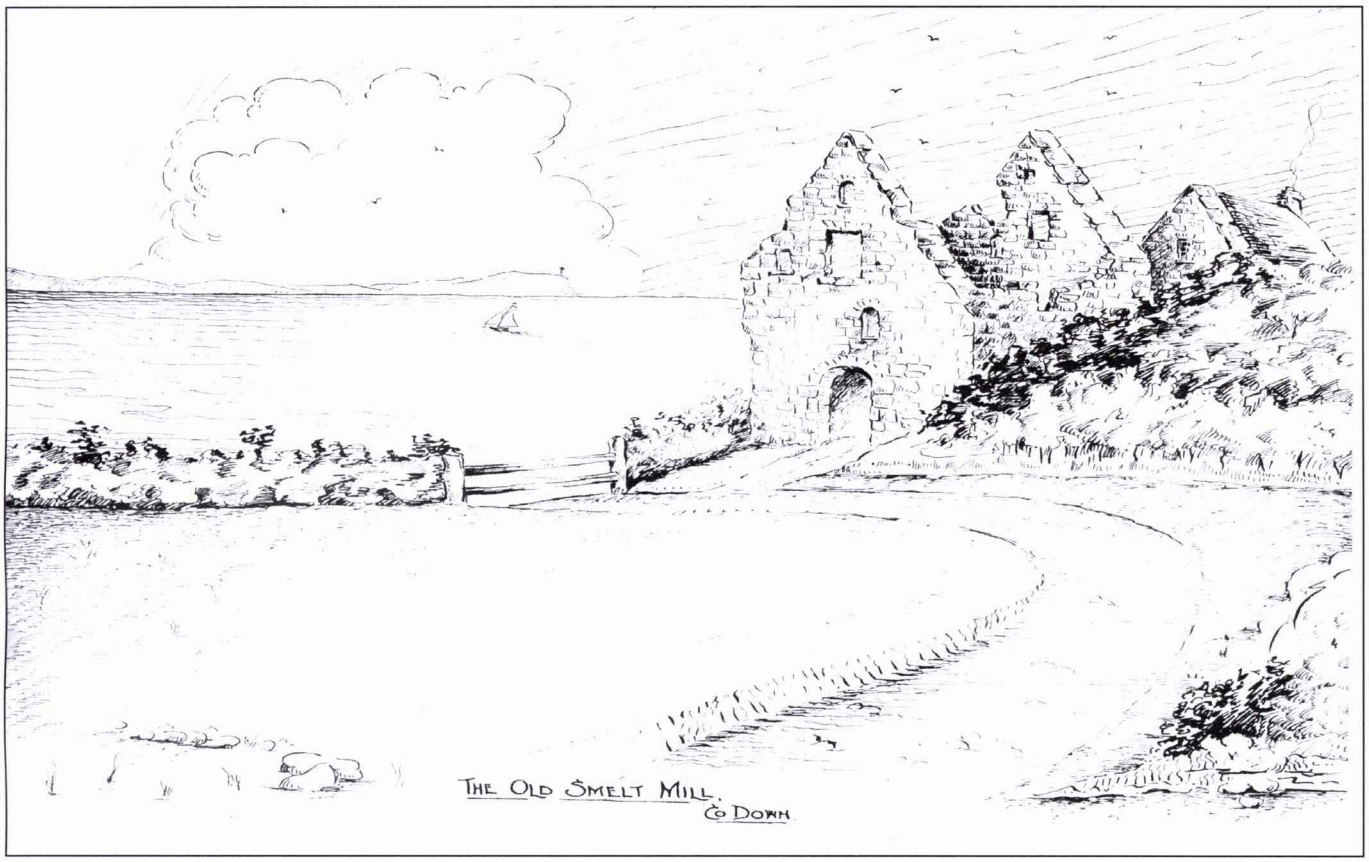


Fig. 1: ***Undated sketch of the eighteenth century smelting mill at Smelt Mill Bay near Bangor, by Robert Cresswell Boak (1875-1949). The site of the mill has since been developed with late Victorian housing***

Fig. 2: ***Oil painting by 'P.J.L.', dated 1887, of the extant remains of the old smelting mill at Stricklands. By kind permission of the copyright holder, the North Down Museum***

He was also instructed that any ore remaining after his 1/16th had been deducted had to be 'smelted into a Metallick [sic] substance and sold to the best advantage'.

Millar's day book, which commenced on 6 October 1780 and contained fairly regular entries up until it stops abruptly on 29 September 1783, describes a primitive mining venture, the workings of which were of no great depth. It employed only a dozen or so miners and some additional labourers, the workings hewn by pick and gad, blasting with gunpowder kept to a minimum due to its exorbitant price, and unwatering undertaken by labourers using windlasses at the surface above which primitive 'cotts' had been erected to protect them from the worst of the elements. Their efforts at pumping proved to be largely ineffective and the miners were often driven from their workings by flooding and the presence of bad air that 'wasted candles'. At the very end of 1780, Millar introduced bargains to small groups of miners set at varying rates per fathom depending on the nature of the ground, which alternated between bad and running (requiring timbering) to very hard. There is some indication that a few local men had worked under the Scotsman, Moore, on the previous mining venture and from time to time their opinion was sought as regards the mineral characteristics of the old workings. Both development work and stoping was undertaken, but it seems unlikely that the men who took the bargains made any great amount of money. For example in 1782, Millar notes that two bargains '... were attended with much cost of labourers, gunpowder and tools to the miners so as to bring them into debt to the company'. Possibly to quell resentment and to incentivise them, while cunningly helping him to prove the extent of one of the more persistent stringers of lead that had been discovered, he permitted the miners to '... cut out ore in their spare time to begin at the bottom of the appearance of metal and stope upwards on both sides of the shaft and they are to be paid £4 per ton for such ore as they shall produce from that work clean and merchantable'.

Millar's day book records the fruitless search for a main ore body by a man who could not grasp the geology of the Whitespots area. He resorted to engaging in continual 'shoading', re-opening the old works and even draining a small bog lough to try and discern the main mineral vein which he was sure existed, but which continually eluded him:

> It is probable the vein of ore which was sunk upon and which was so exuberant in some parts, must have a connexion with a greater body in some place in the neighbourhood where the rock become kinder so as to permit the ore to live (according to the idea of miners) but this work had best be postponed till summer next, the ground being deep and wet.

It is somewhat surprising that the enterprise, constantly hampered by flooding, creaked on for up to eight years, with regular demands for capital being made on the partners, as exemplified by the receipt for £25 that Millar sent to Edward Ward on behalf of the Bangor and Newton Mining Company on the 30 January 1784 (PRONI Ward Papers), before it was wound up in the late 1780s.

Following the cessation of the Bangor and Newton's mining activity, Stewart, now Lord Londonderry, permitted two Scottish miners by the name of Macartney to make some superficial trials on the line of the workings at Whitespots which they conducted from 1796 to 1798. They then relinquished the undertaking, probably due to the outbreak of the Rebellion. Following the cessation of hostilities, in 1800 Lord Londonderry agreed with a man named Dalrymple (possibly Sir Hew Dalrymple) for a mining lease of Whitespots. Dalrymple brought over a scientific man from Scotland to inspect the works, but following his unfavourable report on them he declined to take up the lease. Stewart (1800, 59) commented on the long level that had been driven north-south and the quantities of 'black stuff' possibly containing cobalt that he had seen 'in the rubbish thrown out of the mine holes', similar to what he had observed in Silvermines in County Tipperary. The mines were again noted by Reverend Dubourdieu two years later, but remained idle until interest in them was rekindled over two decades later during the London Stock Market craze of 1824-5.

THE RUMBUSTIOUS 1820S

This engendered a mining 'boom' (see Critchley and Schwartz 2012, 38) and a frenetic scramble among a handful of rival Irish companies ensued when each vied with the other to grab the leaseholds of the most promising mineral prospects across the island. Old workings were revisited and new ones tested. One area to receive attention was Portaferry on the east side of Strangford Lough, where lead had been discovered on lands belonging to Colonel Andrew Nugent. The Mining Company of Ireland (MCI) set up as a joint stock company of £200,000 divided in 20,000 shares of £10 each (£140,000 subscribed), sent an engineer to inspect a site in this area in 1824. He recommended trials be made, and Richard Purdy, company secretary, wrote to Nugent about permitting such and also about obtaining a lease. However, it appears that Nugent was none too keen on the idea, as the trials could not be made without 'any inconvenience or loss to him' (PRONI Letters to Andrew Nugent). Inevitably attention was focussed once more on the Whitespots outcrop near Newtownards. The Hibernian Mining Company, set up with a share capital of £500,000, £350,000 of which was subscribed in England, the remainder to be raised in Ireland and which received Royal assent in 1824 (RCG 1824), were quickest off the mark. They contacted the Third Marquis of Londonderry, the son of Robert Stewart, the First Marquis[12], who had been connected with the Bangor and Newton Mining Company, about the Whitespots Mines.[13]

---

12 Charles William Vane, 3rd Marquis of Londonderry (1778–1854), known as Charles Stewart before 1822, was the only son of Robert Stewart, 1st Marquis of Londonderry, by his second wife Lady Frances, daughter of Charles Pratt, 1st Earl Camden. Robert Stewart, Viscount Castlereagh, the Second Marquis of Londonderry, was his half-brother who committed suicide in 1822.

13 Cowman (2001) claims that the 'formal origins' of the Hibernian Mining Company date to the Committee for managing the British subscription to the peasantry of the distressed districts in Ireland, initiated on 7 May 1822 by a group of British gentlemen in response to the famine that particularly affected the southern and western parts of the country. The committee quickly raised a considerable amount of money, augmented by grants from the British government which was distributed with the help of the Mansion House Committee in Dublin. A balance of £60,000 was stated to have remained in

Their enquiry was received favourably, evidenced in a letter sent in early January 1824 by Lord Londonderry's Estate Agent, the Reverend John Cleland[14], to George Phillips Foster Gregory (1790-1851), a London-born solicitor and the company's representative, concerning the whereabouts of Millar's journal (NLI, Hibernian Mining Company Papers *et seq.*). This entreats the company 'not to delay commencing their researches at Newtown Ards', as Lord Londonderry considered 'the employment of the people an immense object'. However, the Hibernian appears to have dragged its heels somewhat, as Cleland wrote to Gregory again, pointing out that Millar's journal had been located and was available for viewing at his Lordship's office in Newtownards. Even though he resided in Armagh, he offered to meet the company's engineer in person and to ensure that '... every attention and correct information shall be given him that is in my power to give or procure him on the subject'. Probably to incentivise the Hibernian, he pointed out that Richard Purdy, secretary of the rival Mining Company of Ireland, was also keen to conduct a survey at the site, stating that:

> I have to request that you will send your engineer as soon as you conveniently can, to read the journal and examine the works and appearances of the mine, that he may give the Co. he acts for, his opinion, to guide them in their further pursuit of the mine, or declining it altogether, and in order, if the latter, that the other Co. may have the like offer of examining the subject that is now made to your Co.

In January of 1825, the Reverend Cleland once more wrote to G.P.F. Gregory altering him to the fact that he had received a letter from MCI secretary, Richard Purdy, and that he had been informed during his most recent visit to Newtownards that a 'stranger' had been recently examining the old mines at Whitespots. Cleland reported that this person was obviously well versed in science and was believed therefore to have been dispatched by the MCI to investigate the lead mines without permission from Lord Londonderry, and he noted:

> I send you this intelligence to invite you the more strongly, without inconvenient delay, to send one of your most competent and experienced professional gentlemen to inspect the works and on his report, that you make your decision, for I cannot, on the part of the Marquis of Londonderry, keep the mine without examination, where such anxiety and solicitude is manifested by another party to have the preference to make it and prepossession that the mine is valuable.

Cleland had written to the MCI regarding their suspected intrusion onto the Londonderry Estate, which matter had been discussed by the MCI Directors. The tone of Richard Purdy's letter in response is highly surprising as it is heavily laced with nationalistic rhetoric and sheds new light on a previously overlooked sectarian dimension to the struggle to grab mining leaseholds across Ireland during the London stock market boom. The MCI prided itself on its philanthropic principals, and Purdy, probably well acquainted with Londonderry's sympathies during the 1798 Rebellion, an event that was still raw in the minds of many Irishmen, clearly tried to claim the moral high ground stating that the MCI directors:

> ... desired to state that however they may regret that the Marquis of Londonderry considers himself bound to give the English Company a preference of his Royalties, they readily withdraw their suitable claim arising from your letter and they sincerely hope that the English Company will evince at N.T. Ards a lively zeal for the employment of the Irish peasantry which the works of this Company have proved to be the principal object of the Directors and Subscribers.

The letter ended on a particularly devious note, by requesting clarification that in the event of the MCI's engineer happening to discover any mines on Londonderry's Estate that

> ... the company may propose for a lease of same, or whether the English company are to have a monopoly of the entire, work or no work, as has heretofore been the case in Ireland to the obvious injury of the Landed Proprietor and the Company at large.

Here, Purdy has revealed the unpleasant underbelly of the 1820s mining boom, evidenced by companies snatching up leases in order to prevent them from falling into a rival company's hands. He insinuates that it was common practice in Ireland to take mineral leases with no intention of actively working or developing mines, and reading between the lines, he is slyly trying to sow seeds of doubt about the intentions and integrity of the Hibernian Mining Company.

Cleland replied almost immediately to Purdy, noting that he was not aware of any agreement entered into by the Marquis of Londonderry with the Hibernian Mining Company, save the liberty of looking over his estates, especially that at Newtownards, for lead. He further emphasised that if the Hibernian decided to work the mine, a proper lease would be entered into, stating that it must be seriously and actively worked and that he would introduce a covenant effective to prevent the 'evil' that Purdy had suggested. This elicited a sharp response from the Hibernian which stated that Purdy's insinuation was 'entirely without foundation' and that their company was a respectable one, drawing attention to the fact that John Taylor (1779–1863), an engineer and mining

---

the fund when payments ceased in late August 1822 (Report of the Committee 1823). It was proposed by the committee that this should be distributed in the form of loans to encourage development of Irish industrial resources. Mining was not specifically mentioned in the 1823 Report, but Cowman claims that £50,000 of the fund money eventually found its way to the Hibernian Mining Company, yet we could find no evidence for this, or for his assertion that the Hibernian Mining Company had its 'formal origins' in the May 1822 distress committee.

14 The Stewart family had originally been Presbyterian but had changed to Anglicanism. In 1792 Cleland, Church of Ireland minister of Newtownards and agent for Lord Londonderry of Mount Stewart, began to insist on the payment of tithes which infuriated the overwhelmingly Presbyterian population of the area and may have led many to commit themselves to the United Irish cause. Throughout the 1790s Londonderry and his son, Viscount Castlereagh, were active in opposing the United Irish movement for reform and in attempting to suppress their activities in the Ards area. They also, with limited success, attempted to raise a force of yeomanry to provide military support for the loyalist cause.

entrepreneur of great integrity known throughout the contemporary mining world, had been giving them advice and helping to secure a mineral lease on a lead mine on the Downshire Estate at Dundrum. The terms of this lease (see below) were included in the letter to the Reverend Cleland, with a suggestion that the Hibernian would be happy to enter into a similar lease with the Marquis of Londonderry for the mines at Newtownards once they had been inspected and found to be a worthwhile proposition. This annoying turn of events appears to have galvanised the company into action and they finally dispatched geologist, Thomas Weaver, to County Down on 25th January 1825 to inspect 'the mines formerly worked in the parishes of Newtown Ards and Bangor', and also instructed him to examine 'metalliferous appearances' at Killough and Ballydargan. Weaver returned to Dublin on 5th February; his report was compiled on the 9th.

Weaver (1773-1855), an Englishman and graduate of the famous Freiberg Mining Academy, was one of at least three geologists/civil engineers employed by the Hibernian.[15] Not only well qualified, he was considered to be highly experienced and was respected in the mining world, having served as manager of the Avoca Mines with the Associated Irish Mining Company in County Wicklow for a number of years. He was credited with the discovery of a major lead lode in the Wicklow uplands, setting up a company to work this in 1809 and which he sold to the MCI in 1824. He had also been entrusted by the British government with the investigation of the gold deposits in the Wicklow Mountains and had published his observations just a few years before the mining boom (Weaver 1821). Interestingly, he had also served as a field geologist for the MCI before being lured away by the Hibernian in 1824 at a fee of one sovereign and a half per day, plus expenses; this perhaps accounts for some of the rancour that clearly existed between the two companies.

Weaver records that there were seven partners in the Bangor and Newton Company, not the five as listed in the original lease, including Sir John Parnell besides Lord Londonderry, Colonel Ward, Lord Dufferin and 'three other gentlemen of the county'.[16] From Weaver we learn that the workings of the Newton and Bangor Mining Company had been mostly confined to the townland of Whitespots. Weaver states that operations lasted for some seven to eight years during which time an adit level was driven in 18 or 19 fathoms below the surface of Robert Stewart's 1776 trial. Upon this adit eight shafts were sunk, the deepest being just over 19 fathoms (almost 30 metres) and just short of 276 fathoms (about 500 metres) from the mouth of the adit. Additional shafts were also sunk further up the hill. A shallow level was driven eight fathoms from the surface in No. 8 Shaft to connect with the western cross cut from Mr. Stewart's (Lord Londonderry) trial shaft (The Scotsman's Shaft). It was then carried forward to No. 9 Shaft which was sunk 7 fathoms deep to that level. A middle level was also driven from No. 8 Shaft at a depth of 13 fathoms toward the same quarter, but Weaver was unsure whether this extended beyond halfway toward No. 9 Shaft. There were three trial shafts sunk at Conlig, none deeper than 7 or 8 fathoms, but they had been filled in and the surface levelled.

At Ballyleidy, where work appeared to have commenced first, the trials had been more extensive and persisted from early October 1780 to the end of September 1781. Two shafts (Trial and Comrade) were sunk 8 fathoms from each other, one to a depth of 16 fathoms and the other 11 or 12 fathoms and connected by a drift at 9 fathoms. Other drifts were apparently carried into the ore bearing ground, but progress was retarded by flooding and the disappointing nature of the ore, and, with only nine tons of lead ore being raised, it was considered unwise to continue, the shafts were in-filled and the surface smoothed.

The principal part of Weaver's information concerning the depth and extent of the workings were derived from the transcript of Millar's day book which was '... unfortunately imperfect, extending only to September 1783, when it breaks off abruptly'. He noted that there was consequently some uncertainly as to whether the levels were proceeded further into the ore bearing ground 'as there is no one now left in the country that worked in these mines during the Company's time and I cannot learn what may have become of the original document'. This is hardly surprising given the upheavals witnessed in the Ards Peninsula during the 1798 Rebellion. Many locals were hung for their convictions and countless others fled the area never to return. Indeed, Weaver states that the mines were long abandoned:

> ... the works ... wholly inaccessible, being in a ruinous state, the shafts tumbled in and filled up and levels closed in and choked. The only shaft whose collar is open at the day is No 7, having been sunk in hard rock from the commencement, but this is also filled with rubbish.

He then explains that the journal was a transcript of Millar's day book made by Francis Taggart, the former clerk to Lord Londonderry, whose whereabouts were then unknown. Weaver thought that the true value of the journal lay in the insights it gave into the characteristics of the mineral lode, which together with the minerals exposed in the old burrows, were '... the principal means now left for coming to a just conclusion respecting the value of these mines'. It appeared that during the lifetime of the journal, around 45 tons of lead ore was raised, most of this in the townland of Whitespots, but Weaver was unable to ascertain with any certainty how much lead was wrought by the company during its entire lifetime,[17] but deduced from the description of the workings given in the journal (incomplete as this was), by an inspection of the gangue such as could be found in the old burrows and by close examination of bands of mineralisation exposed in quarry

15 Others included civil engineers, Richard Griffith and Alexander Nimmo.

16 In the Lease of 23 October 1780, Sir John Parnell of Rathleague in the Queen's County and William Gillespie, City of Dublin, Esq., are named as witnesses to the lease. Weaver is probably in error about their involvement as partners.

17 Weaver quoted the very liberal figure of 225 tons, which would have given about 150 tons of dressed ore, which, even if sold at the high price of the times (around £20 per ton), would still have resulted in a significant overall loss to the operators.

faces in the vicinity, that neither a regular vein nor a regular bed of ore was anywhere met with by the operations on Whitespots, Conlig or Ballyleidy.

He concluded that the 'metalliferous deposits were casually dispersed, occupying joints and fissures in the rocks in various directions in discontinuous layers and stings... and occurring incidentally disseminated in the mass of rock itself, being in fact contemporaneous in origin with it'. For the Bangor and Newtown Mining Company it had therefore 'proven impossible to follow any definite course of operations, and the work was necessarily much dependent on chance'. He notes that the partners, after expending a sum of around £10,000 on a concern that never paid a dividend and that he judged to have resulted in a positive loss of around £7,000, eventually lost courage and abandoned the concern. He therefore concluded:

> I can perceive no safe ground on which the company would proceed in a speculation upon the lands of Whitespots, Conlig, or Ballyleidy, and hence I cannot recommend it as a desirable adventure.

And with that perfunctory sentence, the Hibernian was warned off working a deposit that became one of Ireland's richest lead mines. Weaver surely came to regret this conclusion, as it was used by his detractors to taunt him for many years to come, the *Mining Journal* in 1840 quoting examples of his mistakes and the 'ill effects arising from an excess of caution', remarking that in more than one instance 'undertakings condemned by him had subsequently worked to advantage' (MJ 1840).[18] The only consolation to the Hibernian must have been that neither the MCI or indeed any other rival Irish company got their hands on the leasehold. In fact, the mines were to remain idle until a Manx based company began operations in March 1827, about which more below.

Weaver was equally dismissive of the 'metalliferous appearances' at Killough and Ballydargan, but in this instance he was unerringly accurate in his observations. According to Weaver, there was an area of protruding rocks upon the strand immediately adjoining the town that were only exposed at low tide, known as 'Lead Mine Rocks', which had also been noted by Harris and Dubourdieu. There were two reasons given for this name: the first because lead actually existed in the rocks; the second due to the fact that they were the site of a shipwreck of a vessel laden with lead ore bound for Liverpool that floundered in inclement weather in about 1755 (perhaps conveying ore raised in Ward's Ballydargan Mine described above?). Weaver observed some small thread-like veins of pure galena, seldom expanding to the breadth of more than half an inch, discontinuously dispersed throughout the clay-slate and greywacke. Pure galena was also seen to be coating the joints of the rock accompanying veins of calcareous spar (calcite), brownspar (siderite) and quartz, that never exceeded an inch in thickness. He therefore concluded that '... at Killough the appearances are not sufficient to authorise a mining venture'. While examining Lead Mine Rocks, Weaver was informed that lead ore had actually been raised in Ballydargan townland, some two and a half miles from Killough, that lay upon the royalty of the Earl of Roden. During procurement for stone to build Oakley House, a quarry (marked on the 1834 edition 6-inch OS Map) had been cut down vertically into the clay-slate rocks sited to the north-east of the house, from which several baskets of lead ore were apparently obtained. Weaver observed some traces of galena in a few thins beds exposed in the old quarry face, but not enough to convince him that a mining operation was warranted.

He appears to have been rather more positive about another area that attracted the Hibernian Mining Company's interest - Dundrum, which lay on the Downshire Estate and where lead was known to exist. Harris and Dubourdieu had described a lead vein formerly worked on the Blundell Estate near Dundrum and we now learn that this old working had been inspected by mineral surveyors, brothers John and Daniel Busby, not long after Dubourdieu published his *Survey* (1802). The Busby Brothers were natives of Alnwick, Northumberland, the sons of coal miner, George Busby. Both became involved in mineral surveying; John, the more talented of the two brothers, was promoted to the position of coal mine manager at just 19 years of age before moving to Scotland, while Daniel remained in Alnwick. In 1806 they were hired by the greatly indebted but pragmatic Arthur Blundell Sandys Trumbull Hill, the Third Marquis of Downshire (1778-1845).[19]

Considered to be an improving landlord and one who took a keen interest in the affairs of his estates, Downshire tasked the Busby Brothers with developing his Dundrum estate and in surveying and searching for minerals throughout his Irish lands, hoping no doubt that mineral exploitation might help to mitigate his financial problems (see Critchley and Schwartz 2011 for details of their activity at his Edenderry Estate). The Busby's recommended that the natural harbour at Dundrum be deepened to encourage shipping and that settlers should be attracted by the offer of building sites at a nominal rent. That they successfully located a variety of minerals on Downshire's Estates is contained in an advertisement that appeared in 1807 in the *Newcastle Courant* seeking to attract miners, manufacturers and mechanics for 'large estates' where a variety of minerals have been found, underlining the fact that the skilled labour to initiate the exploitation of these Irish deposits did not exist within their immediate locality. The minerals were listed as feldspar and pure quartz suitable for porcelain manufacture; clay fit for pottery ware, bricks and tiles; bog iron; coals; ironstone; manganese; slates and a variety of stone, and most interestingly, 'lead, where mines were many years ago worked and with the benefit of old shafts and a water level etc.' (NC 1807).

The later correspondence between the Downshire Estate and the Hibernian Mining Company throws more light on the

18 For example, the concluding remarks in Weaver's 1825 Report on Whitespots and Conlig were quoted at a meeting held at Newtownards in 1872 to discuss the mineral potential of the area. Although not named, he was described as an 'accomplished geologist', but one apparently 'deficient in practical experience' (BNL 1872).

19 The Blundell's Dundrum estate came into the Downshire's possession through marriage. See Critchley and Schwartz 2011.

Busbys' activities at Dundrum over a decade earlier. Specimens of coal had been discovered in the summer of 1824 in the vicinity of Banbridge and the use of this to smelt any lead ore raised at Dundrum was mooted, as it was thought this source of fuel would prove less expensive than importing Welsh coals. Not long after, the Marquis of Downshire became associated with the Hibernian Mining Company and in November declared himself, 'ready to enter into a proper lease agreement for granting to the Company the liberty of searching for and converting lead and other minerals upon his Estates at and near Dundrum' (NLI, Hibernian Mining Company Papers *et seq.*). The correspondence between Handley, Downshire's Agent, and the Hibernian, reveals that the Busby brothers had discovered and explored an old adit about a mile from Dundrum harbour that they observed to have been driven on lode. This old working was probably located on the south-western side of Shague Hill in the townland of Moneylane.

The Busbys had concluded that the adit was wrought in ancient times 'before the use of gunpowder was known', and consequently ended where the veins entered hard rock. The brothers had taken out two to three tons of good lead ore and, convinced that ore would be found in quantity in the rock beyond the old men's workings, reported the mine to be a favourable proposition. However, nothing seems to have been done by way of developing this old mine, due probably to the abrupt cessation of the Busby's contract with Downshire. By 1812 the Busbys were pressing ahead with developments at Dundrum town, employing 15 masons, 65 quarrymen and labourers, 3 carpenters, a blacksmith and 25 horse carts and were constructing a pair of semi-detached houses for themselves in Main Street. However, they appear to have fallen foul of the Third Marquis and were forced to tender their resignation in 1813 before the houses were completed (Wheeler 1997).

Weaver was dispatched in 1824 to inspect and report on this old mine and Downshire, now President of the Hibernian Mining Company, pressed hard for the company to enter into a lease with him to work it in January 1825.[20] Incredibly, he even marshalled the aid of mining doyen, John Taylor, C.E. (1779–1863), who attended a meeting of the Hibernian Mining Company in January 1825 and was tasked 'to refer the terms on which his Lordship's Royalties at Dundrum were to be leased to the company'. Taylor declared his opinion to be:

> ... that the 1/15th reserve would be just and fair dues till the company should be reimbursed for the capital laid out in getting the mine into work and afterwards the 1/12th during the remainder of the lease which he recommended should be for 21 years.

The Lord's dish (royalty) was set at 1/6th of the ore when prepared for smelting. The Agent at Dundrum was a man named Harrison,[21] who was to undertake the hiring of men and in procuring suitable lodgings for them. However, the Hibernian Mining Company withdrew from the district in the summer of 1825 after expending the sum of £400 on 'unsuccessful Trials, at Dundrum, and some other Mines... These, after a certain outlay for the purpose of fair experiment, were abandoned entirely; your Directors considering, that, with the extensive choice open to them, further research was unnecessary'. It does seem that mining eventually went ahead near Dundrum, perhaps under the aegis of a private company, as a mine on Downshire's Estate in the Shague Hill area was in operation in 1829-30 when about 30-40 tons of lead ore were raised (DR 1837). However, given the sustained low price of lead during the 1830s, it seems highly probable that this mine, like many others across Britain and Ireland, would have been adversely affected leading to its closure.

MINING IN THE POST 1820S 'BOOM': MANX CONNECTIONS

The 1820s mining boom resulted in a wave of prospecting across County Down which led to a number of small scale mining ventures for lead in various parts of County Down into the 1830s, but with one exception, none were of any great duration. In the summer of 1828, lead was discovered on a farm near the main road between Downpatrick and Strangford belonging to Thomas Smith when a bog drain was being cut through rock. The Right Honourable Lord de Ros (Henry FitzGerald de Ros, 22nd Baron de Ros, 1793-1839, who acceded to the Baronetcy in 1829) granted permission for the Tullyratty Mining Company to work this deposit. Over the course of the next two years, a mine 102 feet (31 metres) deep with several horizontal drifts was developed. About £600 had been spent on development and 30 tons of ore were produced which was shipped, presumably out of Strangford Harbour (owned by Lord de Ros), and sold in Liverpool.[22] The Tullyratty ore was assayed there and in London, where it was found to contain from 75-80 per cent lead, but little silver. The Tullyratty Mining Company also reopened the Ballinacraig mine in 1829, but discovered no ore. Water ingress into the workings appears to have been a constant problem at Tullyratty, and a writer to the *Downpatrick Recorder* (DR 1837) recommended driving a level [adit] as far as the Carrowcarlin Bog (500 metres to the west) to remedy this. In July 1830 work stopped, probably due to problems with flooding and the low price of lead, but recommenced once more in 1834 and again briefly in 1842, when it was noted that twelve men were working at the mine, with another twelve about to start. The lead ore was said to have been 'abundant and of excellent quality' (MJ 1842), and was exported to England for smelting. The lead metal that was then produced contained one part of silver for every 1,000 parts of lead metal (BNL 1842).

Another small venture was the Ballyplunt Mine which was re-opened by John Corry in the summer of 1836, but after three or four month's labour which produced very little ore, working ceased. The same year a working was opened above Strangford Lough on Samuel Bailie's farm at Portloughan, parish of Saul, which, after some six months, had attained a

20 Unfortunately, Weaver's report, undertaken in the summer/autumn of 1824 on this area, seems not to have survived among the correspondence of the Hibernian Mining Company.

21 It is not known whether this is George Harrison who in 1832 became Agent of the nearby Newtownards Mine.

22 Local lore states that a cargo of lead ore sank at the bar mouth of Strangford Lough, probably during a later re-working.

depth of about 60 feet (over 18 metres) and had been driven horizontally about the same distance. Nothing more is known of this venture. Lead ore was also discovered in 1833 near the harbour at Ballyhornan and on Captain Magennis's property near the high water mark at Sheepland, but by the late 1830s these deposits had not been wrought (DR 1837).

The Newtownards Mine was the sole real success, entering upon a new era when it was reopened by a trio of partners with Manx connections in 1827. Entitled the Newtown Ards Mining Company, a 21 year lease dated 21 November 1827 was obtained from the Marquis of Londonderry (see Fig. 3) to work the mine, subject to a royalty of one tenth of the produce (MS 1839). This cost book company proceeded with a working capital of only £24. The leading partner with a subscription of £18 was Henry Pooley Esq. (1790-1848), a native of Manchester resident in Douglas. Francis Basil Byne, the son of George Byne of Northumberland who had moved his family to Douglas sometime before his death in 1832, subscribed £3. John Lobb whose surname ramified most strongly within nineteenth century Britain in an area running from central/east Cornwall to west Devon, appears to have been the practical mining man, as it was he who visited the mines, run on the tribute system, the most in their first 12 months of operation. He also subscribed £3 but was later to relinquish half of his shares to Francis Basil Byne, presumably when he ceased to be the Mine Agent (c1832). Information about the early years of the company is scarce indeed, with the only documentary evidence of the activity at the mines being a cost book that runs for a period of 15 months from the company's inception in March 1827 (MNLA Memorandum book, *et seq.*).[23]

Pooley, Byne and Lobb had taken possession of a mineral sett not worked in earnest since the late 1780s, in a locality devoid of experienced miners and at a most inauspicious time for the lead mining industry. Caused by an excessive supply of lead flooding the market, the average price of British pig lead per fodder (roughly a ton) had already started on its sharp decline from over £27 in 1825 to around just £13 by 1830, a price '... now so low that few of these [lead] mines in the United Kingdom can be worked profitably' (Mining Company of Ireland, 1855). The three men were basically starting from a standing position and had to purchase all the required equipment to rehabilitate the former workings, including mucking out the old adit entrance (for which labourers were paid 1s 2d per shift which increased to 1s 6d once the work entered the underground level) and erecting surface works. That May Robert Fleming and Company' were paid £1 18s for building a blacksmith's shop and millwright, Robert Thompson, £3 for his work on renovating a derelict eighteenth century windmill (formerly used as a grist mill) that lay on the mine sett. With over fifty windmill sites used primarily for flax scutching and for grinding grain, the Ards Peninsula was known as the 'Little Holland of the North'. The windmill at Whitespots was to become the mine's most iconic feature, providing power for the crushing and jigging machinery on

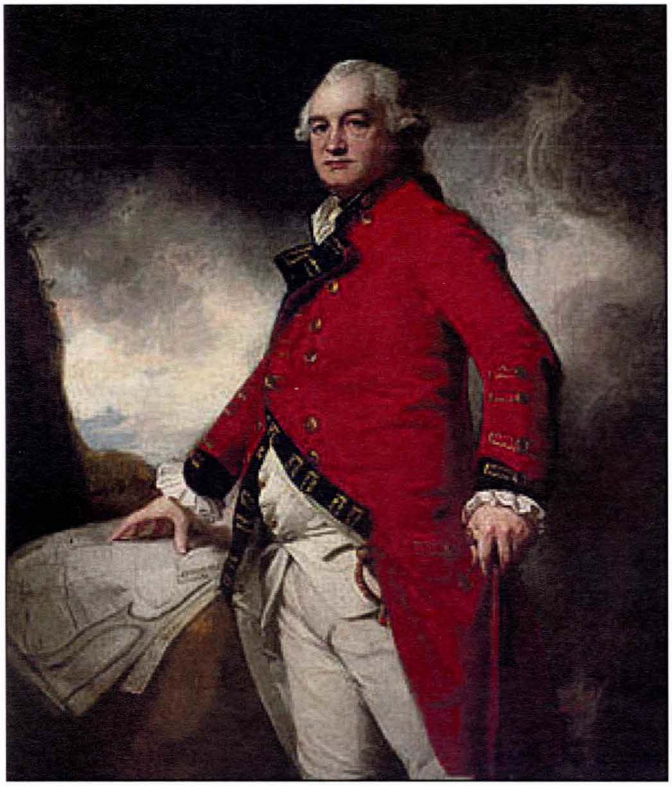


Fig. 3: ***Charles William (Stewart) Vane, the Third Marquis of Londonderry (1778-1854). Image in the public domain***

the dressing floors. Recalling this windmill almost a century later, Philip Henry Argall, born at the mines in 1854 where his father, Philip, was employed stated:

> I visited the locality in 1911 and saw the ruined tower of the famous wind-mill that operated the crushing machinery in the early 'fifties. The large dumps of jig-tailing adjoining bore ample testimony to the power developed by this huge wind-mill, of which I heard my father speak so often. In average weather it ran the whole dressing-works, but as a local wit remarked, 'she had her off days, and in that respect was more human than the steam pumping-engine that was never affected by the weather' (Rickard 1922, 6).

Rope costing 3s 7d for rehabilitating the windmill was supplied by 'Tomas More'; sacking for its sails by Robert Burns (33 yards at 6d per yard at a cost of 16s 6d), and John Crawford provided sisal[24] at 3s 6d used for making the sails. Hauliers, usually local farmers who provided a horse and cart as was the practice in many mining areas in Britain, were hired to transport goods and materials to the mine (one Alex Dempster being paid 3s 6d), while William Sherry was paid six shillings for six consecutive Sundays acting as watchman at the mine where the Sabbath was strictly observed.

Woodrow claims that the Whitespots mineworkers were 'more likely than not to have been predominantly of the Roman Catholic faith' (Woodrow 1978, 52). Documentary evidence

23 Lobb probably kept the cost book, and, judging by the nature of the dialect and spelling contained within, was very likely to have been a native of Cornwall or west Devon.

24 A traditional material for rope and widely used in agriculture as binder twine because of its strength and durability.

suggests otherwise. Scrutiny of rites of life registers and later civil registers of marriage, determine that the majority of the mineworkers were Presbyterian of Ulster Scots descent. This is confirmed by academic research which has revealed that the Upper Ards Peninsula was 81 per cent Presbyterian in the latter decades of nineteenth century (Smith and Bittels 2002), a demographic pattern that persists to this day. Once the mines began to develop, skilled miners from other areas arrived, including the Isle of Man, Wales and Cornwall. Thus, we learn of the death of Welsh miner, Edward Prichard, formerly of Amlwch, a port town near the famous Parys Mountain Mine in Anglesey, who died in a blast at Whitespots on 22 August 1834, aged 27 (Beattie's History).

By mid-July 1827 tutwork bargains were being let to pares of miners, with one taker, William Comming being set a tribute pitch at £3 per ton for two months in Number 1 (presumably a new shaft that was being sunk and that had intersected ore bearing ground that had eluded James Millar). Six other miners, probably Commings' partners, and who were advanced 'subsist' on their expected monthly earnings, are named in the cost book: John Andrews; William Fearns; Edward Griffing; William Milligan; Will Varnon and William Carne. The pare had obviously begun raising ore, because by mid-September the names of a number of women and children who were hired to dress the ore appear in the cost book. Female labourers, Elin Cherry (3s 11d), Mary Brown (4s), Margit McClement (2s), Susen Wight (5s 9d) and Margit Shaw (5s 2d) are listed, as well as Boy Cree (3s 4d), Boy McCutchin (8d), and presumably some older boys: Patrick Wallish (3s 9d), James Fliming (3s 8d), William Low (3s 4d) and David Morrow (2s 10d). Boys were hired on at wages from 4-6 pence each day and women at 8-9 pence per day, but this rate was to fall to 7d by the beginning of 1828 suggesting that there was a surplus of female labour in the immediate area. In February and March of 1828, cart loads of dressed ore are noted as being transported to Bangor where it was stored prior to being shipped. This gave employment to local carters, James Green, Alex McCutchin and John Crawford, all of whom received 9 shillings 'for Caring lead ore to bangor'.

For the first few years of operation little more was effected than the opening out of some old shafts which turned a trifling profit. The company made slow progress in raising ore and consequently, Lord Londonderry did not receive a royalty (£47, 8s 6d) until 1829, presumably when sufficient ore had been raised for a shipload to be sent across the Irish Sea to the River Dee smelters. The early work was concentrated in the northern part of the sett and included developing a new shaft (Number 1) which was to become the North Engine Shaft. In 1830 the works were noted to have 'fallen into other hands', signifying the break up of the original trio of partners who had been answering regular calls since the company's inception (MS 1839).[25] To more fully develop the mine required significant capital investment. After the new proprietors took over, we learn from an article printed in 1839 in the *Manx Sun* that near £50,000 worth of ore had been raised and the works had been extended. In addition to the rehabilitated windmill that drove the crushing plant and other machinery, a powerful steam engine had been installed and '£15,000 actual profit had been accrued from the mine from above the 40 fathom level within the last six years' (from 1833). Indeed, in October 1834, the *Belfast News-Letter* reported that a cargo of lead ore had been exported, 'raised from the mines near Newtonards [sic] which are now successfully wrought and where about 200 people get constant employment' (BNL 1834).

However, a description of the mines by Samuel Lewis dating to 1837 paints a slightly different picture:

> Some extensive lead mines are held under lease from the Marquess of Londonderry by a company in the Isle of Man; the ore is very rich, but the mines are very indifferently worked; the water being imperfectly carried off by a level, the lessees have sunk a new shaft and erected a steam engine to raise the ore and to drain the mine; the ore is shipped at Bangor and sent to Flint, where it is smelted (Lewis 1847, 397).

The following year after Lewis' observations, the company decided to deepen the Engine Shaft to 60 fathoms to prove the ground. They had applied to Lord Londonderry for a renewal of their lease in order to extend the sett to include ground to the south, but he had requested a larger sum than the proprietors felt justified in paying until the 60 fathom level had been thoroughly explored. Following the discovery of a considerable body of ore just six fathoms north of the Engine Shaft and very favourable signs in the level running south, a new lease was agreed and a prospectus issued to attract shareholders in order to raise the necessary capital to develop the mine. The intention was to extend the workings to the 100 fathom level and to develop the ground to the south where some 'judicious trials' had been made. The mine was to be divided into 1,000 shares at £15 per share, the present proprietors were to retain three-fourths thereof, and the remaining 250 were to be offered to the public with future calls upon each share to be limited to 5 shillings per month, and not to exceed in the whole £5 upon each share. This ensured that no shareholder would be required to be called upon to adventure more than £20 per share. The three directors were named as Edward Forbes, C. C. Tupper and Francis Basil Byne. George Harrison, an Englishman who had 'so ably conducted' the works over the last seven years (from 1832), was to continue as Mine Agent, subject to the inspection and direction of Captain William Jones of Chester. Like the previous manifestations of the company, the shareholders (as well as the directors), were almost exclusively residents of the Isle of Man (MS 1839).

The prospectus was issued along with a report by Welshman, Captain William Jones. He was closely involved with the Isle

25 Pooley later left Douglas, advertising his imposing residence *Villa Victoria*, which commanded a fine view of the bay, for sale or rent in 1839 after he had returned to live in Manchester (MH 1839). He died at Bowness in the Lake District on the 17th of July 1848 aged 58, and is interred at Windermere. A John Lobb is listed under a list of mineworkers employed by the Isle of Man Mining Company who donated money to the Kidderland Disaster Fund in 1853 for the 29 men who lost their lives by an explosion of gunpowder while saving the cargo of the wrecked brig *Lily* at Kitterland Island, 28 December 1852 (MH 1853).

of Man Mining Company (formed in 1828 by a group of businessmen from Liverpool, Flintshire and Chester to work mines in the Foxdale area), had reported on Dixon's Mine in 1835 and also served as a company director of Beckwith's Mine in the late 1830s. Not surprisingly, he declared the Newtownards vein to have been 'one of the largest and strongest I have almost ever seen':

> ... its line of bearing is North and South, with an underlay to the West. There seems to have been two pipes of Ore discovered in this mine near the surface – the one near to the engine-shaft, which is the north end of the mine, and not far from the boundary – and the other, on the south end of the mine, nearly opposite to the present Windmill; but the Vein on this end of the mine extends a considerable distance through the property leased to the company further to the southward, but, as yet, few trials have been made in this direction.

He notes that the north pipe of ore near to the engine shaft had a slight dip to the northward and that it continued uninterruptedly from the surface down to its present depth of 60 fathoms. He also inspected the forebreast of the 60-fathom level which was being driven to the north which he judged to be very favourable and stated he had every reason to believe that if the 40-fathom level was continued north, a great quantity of ore might be raised. With the vein bearing such a body of ore at the present depth, he therefore urged that the engine shaft should be deepened with immediate effect.

The other pipe outcropping nearly opposite the windmill had also been developed and had yielded a very large quantity of ore down to the 30-fathom level. However, few trials had been made under that level, but two bargains were then at work upon tribute. 'A finer looking vein I never saw', noted Jones, 'there is now sufficient ore in this part to enable the men to make wages without receiving anything per fathom; and I have very little doubt, that by sinking 10 or 15 fathoms deeper, the vein would be as productive if not more so, than it was near the surface'. Indeed Jones had a better opinion of the potential of the southern end of the mine at depth than the area to the north of Engine Shaft, and it seems absurd that this part of the mine was not given serious attention for almost a decade. According to Jones, the pipe of ore in the south end dipped to the southward, 'and consequently will give the company a much greater hold of it, as they have a great extent of leased land in this direction'. Jones ended his report by stating that he could '... safely recommend this as one of the best mining speculations I have surveyed for many years', one that '... required only a little further outlay of capital to make it a most profitable concern'.

However, the issuing of the Newtownards prospectus was not without controversy, as a letter in the *Mining Journal* illustrates (MJ 1839). Apparently, the name of the *Journal's* editor, Henry English, had been used without his consent:

> Being perfectly ignorant of the scene of operations, the prospects of the mine, or indeed, any other information than that conveyed in the prospectus, and having no knowledge or communication with the parties, you may judge my surprise on finding my name and address with others appended thereto, to whom "all applications for further particulars and for shares" are to be made.

English claimed never to have heard of the existence of the undertaking and sought to place readers of the *Journal* on guard: 'We do not wish to ascribe improper motives to the directors in this particular instance, but the system has been so frequently carried out, that, in the absence of any intimation of such a mine, or such a company, being in existence, excepting that conveyed in the prospectus, and which might, for aught we knew, have been equally fallacious in other "particulars"'. He warned that 'while this may be the way in which things are managed in the "Isle of Man", we cannot assent in its propriety' (MJ 1839).

Director, C. C. Tupper, responded with a letter of his own, in which he claimed that English's name had been inserted by a mutual friend, William Jones, and he took exception to his comment about putting the readership of the *Journal* on their guard: 'Such a remark, permit me to observe, would scarcely be justifiable except as applicable to a transaction which carried with it every mark of a fraudulent intention, and more particularly, when combined with your Editorial threat, that you would not hesitate, "on every occasion, to expose a system so calculated to deceive"'. Tupper called upon English to acknowledge that the directors of the Newtownards Mining Company did not intentionally set out to deceive the public, a charge he felt was unwarranted, given that English knew the character and professional standing of William Jones who had reported on the mine (MJ 1839). English did no such thing, and adamantly stood over his 'observations and insinuations' (MJ 1839). Despite the directors' startling *faux pas*, it was reported that all the shares in the Newtownards Mines advertised in the prospectus '... had been subscribed for, principally by residents [of the Isle of Man], within the space of ten days'(MS 1839; MH 1839).

In his report, Jones notes that the northern pipe of ore was situated 'not far from the boundary'. This is a reference to the extent of their sett which lay contiguous to one granted by the neighbouring Lord of the Soil, Lord Bangor, to the Ulster Mining Company. This enterprise had been set up in about 1835/6 and was managed by John Taylor junior (1808-1881) from Coed Du, his base near Mold in Flintshire, with Henry Rowe as Mine Captain (Slater's Directory 1846, 511). Rowe was almost certainly a Cornishman, for the Taylors had interests in numerous mines throughout Cornwall and west Devon and were renowned for employing Cornishmen in many of their mining enterprises elsewhere in the British Isles. We know that John Taylor senior was interested in the potential of Irish lead mines, as he was acquainted with the Marquis of Downshire and had dealt with the Hibernian Mining Company on his behalf a decade before. He also secured leases to work mines in Counties Tipperary and Clare around the same time as that of Conlig (Burt 1977, 61). The fact that the Newtownards Mine began to raise significant quantities of ore, the amount of which almost doubled between 1834 and 1835, perhaps prompted Taylor to take out the lease on the adjoining sett. Due to the destruction of the

Taylor Company archives in London during WW2, little is known of this enterprise which persisted until the sett was taken over by the Newtownards Mining Company in 1850.

Given the Taylors' attachment to steam power, they installed a rotative steam engine at the Conlig Shaft, the main pumping and winding shaft. It appears that progress in raising merchantable quantities of ore was slow and according to a report in the *Freeman's Journal*, the mine only seems to have cut rich after several years of working: 'The Ulster Mining Company have, after ten years' perseverance at Conlig Hill, County Down, in seeking for lead ore, with an outlay of £12,000, been at last successful. The directors are bringing to the surface 1,500 tons of ore' (FJ 1846). However, at neighbouring Newtownards a different picture was emerging, for the general health and running of the enterprise was beginning to concern Lord Londonderry.

'ROTTENNESS IN THE STATE OF DENMARK'

The rising price for lead ore had coincided fortuitously with improved tonnage figures from the Newtownards Mine and Lord Londonderry had been well rewarded with increasing annual royalties which reached a high point in 1838. Thereafter, however, they began to decline and by 1842, were almost two thirds less. It was this fact that probably prompted Londonderry to have the mine inspected. He called on John Taylor junior, of the neighbouring Conlig Mine, to draw up a report which, dated 1 March 1842, is most illuminating (PRONI Taylor Report *et seq.*). Taylor commenced by stating that he considered the mine to be a favourable one in many respects, 'the lode or vein on which the workings have been made is one of unusual form and size', but he added that it was 'not so richly stored with metal as many others with which I am acquainted'. Notwithstanding that, he noted that the quantity of ore raised had been:

> ... sufficient to remunerate the Adventurer for his capital and current costs and I am of the opinion that with a prudent and systematic mode of working the Newtown Ards Mine, it is one that could be carried on for quite a number of years, so as to yield a moderate profit to the Adventurer, a fair Royalty to the Lord of the Soil and employment to a large number of work people and the neighbourhood would advantage from the expenditure consequent upon such an operation.

However, with unrestrained bluntness he then states, 'You will naturally imply from these remarks that I do not quite approve of the present mode of working the Mine, and such, Sir, is the case'. He then proceeded to point out the errors that had been made by the mine's management. One of his chief criticisms was that the Engine Shaft had not been driven deep enough:

> I hold it essential to the durability of a Mine and for the present most advantageous working of it also, that the bottom of the Engine Shaft should be the deepest point and that regular levels should be extended from it. This is not the case at Newtown Ards. The Engine Shaft is sunk to the 60 fm level. Below this level at some distance North from the Engine Shaft a Sink had been made 10 fathoms deeper and the drainage of it is effected by hand labour. Again at the South end of the Mine, a Whimsy shaft [Gin Shaft] is sunk only to the 40 fms. Level and a working downwards upon a branch of good ore has reached a depth of 20 fms below the surface of the Shaft.

He noted that the principal workings were in the north end of the mine where good ore was to be found in several places. The vein had split in running northwards and the western part of it which was being worked on bargains, promised to yield a return of 20 or 30 tons (per month) for some time to come. Taylor had inspected the shaft and found signs of good ore in the drifts driven from it at the very deepest part of the mine. He considered the mine a good prospect at depth as the vein was 'of one immense size upwards and the ore has been thrown about it from side to side – I believe it narrows in depth, or at any rate that the same quantity of ore is compressed as it were into a smaller compass and that it will be easier to work'. Taylor stated that he saw 'no evidence of any gradual decline in depth, nor reason to believe that rich deposits may not yet be found'.

He pointed out that the expense incurred in extracting the ore in the *ad hoc* manner pursued by the Newtownards Company swallowed up most of the profits to the adventurer. Moreover, working a mine by basically 'picking the eyes out' (working only the richest parts, which was, unfortunately, quite common among contemporary cost book companies), meant that good ore bearing ground that could be opened and made to pay remained unwrought. He ended his report with the following *coup de grâce*:

> I am sorry to see the mine carried on as it is at present. A rapid extraction of ore discovered is going on and no effort in making for a trial in depth or for rendering the mine permanently advantageous to any party. On the contrary I much fear whether any parties will be found sufficiently spirited to undertake the mine if cut out to its present bottom as they would have to lay out a completely fresh capital in attaining a greater depth and must expect no return after the commencement of this operation.

Taylor's report details a shambolic mining operation. Harrison later alleged that the delay in obtaining the new lease in 1839 caused very considerable losses to all parties. Reflecting on the mine's development during this period, he was critical of the manner in which it was worked, stating that the management were more interested in obtaining their dividends than reinvesting capital into the mine for much needed development, particularly with respect to the South Mine: '... it would have been better for the company to have suspended operations than work the mine in the way in which I was *obliged* to do, for it might have been compared to a farmer endeavouring to produce good crops without draining and manuring his land' (BOU 1850). Lord Londonderry must have suspected this was the case, for he wrote the following across the bottom of Taylor's report: 'I think the enclosed a much more satisfactory

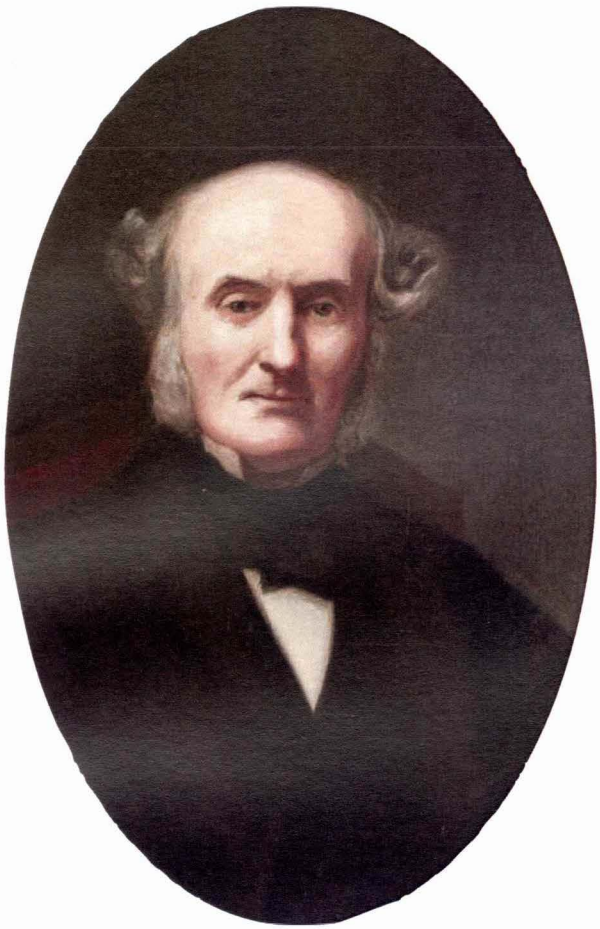


Fig. 4: ***The formidable George William Dumbell, 'The Lord Of Man', Chairman, Director and major shareholder of the Newtownards Mining Company. By kind permission of Manx National Heritage***

report than I envisaged'. He then hinted at his future intentions by also noting that he required some legal advice to see whether he could vitiate the leases.

He appears to have managed to do this, for on 5th April 1843 he granted a new 21 year lease to George William Dumbell (1804-1887) of Belmont (Fig. 4), who was named as the chief Trustee (PRONI lease between Londonderry and Dumbell 1843). The lease was to run from the 1st November and was held on the life of Dumbell's six year old son, William, or for a period of 21 years, with a royalty of one tenth. Also named in the lease are William Beckwith and William Gill, who, along with Dumbell, are described as Trustees and who also served as the first Company Directors. The new proprietors were men of considerable substance from the Isle of Man.

Described as '...dictatorial, quick-witted, scornful; short, thick-set, and aggressive; insincerely servile when the verbal passage suited him, bullying and even ferocious when on the attack' (Chappell 1981), Dumbell was born in Flint, Wales. His father, Jonathan Dumbell, was a native of Lancashire whose family had acquired a fortune in cotton manufacture, copper mining and milling of grain; his mother, Anne Davies, was a native of Flintshire. Dumbell migrated to the Isle of Man with his family when he was a child and served his apprenticeship as a lawyer with controversial Irish barrister, William Roper. In 1826 he was called to the Manx Bar. He rapidly acquired a finger in every business pie in the Isle of Man, becoming Chairman of most of the leading public companies and served as a member of the House of Keys, acquiring the sobriquet, 'The Lord of Man'. He was heavily involved in banking and was interested in mining. In addition to becoming the Chairman and a director of the Newtownards Mining Company, holding 70 per cent of its shares, he was involved with Bradda Head, Ellerslie, North Laxey, Snaefell, Kerroomoor [Kerrowmoar] and Great Laxey mines on the Isle of Man (IOMT 1887).

William Beckwith (1801-1883) was a Lancashire-born merchant who had unsuccessfully tried to obtain a lease from the Duke of Buccleuch to work Wanlockhead in Scotland in 1840. Like Dumbell, he was intimately involved in Manx lead mining, particularly in the Foxdale area. William Gill was drawn from the gentry and the Company Secretary was the indomitable Henry Bloom Noble (1816- 1903), a native of Clifton, Westmorland, whose name is intimately associated with the Isle of Man through his munificent legacy to the island. George Harrison was retained as the Mine Agent at an annual salary of £250, payable quarterly, Dumbell writing to him: 'I hope you will consider this a liberal arrangement, and that you may be spared in health to enjoy it; and as I fully believe that you are quite capable of managing the mine as it ought to be done, and to conduct the work scientifically, to your own credit and our advantage'. His words were to ring hollow in light of events only a few years later.

Seemingly on the advice of John Taylor junior, Londonderry had carefully worded the terms of the lease granted to Dumbell to avoid a repetition of the actions of the previous proprietors who had ransacked the mine in their search for rich ore. The new lease stated that if the mine were to become 'unproductive of Metal Ore and Metallick [sic] minerals' so that Dumbell or his heirs or assigns were unable to work the mines with reasonable profit or advantage or to 'explore for the same', then three months notice had to be given and the lease would be voided. Dumbell and his fellow Directors set about trying to turn Newtownards into a paying proposition, but soon realised that John Taylor's prediction about the financial commitment to secure the correct development of the mine was painfully accurate. Almost £50,000 was expended over the eight year period following his procurement of the lease in developing the sett. Some of their decisions were decidedly dubious and much capital was undoubtedly wasted. Indeed, Dumbell was to write to Londonderry in 1850 seeking an abatement of the royalty from one tenth to one fifteenth, as the mine had not paid a dividend since 1842 and it was not until after 1850 that Newtownards finally turned a profit. In 1846 the mine hit a nadir, producing only 211 tons of dressed ore. Interestingly, this year also coincided with some sensational intra-company finger pointing.

It appears that the Manx Board of Directors had learned that their Mine Agent, George Harrison, had acquired a financial interest in another lead mine in County Down. These were not men you would wish to cross and, in light of the damning

report by Taylor and rumblings of discontent among shareholders about the mine's management and development, Harrison's acquisition of a share in this lead mine served as the catalyst required to oust him. Harrison clearly felt himself to be a scapegoat and was convinced that his departure was orchestrated in the main by William Beckwith, whom he accused of 'tainting others with the venom of prejudice', a man who only ever acted out of 'duplicity or selfishness' and who feigned friendship 'but at the same time acted the part of an assassin'. He claimed that Beckwith alone of the directors knew anything about practical mining and was therefore able to present falsehoods to the Board of Directors and shareholders about his methods of working the mine:

> That *envious*, that *grasping*, that avaricious individual, who could never bear hearing the name of any other person mentioned but his own in connection with any new undertaking, had the satisfaction of seeing the accomplishment of his scheme.

Aware that his services were about to be dispensed with and deeply embittered, Harrison determined not to go quietly and vociferously defended his reputation, publishing a sensational spate of letters in a leading Manx newspaper and even resorted to having a 33-page pamphlet addressed to the Newtownards Mining Company printed by John Henderson of Castle-Place, Belfast, in October of 1846 (PRONI Harrison's Address to the Newtownards Mining Co. *et seq*). In this pamphlet, Harrison noted that the Directors had laid three charges against him: firstly that the miners were in debt to the company; secondly, that he had not treated his Mining Captain as he should have done and thirdly, that he had neglected matters generally. He then proceeded to deal with each of these charges.

He commenced by stating that before the company was reorganised in 1839, the debt due by the miners was actually more than it was at the present time. This debt had occurred due to the practice of granting miners, particularly those on tribute, 'subsist' by which means they were 'enabled to persevere until they had made discoveries of considerable importance'. Tribute pares had to pay for all their mining tools, fuse, explosives, candles, clay, smith's cost and also for the tramming, raising, assaying, sampling and dressing of the ore, on top of which were subtractions for the doctor and club, and often found themselves hardly breaking even or in debt to the mine once deductions for the above were made. 'Subsist', common especially on the Cornish mines, was an advance made 'on account' at the end of the first month of the miners' contract for the subsistence of the men and the payment of their boys (labourers). The amount was commonly determined by the value of the work already undertaken, but sometimes the amount advanced was nearly always the same; the men were relied upon to continue their work at the mine and subsist was allowed for a number of successive months until at length their contract became more profitable and they were able to clear the arrears. Harrison claimed that those miners who got into debt never received more than seven shillings a week and defended his actions by stating that:

> I know from experience that men in this place will not, because they cannot, work for more than a month, without getting assistance when they meet with bad bargains; and I have no hesitation in saying, if it were discontinued, it would be one of the company's worst steps that could be taken against the company's own interest; for hundreds of fathoms of ground have been cut in this way for less than one half the prices which otherwise we would have had to pay if the ground had been explored by TUTWORK. And thus the trifling debt due by the miners to the company, when properly taken into consideration with respect to the time and manner of the accumulation, will, I think, be admitted to be a matter of no serious importance.

He also remarked, 'And where is the mine to be found that "bad debts" never existed? Did Mr B. [Beckwith] not tell me that he had frequently advanced from £30 to £40 to the men, in the island [the Isle of Man], on one pay day?' He ended by stating, 'In fact, I believe, if a proper search were made, that this concern stands as clear of bad debts as any other mine'. However, he also admitted to depending on his own judgment over that of his Mining Captain when differences of opinion arose between them over setting the prices of monthly bargains. We can assume that these were more often than not, let at a low tribute rate in the pound. What he failed to divulge however, was that he was secretly running a truck shop at Newtownards, a pernicious system of payment by employers of their men's wages wholly or in part with goods or by token which could only be obtained/spent in a company shop. This system was obviously open to considerable abuse as workmen could be forced to take goods at their employer's valuation and it had in fact been outlawed in the Truck Acts of 1831. We can only assume that Harrison was benefitting personally by running such a system, and, by constantly overruling his Mine Captain to set tribute pitches at low rates, he ensured that the men were more often than not in debt.

He then proceeded to refute the second charge, concerned with his treatment of Mine Captain, Richard Rickard (see Fig. 5). Captain Rickard was a Cornishman, born at St Day, Gwennap, in about 1802. He entered the copper mining industry at an early age and had risen to the rank of Mine Captain at Wheal Busy, Chacewater, when in his early twenties. His wife, Hannah Heath, whom he married in November 1827 at Kenwyn Church, was also from a mining family. As his great grandson, Donald S. Rickard, was to write years later: 'Great grandmother Hannah Rickard indeed had her hard times, for her husband did not always prosper and she and her many children could not always follow him in his various employments' (Rickard 1960, 4). It seems likely that Rickard had spent a few years working away from his home in Chacewater, in the west Devon parish of Buckland Monachorum, before he left for Newtownards as he brought the details of two small cost book companies to Ireland with him: Plymouth Wheal Yeoland East and Tavey Consols East, neither of which were well known enterprises (Hamilton Jenkin 1974, 50-51; 114-117). The Rickard family moved over to Newtownards, probably in the late spring of 1844, where Richard was hired on a wage of £8 18s per month. By now in his early 40s, he had undoubtedly gained much experience of hard rock mining both in Cornwall and west Devon. But it seems that he was almost immediately placed

Fig. 5: ***Richard Rickard, Captain of the Whitespots Mine, Newtownards, in the mid-to late-1840s. Reproduced with kind permission of the Northern Mines Research Society***

into an untenable position at Newtownards, for William Beckwith, seemingly wary of Harrison, sent the Cornishman a letter in the early part of 1844 in which he asked him his opinion of 'the stint' and whether he would propose 'any change' which might be 'matured on his arrival at the mine'.

This was compounded the following year by Beckwith's insistence that Rickard send him a full report, with remarks and suggestions, of the underground department every month (ML 1847). The hypersensitive Harrison reacted strongly when he found out about the new arrangements which he alleged were entirely of Beckwith's volition and not made with the assent of the Board of Directors. He suspected that Beckwith wished to have the reports first so he could address the shareholders' meetings giving his interpretation of the mine's development in order to undermine him (ML 1847). Harrison's objections resulted in a small victory: Rickard was requested to send the monthly report to him first and he, as the Mine Agent, would then forward it to the Company Secretary, Henry Bloom Noble, in the Isle of Man. These background intrigues did not promote a harmonious working relationship between the management at Newtownards. In the early days of Rickard's appointment, it appears that Harrison was only too happy to make regular visits to the Cornishman's home to discuss mining matters, particularly concerning Newtownards, where it seems he was well received. Reading between the lines, it becomes obvious that Rickard saw through Harrison's callowness and realised that the mine he had arrived to work at was being managed in a less than satisfactory manner. Indeed, Harrison admitted that 'a better situation would no doubt be very acceptable' [to Rickard]. Sensing that Harrison stood in no great esteem amongst the Newtownards directors, in inimitable Cornish fashion, Rickard let him know this and delighted in playing on his insecurities. The relationship between the two inevitably soured and then turned confrontational.

Rickard, probably unhappy at the way the prices that he set for tribute bargains were being constantly overruled by Harrison, became alarmed about the level of subsist being advanced to the tributers and made it known that he thought that 'subsisting the men was the ruination of the mine'. Forced into a corner and possibly fearing the discovery of his truck shop scam, Harrison wrote a letter to the directors regarding subsist, in which he claimed to have repeatedly tried to discuss the issue with Rickard, accusing the Cornishman of endeavouring to make the men discontented with the subsist 'to accomplish his own purposes'. However, letting pitches at repeatedly low rates only encouraged dishonesty. Men working different pitches set at different rates of tribute could easily collude among themselves by mixing ore from pitches set at a low rate with that raised from pitches let at far higher rates. Indeed, the company launched an unsuccessful court proceeding for 'embezzlement' against Andrew Stitt[26], John Johnston and William Patterson when ore raised from a pitch let at 50s per ton was mixed with that which had been raised by a pare working a difficult face at £6 per ton (Woodrow 1978, 35).

Harrison also accused Rickard of making repeated accounting mistakes in the mine books, including basic errors such as not entering the correct amount of ground driven by one set of men during their month's contract, which caused continual complaints from the workmen on pay days. 'But what is the fact with respect to his correctness in keeping accounts?' asked Harrison:

> Why, although he has only kept a few petty books, there has scarcely (if any) a pay-day ever passed, but there were complaints made by the company's labourers about his mistakes. I frequently told him, in a friendly way, to be more particular about these matters, that it was unpleasant to all; and that his *constant mistakes* were becoming the *subject* of *remarks* amongst the men, &c. And I may observe that some of the men have threatened to stop working, if either I or John White [head ore dresser] would not keep account of their time…

This accusation rings somewhat hollow in the light of the survival of a remarkable book kept by Rickard during 1847, in which he meticulously records the day to day running of the mine including payments to merchants, costings and tribute bargains (PRONI Rickard Journal).[27] This book, which

26 Andrew Stitt, son of John Stitt, a farmer, resided at Drumhirk and married Jane Wallace on 25 December 1847 (Beattie's History). The men escaped the weight of the law as they had not been paid for the ore and the prosecution, too hasily brought, was thrown out of court.

27 Rickard might have kept this book as an aide memoir to prevent accusations of mismanagement on his part.

appears to have been a personal journal containing partial transcriptions from mine cost-sheets, was taken to the United States in 1847 by his eldest son, Richard Heath Rickard. Albeit with one or two very minor mistakes in calculations that are probably transcription errors, it nonetheless demonstrates a level of diligence and eye to detail that flies in the face of Harrison's assertion that the Cornishman was somewhat cavalier with regard to his book-keeping. And far from just keeping 'a few petty books', evidence seems to point to the fact that Rickard not only had charge of the underground and surface operations, but he also doubled up as mine clerk and purser. He would have been responsible for keeping accurate accounts of merchant's bills, tribute and tutwork bargains, and the day books detailing the mine's development, all of which should have been separately transcribed into the mine cost-book for scrutiny by the company shareholders. Rickard's clerical duties, on top of his day to day management of the mine, were therefore myriad and he appears to have performed more than his fair share of the work for less than half the annual salary commanded by Harrison.

Harrison also tried to cast doubt on Rickard's mine management skills by citing an incident that had occurred the previous year, when two English miners had accused him of removing a marker (presumably a survey peg or chalk mark) in one of the levels they were driving, thereby 'defrauding them of some measurements'. The charge was investigated, but could not be substantiated, so Harrison dismissed the miners concerned, claiming that he had made it clear to the remaining workforce when going through the pitches that he had done so to dissuade others from attempting to act in a similar manner. However, the directors were not satisfied that all the miners knew this was why the men had been dismissed and clearly expected their agent to call a meeting of the men to explain his decision. 'I may have erred in judgement on the occasion', wrote Harrison, '... but I never heard of all the men in any mine that ever had been arrayed as I have just stated; and I conceived that dismissing them was all the punishment that was requisite'. He was clearly angered by Rickard's assertion to the directors that, to the contrary, he could bring forward twelve men who could claim to know nothing about why the two men had been dismissed. However, it would most certainly have been a relatively straightforward process to address the men as the directors had suggested, outside the count house, when they were all assembled at the mine on the monthly pay day/setting day. One can only assume that Harrison did not wish to be seen to be losing face by doing so only after the directors' insistence and, of course, some time after the event.

A specific altercation with Rickard was also mentioned, which occurred over the shipment of a consignment of 60 tons of lead concentrate from the nearby port of Bangor in early September 1846. Rickard had noted in one of his reports that Harrison had deliberately hidden his intentions about the timing of this ore shipment, which he planned to commence weighing early on the Monday morning. But Harrison wanted the task to commence on the Monday afternoon '... that I might be occupied at Bangor Tuesday all the day, for a reason best known to himself', grumbled Rickard, he '... put me to the expense of car and going to Bangor on Sunday to get proper information when to commence to ship the ore'. Harrison utterly refuted this accusation, stating that he had made it clear that he wanted Rickard to begin weighing the ore on the Monday afternoon, claiming the task would be completed by the end of Tuesday afternoon and the cargo shipped that evening, rather than midway through the day when the men might be disinclined to return to work. He states that this consignment of ore was to be weighed more carefully than usual, 'as payment [To Lord Londonderry] would be made according to what the ore would weigh in Bangor [at the company's store overseen by Samuel Dodd]'. Why this particular ore consignment should be treated in a manner any different from those shipped after 1845 when Londonderry changed the payment of his royalty from a tenth part of the nett proceeds of the ore sales, to taking a tenth of the concentrate in store at Bangor, is odd unless theft or fraud was suspected. Consequently, Rickard was forced to travel to Bangor himself to find out what was going on, suspecting that the confusion was deliberately engineered by Harrison who wanted him out of the way when the Manx directors arrived to visit the mine. As a result, the 60 tons of ore was hurriedly weighed on the Tuesday and Harrison questioned whether it had been done correctly.

His devious plan bore little fruit, for he was deeply agitated by the fact that following the directors' visit to Newtownards, Rickard, whom we can assume was not held up to scrutiny by the Manxmen, felt himself to be vindicated and clearly delighted in rubbing this fact in to a discredited Harrison:

> ... in fact, the man appears, since the directors have been over, between, I suppose, *joy* and *disappointment*, to have lost his equilibrium, for when I had occasion to speak to him in reference to what he had written in one of the day books, which I observed after the directors had left here, he began to *sing* and *whistle* in my face, and went out of the office, making all the *gestures of a mountebank*'.

More serious were the charges laid against Harrison's competence as a mine manager, that he had 'neglected matters generally' aggravated no doubt by constant calls on the shareholders and the fact that the mine had not paid a dividend in years. This, Harrison alleges, was instigated by Beckwith who, accompanied by Dumbell and Duff on a visit to the mines in the spring of 1846, 'had the daring effrontery to represent to them that the Mine had been so much neglected by me, it would take *twelve months to repair it*, and they were in danger of getting their lease broken on that account' (ML 1847). Harrison was further incensed as this charge was made despite the fact that they had not taken the opportunity of inspecting the underground workings (BOU 1850). Probably as a result of this accusation, a withering letter had appeared in the *Manx Liberal* in July 1846 (ML 1846 *et seq.*) penned by T. T. Smith Esq. of Newcastle Upon Tyne, a shareholder in the company for ten months. He strongly condemned the whole running of the Newtownards Mines, claiming never to have seen a balance sheet or received a dividend, yet had answered frequent calls, which prompted him to make some inquiries into the health of the company. This led to information that convinced him that 'the affairs of the company do require

"searching investigation and amendment"'.

> I last year paid a call of one pound per share; another of the same amount I ordered to be paid in April; and have just remitted a further sum of five shillings per share – a sum which has to be repeated for the next five months. No explanation is given why these calls are made. No reports are sent to the shareholders to afford any clue by which an idea can be formed of the necessity for these appeals to their purses. This may satisfy individuals who are dealing with their own money; but I am now a proprietor of shares as a trustee with others, and as I am responsible for my trust, I have been led to look into the doings of the Directors and the prospects of the Company.

Smith had examined the Company's Deed of Incorporation and discovered that it was a legal requirement to have two Trustees and three Directors. Mr. Jones (Captain William Jones of Chester), one of the Trustees, had been dead some time, and William Beckwith, the other Trustee, had been doubled up as a Director. Smith questioned why someone had not been elected to replace Mr. Jones? Indeed, he suspected that none of the officers had ever undergone a formal election process: 'Your business as a Company now appears to be left to take care of itself, and for this bad nursing of the rickety bantling you call upon the proprietors to pay! This may do in the Isle of Man, Gentlemen (where your deed specifies that your General Annual Meetings shall be held), but in England we do things differently'. He heavily criticised the running of the mine stating:

> A mining agent of experience, of *honesty*, and *sound* judgement, has seen the mine, and having been told that a call was made upon the company, was amazed to find ore in great abundance, which could be got at a cost of about one-third that which the men were working, and they were driving into new ground leaving all this rich ore, which if properly wrought *should* be turned into the Company's pockets, instead of demanding calls that are unnecessary. Upon asking why this rich ore was left? the conductor could give no reason, but said he supposed it could be got *now*! This inspection was subsequent to Mr. Taylor's very unfavourable report...

He also raised doubts about Dumbell's integrity, revealing that he had acquired 191 out of a total of 598 shares, sold at public auction at the Wellington Market that March (MS 1846):

> ... when so large a number "fell into Mr. Dumbell's hands" at an average of £11 7s 1d per share, and which he, with great kindness and unsolicited, offered to me in a few days after, at £25 per share, although "he did not think them worth less than last autumn," when he offered to sell me all he had at £35 per share! There was too much generosity in this offer, to a perfect stranger, for me to take advantage of a purchase of 149 shares at (£10 per share, or) £1,490 less than the unfortunate owner thought them worth! My own estimate of their value, *under the present management*, I communicated in my reply, which was about £8, and he to pay the calls, amounting to 50s. per share... I do not hear that the dark cloud which hung over the concern is removed, or that the order for the call is rescinded, as I was told it was likely to be. My money has been paid, whether, Gentlemen, you have paid yours, the Company should inquire, and not allow the Directors a privilege which the other proprietors do not enjoy, and to avoid the payment of which calls, I am told that one of our *three* Directors [Duff] was anxious to sell his shares.

He delivered a blistering attack on Harrison's management of the mine stating: '... I can produce a proper mining agent, who would undertake to work the mine *in a proper workmanlike manner*; with HALF the proceeds of our mine, he would pay all the expenses of the mine, and a good dividend to the company!!' He questioned why Dumbell and Duff were anxious to sell their interest and back out of the concern: 'If there be any thing disastrous in the affairs, known to you as Directors, why do you not reveal it to the parties interested?' He threatened that if no meeting was called 'to prevent further appeal being made to our pockets', or if the opportunity was refused, then the shareholders would call one for themselves 'as becomes independent men'. He concluded his letter by stating that he could see nothing in the Deed of Incorporation to protect the Directors from 'wilful mismanagement' and warned that if an immediate change was not made in the management of 'our affairs in the mine... I beg to tell you that you will find that Manx laws will be no protection to you against the JUSTICE which the British legislature allows us to avail ourselves of' (ML 1846).

'To this I boldly answer, let him do so, if he can', thundered Harrison in response, claiming that he went underground not less than twice every week, was a constant presence at the surface and had attempted to run the mine as economically as possible, quoting improvements he had made to the two steam engines and making specific mention to coal consumption, probably to counter accusations of pilfering.[28] One area for concern was the mine's timbering. The top of No 5 Shaft had recently fallen in during one very wet night, but Harrison was quick to pin the blame on Rickard: 'And was it not right that Captain Rickard should have paid some attention to these things, when, in reality, I had done almost every other work myself? Should he not, as a matter of duty, have attended to these matters, if he had not been instructed by me to do so?' Harrison alleged that he had drawn Rickard's attention to the

28 Regarding the engines (an 18-inch and a 26-inch), Harrison stated that he had replaced the leather valves with brass ones in the plungers and had wooden valves made to replace the leather valves for the upper clacks of the plungers fixed in the hot wells at the backs of both engines, which he claimed had effected a great saving and demonstrated his desire to run the mine economically. He also quoted the coal consumption of the engines from 25 August 1845 to 27 December 1845 as 26 cwt. per day, or 9 tons 2 cwt. per week, and also the coal consumed in the count house from August to December as 27 cwt. per day. He stated that he had been keeping a close eye on coal consumption about the mine and in its transit from the company's coal yard in Bangor to Newtownards; he had suggested putting in a weighbridge to guard against pilfering, but Mr Beckwith had told him 'to continue to go on as we had before', hence, in Harrison's opinion, there was no case to answer over coal consumption.

bad timbering in the mine and suggested that the timber man be allowed to work a few extra shifts to make the place secure, but stated that the work had yet to be attended to. He further alleged that the timberwork had been neglected 'principally on account of the ill usage of one man in particular by Captain Rickard, and I believe, by a desire on his part to favour a relative of his own'. He claims that this was also 'supposed by many of the men' and 'in consequence of the incompetency of that individual, Captain Rickard had to devote a great deal of time to assist him which otherwise would have been unnecessary'. Harrison was obviously making reference to Rickard's son, Richard Heath, whose name appears among the tutwork pares entered in his father's Journal. As a result of this nepotism Harrison claimed that, 'Several good hands went into the adjoining mine in consequence of harsh treatment'.

He also resisted Beckwith's idea of erecting two ore grates at the north engine to wash the ore and separate it from the gangue before it was conveyed to the main dressing floor. Beckwith estimated that this would make a saving of about £60 per year. Harrison stated that if erected, the grates would probably have to be pulled down again and gave four reasons why the scheme was unlikely to succeed. Firstly, a deficiency of water, enough for just three hours work, meant that the ore would be drawn out of the mine faster than it could be treated, resulting in a need to lift it some 10-12 ft in order to store it in ore bins above the grates. Secondly, the waste rock would have to be put onto cultivated ground and thus damages would need to be paid to the landowner. Indeed, the 1843 lease specifically stated that reasonable amends were to be made for spoil and damages to lands. Thirdly, there would be added expense in having someone to oversee the boys employed there and fourthly, the rich ore separated by grating would need to be minded by someone overnight to prevent theft, resulting in added cost. Given the fact that during 1843 some 30 tons 9½ cwt. of ore had been raised from this end of the mine and the cartage to the main dressing floors had been £4 3s [per month], which, if the same amount had been raised and transported for twelve months would come to £49 15s, and given the additional expenditure that would arise by adopting the new scheme, Harrison concluded 'they are about to adopt a plan which will make matters *still worse* than they really are at present'. Plans had been initiated to remedy the shortage of water by putting in a larger plunger and a reservoir was being mooted to store the water. Harrison dismissed this by stating that there was no room to build a reservoir, as the top of the shaft needed to be raised so as to have a fall for the intended grates: 'Indeed, take any view of this matter you please, the grating of only a part of the stuff, at the north-engine shaft, will be of no utility, or I would have adopted it long ago.'

Harrison then compared the Newtownards dressing floors to those at Cross's Mine which was working the Beckwith Vein on the Isle of Man, where he notes 'they were wheeling all the stuff in *hand-barrows up inclined planks* to the *crushing mill* (which was a very expensive and a laborious work), and the ground stuff was again wheeled in barrows from the mill to the washing-place' despite the proximity of a steam engine that could easily have been pressed into service to draw the ore into the Cornish rolls crusher. Cross's Mine was, of course, worked by the Isle of Man Mining Company, a concern in which William Beckwith had a significant interest, therefore Harrison's comments were pointedly intended to question his mining acumen:

> I shall now, for the information of the shareholders who have not yet visited this mine [Newtownards], give some description of the dressing-place, &c. The stuff from the south end of the mine is brought on a railway to the grates at the washing-place; and the stuff which required to be ground, is drawn *by the windmill* up an inclined plane, to the *hopper of the crushing-mill*, and the ground stuff is again conveyed on railways to two different places, where it undergoes the first preparation for dressing. We have two crushing mills, which are wrought by the windmill, and which is, in a middling good breeze, sufficiently powerful to work the two at the same time. The two crushing-mills have each *three pairs of rollers*, which is not, (if at all) the case at any other mine, but is, in my opinion, a *decided improvement*. In fact, our dressing place is as convenient in every respect, as any one that I have seen, and much more so than some I could mention.

Harrison argued that he had taken on the mine 'under the most discouraging circumstances' and the unfair criticism levelled at him was compounded by the knowledge that he had turned down the offer of an agency of one of the most productive mines in England 'after a good deal of solicitation by the original shareholders, to remain at the Newtownards Mine'.'In a few years succeeding 1830', claimed Harrison, 'I succeeded in getting it to pay the proprietors very handsomely for a great number of years, besides clearing expenses of extensive machinery and buildings'. He was at pains to point out that his mine management capabilities were not sorely lacking as Beckwith was implying, stating that Captain William Jones, a man of very extensive experience in mining and to whom he was answerable under the terms of the 1839 leasehold, 'approved of my method of working the mine in every respect'. Moreover, he claimed that 'nothing but harmony existed between me and the original Shareholders during the long period that I had the pleasure of being their Managing Agent of the Newtownards Mine' (ML 1847) despite the fact that he spoke detrimentally of their management of the mine following the Taylor Report. In order to illustrate his competence as mine captain, he notes that he had queried instructions contained in a recent letter from the company secretary, Noble, stating that the Directors wished him to make an effectual trial at the north end of the mine, by putting down the North Engine Shaft and extending the levels to the northward side of that shaft as rapidly as possible:

> ... in my report of the 25 July, I wrote as follows:- "Referring to the making of a trial in the north end of the mine, either by sinking the engine shaft or by sinking sumps in the 90 fathoms level, and drive from them, I gain beg to say, that, should the directors be guided by *my* advice, they will defer making this trial, until it shall be ascertained, by driving the 90 fathom level further northward, whether the bunch of ore in the adjoining mine [Conlig] extends into our ground or not.

The directors did agree to defer this trial due to 'the falling off of the ore in the Conlig mine', and, desperate to prove his credentials further, Harrison raised the issue of the recent stopping of a rise he had commenced, designed to ventilate the workings in the north end and to prove the ground (probably as the result of the stinging criticism contained in the Taylor Report):

> If I have erred in anything connected with my management, it was in putting men to *raise ore northward* of the sump from the 60 to the 75 fathom level, in the north end, before the rise which had been begun by me, would be communicated with the intended sump from the 40 fathom level to meet it; the rise should have been done *forthwith*; but the stopping of it was right down *ruinous* folly, and make no mistake. In fact it was one of the most *glaring* and *unfortunate* acts on the part of those interested in this matter that could have been done...

He noted that there were eighteen men at work above the 60 fathom level labouring in poorly ventilated workings that required a duck machine (see below) to supply air. But the mere fact that he had begun exploiting this very rich piece of ground, 'picking the eyes out', with no regard to ventilation, pumping or proper development (albeit under instruction from, or with the sanction of, the Board of Directors) in the first place cannot be overlooked, and nor can the criticism contained in the Taylor Report.

Harrison's plans for the mine's future development, particularly in the trials he had instituted, were also under question. He had apparently resolved to sink a new shaft on the South Mine (to the east of South Engine Shaft, see below) and this news was seized upon by T. T. Smith who expressed his incredulity, stating that the new 75 fathom shaft was 'a disgraceful outlay of our money'. 'By sinking a few yards farther than the spot fixed upon by him, a shaft 20 fathoms will answer every purpose. Upon what pretext is our money to be thus squandered? Fifty fathoms of unnecessary shaft! Does your Agent know no better, or does he act under your orders?' 'The statement is utterly untrue', retorted Harrison:

> The place fixed upon by me for the shaft is at the foot of a hilly range extending parallel with the vein, commanding only so much rising ground as would allow a suitable place for dressing ore, and its highest elevation above the adit or day-level is only 20 fathoms; and it will appear by reference to the "estimates of cost of trials ." &c., which I sent to the directors some time ago, that the depth of this new shaft to come upon a level with the 75 fathom level, would be only 60 FATHOMS. And thus, as to the statement that by sinking a shaft a few yards farther than the spot fixed upon by me for this shaft, one of 20 fathoms would answer every purpose, it is altogether absurd and impossible.

However, he did admit that the trials he had instigated, 'had not answered my expectations, but some at present appear to equal my hopes' and he stated his conviction that the mine was as yet imperfectly explored would improve with depth in the South Mine in particular and that the greater returns of which it was capable could only be made by further development of its resources. He succeeded in obtaining a written apology from T. T. Smith that September (which was sent to the Manx press), in which Smith stated that he had been 'grossly misinformed' before he penned his letter to the *Manx Liberal* (ML 1846). However, there is every reason to speculate that he had perhaps been forced to retract his statement about the running of Newtownards by Dumbell, a formidable lawyer who would have been deeply embarrassed and angered by the accusations of mismanagement and incompetence so freely ventilated in the Manx press, about a company of which he was the Chairman and a Director. For example, one respondent to Smith had that August written to the *Manx Liberal* about the Newtownards Mine under the pseudonym, 'Another Wanderer (Not) from Belfast', sensationally claiming, 'If ever there was "rottenness in the State of Denmark", there seems to be something of the kind here; and the diseased limbs must either be amputated or cauterized'. Tellingly, this anonymous letter also cast doubt on the integrity of the directors' mining interests at Laxey and Foxdale (ML 1846).

For Harrison, matters did not end with Smith's letter of apology. Beckwith had succeeded in his plan of undermining him as Mine Agent to such a degree that he had provoked the ire of Dumbell who now resolved to make an example of him, perhaps hoping that this would go some way to assuage the accusations of gross mismanagement of the Newtownards Mine for which he, Dumbell, was at least in part culpable. Harrison's involvement with a lead mine at Rathmullan during the summer of 1846 presented him with the perfect opportunity.

THE RATHMULLEN MINE DEBACLE

The 'Rathmullen Mine' was discovered in the small townland of Glebe (a field containing the Glebe House a short distance to the southwest of the church) and contiguous to the much larger townland of Rathmullan, about six kilometres south of Downpatrick. Opened on a lode running northwest-southeast, comprised of barite and fibrous gypsum through which abundant galena was distributed in veins and patches (Traill and Egan 1871, 67), its discovery elicited a great degree of interest on the part of mining adventurers in 1846. A key player was William Campbell Esq., a mining entrepreneur of Ballyalton, Newtownards, who had engaged in mineral exploration on Lord Bangor's lands at Ballyleidy in 1835 and had been warned by William Blacker about encroaching on a neighbouring estate: 'I was not aware of the probability of it being likely that you should enter into Ballyleidy Demesne which I am afraid will be disagreeable to Lord Dufferin whom I should be very sorry to annoy but it is too late now to make any reservation in his favour and I trust you will take every care to do him as little damage or annoyance as possible' (PRONI Outletter Book of William Blacker *et seq.*). Campbell had also tried to secure a 31 year lease to work a mine on the Gosford Estate (which had land in Counties Cavan and Armagh), and also appeared to have been in negotiation with Lord Bangor over a mining lease in Castleward townland in 1835. This had caused a major dispute between Bangor's Castleward tenants and the proposed 'mining corporation'

Fig. 6: ***Captain Richard Rowe junior of St Agnes who worked at Conlig before becoming the Captain of the Laxey Mine in the Isle of Man. By kind permission of Manx National Heritage***

over the extent of the proposed workings. If Campbell had been given a lease of all of the townland, this would have impacted on their access to commonage.

Another key player was Captain Richard Rowe (1823-1886), the son of well known Mine Agent, Richard Rowe (hence he often signed himself 'Richard Rowe junior'), born at St Agnes, Cornwall, who had begun his early mining career in County Down, at Conlig some time after 1841 (where the Mine Captain, Henry Rowe, was probably his uncle) (Fig. 6). Showing promise, he had been offered the management of Dumbell's Mona Mine in Ellerslie in the Isle of Man before being appointed the Captain of the Laxey Mine in February 1845. The following year, Rowe was tipped off about the mine in the Glebe townland by two or three miners who were working in another part of the country. Believing it to be promising, he had put in an application for the lease of it to the Reverend Archbold. Rather tellingly, this was not in his own name, but under those of three working miners (two named Horsley and another named Dixon, all resident in the Laxey area), only to discover that he had been gazumped by William Campbell who had already set up a private company. Rowe then took out a lease of land in the adjoining Rathmullan townland to the northwest of the church from the landowner, Lord Bangor, and succeeded in forming another private company to work it. Operations had commenced, a shaft had been sunk and plans were in train to put up a steam engine there.

Harrison claimed to Dumbell that he had not hidden the fact that he had acquired a share in Campbell's Rathmullen enterprise in the Glebe townland, having communicated this to one of the Newtownards Directors, William Duff, who had promised to raise with Dumbell the question of permission for Harrison to visit Rathmullen occasionally to advise on its working. He alleges that he also wrote to Beckwith requesting that he lay before the Board his request to be allowed to inspect the Rathmullen Mine. Beckwith replied: ' Individually, I can see no objections to allowing you the time and permission to inspect another Mine, but I shall lay the letter before the next meeting of Directors, especially as Mr. Dumbell feels sore at any private communication taking place, he not being the party applied to...'. Harrison suspects that when Beckwith raised the matter with the Board, he 'spoke prejudicially to [his] interest'. He also claimed to have done all in his power to try and secure Dumbell, Duff and Beckwith equal shares in Campbell's enterprise. But 'seeing that there was no chance whatsoever of succeeding in this way, I accepted of a share on my own account'.

Richard Rowe had visited Newtownards in the spring of 1846 to inspect the workings in order to draw up a report for the company, which, unbeknownst to Harrison, was to contribute to his downfall. During this time, Rowe was also treating for the lease of Rathmullan from Lord Bangor and had discussed his plans with Harrison. Harrison claimed he had stated to Rowe that if the Cornishman was successful in obtaining a lease from Lord Bangor, he would do all in his power to promote an amalgamation of the two companies. Rowe allegedly stated that if this happened, he intended to make the lease over to Dumbell and Beckwith and promised to discuss the terms of any proposal to unite the two companies. Harrison stressed to Rowe that he wished him to communicate to Dumbell how he had tried, yet failed, to get him and the other two Directors installed as shareholders in Rathmullen and was also at pains to point out that he had always wished Mr. Duff to be included as a shareholder. According to Harrison, Rowe however, objected to Duff stating that Dumbell and Beckwith were 'the *two leading men* in the companies where he himself was interested'.

Having heard nothing about his proposal of a union between the two companies, Harrison claims that he wrote to Beckwith on 16th June 1846 on the subject, stating that he was happy to continue, with his permission, to promote this object. Beckwith responded that Dumbell was not a party in the Rathmullen Mine, which Harrison states took him by surprise. He then relates that when Dumbell and Duff next visited Newtownards and were inspecting a plan of Rathmullen in the count house dining room, Beckwith approached Harrison in his office and warned him not to speak about Rathmullen before either man. It was only when Harrison spoke to Captain Rowe on the matter that he was informed that Beckwith had made up a company of his own friends to work Rathmullen mine. Rowe had not retained a share for himself because he was allegedly 'afraid' of Dumbell. On pressing Rowe to give his opinion of the mine, the Cornishman stated that he 'believed the place

was done, and that the ore did not appear to go down', and suggested that if Harrison was keen to know more, he should take 'French leave' to see for himself. Harrison did not believe Rowe for one minute and thought that this was merely a ploy to try and eventually gain the leases to all the ground in the area.

Members of the Newtownards Board of Directors had prior form where sharp business practices were concerned and Harrison should have been forewarned. As Mine Agent, he had advised the company to include the leasehold of the townland of Drumhirk (which lay directly to the east of Whitespots) when they negotiated their new lease in 1842, as some rich specimens of lead ore had been discovered there. The company had not succeeded in achieving this, but were permitted to make some trials there. It later transpired that one of the Newtownards Directors (possibly William Gill), after discussing Drumhirk with Harrison, had quietly taken a lease of it for himself and had acquired written authority from Mr. Lepper, Belfast, to make a trial. Harrison was greatly surprised by this surreptitious action, having freely shared the results of his explorations in the field with him. However, circumstances had not favoured this man to commence operations, and, cognizant of this fact, Beckwith wrote to Harrison: 'As regards the person who once volunteered to shew the ore in Drumhirk, I think it more advisable to let the matter slumber for a while, he may then be thankful and willing to discover the situation for a reasonable sum' (ML 1847).

The final nail in Harrison's coffin was Captain Rowe's report of 1846, conducted right under his nose, which was dismissive of his plans and contradicted his advice for trials and future developments, especially where the South Mine was concerned. Rowe concluded: 'I am inclined to entertain some fears as to whether it will be found to much extent, or in a body at the 90'... Should the 90 fathoms level, as first noticed, after three or four months' further prosecution, *prove* barren and unproductive, I would abandon operations there' (BOU 1850). Harrison had, in his greed and naivety, blundered into a nest of Manx vipers who would not think twice about back-stabbing each other in business, as events at the Laxey Mine were later to prove (Scarffe 2004, 8-12). As soon as the situation looked to be getting out of hand, Rowe wisely withdrew from the Rathmullen venture as he did not wish to make an enemy of Beckwith and he also knew it would spell the end of his mining career if he upset Dumbell, who had been deliberately cut out of any involvement by both companies.

At least one shaft (now in-filled) worked by a horse whim, was sunk 15 fathoms in the Glebe townland mine and another in Rathmullan (which later functioned as a deep well, now covered, that provided water for Rathmullan Church and Hall). As there are no references to any ore being sold by either company, we can infer that neither were a success and did not outlive the 1840s. Despite Harrison's protracted protestations in the pamphlet he had specially printed (PRONI Harrison's Address to the Newtownards Mining Co.) and a series of letters in the Manx press, that he had never intended to double cross Dumbell unlike Rowe and Beckwith '"twin brothers" in duplicity' and that he alone had shown loyalty, the Rathmullen episode finished him. He was dismissed in the late autumn of 1846. Although some of his actions at Newtownards clearly demonstrate that Harrison was not beyond reproach, one cannot but feel a degree of sympathy for a man who, easily manipulated and out-witted by others, cut a somewhat pathetic figure but who was nowhere near as incompetent as Beckwith alleged.[29] He doubtless took immense pleasure in the knowledge that Beckwith had his comeuppance, for he had also incurred Dumbell's wrath over the Rathmullen venture and was ousted from the Newtownards Board of Directors 'as a reward for his imperfect scheme' (ML 1847).

Harrison's nemesis, Richard Rickard, remained at Newtownards until at least 1848 where a son, John, was born. Rickard's career in mining continued, unlike Harrison whose reputation was irrevocably tarnished and who does not appear to have worked in the industry again following his dismissal.[30] Rickard returned to west Devon, an area in which it is likely he had formerly worked, and took up residence in Ford Street, Tavistock. He is described as a Mine Agent in the 1851 Census.[31] In March of 1852, he left his employment at the Devon and Courtenay Mines sited just to the south of Tavistock and with another of his sons, William Heath, proceeded to the Australian gold fields of Louisa Creek (now known as Hargraves), between Mudgee and Bathurst, New South Wales, in charge of a party of 50 selected miners from the Tavistock district (MJ 1852; SMH 1919).[32] By 1861 he was back in Britain, resident at Lower Fron in the Parish of Arddynwent, Mold, Flintshire, where he is noted as a Lead Mine Agent.[33] He died in Tavistock on 30 April 1864 of consumption aged 62 (SMH, 1864).

POST-FAMINE RECOVERY AT NEWTOWNARDS

Against the backdrop of such shameful avarice and treachery, we must spare a thought for the local people who worked at the mine. The attraction of employment at Whitespots was obvious, even if Harrison was running a truck shop and encouraging the system of subsist whereby men were so indebted to the mine, they dared not leave or cause dissent. Mine labour would have protected many local families from the very worst of the calamities inflicted by the failure of the potato crop in the mid-1840s. Indeed, the *Banner of Ulster* lamented the fact that the 'Yorkshire of Ireland' had by no

29 Nor as inept as Woodrow (1978,18) portrays him; there is nothing to suggest that although he was able to read and write he was 'no master of English' and needed 'a highly articulate confederate' to publish his 1846 pamphlet. On the contrary, Harrison comes across as a very articulate and well educated individual.

30 Harrison continued to live in Newtownards where he became a Town Commissioner and in 1872 chaired a public meeting to debate the presence of coal seams in the Newtownards area, a theory which he took pains to thoroughly debunk (BNL 1872).

31 HO107; Piece: 1883; Folio: 420; Page: 31. His eldest son, Richard Heath, migrated to the copper mines of Michigan's Keweenaw Peninsula in 1847 where he became a highly successful mining agent and prospector (Rowse 1967, 187-190).

32 The rest of the family remained behind in Tavistock, Devon.

33 He would have been working at either the Fron Issa Mine, operated by the Fronissa Mining Company, or Fron Hall, both close by.

means 'escaped the privations and destitution which have laid so fearful a hand on the poor in other parts of the country':

> We regret to learn that the poor of this favoured county are approaching daily nearer to a state of destitution similar to that of which so much is heard in the south and west. In the manufacturing districts of the county it might be supposed that poverty would be the least likely to exhibit itself in pauperism, but even in those parts, what with the stagnation of trade and the extremely high price of provisions, the people are fast lapsing into a state of distress greater than has been known to exist there since the 'dear summer'[34] (TT 1847).

In early 1847 it was reported that the Union House of Newtownards was badly overcrowded with 800 inmates, causing sickness to prevail to a great extent (TT 1847) and it was famine related distress that induced the management of the Newtownards Mining Company to grant a most generous donation of £50 for a soup kitchen in both January and April of that year (PRONI, Rickard Journal)[35]. In the spring of 1849, cholera broke out in the area (PG 1849) and the effects of migration, which continued unabated into the 1850s, were remarked upon in the *Downpatrick Recorder*:

> We observe, with regret, that much of the wealth of this country is going to America and other parts of the world. It is a bad sign for Ulster when the Down Peasantry are leaving these shores. Within the last few weeks 2,000 people have left Newtownards, Lecale and other parts of this county for emigration to America with their talents and money (DR April 1849).

The man who replaced Harrison as the Agent at Whitespots at the beginning of 1847 was Captain Silas Evans (1823-1894), the Mine Agent of neighbouring Conlig. He was a Cornishman from St Agnes whom Philip Henry Argall later referred to as 'one of the foremost lead miners of his day' and who had 'worked his way up from Cornwall through Wales to the Isle of Man lead mines and thence to Conlig'. Of interest is that Evans was Philip Henry Argall's second cousin: his father, Mine Agent James Evans, had married Sophia Argall, a first cousin of Philip Henry's father, Philip Argall, who worked at Conlig for John Taylor and where Philip Henry was born in 1854. Sophia and Philip's fathers were brothers, Samuel and John Argall, who worked together in mine management at Wheal Trevaunance, St Agnes, at the end of the eighteenth century. Their grandsons would therefore continue a family tradition by working together at the Whitespots Mine half a century later. Moreover, the Rowes of St Agnes were related to the Evans' by marriage: Silas Evans' aunt, Maria Evans, married Richard Rowe senior. Their daughter, Susan, a sister to Captain Richard Rowe junior, Dumbell's Laxey Mine Captain, married Silas who was her first cousin. Additionally, the man who eventually replaced Richard Rickard as Silas Evans' mine captain at Whitespots was none other than William Henry Rowe (1836-1901), another cousin and the youngest brother of Captain Richard Rowe of Laxey and who had worked as a tin mine clerk in St Agnes before he joined Silas in County Down sometime after 1851.

Harrison remained convinced that Richard Rickard colluded with Richard Rowe and William Beckwith in order to oust him because he coveted his job as Agent:

> But poor Rickard, after all the misrepresentations he had made – after doing violence to those noble principles which should ever actuate a man of truth – and after suffering from conscious guilt (which was plainly depicted in his countenance), little did he know that what he was then doing and suffering was to open a way for Captain Rowe's brother-in-law, the present agent, and not for himself! (BOU 1850).

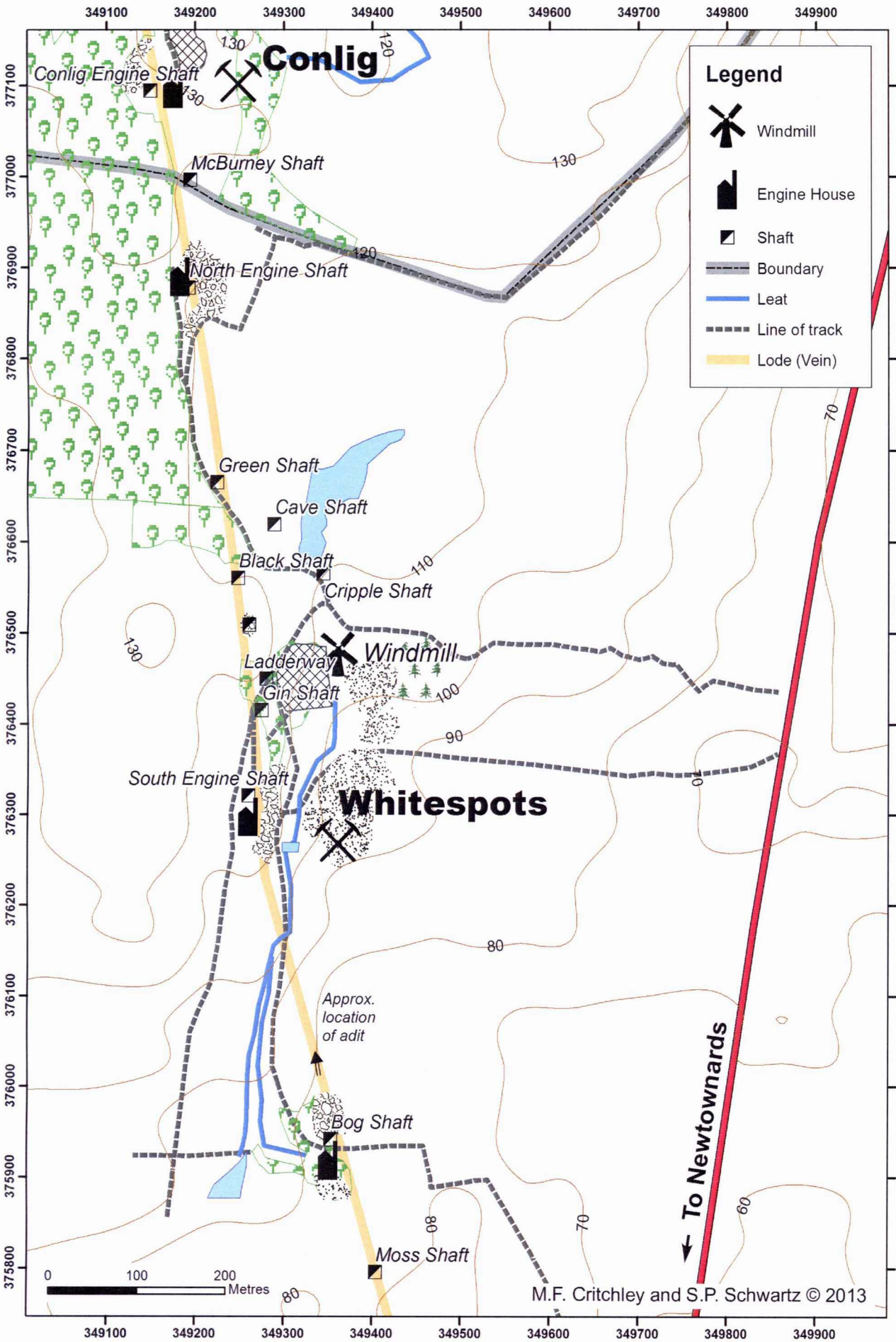
There might well be some truth in his assertion, as the Cornish were renowned for their nepotism and indeed, the relationship of the Rowes, Evans' and Argalls of St Agnes, demonstrate how locally specific numerous nineteenth century mining migration networks were, many based on complex familial ties.

Probably well aware of Harrison's reputation and failings as Agent, Evans, a devout and practising Wesleyan Methodist (BNL 1851), was determined to run a tighter ship. No doubt he knew of the accusations of past pilfering, the truck shop scam and probable favouritism towards certain merchants, prompting him to place advertisements in the *Belfast News-Letter* for tenders to coal merchants, tallow and iron chandlers and others to supply only the highest quality articles to the Newtownards Mines under strict contract for a given period with quarterly (3 monthly) cash payments, in order to ensure fair competition and complete transparency (BNL 1849, 1850, 1851). Under his Agency the mine witnessed a steady improvement and ore tonnages increased from 310 in 1847 to 1,200 in 1850. The Board were clearly delighted with the revived fortunes of the mine and were keen to publicly acknowledge the part they believed Evans had played in this, as reported in Cornish newspaper, the *West Briton*, and also the *Mining Journal* (MJ 1850), which stated that Evans had brought the mine from a 'ruinous state to a profitable condition':

> It is always gratifying to record the success of Cornishmen in the mining department. Some two or three years ago, Capt. Silas Evans, of St Agnes, was appointed manager of Newtownards mines, near Belfast, Ireland, which were then comparatively low, but from Captain Evans's perseverance and practical capabilities as a miner, the mines were raised up to profit and prosperity. During the past year, they have cleared a profit of £6,000 to the adventurers, and are still looking very well. In consideration of Captain Evans's valuable services, the adventurers have

31 This is a reference to the famine of 1817 caused by a disastrous harvest the previous year believed to have been precipitated by a volcanic explosion in the spring of 1815 in Indonesia.

35 This in contrast to Charles William Vane (1778-1854), the 3rd Marquis of Londonderry, Mineral Lord of Whitespots and one of the ten richest men in the United Kingdom, who only gave £30 for famine relief while lavishing £150,000 on renovations at Mount Stewart, his Irish estate.



Map 2: ***The principal features of the Conlig and Whitespots mining setts***

> presented him with a service of plate, value £100, on which is the following inscription:- "This service of plate is presented by the Newtownards Mining Company to Captain Silas Evans, as a testimonial of their unqualified approval of the skill and ability displayed by him in bringing the mine into its present valuable condition". 21st January 1850 (WB 1850).

Seeing a similar report published in the *Banner of Ulster* (BOU 1850), along with the assertion that the mine had been in a 'ruinous state' when Evans took it over, must have sent Harrison, resident in Newtownards, apoplectic with rage! A three column letter from him in response appeared a fortnight later in the *Banner*, which, amid the ranting, contains some very interesting detail about the mine's development in the late-1840s. At the time that Evans took over Whitespots as Agent, the South Mine had been largely neglected, despite the report of Captain Jones in 1838 advising its development. It was not until 1843 that Harrison began a trial there, which he ascertained would take three years to effect in the belief that the mine would cut rich at depth. An engine shaft [South Engine] had been sunk and an 18-inch pumping and winding engine 5-feet stroke in the cylinder operating on the expansive principle as far as its construction would permit, had been erected. Harrison noted that 'the building of the pumping and winding machinery was so arranged that another set of winding apparatus might be put up to draw stuff from another shaft or pit further south if required'.

From the South Engine Shaft three levels had been driven at the 60, 75 and 90 fathom levels southward to explore the vein. In driving southward, a good bunch of ore had been discovered about 30 fathoms in length which extended 15 fathoms upwards, and to the sole of the 75 fathoms level. Here, the lode was interrupted, but Harrison remained convinced that it would prove itself at greater depth and advised the directors to continue driving the 90 fathom level and an additional level at greater depth, and also to sink a new shaft about 150 fathoms farther south, on line with the winding machinery of the new engine and to drop on the vein at the depth of about 120 fathoms.

In the spring of 1850 an advertisement appeared in Cornish newspaper, the *Royal Cornwall Gazette*, stating that a second hand steam engine, preferably of rotative design and not less than a 36-inch cylinder, with or without boilers, was wanted by the Newtownards Mines (RCG 1850). This engine was required in relation to the development of the Bog Shaft at the far southern end of the South Mine, which, at 200 fathoms, became the deepest on the mine (Fig. 7, Map 3). Harrison was scathing about the development of this shaft which lay in the lowest point of the valley and which had necessitated the erection of a new powerful engine to pump out the vast quantity of surface water from the surrounding ground, '... you shall have in review what might be compared to a *perpetual shower-bath* on an extensive scale, keeping a steam-engine at work night and day':

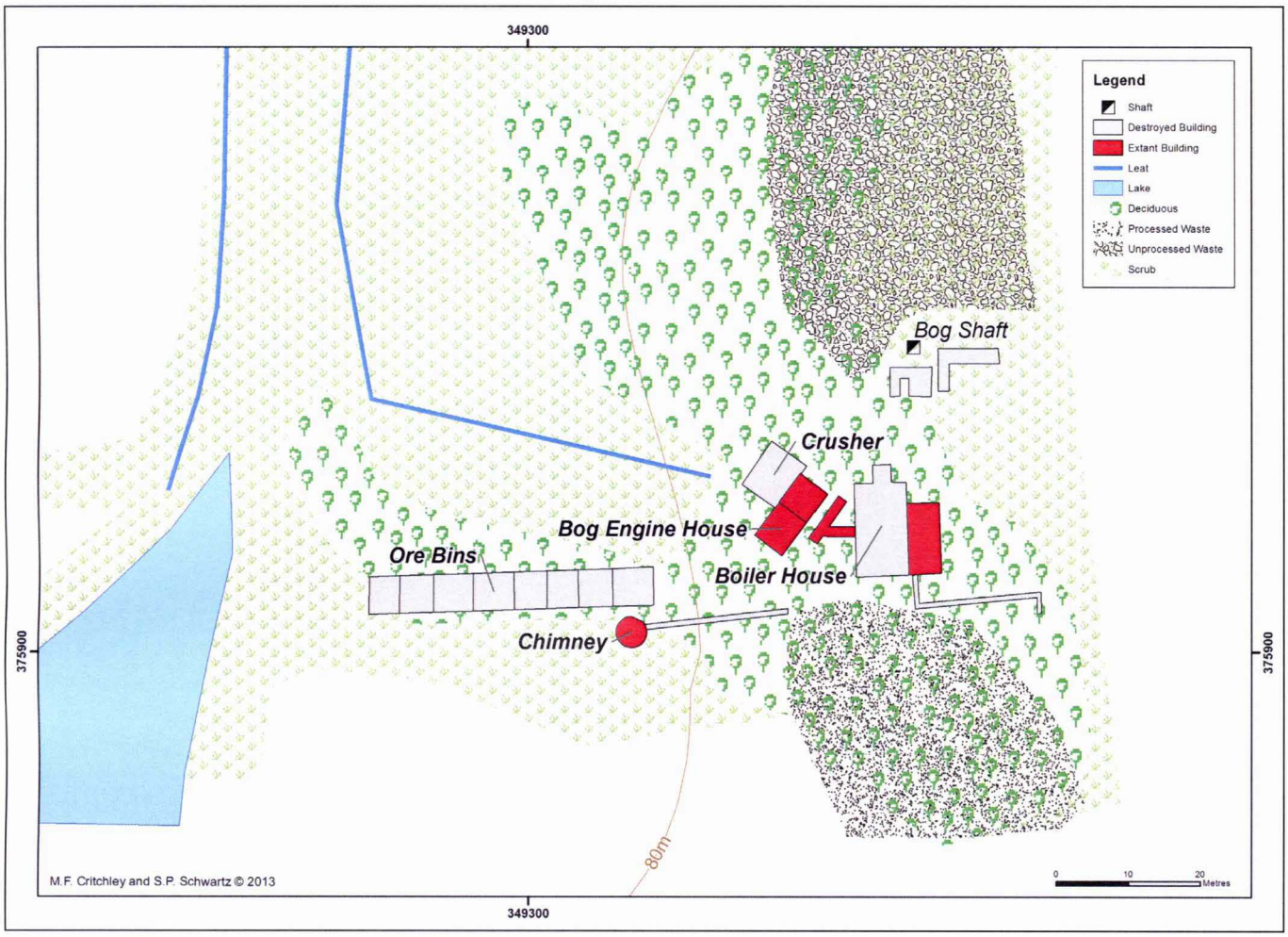
> ... if the extension of the mine were carried out according to *my* plan, the ore which would be raised *southward* of the intended new shaft, and some

Fig. 7: ***The extant remains of the Bog Shaft Engine House, here photographed in the mid-1970s. It was built to accommodate a 36-inch cylinder rotative engine in 1850. Reproduced with kind permission of the Northern Mines Research Society***

> northward of it (if need), could be drawn at this shaft, and dressed on the spot with the new engine [at South Engine Shaft] already at work; and which, after making some alteration, would be adequate to pump all the water which the south end, when worked upon an extensive scale, would be likely to make.

Developments undertaken at the North Mine were also highly questionable, where the ore in the 40, 60, 75 and 90 fathom levels to the north of the Engine Shaft had been basically worked out. In 1846, Harrison had advised suspending work below the 90 until it could be proven whether the rich lode then being worked in neighbouring Conlig Mine extended into the Whitespots sett. In 1851 it was noted that the Newtownards Mining Company had expended the enormous sum of £5,000 putting up two new engines, so an additional one was installed in addition to the 36-inch rotative engine at Bog Shaft (MS 1851). This 36-inch single-acting Cornish beam engine was actually erected at North Engine Shaft which Dumbell alleges had 'fallen in' within a letter of 1850 (Woodrow 1978, 36).

However, Harrison states that the North Mine was abandoned soon after his departure on the advice of Captain Rowe who entertained 'little confidence' that either the North or South Mine would improve at depth. A 25-feet long, 10 ton 'waggon shape boiler' with two tubes was advertised for private sale in the *Belfast News-Letter* in May 1849, which might be connected with the developments at North Engine Shaft (BNL



Map 3: ***The Bog Shaft complex was developed in 1850. It became the deepest shaft on the Whitespots Mine sett at 200 fathoms. Some primary crushing and dressing of the ore took place here. However, in this part of the sett the galena was disseminated in a barite gangue making it very difficult to dress***

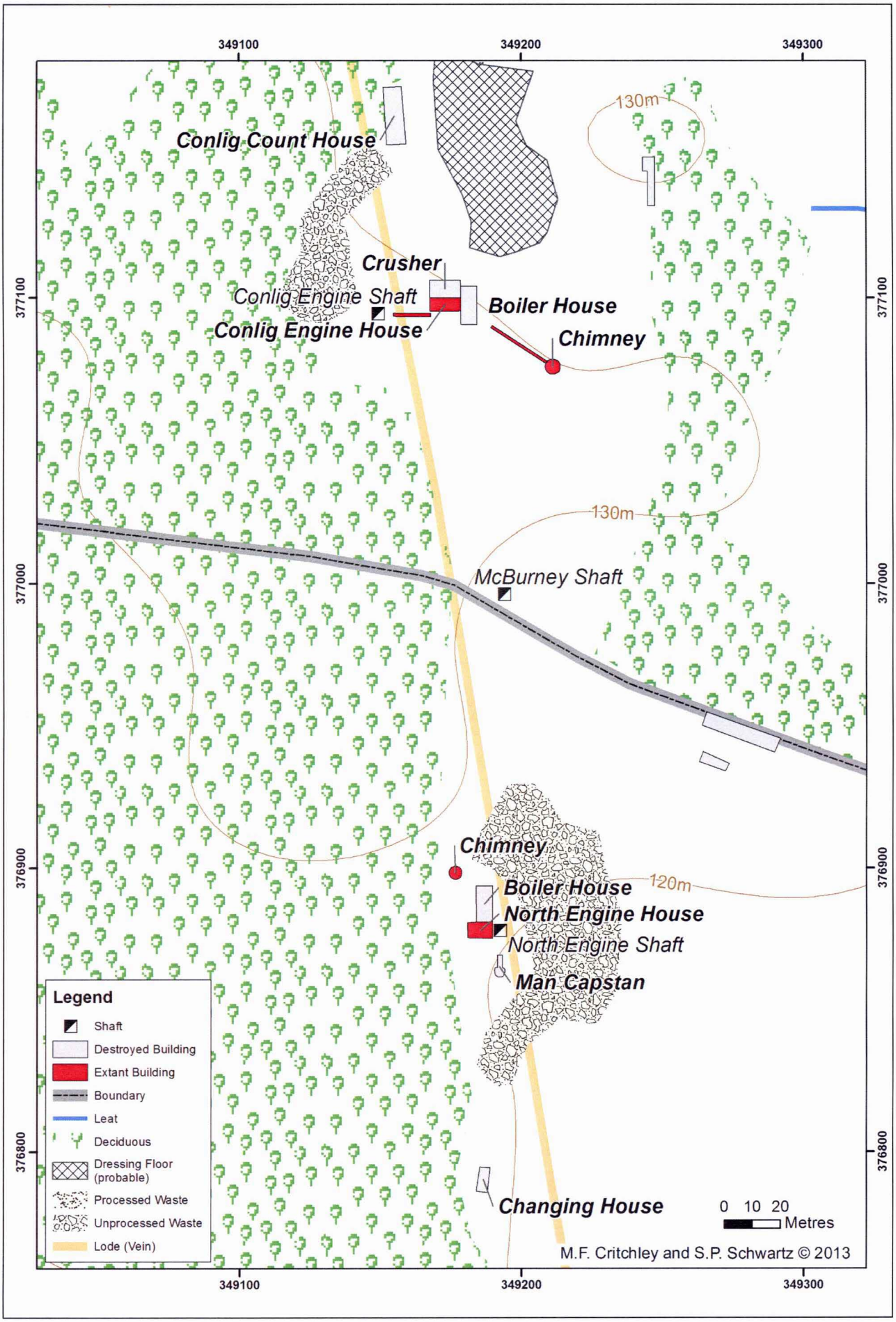
1849) for, according to Harrison, '… the engine house [for a 26-inch engine] and buildings were all taken down, and 90 fathoms of an engine-shaft filled up with refuse, and otherwise destroyed!'[36] He noted that it was later proven that the ore was cutting rich in the neighbouring Conlig Mine at the 80 fathom level (tonnage figures reaching their zenith in 1849) and the vein was believed to dip and extend into the Newtownards sett:

> … but this ore cannot be raised until a steam-engine is again erected, with all the necessary buildings, and the opening out of the engine shaft, properly timbered, with pumps, &c., put into it complete, you must, though unacquainted with mining, be at a loss to account how a person of but small pretensions could, under these circumstances, advise the directors to adopt such a preposterous course, the result of which has caused a very serious loss to the company.

In 1850 the company actually acquired the neighbouring Conlig sett from the Ulster Mining Company for £500 (MS 1851) with about eight years remaining on its 21 year lease granted by Robert Ward, with a royalty set at one tenth. The purchase of Conlig, and the costly *volte face* by the company which led to the rehabilitation of North Engine Shaft and the erection of the new 36-inch single acting vertical beam engine there (the shaft now used for pumping only), proved to be enormous errors (See Fig. 8).

Probably due to the company's acquisition of Conlig, a further report commissioned by Lord Londonderry at the end of 1851 was undertaken by Mining Engineer, George Elliot of Rainton Colliery, Durham (PRONI Elliott Report). Londonderry, who was by now wise to the business tactics of Dumbell and probably cognizant of the fact that a hole had been driven between the two setts on the 60 fathom level, wanted a full and impartial report on the workings to ensure that the mines were not being worked in a method prejudicial to his interests. Elliot was conducted around the works by Captain Evans, accompanied by one Mr. Andrews (possibly Londonderry's Estate Agent), and he undertook a complete survey of the steam engines, air shafts, crushing apparatus, dressing floors and the stores for keeping the ore separate from both mine setts. He declared himself 'well satisfied' with the substantial character of most of the erections but conceded that as they were 'chiefly of the old style', there was room for considerable improvement. Elliot then subjected the mine books, plans and sections of both setts to considerable scrutiny in the presence

36 A comparison of the 6-inch OS-Maps of 1833 and 1858 immediately show the difference in the design and layout of the shaft head complex at the North Engine Shaft.



Map 4: ***The North Mine of Whitespots and the Conlig Mine which were worked by the same company after 1850***

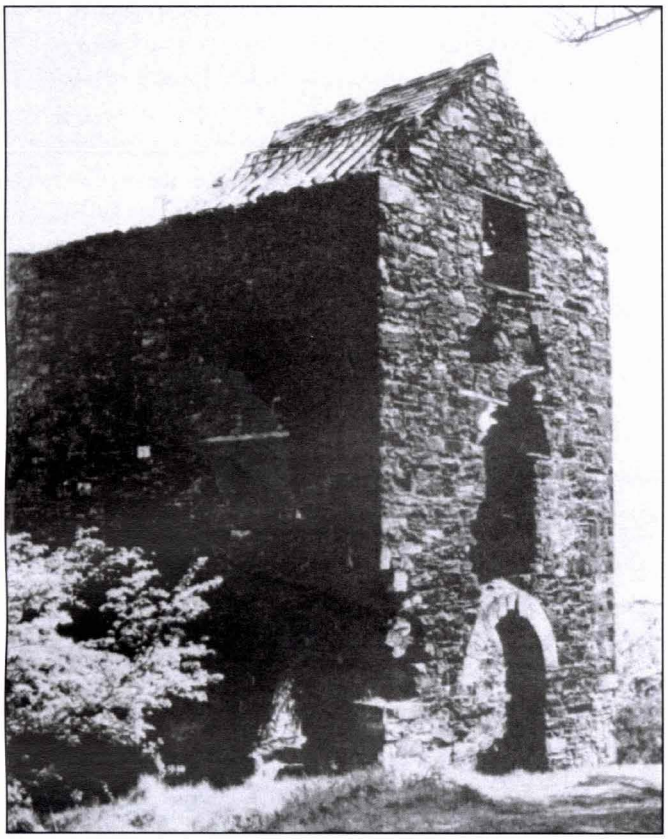


Fig. 8: ***The extant remains of the North Engine House in the mid-1970s, built in 1850 to house a 36-inch cylinder Cornish beam engine. Unfortunately this house collapsed in 1976. Reproduced with kind permission of the Northern Mines Research Society***

of Mr. Andrews:

> ... the result of this survey of the surface works and from the manner in which the produce of the mines is kept separate in the books inclines me to believe that the Company is disposed to do what is right and fair towards their respective Landlords; yet at the same time, if they were disposed to do what is dishonest, from the want of periodical supervision it is quite within their power to do so; as a check not only against this but for the general protection and successful development of this valuable mine I would recommend that once in 6 months the Mines should be examined thoroughly and also that the stock of lead ore should be taken at Bangor and balanced at the same time with the quantity paid to the men...

Elliot stated that there was no need to go to the expense of employing someone to attend to the daily weighing of the ore, unless of course, fraud was suspected, a scenario that seemed unlikely under Evans' management.[37]

He also conducted an inspection of the workings in the vicinity of the Boundary Line delineating the two setts, descending ladders into Conlig. Here he confirmed the presence of a very large opening which had been made between the setts; water was flowing freely from Conlig into Newtownards and materials were being conveyed into the Newtownards property and drawn at the shaft (North Engine). He reported that the ground in Conlig was very poor, and despite on-going exploration, in his opinion the whole of the work in that section of Conlig was unprofitable. Although the Newtownards section near the Boundary was also poor, there seemed better prospects of improvement there. He also subjected Newtownards to a thorough inspection, descending to the 140 fathom level (the depth of South Engine Shaft) by ladder-way:

> I discovered a very valuable lead Mine, being very productive of lead having a very wide vein from cheek to cheek, there seems to be such a quantity of lead discovered as to last perhaps 4 or 5 years, at their present output, and they are going on with energy to develop the vein more fully...

Londonderry was clearly concerned about the question of injury produced by the opening of the Conlig into the Newtownards property, particularly as water was now passing from the former into the latter. Obviously, it was in the interests of a company leasing both mine setts to seek the most advantageous method of working, maximising resources by not having to use more than one steam engine for pumping/winding for example. Moreover, the additional water flowing from Conlig would have been most welcome on the Newtownards sett - pumped to surface and stored - as Harrison had mentioned the scarcity of water, even during winter time, which severely curtailed proposed dressing operations at North Shaft. This issue received Elliot's 'most serious consideration' and he concluded that,

> ... from the construction of the Newtownards Lease, omitting to reserve a Barrier and demising the whole of the Townland of Whitespots I am of the opinion by their working up to that line they are not guilty of a breach of covenant; if this view is correct then I fear there is no redress for this holing having been made. Again admitting this to be so there remains another important question, i.e., if the Lessees have the right to make the communication can they with impunity cause the water to run from the Conlig Mines into the Newtownards Mines which are laying to the deep of them and might be seriously damnified...

He drew Londonderry's attention to a court case, Smith v. Hewick, that was tried at Chester Summer Assizes, 1846, involving Robert Smith, the Secretary of the North British Iron Company (a former John Taylor enterprise), that found in favour of the defendant. Elliot concluded that common sense was required to avoid litigation that might not be in Londonderry's best interests. Although Londonderry was far from happy about the situation, Elliot proposed what he judged to be a fair solution:

> ... that the advantage accruing to the lessees resulting

37 For example, if the royalty payable to either Lord of the Soil was ever to change, then the expediency of adding some ore from the working with the higher royalty to the tonnages obtained from the lower, becomes apparent.

> from the facilities enjoyed by means of the communication should be valued by two disinterested parties, one chosen by each and suppose, that for the sake of illustration that the amount was £400 per annum then I think it would be reasonable to divide this sum and pay £200 to your Lordship and in addition I am further of the opinion that a sum of money should be deposited so that the interest of it would be sufficient to pump the water in perpetuity and thus prevent the water from ever injuring Newtownard Mine.

However, the Manx company's acquisition of the Conlig sett was a costly mistake, for Taylor had wisely abandoned a mine that was all but exhausted. Little lead ore was wrought there after the sale, the last recorded production being just over 49 tons of ore in 1852. Time actually proved Harrison to be incorrect in his judgement of the richness of ore body that lay to the north of North Engine Shaft, which was found to be poor and the mine workings there were eventually abandoned. A dam was later constructed on the 40 fathom level to prevent water seepage from Conlig into Newtownards as a solution preferable to the provision of a large enough sum of money to generate sufficient interest to pay for perpetual pumping. This dam is clearly indicated on a crude cross section of the workings drawn by Dumbell in about 1865 (PRONI, Correspondence between Dufferin and Dumbell).

After Harrison's dismissal, the South Mine cut rich as he predicted it would and Silas Evans took the credit, much to his chagrin. In 1852, 1,795 tons with a lead content of 79 per cent were produced, much richer than the ore they had been raising from the North Mine. Indeed, the lead content averaged about 74 per cent for the duration of the company's operation at a time when the price of lead was high, attaining a zenith of £24 per ton in 1856 and never fell below £20 per ton (see Appendix One). Unfortunately the bonanza was to be short lived and ore production figures began a downward trajectory, by 1858 accounting for just under a sixth that attained in 1852.

COGS IN THE WHEELS OF INDUSTRY: WAGES AND WORKING CONDITIONS

Doubtless the Newtownards Mine was a lifeline in terms of employment and income for the local population throughout the 1840s and 50s, as it was a significant employer. But it was not just the mineworkers who benefitted. Rickard's Journal details the various merchants who were supplying the mine with goods in 1847: James Davison, candles and tallow; sundry engine parts from Samuel Boyd's Belfast Foundry in Donegall Street; gunpowder and timber from John Corry, founder of the Belfast firm, J.P. Corry and Co.; Robert Neil, the best Swansea coal; John and Robert Potts, ironmongery; M. Patterson, rope and leather; William Marshall, oils; Arthur Leay, lime; William Neilson, paints, glass and putty; Joseph Abbot, cordage; John Potter, horses' harnesses; Thomas Egan, sieves; James McClure ceiling laths and pine for the pumping rods and James Jamison, textiles, including nankeen for the manufacture of the characteristic pale coloured dust jackets worn by the management (PRONI Rickard's Journal).

Conditions of work at the mines however, left much to be desired. Some of the surface workers were children and on 17 April 1841, the Newtownards Mine was visited by Thomas Martin who was collecting evidence for the *Children's Employment Commission* (BPP 1968, 881-882). He interviewed Harrison, who had been Agent at the mine since 1832, and found thirty two boys employed, the youngest being just six years of age. Unlike some of the other Irish mines and collieries in the north visited by Martin and in the south of the country, by Frederick Roper, and in contrast to the situation at the mine in 1828 when several women were employed, there was no mention of any female labour at Newtownards.[38] The reason for this was because most young women were by then gainfully employed in cottage industry, as detailed in an article entitled 'The Condition of the People in Ireland' published in *The Times* just a few years later: 'Most of the girls in the district of Bangor, Newtownards, Killaloe and Downpatrick are employed in embroidering muslin collars. The muslin is sent over from Glasgow in an unbleached state, and stamped with a pattern. It is then distributed by agents among the cottiers, to be embroidered, and is then collected and returned by them to Glasgow. The young women at this work earn, on average, 10d a-day' (TT 1846). Their weekly wages would have been in the region of five shillings, which was comparable to many of the teenage boys' earnings at the mines; with the added advantage of performing this work at home, there was no need for them to seek mine employment.

The mine children's only holidays were Christmas Day and Good Friday, and they worked 69 hours a week in summer and 43.5 in winter. Their wages were commensurate with their age, with the eldest boys taking home 6s each week and the youngest, Thomas Ward (aged 6 and illiterate), 1s 6d which was often collected by his father. Only very occasionally was money advanced to their parents on account of the boys' work. During the nineteenth century the wages of children were a vital part of the family's collective income, even more so if the main breadwinner was incapacitated or had died. Indeed, there is the suggestion in Martin's evidence that the income provided by at least some of these young boys might have been helping to sustain a widowed mother, with 10 year old James Kelly, William White and Hugh Campbell (the latter two both aged 15) giving all their wages directly to their mother. Bad behaviour resulted in instant dismissal by Harrison and good work was rewarded with higher wages. Martin interviewed 12 boys and found that only one, 10 year old Robert Miller, could write. Most of the boys appeared to have commenced work at the mine at around 7-8 years of age, and consequently none had received much in the way of formal schooling which was not uncommon in mining areas in neighbouring Britain. Eight boys, John Oliver (11); William White (15); John Borres (12); James Moore (16); James Ward (10); John Ward (10); James Kelly (10) and William McCutcheon (13) could read, and most occasionally attended

38 In the decade after the Napoleonic Wars, the larger English cotton manufacturers undercut the smaller Irish ones and the cotton textile industry in places such as Newtownards, which had largely replaced eighteenth century linen manufacture, quickly went into decline, throwing many women out of work. Mine work for unemployed women in the late 1820s would therefore have been welcome.

Sunday School. Only one boy, 16 year old James Moore, went regularly to a place of worship. Alexander Milne, a 14 year old, stated that he did not attend a place of worship due to a want of clothes.

The boys were employed on the dressing floors situated opposite the windmill complex and the count house (mine office) supervised by John White, the head ore dresser. Their work consisted chiefly of carting the ore from the pits to the washing floors by tramway where they riddled it, a backbreaking process of shaking the ore in large circular sieves partially submerged in water to separate the ore from the waste gangue minerals such as quartz and barite. Their tasks only very infrequently included work underground operating a 'duck-machine', a device consisting of a large bellows that was used to force clean air into the foul and airless levels of the North Mine and which needed to be kept going day and night, with three boys taking turns during each eight hour shift. 'I saw the engine worked by a boy on the surface', noted Martin, adding that 'the labour, which is not by any means hard, consists in pressing down a lever, which opens the bellows of the machine at the other end, thus admitting the air, which by the rising of the lever is forced through a pipe to the place where it is required'. Martin did however, take issue with the management over the fact that the boys on the dressing floor were unnecessarily exposed to the elements during their long shifts, from 7 am to 6.15 pm in summer and from 8 am for as long as there was sufficient light to do their work in winter:

> The work is more severe upon them in winter than in summer, from their exposure to the weather, as the whole of it is out-door; and they are constantly at work, except when it snows hard, or rains hard, or when the stuff, which they dress, is so frozen as not to admit of their dressing it. No sheds for those who are employed in this part of the work: "they could not see so well in them, - at least it would shorten the day, an hour in winter, and it would be expensive to erect them." – This, Mr. Harrison's excuse.

The children had their breakfast before they arrived at the mine; their dinners were eaten during a 45 minute break 'on the spot, brought by themselves, or sent to them,' Martin noting sarcastically, 'Not necessary to change clothes or wash hands here'. Harrison, however, claimed that despite the children's exposure to the weather, 'they are, generally speaking, healthy; few complaints beyond colds, and those slighter... than with children employed indoors... no complaints of any consequence but the smallpox'.

The surgeon of the company, Mr. H.E. Whitlaw, did not share Harrison's opinion, confiding to Martin that he thought that it 'would tend much to the health of the boys if there were sheds', believing also that it would be 'for the interest of the concern in the end'. Martin clearly felt strongly about the treatment of the boys working on the bleak Whitespots escarpment, where 'exposure to cold in this elevated place is very great' and on the 29th April returned to the mine to meet Harrison, finding him in the company of a gentleman from the 'Isle of Man Mining Company'.[39] He presumably again raised the question of the provision of sheds for the dressing floor boys and was told by the gentleman from the Manx company that there 'was nothing in the plea that sheds would curtail light', and that at his mine, where such sheds were erected, they were 'sufficiently high to admit of ample light'. Harrison was finally forced to admit that cost alone was the obstacle, 'the Newtown Ards Company could not afford it at the present'. Martin was clearly unimpressed, remarking, 'But if so, was it justifiable in the company to enter upon a concern in which a first object is a due regard for the health and comfort, more especially of the *children* working for them?'

Although we have lost the 1851 Census of Population for Newtownards which would have told us much about the lives and living conditions of the mineworkers when the mine was in its heyday, Lord Dufferin of Clandeboye noted in 1865 that the majority of the miners and mining labourers resided at Newtownards, less so at the village of Conlig which had developed long before the mines were begun and where weavers outnumbered miners two to one (PRONI Correspondence between Dufferin and Ward). In his very early boyhood, Bobby Orme (born in about 1863) of Newtownards recollects hearing the 'tramp, tramp of the miners as they passed at 6.00 o'clock in the dark winter evenings on their way from the town to the mines'. Orme was a Presbyterian and he notes that some of the mineworkers were Welsh. As there were also a number of Cornishmen at the mines, these men and their families supported, and worshipped at, Methodist chapels including Zion Place built in 1838 and Regent Street, constructed in 1854 in Newtownards (TS 1935; MHSI). The mining company did not build housing for the workers on the mineral sett, with the exception of a house for the Mine Agent or Captain and two additional 'good dwelling houses', although it appears Silas Evans chose not to live at the mines, but resided at Francis Street in nearby Newtownards[40]. A 'changing house' was noted in the sale inventory of 1864, which was sited to the south of the North Engine Shaft, so the miners had a rudimentary dry to change into and out of their dirty clothes coming to and from their shifts. A further 'changing room' at the mine office presumably served the management.

Rickard's 1847 Journal gives a list of the wages received by a variety of workmen in January which illustrates a clear hierarchy of labour with skilled craftsmen receiving the highest wages: James Fullerton, timberman, 35 days at 2/4 (£2 18s 4d); Joseph Park, engine watcher, 39 days at 1/2 (£2 5s 6d); James Campbell, carpenter, 30 days at 2/6 (£3 15s); James McHenry, smith, 28 days at 2/6 (£3 10s); Joseph Montgomery, engineman, 36 ¾ days at 2/4 (£4 5s 9d); Hugh Little, labourer, 10¾ days at 1s 4d (14s 4d) and Thomas

39 Judging by the contrary answers to Martin which must have agitated Harrison, we can infer that this man was none other than William Beckwith.

40 Woodrow (1978) claims that the cottage later known as McNulty's House which can be seen on the skyline in Fig. 9 behind the South Engine House was the Mine Captain's residence and that it lay on the mineral sett. We can find no evidence for this assertion and the Griffith Valuation for Down conducted in 1863-4 indicates that this cottage was not on land leased to the Newtownards Mining Company.

Mawhiney, mason, 14 days at 2/6 (£1 15s). The wages of tribute pares varied enormously during January which is not to be unexpected, given the unpredictably of ascertaining the value of the ground to be mined, as illustrated by the following examples: James Boyd and Co., for lead mined above the 60 north, 6 fathoms at 12s per 2 cwt (£6 per ton). The bill for materials came to £4 15s; the smith charge was £1; winding costs, 19s 6d; carriage 17s 9d; doctor £3 and club £2 6s. The mine took £7 17s 9d, leaving the pare with £28 2s 3d out of the total £36. The presumably much smaller pare of William Still and Co., for lead mined above the 75 north 1 ton 8 cwt at 12s per ton, paid £2 8s 10d for materials, 15s for the smith, 5s for winding 6s for carriage, 2s to the doctor and 1s 8d to the club. The mine took £3 18s 6d, the men earned £4 9s 6d out of a total of £8 8s.

A tutwork pare with three partners (John Barber, Sam Boyd and Richard Rickard junior) plus three labourers, fared rather better. They undertook to drive south of the South Engine Shaft for the month of May 1847 at 75s per fathom. They drove 9 fathoms 4 feet and used 98 lbs of powder charged at 9d per lb which came to £3 13s 3d; 61 lbs of candles were burned at 7d per lb, costing £1 15s 7d; smith's charges were 2s and winding 196 kibbles at 6s 6d per hundred cost 11s 9d. The doctor cost 3s 6d and the club 2s 10d. Interestingly, there was a fine of 2s added to their tally. Miners could be 'spalled' for all manner of misdemeanours by the Agent; Rickard lists 28 separate rules enforced at the Newtownards Mines in his Journal, many of which resulted in specific fines for partners and their labourers. These include a pare working beyond the pitch they had taken; taking on or dismissing men from a pare; being intoxicated at work; missing shifts and not clearing out rubbish which made it difficult for others to prosecute their work. The mine took £6 11s 2d leaving the men with a nett income of £27 5s 6d out of the total of £33 16s 8d, apparently based upon a rate of 70s per fathom and not the agreed rate of 75s (PRONI Richard Rickard Journal).

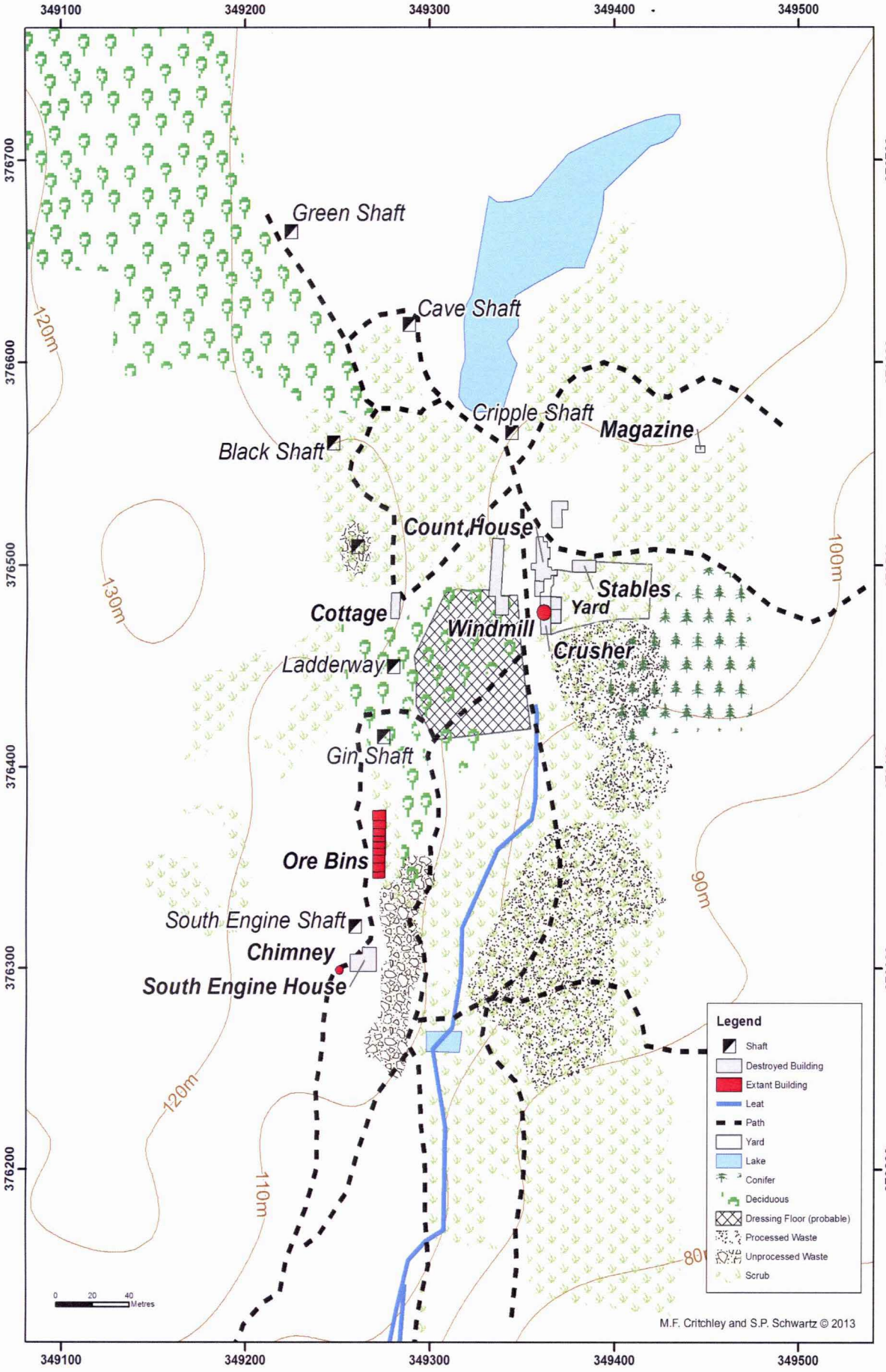
Five hundred people were recorded working at Newtownards in 1851, with a further 200 employed at Conlig. The following year this number had fallen to 400 at Newtownards and only 50 at Conlig (Thoms 1852, 179; 1854, 244). In 1853 a workforce of 400 was recorded at the Newtownards Mines, consisting of about 220 men underground and 180 at the surface. By then, the surface workers' pay averaged about 7s each per week. The takings of underground tribute pares, employed by monthly 'bargain' (contract with the mine), averaged around 15s per miner per week (Sproule 1854, 52). In common with many other nineteenth century metal mines, conditions were far from good, even given that there was a 'doctor and club' into which the mineworkers paid a part of their monthly wages for treatment in times of accident or illness. The mine surgeon had informed Martin in 1841 that the underground environment being damp, had caused 'considerable mischief among the miners' (BPP 1968, 881-882), who often succumbed to chest complaints such as miners' phthisis or pneumonia, doubtless made worse by exposure to foul air in the North Mine workings. Sproule notes that miners as a class of workmen were much exposed to accidents, many arising from intemperance (Sproule, 1852, 52), but as accidents at Irish metal mines did not have to be officially reported until the 1872 Metalliferous Mines Act, we are reliant on accounts that made their way into the local press. These undoubtedly represent a mere fraction of the incidents, fatal or otherwise, that occurred at the Newtownards and Conlig Mines.

The year 1852, when the mine attained its apogee in terms of tonnage figures, was particularly notable. Two men were nearly killed in Conlig and another seriously injured in March of that year when they inadvertently drilled into a charged hole left by miners on the evening shift. They were engaged in deepening this hole when their 'jumper' (drill steel) struck the unexploded charge which ignited, throwing two men, one eighteen feet, the other a slightly shorter distance. One miner had his upper lip cut off and some teeth broken; the second received severe bruises about the head and face and it was feared he would lose an eye, while the third man sustained a serious wound in the knee (BNL 1852). In August of the same year, an unmarried miner named Moorewood fell to the bottom of a shaft from a ladder-way he was climbing at the end of his shift, only surviving a few hours before expiring (BNL 1852). It was surmised that his foot slipped off the ladder, or that he was overcome by weakness. Climbing many fathoms of slippery, crooked ladder-ways after working a long shift was the cause of numerous fatal accidents among poorly nourished miners. Indeed, it is telling that Elliot in his 1851 report described the ladder-way at Conlig as 'barbarous'.

Only a few months after this fatality, Robert Cumming and his partner Wilson were working in a shaft at the Moss engine when the roof gave way burying them both.[41] Thirty to forty labourers rushed to the scene of the accident to dig them out and after eight hours of arduous toil, Wilson was pulled from the collapse alive, but Cumming was pronounced dead at the scene. He left a wife and child to mourn his untimely loss in circumstances similar to that of his brother, who had died at the mine some time previously. Two days later, as the inquest into Cumming's death was being held, a young man named John Caughey (the *Downpatrick Recorder* states his first name to have been James) was struck by one of the blades of the mine windmill as he emerged from inside the building, splitting his head open.[42] His injuries were so severe that he died within twenty minutes and the works were reported to be suspended in consequence of these accidents (BNL 1852). The *Downpatrick Recorder* also notes the death of James McConnell, killed at the Conlig lead mine on 4th December 1852 (DR 1852), while Alexander Cree became another fatality just three months later, when a stone accidentally fell on him as he was working. He left a wife and five children, the *Freeman's Journal* noting the melancholy fact that he had previously lost two brothers to mining accidents in England (FJ 1853).

41 The newspaper reference states Moss Shaft to have been in the Conlig sett, but on a section of the mine drawn by Captain William Henry Rowe, it is pencilled in on the South Mine beyond Bog Shaft and attained a depth of about 50 fathoms. It seems to have been an exploratory shaft as there is no stoping shown from it.

42 The windmill had a timber stage platform running round the exterior accessed via a doorway directly above the one at ground level.



Map 5: ***The central section of the Whitespots Mine in the mid-1850s showing the windmill complex, dressing floors and South Engine Shaft***

Ireland's first salt mine, Duncrue near Carrickfergus in County Antrim, accidentally discovered in 1851 while sinking a shaft in the search for coal, and two lead mines: Dundrum and Kilmegan. The discovery of these mineral deposits was reported as due entirely to the 'sagacity and perseverance of the Marquis of Downshire himself' (DN 1852).

The lead mine near Dundrum, the veins of which came to the surface and dipped east and west (DR 1852), were on Shague Hill which, as we have seen above, had been subject to numerous periods of working and trials beforehand. The *Newry Telegraph* reported the discovery of lead ore at Dundrum in October 1850 stating that work was about to begin, a 'respectable Welsh company' having been granted permission to exploit the deposit (MJ 1850). This consisted of two parallel lodes some 15 yards apart which had been surveyed and gave indications of a very rich yield; the specimens procured found to be of a first rate quality, full of calamine, black-jack, iron and barites. By the summer of 1852 this company of 'English and Welsh adventurers', which had been extensively engaged in mining operations in Flintshire and Montgomeryshire, and had, 'from a thorough inspection of the Dundrum district felt that great opportunities existed there for successful mining operations' (MJ 1852), were engaged in driving a level. The following June it was reported that the mine was yielding a good supply of ore, having cut rich in the adit (MJ 1853) and the *Downpatrick Recorder* noted that there had been a considerable increase in the quantity of ore turned out and every prospect of it containing much silver. London newspaper, *The Standard*, reported in August 1853 that two shafts had been sunk to considerable depths, lead ore of the purest character containing 20-30 per cent silver had been brought to the surface in remunerative quantities and fresh hands were to be placed on the work in the ensuing season (S 1853).

The *Downpatrick Recorder* also reported the opening of a new mine that summer 'at a distance from those already in operation, from which ore of a very superior quality has been obtained' (DN 1853). The *Mining Journal* notes this mine, raising lead and copper, to have been about a mile away (MJ 1853). A further newspaper reference refers to this as the Kilmegan Mine, presumably to differentiate it from the workings on Shague Hill above the town of Dundrum.[43] By August of 1853 Kilmegan was being operated by a Shropshire company that had sunk a shaft 50 feet and was busy bringing lead ore to the surface (S 1853). This working is marked on the 6-inch OS map of 1859 and notes the presence of a water engine, but it is not on the 1833 edition, so must relate to the period of working during the 1850s mining 'boom'. It seems improbable that the 'water engine' refers to a water-pressure engine, a machine which Robert Kane noted in 1844 to have been little known in Ireland (Kane 1971, 90-92), as the nearest source of water is Ballylough, some 2 km away to the north west; due to the topography of the land, the head available would only have been just under 20 metres, probably not enough to create sufficient pressure to power such an engine.[44] Alternatively, it might relate to a water-balance pump, like the one now preserved at Wanlockhead in Scotland, the only extant example of a water bucket pumping engine on a mine in the UK. However, just what the OS cartographer meant by 'water engine' (an early form of turbine perhaps?) remains in question, as there is no other documented reference to it, or indeed, to the mines of Kilmegan or Dundrum which never returned a record of any ore sales to the annual *Mineral Statistics*. We can therefore conclude that Downshire's lead mining enterprises were short lived and fizzled out like the 1850's mining 'boom'. No mining of any significance was undertaken in the Dundrum vicinity again. It is likely that the early-to mid-1850s also saw the sinking of two shafts on Gun's Island, one of which in the southern part of the island lay just above the high-water mark and attained a depth of 10 fathoms. No trace of galena was discovered to warrant such trials and it is not recorded by whom these were made (Traill and Egan, 1871, 67).

In April 1852, the *Mining Journal* reported how 'the Strangford Mines' were 'for the present suspended in consequence of the water' (MJ 1852). This relates to Tullyratty, which had witnessed sporadic development throughout the first half of the nineteenth century and had last worked in the early- to mid-1840s, but had always been plagued by flooding. However, following a favourable survey made by Edward Pickering for Lord Baron de Ros (MJ 1853), he granted a 21 year lease at one tenth royalty of all ores found, to leading Belfast merchants and industrialists, Andrew Mulholland, Sinclair [St Claire] K. Mulholland, William Pirrie, John Young, William Coates, Edward Walkington and Thomas McCommon[45] on 20th November 1850, to work mines in the 'Manor of Strangford'. This covered the townlands of Tullyratty, Tullyfoyle, Cargagh, Upper Killard, Lower Killard and Lagnagoppoge. The terms of the lease were that the partners would pay a rental of £12 per year and 25 shillings per acre of land per year that was affected by mining operations (Lease of Mines PRONI *et seq.*).

The *Mining Journal* report noted how this company were '... getting an engine made, when the workings will resume' (MJ 1852). It is no coincidence that William Coates and John

43 Confusingly, the Shague Hill workings also lay within the townland of Moneylane and the parish of Kilmegan.

44 Kane describes how in mechanism the water-pressure engine was essentially the same as the steam engine and was usually single acting, but with much larger valves and passages, 'as water cannot be wire-drawn like steam'. The water acted not by its own weight or impulse, but by its pressure. The height of head to obtain the requisite pressure had to be considerable, but the quantity of water consumed need not have been great. A main-pipe a few inches in diameter usually brought water from a reservoir constructed some distance away, delivering this to a valve box through which it entered the cylinder, which raising the piston, it gradually filled: the entrance valve closed, the water was let off by the opening of an exit valve, and the piston fell by the weight of the machinery with which it was in connection. Kane considered water pressure engines to be more economical than waterwheels and it is surprising that their use was not more widespread on Irish mines where coal was expensive and water abundant.

45 Brothers, Andrew (1792-1866) and St Clair Kelburn Mulholland (1798-1872) were from the wealthy Belfast textile dynasty and owned the York Street Spinning Mill, then one of the largest in the world. Captain William Pirrie (1780-1858) was a shipping merchant and a key figure in the draining of Belfast Lough. Walkington was a druggist whose residence 'Snugville' gave its name to Snugville Street in Shankill.

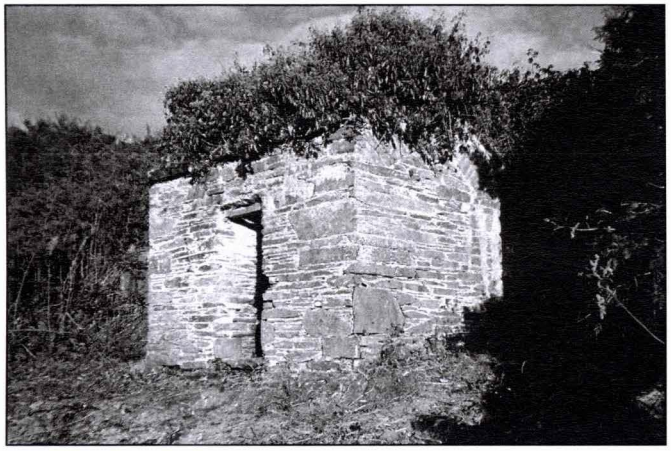


Fig. 10: ***The extant remains of the Tullyratty powder house. Photograph courtesy of Alastair Lings***

Young appear among the names of the partners, as they ran the Lagan Foundry at Belfast which was among the most important manufacturers of stationary steam engines and boilers in Ireland and supplied numerous local mills, factories and pumping stations throughout the country. The Tullyratty engine was obviously to be manufactured at their Belfast works. By the spring of 1852 the shaft had been sunk 30 fathoms (about 180 metres) and there was reported to have been 'a good orey lode in the bottom with every probability of making a good working mine' (MJ 1852). The following year, the *Banner of Ulster* announced that a discovery 'likely to prove of great value to the country' had been made at Tullyratty near Strangford by William Coates Esq., of the Lagan Foundry. 'We allude to the exposure of a lead mine, rich in the purity and abundance of its ore, and at only 33 fathoms below the surface soil and in circumstances otherwise remarkably favourable' read the report, adding that specimens of the ore were available for inspection at their Belfast office (FJ 1853; MJ 1853).

By the spring of 1853, work was well under way, as evidenced by the baptism at the Ballyculter Church of Ireland, of two children: Mary Anne Hershen, born 11th March 1853 to Nancy and Alexander, a miner, and Elizabeth Patton, born 18th March 1853, to Grace and John, a labourer at the lead mine in Tullyratty. In 1854 the shaft 'at Strangford' was reported to have been sunk 7.5 fathoms and the lode was still producing good stones of lead ore (DN 1854). The *Mineral Statistics* record the production from Strangford of 40 tons of lead ore (31 tons of lead) in 1853 and a further 31 tons of lead ore (23 tons lead) in 1855, erroneously entered under County Antrim. However, by 1856 the mine was noted as having ceased and no further work occurred there. It is not known whether an engine was ever erected and it does not appear that any deep lode mining was undertaken by the company on any of the other townlands mentioned in the 1850 De Ros lease.

TRIALS AND TRIBULATIONS AT CASTLEWARD

In the townland of Castleward not far from Tullyratty, lead ore had also been discovered (Burnett 1988). An unsuccessful attempt had been made by William Campbell to obtain a lease from Edward Ward (1827-1881), 4th Viscount Bangor, to mine for lead in this and nearby townlands in 1835 (PRONI Outletter Book of William Blacker). Given the documented early mining activity on their other lands in County Down, it seems almost inconceivable that attempts had not been made by the Wards of Castle Ward to exploit mineral deposits right on their own doorstep, unless of course, they did not wish mine workings to mar the views from their mansion. Yet the first documented evidence of deep lode mining in this vicinity did not occur until mid-1856 when a 'few speculators' reportedly sunk a shaft at Dickson's Island to a depth of 11½ fathoms with favourable indications and opened a level upon two lodes for a short distance. From this small working 'some 50 to 60 tons of lead were raised which very nearly paid the expense of working', but, owing to a want of capital, they had been obliged to suspend their activities after only a year and a few months of working (BNL 1857).

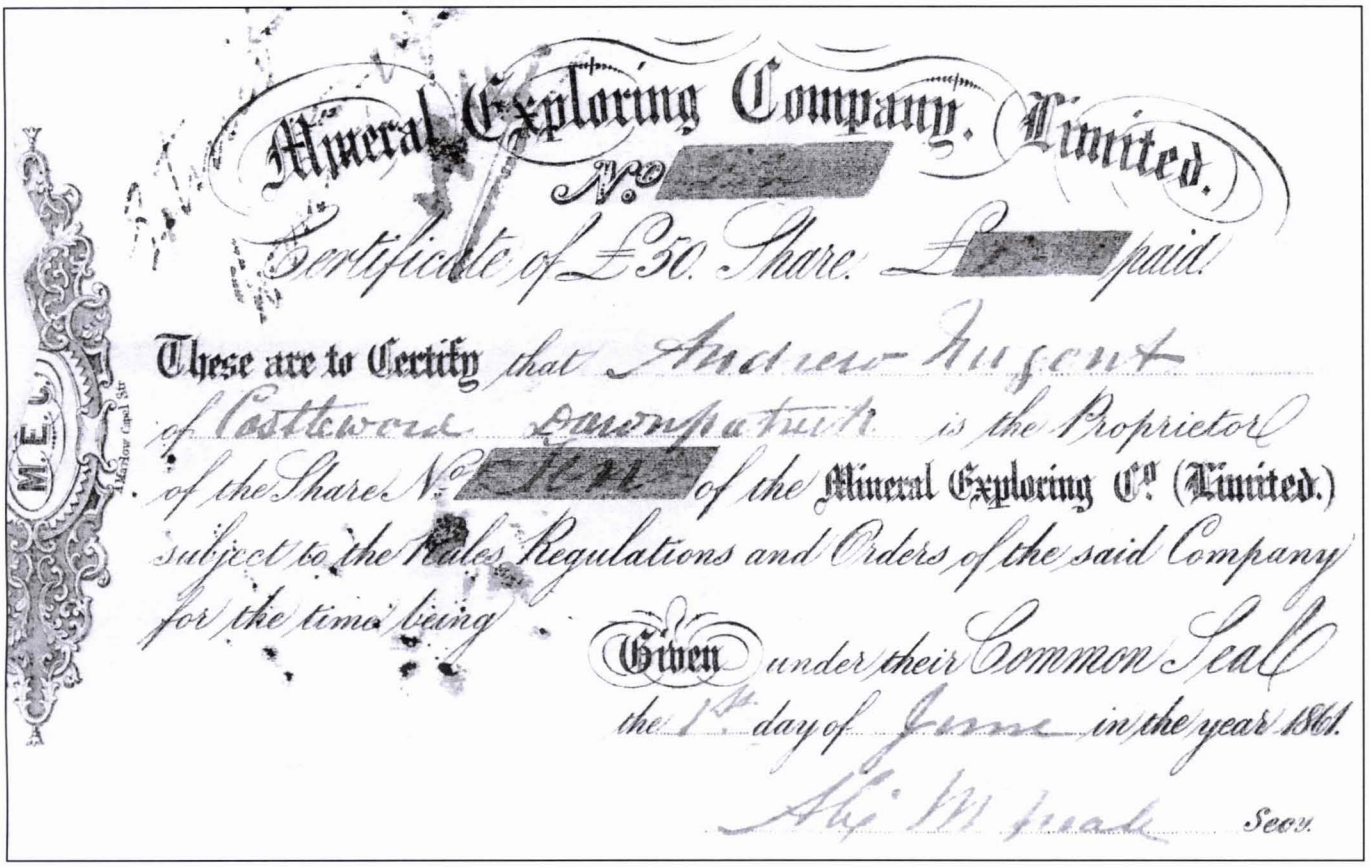
An anonymous report by a Mining Agent published in the *Belfast News-Letter* in 1857 noted the large boulders of lead ore that were visible on the sea shore of Strangford Lough. These had doubtless come from the backs of a mineral vein and the author lamented the fact that this promising mine remained unwrought (BNL 1857). Indeed, development at Castleward remained in abeyance until the property was placed into the hands of the Mineral Exploring Company (Fig. 11). This had been set up in 1858 and incorporated the following year to counter 'the widespread ignorance of Irish mineral resources propagated by English mining engineers':

> Generally speaking, the capital and skill for Mining enterprises have been supplied from England and in the attempt to carry out these projects, an almost insurmountable difficulty had to be contended with. The operatives employed were either Cornish or Welsh Miners, who, accustomed to the peculiar stratifications of their respective districts in which they had been educated, could not understand a mineral deposit being found in a different character.

The company's aim was to search and explore '... for all minerals and substances of a mineral nature, and for the purchase, selling, and general management of, or otherwise trading in, or dealing with mineral estates of every kind' (BNL 1859).

In late 1859, a prospectus was issued for the Castleward United Mining Company Ltd., which had been set up with a capital of £10,000 in 10,000 shares of £1 each (see Fig. 12) by some of the people also involved in the Mineral Exploring Company.[46] Castleward United agreed to pay the Mineral Exploration Company £1,000 to become the purchasers of the mine sett held on lease from Viscount Bangor, for a term of 21

46 One thousand free shares were to be allotted to the promoters in lieu of all preliminary expenses of every kind, including legal costs and other incidental expenses attending the formation of the company, so that all the moneys received would be applied to the future purposes of the company. A deposit of 10s per share was to be paid on allotment, and the remaining 10s was to be called up as required. No call was to exceed 5s and an interval of at least 3 months was to elapse between each call.


Mineral Exploring Company. Limited.

No. [redacted]

Certificate of £50 Share. £[redacted] paid.

These are to Certify that Andrew Nugent

of Castleward Downpatrick is the Proprietor

of the Share No. [redacted] of the Mineral Exploring Co.y (Limited.)

subject to the Rules Regulations and Orders of the said Company

for the time being

Given under their Common Seal

the 1st day of June in the year 1861.

Sec.y

Fig. 11: ***Share certificate of the Mineral Exploring Company issued to Colonel Andrew Nugent of Castleward. By kind permission of the Deputy Keeper of the Records, Public Record Office of Northern Ireland***

years at a royalty of 1/18th, the price to include all the machinery then on the premises, as well as a steam engine. The mine was noted to have been in a very favourable position, 'situate within a few yards of the sea beach where there is an excellent quay, at which vessels of moderate tonnage can load or discharge at all seasons of the year, free of any local or harbour dues'. Another advantage was that the sett, which encompassed an area of about a square mile and covered a portion of three townlands, was surrounded by Viscount Bangor's Demesne 'from which an unlimited supply of Timber, suitable for Mining purposes can be had at moderate prices and Labour in this district is both abundant and cheap'.

The first Chairman was Lord George A. Hill (1801-1879) of Ramelton in Donegal, the son of Arthur Hill, the Second Marquis of Downshire and Mary Sandys, and the youngest brother of Arthur Trumbull Hill, the 3rd Marquis of Downshire. The Board of Directors was drawn from members of the landed gentry and high profile professionals: Viscount Bangor himself of Castle Ward and Colonel John B. Ward, Strangford; Major Andrew Nugent, Castleward, Downpatrick; Sir James Dombrain (1794-1871) Dublin, former Controller and Inspector General of the Coastguard of Ireland (Symes 2003);[47] Samuel Crampton, Raheny; William F. Greene, Dublin, an attorney; Thomas Johnston, Company Secretary, Dublin; John Stanton, Kingstown and John S. Charley, Lisburn, a magistrate. The consultant Mining Engineer was Silas Evans of Belfast, then acting Manager of the Carysfort Mining Company in Avoca, County Wicklow (BNL 1859), who, along with Captain John Paull and Captain William Plummer, Inspecting Agent and Mine Manager for John Taylor and Sons respectively, had produced favourable reports on the mine for the issuing of the prospectus. Evans (who took up 50 shares in the company) and Plummer, both recommended erecting a small steam engine for pumping, winding and crushing.

However, from the start of the new enterprise, it was evident that the work was lagging behind schedule (PRONI Correspondence of the Castleward United Mining Company *et seq.*). Arthur Hill in particular was concerned, having seen reports and the prospectus of the mine published in the press (ie., BNL 1860), writing that it was foolish to have stated that the steam engine was 'on the spot', as it was not yet at the mine, but in Bangor.[48] Two weeks later he complained that

47 A native of Kent, Sir James joined the Royal Navy and became the Controller and Inspector General of the Coastguard of Ireland, a force which he had introduced and organised in 1818. He was knighted in 1843 and was honoured by the poet Seamus Heaney in his poem *For the Captain of the Eliza* due to his unfailing efforts during the Great Famine to ensure that starving people in parts of Louth and Mayo received corn in defiance of instructions from the Treasury in Whitehall. Following his retirement from the Royal Navy in 1848, he turned his attention to establishing much needed lighthouses around the Irish coast and strongly supported the development of Irish industrial resources.

48 Evans had inspected the engine (noted to have been of 40 hp and probably in the region of a 22-24-inch cylinder size) and described it as in good condition. As Evans never states that he is going to Conlig, Newtownards or

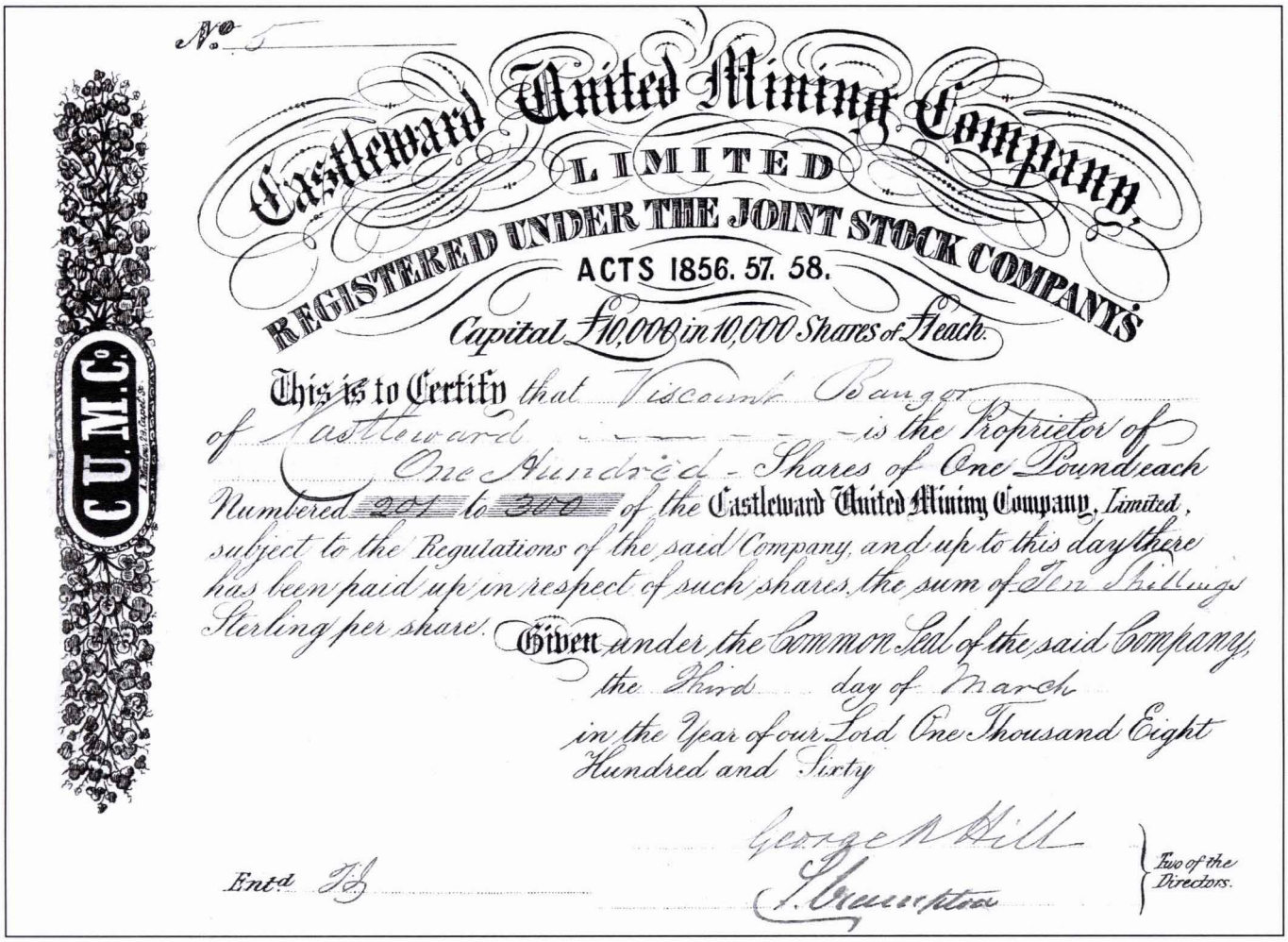


Fig. 12: ***Certificate for one hundred shares issued by the Castleward United Mining Company to Viscount Bangor of Castleward. By kind permission of the Deputy Keeper of the Records, Public Record Office of Northern Ireland***

the 'stones were needed to set the engine' (the cylinder bedstone) as this was delaying work, and although all looked well, as to the mine, '... a little life in the affair will help it'. Moreover, Thomas Johnson, the Company Secretary, noted at the end of that month that the shares were '... not flowing in as well as we could wish', especially from Belfast and Downpatrick.

In January 1860, the company entered into a contract with Mr. Edgar, whom Hill described as a 'working man who undertakes things in all directions' to construct the engine house and other buildings and to erect machinery, for which he was to be paid £50 with a deduction of £2 per day if the whole was not erected by the 1st June. All the buildings were to be to the specification of the Mining Engineer, Silas Evans, described by Hill in a letter to Nugent in January as being 'a prudent smart fellow' and the Board resisted Viscount Bangor's desire to have ornamental features such as crenellation on the engine house, on the grounds of cost. Edgar came highly recommended, having built the crusher house and installed the dressing floors at the Barravore Mine in Glenmalure, County Wicklow, another Mineral Exploring Company enterprise. Captain Evans was noted to have been planning to visit the Newtownards Mines where he, of course, had been the Mine Agent, in a bid to obtain some iron and if possible '... to make a bargain with Mr. Ward for the stones at Bangor'.[49] Instead

the mines to inspect it, rather Bangor, it seems the engine might have been at the port there. It is tempting to speculate that this was the Conlig rotative engine decommissioned in the early- mid-1850s. If the bolt holes on the cylinder plat of the Conlig engine house are to be believed however, a 36-inch engine was installed there which would make it a little too large to be the Castleward engine. It is unlikely that the engine at Bangor was that removed from the North Engine Shaft in the late 1840s, as this might have been the rotative engine that was offered for sale in 1860 at Newtownards (see p.70). Without further documentary evidence the provenance of the Castleward engine remains unsubstantiated.

49 Evans was obviously after a specific type of stone, probably a sort of freestone, for the engine bed. The cylinder bedstone usually went with a second-hand engine when it was moved. If the Castleward United Mining Company were buying the engine from Conlig, they would expect the bedstone to be included in the price of the engine. This could explain Evans' surprise as to why the stone was not given for free. However, it makes no sense for Evans to be negotiating with Lyle, Ward's Estate Agent, for the stones because the plant on the Conlig mine sett did not belong to him, but to the Newtownards Mining Company. Alternatively, the engine might have been imported to Bangor from elsewhere in Ireland or in Britain; a new engine would not have had a bedstone. Evans could therefore be referring to the procurement of suitable stone to make the cylinder bed that had been left over from the construction of Castle Bangor (built of Giffnock Sandstone), and completed in 1852. With Viscount Bangor being closely involved in the Castleward United Mining Company, and Robert Edward Ward of Castle Bangor being a near relative, the company might have expected to receive the stones for free, hence their surprise.

of being given for nothing, these were offered by Mr. Lyle (Ward's Estate Agent) at 'quarry prices' much to the board's surprise, Evans writing in late January to Johnson:

> I find it impossible to comply with Mr. Lyle's extravagant demands for them, at first he wanted the price of new stones... I offered him £10 which he refused - I shall now make out plans for the engine bed, that shall be built principally with the stone from near the mines.

Lyle had offered Evans a price of £25 for the stones, minus a boiler he was after, but Evans would not give that kind of money. However, it appears that the company finally obtained the boiler required for their steam engine from the Newtownards Mines (during 1860 a considerable amount of equipment was sold from there, see below), and there followed a great debate about the best way to bring it round to Castleward. Silas Evans had encountered difficulties in getting horses and other assistance to convey it by road, and the Board were therefore mooting having it brought the three miles by road from Newtownards to the shore of Strangford Lough and then floated down to Castleward. This was considered by far the cheaper option, as it would have cost £14 to transport it by road and a further £2 to put it into the mine, whereas it would have cost £12 in all by the lough route. Colonel Andrew Nugent was tasked by the board with keeping an eye on the works to obviate the costly necessity of Silas Evans having to travel regularly to Castleward to pay Edgar and a man named Duff, who was there in connection with erecting the steam engine. Edgar, however, appears not to have been performing his duties to the board's satisfaction, Thomas Johnson, the company secretary, noting to Major Nugent at the end of March 1860 that he was sorry Edgar was not in good repute, hoping that he may yet redeem his character and that a tight rein would be kept on him.

In early June, with the engine erection nearing completion and deep lode mining about to commence, Silas Evans was planning to go to Newtownards to look into getting some miners he presumably knew there, as well as a crushing mill. At this time, the board had also engaged a Mine Captain, paying Viscount Bangor £80 for a house on the mines which was to serve as his residence, his family to arrive at the mines on 28th June. This man was Richard Tabb, a native of Velan Saundry near Ramsgate in Camborne parish, Cornwall, born in 1820, the eldest son of husbandman, John Tabb and Mary Eddy. The locality in which he grew up lay to the south west of the Carn Brea granite range and was later to prove hugely productive of tin along what became known as the Great Flat Lode. However, during Tabb's adolescence most of the small mines that had opened were worked for copper ore obtained from vertical lodes, none of which had been developed to any great depth. Unsurprisingly, Tabb became a copper ore dresser, then a miner before he migrated to Ireland sometime between 1851-53. His destination was the Crookhaven copper mine in West Cork, where he and fellow Cornishman, Captain Henry Thomas[50], are mentioned as conducting Captain James Dombrain, one of the Company's Directors, around the workings (MJ 1853). From West Cork, Tabb moved north to County Mayo starting work in March 1856 as Captain of the Geevraun copper mine (Lings 2011, 19), a concern that was financed in large part by none other than Sir James Dombrain, who did his best to talk up the enterprise in a letter to the *Mining Journal* (MJ 1856).[51] The following year Tabb is noted as the Captain of the 'Gievraunn Copper Mining Company', a limited liability concern registered in 1857 (MJ 1857) set up to gain increased capital to work the mine. When the Gievraunn Copper Mining Company failed, Dombrain presumably secured Tabb the position of mine Captain at Castleward.[52]

However, it seems that the two Cornishmen, Tabb and Evans, soon found themselves at loggerheads. Evans, writing to Nugent at the very beginning of July 1860 regarding a consignment of coals that was to be delivered at the quay at Castleward for the steam engine at 11s 6d per ton, slipped in a dig at Tabb, stating that he was '... sorry to find the work going on so slowly at the mine'. Indeed, Dombrain hints at tensions between the two in a letter to Nugent, dated four days later:

> I fully concur in opinion with you that Evans is taking unfair means to get his own creatures appointed to the mine. I have always had a very high opinion of Tabb's integrity and Capt. Thomas of Crookhaven no bad judge told me the other day that he thoroughly understood his work and was a conscientious honourable man. He, Tabb, spoke the other day to me in strong terms of reliance upon receiving your support if he did his duty and he would not look for it or expect it otherwise.

Tabb, however, knew nothing of lead mining having only ever worked at copper mines, and Silas Evans, a man of considerable experience in this respect, undoubtedly had legitimate concerns regarding his fellow Cornishman's ability to manage Castleward. Dombrain and Nugent, however, sided with Tabb and Evans was shortly afterwards relieved of his post as Consulting Engineer, the position filled in late 1860 by Welshman, Evan Hopkins (FJ 1861). Born in Swansea in 1807, he was a man of vast experience, having been employed as Engineer to the Santa Ana gold and silver mines in the Colombian Cordilleras in the 1830s before returning to Britain where he set himself up as a Consulting Engineer and Share Dealer in London. Here he rubbed shoulders with the leading lights in the contemporary mining world: Sir Charles Lemon, John Taylor, Robert Hunt and Henry English. Well respected, his services were sought the length and breadth of Britain and he reported on mines from Cornwall to Cumberland. Considered an expert on mining in Spanish America, as well as gold mining in California, he was also deeply interested in

50 Captain Thomas was a native of Bolenowe, a small hamlet situated not too far away from Velan Saundry, thus suggesting that Tabb either worked with him, or knew him, in Cornwall.

51 In 1856 he married Catherine Mary Moore from Arranmore, Donegal, in Ballina.

52 His eldest son, Richard, was born in Ballycastle, Mayo, in 1858; a daughter, Frances Mary, was born at Castleward in 1864.

cosmology and authored a book entitled, *On the Connection of Geology with Terrestrial Magnetism* in 1844. In 1852 he proceeded to the gold diggings of Victoria Australia, in charge of a group of skilled miners employed by the Port Philip and Colonial Gold Mining Company, where he was to establish the company's operations. However, he found it very difficult to promote the company's interests in the Castlemaine district and by 1854 he was back in London. In 1859 he inspected the mines of the Galway and Mayo Mining Company with Cornishman, George Henwood, who was one of the most vocal proponents of Irish lead mines during the early 1860s (see Schwartz and Critchley 2012 for his Monaghan enterprises). Tabb was instructed to follow Hopkins' instructions regarding the working of the mine.

By the end of 1860, the machinery was reported to have been all in perfect working order and the majority of the shares had been taken up. The company had expended over £554 on mining machinery, over £300 on buildings, £422 on working the mine and £77 on managerial fees. There was, however, some concern over the boiler and a new one was considered desirable, but the cost impeded a replacement at that time. It appears that salt had corroded it causing a defect and a supply of fresh water was to be brought from the farm yard a quarter of a mile away in earthen pipes to remedy the problem. This appears to have been too little too late, for in the first half of 1861 progress at the mine was temporarily halted by damage to this boiler, necessitating the purchase of a replacement to avoid a repetition of such an interruption.

In his December 1860 report, Hopkins had recommended the cessation of sinking the engine shaft to concentrate on development of the SE winze, 13 fathoms from the shaft which was down 7 fathoms and was being pushed towards the 20 fathom level where it was planned to drive towards the shaft to lay open the ground. This had been achieved, ore bearing ground had been intercepted and Hopkins instructed the sinking of Engine Shaft to resume immediately. By the summer of 1861, it had been sunk to a depth of 20 fathoms through very hard ground making progress slow and costly, and a cross cut had been driven towards 'orey ground'. This had intersected a branch of quartz interspersed with lead and blende (zinc sulphide, which would have been thrown away as a gangue mineral) and about 20 tons of lead had already been delivered to the surface for dressing.

Hopkins had every reason to believe that the stope of ground would turn out a large quantity of ore, recommending that the 20 fathoms level be made fit for small rails and wagons in lieu of barrows. The 10 fathom level (west) had been driven upwards of 20 fathoms and had laid open some branches of ore, and Captain Tabb was making a trial sink near the NW end of the Inclined Shaft which was also producing good stones of ore. Hopkins recommended that the ground to the depth of the Incline be stoped away from the Engine Shaft which would necessitate the driving of a cross cut of three fathoms from the bottom of the Incline to the Engine Shaft to avoid the cost of hauling by hand to the 10 fathoms level (FJ 1861). Interestingly, Hopkins, who sent his report to the *Mining Journal*, observed how the masses of ore were formed at the intersection of joints and the cleavage planes of the rocks confined to certain patches of ground. Wisely, he sounded a warning note, advising caution in development as 'care and judgement' was required to render the workings profitable so as not to follow barren joints and cleavage planes.

With work progressing rapidly in 1861, Viscount Bangor must have again raised his concern about the sight of an industrial enterprise marring the views from his mansion sited on the hill above Dickson's Island. Arthur Leslie Cousins C.E., the Secretary of the Mineral Exploring Company (DN 1862) who had taken on the same role with Castleward United after Thomas Johnson's death, drew up a sketch of the engine house and accompanying buildings including a crusher house, as yet to be erected, as they would be seen from Castle Ward mansion, complete with ornamental crenellation (see Fig. 13) presumably to harmonise with existing buildings on the estate. However, Cousins cautioned against making any immediate alterations to the engine house as the outlay for scaffolding, stripping part of the roof, laying metal gutter and raising parapets, estimated at about £30, was an unnecessary expense until the 20 fathom level had been successfully proved. Moreover, if the deeper levels should show a profitable or extensive mine, a more powerful engine than the existing one would be required for more permanent work, necessitating alterations to the engine house. Only then might it be worth the expense of disguising the chimney by installing a smoke condensing apparatus and adding ornamental flourishes to the buildings.

With the Engine Shaft being sunk rapidly, pumps were required immediately and the Board had its eye on some that were to be sold by weight at Newtownards, with Edgar instructed to make inquiries. The company had dragged its heels about the procurement of pumps, waiting for an auction that was to take place at the Ballymoneen copper mine in Avoca, County Wicklow. The Ballymoneen Sulphur and Copper Mining Company Ltd. auctioned their plant in September 1861, but to the Board's annoyance, a gentleman had taken the whole as it stood and there had not been another suitable mine sale since.

The following year, 1862, was fraught with issues which almost tore the Board of Directors apart. In his half yearly report presented in January 1862 (IT 1862; FJ 1862), Hopkins noted that the mine was being developed satisfactorily, and although the trial Tabb was undertaking to the NW of the Inclined sink produced no result, the shaft was being deepened towards the 30 fathom level and 20 fathoms of a good orey vein had been laid open from the shaft to the south east, the end of which was moderately productive and easy for driving. Work was also underway to place a proper plunger in the 20 fathom level to ensure perfect drainage at less cost of fuel. The appearance of the vein in the 20 fathom level was much more favourable than in the 10 fathom level above, although it was impregnated with blende. The backs of the 20 fathom level north and south of the winze were being stoped and a large heap of rough ore (about 50 tons) was ready for crushing. A dressing floor was in the process of being constructed and a wall was being built to make ground for a coal shed (MJ 1862).

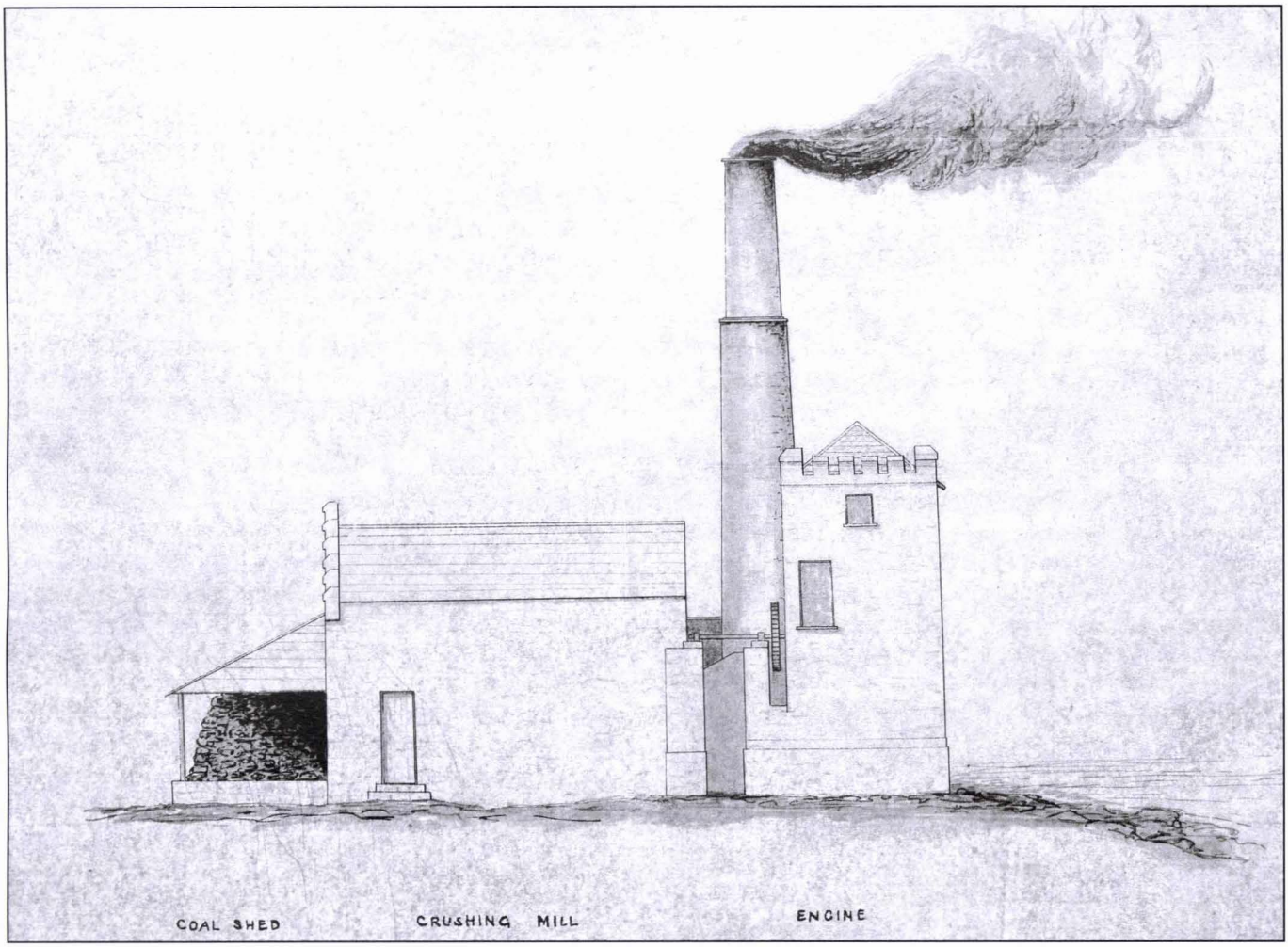


Fig. 13: ***Drawing of the Castleward engine house with crenellation to please Viscount Bangor, by Leslie Cousins, C.E. By kind permission of the Deputy Keeper of the Records, Public Record Office of Northern Ireland and the National Trust***

As per Hopkins' suggestion, a rough stage from the mouth of the Engine Shaft had been erected to carry a tramway for the conveyance of waggons of raw ore to the spalling floor, ore dressing had commenced and a crusher was expected on the mine that March and was to be erected in April. Additionally, some sheds, buddles and jigging frames were required to ready the ore for market and it was anticipated that the company would have a large cargo ready for shipment by May. Rather tellingly, the supplies of ore did not cover the company's expenditure and in order to lay out the new dressing floor and 'push on the works with vigour', the Directors stated that it might be necessary to make a call on the shareholders before the first ore bill could come to their assistance (FJ 1862; MJ 1862). Interestingly, Hopkins noted in a letter to the Directors in early October 1861 that he hoped '... the Capt. has now perfected such arrangements at surface as will enable him to keep the different classes of ore separate from the attle [waste rock] in future'. It seems that Richard Tabb had been found wanting where the dressing of lead ore was concerned (confirming Silas Evans' scepticism of his ability to manage a lead mine) and in May 1862, a lead dresser named Hugh Warden had been appointed by the Board at 16s a week.

Warden was informed by the Company Secretary that he was to take charge of the ore 'from its delivery at the shaft mouth until its shipment and be responsible for it and for all tools, appliances and machinery' required by him for the use of his department. The people he hired were to be answerable to him, but he was expected 'to work with his own hands' to show by his example that he had the interests of the company in view. Warden was requested as soon as possible after his arrival at Castleward to make a request to Captain Tabb for all the tools, appliances and assistance he required and to submit to him a list of all those things now in use which he would retain and stating any alternations which he wished to have made. When he needed anything he was to give Captain Tabb a written description of it and always return to him in as good an order as possible what he no longer had use for. When he wanted the crusher to work, he was to give Tabb 24 hours notice and to state for how long he required it to be in operation. Warden was to compile a weekly report of the progress of his department made up to the Saturday evening previous in time for the Monday evening's mail. He was also instructed to keep the accounts of the labour and expenses of his department and to submit these in time for insertion in Captain Tabb's monthly cost sheets. Quite what Tabb thought of such an unusual arrangement we can only ponder, but mutiny had broken out among the board, with some Directors openly criticising the Cornishman's ability as Mine Captain. According to Dombrain, Hopkins' half yearly report (detailing work undertaken in the autumn and winter of 1861) had,

however, 'completely floored the malcontents against Tabb, as he had supported him in the strongest manner'.

In June 1862, Hopkins reported on the first half of the year's developments, noting that the shaft had attained a depth of 31 fathoms, exploration of the 30 fathom level was being carried out 'carefully and thoroughly' and the results 'left no doubt as to the advantage of continuing to sink the Engine Shaft to the 40 fathom level'. The vein in the 30 fathom level was more calcareous and stronger than in the levels above, but it was 'branchy'. A fine branch of lead ore, unconnected to the vein running to the SE, was discovered in the bottom of Engine Shaft at the 30 fathom level running east and west. Hopkins reported how exploratory work had determined that this branch contained a shoot of ore rising to the east and dipping to the west under the level. Work continued in laying open the back of the 30 fathom level to extend it southward; opening up productive ground in the 20 fathom level west in order to stope it and sinking the shaft to the 40 fathom level (IT 1862).

With the hands on the dressing floor being then sufficiently trained and his recommendations having been undertaken, Hopkins declared himself 'much pleased with the general appearance of the dressing floors' in a letter to the Board in mid-July:

> They are gradually getting in order, and I trust to see shortly everything carried on in a satisfactory and economical manner. The clean lumps of ore are now being picked out of the shaft and kept apart, and I have instructed Capt. Tabb to crush these lumps in the rollers without the weights and to wash these lumps in clean sieves and boxes.

Additional building and machinery, mostly in connection with dressing operations had cost the company £61 and £180 respectively, but this had enabled the company to offer for competition their first parcel of lead ore, 40 tons in total. This had been bought by Messrs. Sims, Williams, Nevill, Druce and Co. Llanelly, one of the largest lead and silver smelting works in South Wales at £12 9s 6d per ton; Viscount Bangor had received his first royalty: £32 15s 8d. During the last half of 1862, 80 tons of lead ore were sold to the same buyers, but the cargo was not shipped immediately on being sold, which afforded the opportunity of increasing it by 10 tons (FJ 1863).

However, question marks still lingered over Tabb and things took a decided turn for the worse for him when one of the mine boys was killed and another seriously injured when playing with one of the waggons on the dressing floor tramway in early July. It being the dinner hour, Tabb was at his house when the melancholy incident took place and the dressing floor workers, having their back to the boys at that time, did not witness the incident occur. It appears that the waggon was left in its proper place by the man who had been using it, and only the day before, Tabb had ensured iron fixtures were placed at the end of the rails to prevent the waggon going over the end of the ore grate bank. Even before the coroner's inquest returned a verdict of accidental death, attorney, William Greene, one of the Directors, laid the blame firmly at Tabb's door. This accusation deemed to be 'harsh and uncalled for' deeply upset Sir James Dombrain to the point where he penned a letter of resignation from the Board as he '... could not bear to sit there and hear another unjust word spoken against the poor fellow [Tabb]'. He was about to advise the Cornishman to resign his position as Captain to seek work in England as it was evident the Board would 'not let him remain long', but the Company Chairman, Samuel Crampton, apparently came to him 'in a great fright' and persuaded him to retract his letter.

Dombrain, who thought 'very warmly on the subject' did agree to withdraw his resignation but he blamed Greene, whom he regretted ever allowing to come onto the Board, for stating he thought great blame attached to Tabb '... for the accident of which he was as innocent as I was'. He was further angered when he saw the minutes of the Board meeting which then laid the fault indirectly at Tabb for not keeping 'trespassers' from the mine and stated his intention to get the record expunged: 'they cannot know the meaning of the word or they would not call people employed at the mine "trespassers"'. Nonetheless, despite Dombrain's protestations and his observation that it was highly foolish to have condemned Tabb before the inquest because, had this fact been known to the coroner and jury, a heavy deodand would undoubtedly have been placed upon the mine, the Board persisted in their condemnation of Tabb and refused to alter the minutes to remove the offending word.

By August 1862, Colonel Nugent was also clearly unhappy with the situation at the mine and wrote to Dombrain requesting that he raise several issues before the Board as his letters to the Secretary, Arthur L. Cousins, no great supporter of Tabb, had met with unsatisfactory answers. He perceived the arrangement with the ore dresser to be highly irregular and stated that he considered the Secretary's instructions to Warden to have reduced the manager of the mine:

> ... to a mere cipher as far as the management of the lead is concerned from the time it arrives at the shaft's mouth to the time of its shipment. This dresser seems to do his own work very diligently but he is nothing more than a labouring man and not fit to be so placed - on a par with a manager. I only wonder that the affairs of the company have held together here with such instructions.

Nugent commends both Tabb and Warden for working together harmoniously in such circumstances, but he added as one who watched the works daily (as instructed by the Board) '... I unhesitatingly say, as I before did, that the manager should have authority over everyone here: And that Mr Tabb has proved himself to be quite fit to have that individual control and that he should be officially informed of this'. As far as he was concerned, Tabb had been placed in an invidious position and he insisted that the instructions to Warden should be cancelled and he be told to consider himself under Mr. Tabb. In response to the accusation that Tabb was clearly not fit for purpose, he stated:

> ... should Mr Tabb' s incapacity as to the dressing of lead and other matters about the mine be persisted in by

> the majority of the Board, I as one of the Directors, and who cannot always be at the expense and inconvenience of attending the weekly meetings [in Dublin] beg and express the opinion that it should be decided by impartial investigation whether he [Tabb] is or is not incapable of performing the duties of manager here.

In his July letter to the Board, Hopkins had reported how the crusher had not performed as expected. One of the rollers was very worn and he recommended another of much harder metal be made forthwith. Nugent also declared himself to be unhappy with the performance of the crusher and thought it strange that after the new machinery had only been so short a time at work, having crushed only about 40-50 tons of lead, that it was 'now almost pulled to pieces for alternations and repairs'. Furthermore, he observed how the rollers and frames were so fixed that a large slice had to be taken out of a beam underneath and this had weakened the framework of that part of the machinery. He also thought that the way in which the crusher was then being re-fitted and fixed meant that '... when further repairs were necessary, a great part of the machinery must again come down'. He laid the blame firmly at Edgar, stating him to have taken way beyond reasonable time to erect the crusher and was late at all his jobs, yet he questioned whether he forfeited any penalty. Edgar, however, sought to push the fault onto Tabb, accusing the Cornishman of knowing 'nothing of the machinery'. Nugent was unimpressed:

> Mr Edgar I dare say can make his own story good in Dublin, but how can he explain his lever having been 6 inches short and now being added to and this defect caused the breaking of the boxes inside the crushing house and which he laid on Mr. Tabb's neglect.

Hopkins had also noted that the engine's winding gear had been defective. The bushing of the winding drum had failed and Edgar also apportioned blame for this to Tabb, whom he accused of neglecting to oil it sufficiently. Hopkins had suggested an alternative solution to remedy the necessity of putting the engine in reverse to lower a kibble in an attempt to lessen the wearing, which met the approbation of Captain Tabb. However, a mechanic stated to Nugent that the drum wore where there was the most friction and may do so again, concluding that brass should have been used when it was repaired but that this was deemed too expensive. Unsurprisingly, when tabling Nugent's motions at the next Board meeting, Dombrain was voted down; his fellow Directors rejected Nugent's suggestions, they did not see any reason for cancelling the arrangements already made with the ore dresser.

Unfortunately for Tabb, he did not do himself any good in September of 1862. Hopkins, who was by now making less frequent visits to the mine, being resident in Wales and with far bigger fish to fry than Castleward, was sending his instructions by post. Whether this was to Tabb or to the Company Secretary is not clear, but his obvious concern that his orders were not being followed correctly is evidenced in this letter:

> ... I trust that he [Tabb] knows where the vein is in the 30 fm and that he will follow it southward... it is to be hoped that he will not drive westward beyond the vein into the barren ground. Pray ask him if he is certain of the position of the vein on the 30 fm and if he is driving it southward.

However, whether through misunderstanding or design, Tabb did not follow Hopkins' instructions and drove the wrong way. His *faux pas* cost the company at least £200, which, in its straitened financial position, it could ill afford. Dombrain in particular was highly disappointed in Tabb after his steadfast and vociferous support of him, contrary to the opinion of most of his fellow Directors who now seemed vindicated. He told Nugent that if he saw the Cornishman, he was to tell him '... he has made me feel most uncomfortable'.

The coming months did not bring the hoped for upturn in fortunes. Tabb was being careful to follow Hopkins' instructions to the letter, driving the 30 fathom level SE past the winze without delay in order to prove the ground there for stopes, as well as opening the 20 fathom level west as far as productive ground extended to ready it for stoping and continuing to sink the Engine Shaft to the 40 fathom level (FJ 1863). However, in March 1863 Arthur Leslie Cousins wrote to Nugent of the unsatisfactory returns of ore from the floors. He had expected the present rate of stoping, ten fathoms per week, to give from three to fours tons, or more, of ore per week, but instead:

> The amount of ground stoped away during the past fortnight was nineteen and a half fathoms, but the ore (both dressed and remaining cobbed) which that large quantity of stoped ground yields is but four tons and a quarter, this as an average is too low to pay cost. Some of the stopes yield nearly all the ore, and unless there is immediate prospect of the poorer ones improving, it would be well, I should say, for Mr. Tabb to take away the men from there.

The final reports of the mine in the spring of 1863 paint a bleak picture, with Captain Tabb noting that the '30 fathom end S.E., is of no commercial value, having become too poor to follow'. Hopkins reported that there was no strong and well defined lode, the stope above the 30 fathom level SE was not as good as had been expected, being 'bunchy and much impregnated with blende' and, in a damning verdict on the Directors, stated that owing to their constant want of capital to extend the explorations, the company had been 'compelled to extract the ore for market much faster than it was discovered and prepared for stoping':

> ... in mining speculations the trials should not be too limited, and ... they should be carried to a sufficient extent to ascertain the merits of the ground. The Castleward Mine ought to be explored to the fifty fathom level to make a fair trial.

Hopkins makes it clear that the company had, in his opinion, picked the eyes out of the mine. The writing was on the wall for what was, to all intents and purposes, a shambolically run mining operation.

The Board sought a second opinion and had the mine inspected by Captain William Henry Rowe of Newtownards who delivered a fairly pessimistic verdict, stating '... I think it right to say that, considering the weak, and of consequence, irregular, nature of the vein, its position and bearing, I should have hesitated to recommend (in the first instance) the outlay and labour that have been already expended upon it'. However, given that the company had invested considerable capital on the erection of machinery and that the pipe of orey ground in the 30 fathom level was presenting some reviving features, he thought it 'highly injudicious to abandon the Mine altogether at the present stage'. In order to exhaust every reasonable chance of success, Rowe proposed a further and speedy trial of the ore bearing ground a few fathoms below the bottom of the present sump which would perhaps better justify (or otherwise) the sinking of the Engine Shaft. He estimated that the work might take around three months and cost about £90, whereas developing the Engine Shaft and waiting for the result, little could be known in under nine months at a cost of around £300. Hopkins concurred with his suggestion.

However, the Board decided in June that the trial recommended by both Rowe and Hopkins was beyond the means of the company and they resolved to appoint liquidators to wind up their affairs. This motion, however, when presented at the shareholders' meeting, failed to find a seconder and fell to the ground. Instead, an offering to shareholders of shares at ten shillings in full payment and with half crown calls to undertake the limited development recommended by Rowe and Hopkins and the summoning of a future meeting to issue such was agreed upon. However, it seems the call for shares was unsuccessful and by the autumn of 1863, an extraordinary general meeting of the shareholders was called in order to adopt a resolution for winding up the company, which, it was stated, 'cannot by reason of its liabilities continue its business, and that the said company shall, therefore, be wound up voluntarily' (FJ 1863). The final consignment of dressed lead, 24 tons in total, was sold to the Mining Company of Ireland at £10 11s per ton.

An isometrical view of the mine (see Fig. 14) containing a remarkable amount of detail was drawn in March 1864 by Arthur Leslie Cousins, C.E. (FJ 1863), probably in order to increase the concern's attractiveness to potential buyers (PRONI Isometrical View of Castleward Mine). From this illustration it is confirmed that the engine house accommodated an internal rotative engine (note the external winding drum), that it had an integral chimney (shown belching smoke) and a lean-to boiler house. Another building with windows in the roof located behind the engine house housed the rolls crusher. A large coal pile lies to the right of the engine house close to the quay where a sailing ship is anchored. Sections of rising main and a fly wheel can be seen on the quayside close by.

The stone for the engine house was most likely extracted from a quarry at the far top of the view (to which a light tramway extends and which appears to be partially in-filled with waste rock from the workings). The quarry lies behind a blacksmith's shop (with smoking chimney) next to a single storey cottage and outhouse with a large vegetable garden in front (with distinctive raised potato beds). This cottage in what was described as 'the farm yard' is likely to have doubled up as a purser's office (where the men received their pay) as well as the residence of Captain Richard Tabb. A rectangular structure to the left of the cottage is probably the reservoir providing fresh water for the boilers; quantities of timber to shore up the workings are piled up above the beach to the right of the island and the small, pitched roofed shed to the very far right is the mine magazine.

A rather primitive dressing floor occupies the neck of land connecting the island to the mainland, consisting of a spalling floor with heaps of ore being broken by workmen (see inset). An elevated tramway on which waggons of raw ore can be seen terminates at an ore grate surrounded by three figures, one brandishing a rake, where the ore is being washed and sorted. A large, hipped-roof open-sided shed parallel with the spalling floor contained a series of manually operated jigging hutches (the long handles of which can be seen jutting out), while at least one more hand operated brake jig can be seen on the dressing floor close to the tramway. Beyond lie a series of three trunking buddles, with their distinctive triangular inclined planes, used to wash the crushed ore. A leat leading away from the grate, jigging hutches and the buddles conveyed slimes to two rectangular settling ponds on the high tide line to recover the fines and lead ore in suspension. The effluent from the dressing process then discharged down the beach and into the lough.

An angle bob to convert the horizontal motion of the pumping rod (attached to a crankshaft and flywheel) to vertical, can be seen to the right of the head frame over Engine Shaft, the pumping rod then running down the shaft depicted with three levels driven SE and NW at 10, 20 and 30 fathoms. Most of the active stopes were located to the SE, especially on the 20 fathom level, connected by a ladder-way to the 10 fathom level; a winze was being sunk to connect the 20 and 30 fathom levels. The mine had been worked by overhead stoping and men can be seen standing on the tops of their pitches in stopes backfilled with deads. Access seems to have been via a ladder-way in the Engine Shaft and the miners are depicted pushing barrows of ore towards it for hauling to the surface by kibble. The probable original isometrical view is hanging in the library of Castle Ward mansion and is executed in sepia ink (PRONI Isometrical View of Castleward Mine).

The company was placed into liquidation and accordingly we find the interest of a lead mine in County Down, along with plant and stores, 'all in perfect working order', advertised for sale in the *Liverpool Mercury* in August 1864 (LM 1864). This advertisement, placed as it was in a newspaper that circulated in the north west of England where a sale might have been readily expected given its proximity to the many mines and smelting works of the Chester and North Wales region, appeared to have generated little interest. The residue of the term of the 21 year lease granted in December 1859 and 'all the valuable Steam Engine, Boilers, Pitwork, and Tools, spare Pumps and Rods, Dressing Machinery, Plant and Stores', were once more advertised for sale the following February in the Ulster press with a notice that the mine was to be forked (it had therefore been allowed to flood) and opened for inspection. Naturally, the company was not about to divulge the fact that

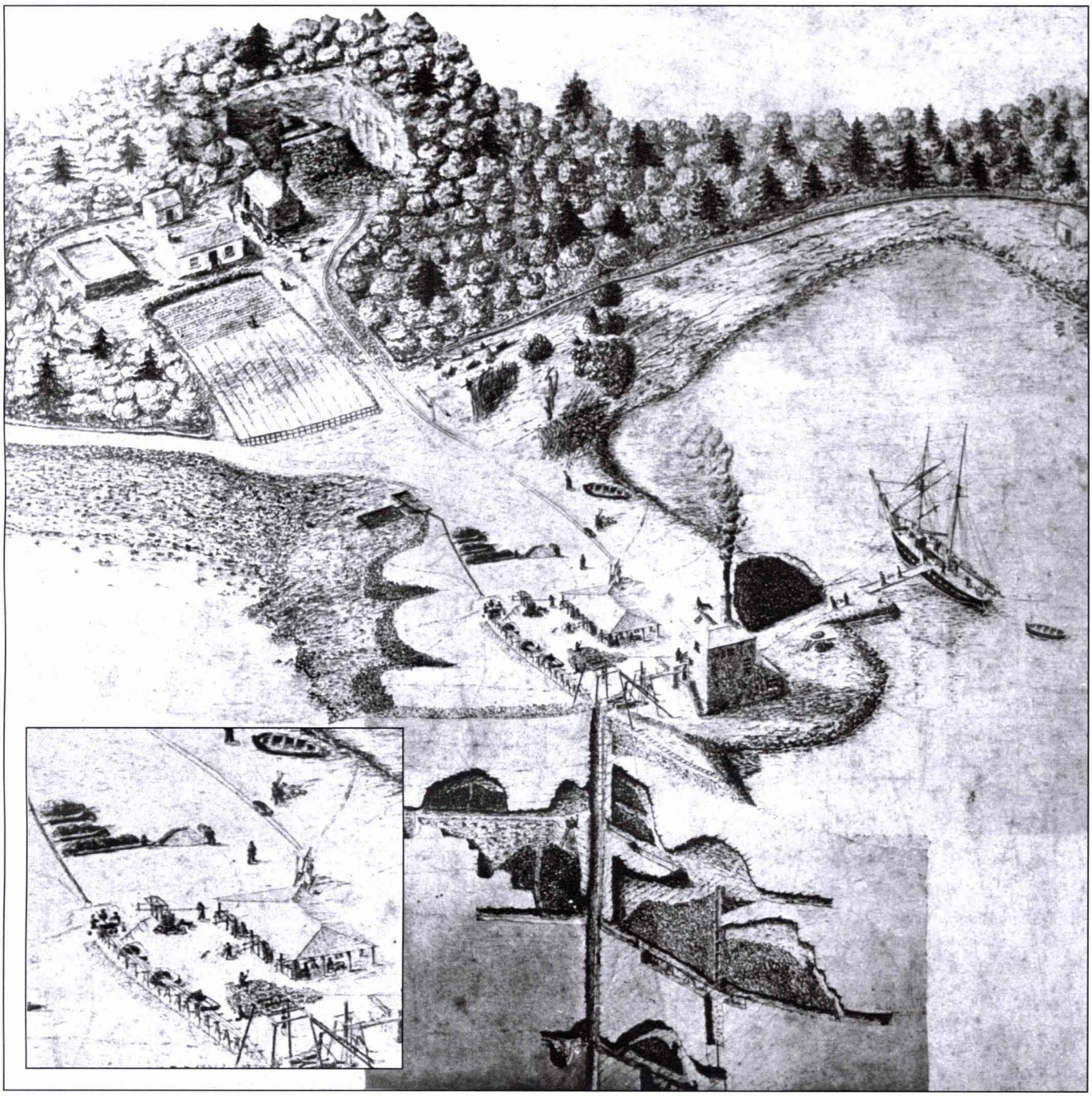


Fig. 14: ***An isometrical view of the underground and surface works of the Castleward lead mine drawn in March 1864 by Arthur Leslie Cousins, C.E., the secretary of the Castleward United Mining Company. The inserted box contains a close up view of the dressing floor area. By kind permission of the Deputy Keeper of the Records, Public Record Office of Northern Ireland***

due to its geology, there were doubts that it would ever become a paying prospect, and stated that only a lack of capital prevented it from continuing operations, owing to 'protracted difficulties in the Money Market' (NW 1865; BNL 1865).

Whether the engine was sold or scrapped is unknown, but its house was soon demolished, no doubt on the instructions of Viscount Bangor, and an ornamental boat house constructed in its place. During its lifetime, the annual *Mineral Statistics* record that the Castleward United Mining Company succeeded in producing just 134 tons of ore which realised 103.5 tons of lead and 493 ounces of silver; it never adequately covered its costs and the shareholders never received a dividend. It had accumulated losses of over £2,000 on its closure and the only true beneficiary was Viscount Bangor, who received both rent and royalties as well as payment for supplying goods such as timber. After the closure of the mine, Captain Richard Tabb, who had hardly covered himself in glory at Castleward, moved west to the Inishowen peninsula of Donegal, where a daughter was born at Greencastle in 1866.[53] By 1870 he was

53 The silver-lead mine of Glentogher (Carrowmore) lay a few miles away from Greencastle, but there is no reference to it as working at this time; the MCI lead mines further afield in Donegal were suspended. If engaged in mining, his work is likely to have been of a prospecting nature.

back in Cornwall, residing at Ramsgate in Camborne parish close to his childhood home, but soon moved to the village of Hafod near Swansea, South Wales, where he was employed in 1871 as a time keeper, presumably in one of the large smelting works. In 1881 he had risen to the rank of Agent of a copper mining company, resident at Neath Road, Swansea. He died there in 1884 aged 61.

A 'GREEK TRAGEDY': DUFFERIN'S 'DONKEY' AND THE DEMISE OF THE NEWTOWNARDS MINING COMPANY

By the early 1860s the future of the Newtownards Mine was looking extremely bleak and production figures fell sharply. There was now little need to employ an Agent and a Mining Captain, and, as we have seen, Captain Silas Evans had moved on, branching out into business on his own account as a Belfast stockbroker and share dealer acting as consulting engineer, company secretary or manager to numerous mining and railway companies throughout Ireland and beyond.[54] In the autumn of 1860, perhaps in an attempt to raise some much needed capital, two steam engines that must have been considered superfluous to needs were advertised for sale: a 24¼-inch cylinder condensing rotative engine, 5 feet stroke, and an 18-inch cylinder Cornish winding engine, 4 feet stroke, with winding gear attached. Also advertised were 'two good boilers' 8½ tons each and prospective buyers were requested to contact Captain William Henry Rowe on the mine (BNL 1860).[55] One of these was, as we have seen, purchased by Castleward United.

The same year, lead ore production figures were down to 168 tons of ore which realised only 128 tons of lead. In 1861, no production figures were recorded in the annual *Mineral Statistics*, and, after a brief rally in 1862-3, by 1864 production figures had declined to just 127 tons realising 97 tons of lead. The mine had not been covering its costs for several years, yet abandonment must have been a thoroughly unpalatable prospect, especially given the amount of capital that the concern had swallowed over the previous decade. Cognizant of the terms of the 1842 lease, which had stipulated that if the company was unable to work the mines with reasonable profit or advantage or to 'explore for the same', then three months notice had to be given and the lease would be voided, trials and prospecting work to test the ground to the north of the Conlig Engine Shaft had been effected.

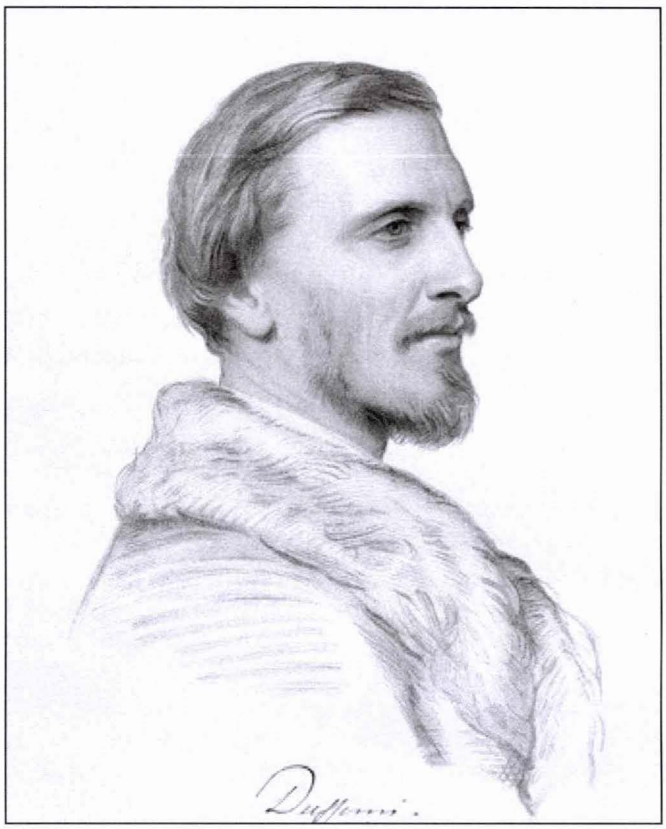


Fig. 15: ***Frederick Temple Hamilton-Temple-Blackwood, Fifth Baron Dufferin and Claneboye (1826-1902), c1869. Image in the public domain***

This activity deeply upset Frederick Temple Hamilton-Temple-Blackwood, Fifth Baron Dufferin and Claneboye (1826-1902), a respected author, politician and Victorian diplomat (Fig. 15)[56] and the occupant of this part of Conlig Townland, prompting a spate of correspondence between him and the Mineral Lord, Robert Edward Ward (1818-1904). Ward (Fig. 16) had written to Dufferin at the very beginning of 1864 (PRONI, Ward Letter to Dufferin January 1864) regarding the intentions of the Newtownards Mining Company, stating that they wished to take out a new lease of the minerals of the neighbourhood and proposed to go to considerable expense in trying for ore in the ground included in the lease. Whether successful in searches or not, they would pay an annual rental of £20 and if successful, 1/15th of the produce. 'I imagine they are now in connection with the shaft sunk in ground now leased to you', wrote Ward, adding, 'I should be very sorry that any part of your park were disfigured by additional buildings and I shall not conclude as to terms with the Mining Company without giving you time for further communication on the subject'.

Dufferin was clearly alarmed and deeply disappointed by the

54 Evans died on the 16 May 1894 at 2 Upper Crescent Belfast and is interred at the Movilla Cemetery, Newtownards, with his first wife, Susan, (who died in 1854), their two infant children and a 6 year old son by his second wife, Agnes 'Nannie' Paisley, whom he married in 1856. There is a barely legible headstone.

55 The 18-inch engine was probably that erected on the South Engine Shaft, although Harrison stated that this was 5 foot stroke in the cylinder. The 24¼-inch rotative engine could be the one that had been removed from North Engine, although Harrison had described this as a 26-inch. Interestingly, the details of the engines in the 1864 sale inventory of the Materials and Buildings on the Newtownards Lead Mines quoted by Woodrow (1978, 48) do not correspond to the description given of the same engines when advertised for sale in 1867 (see Fig. 18): the newspaper advertisement quotes two 36-inch engines, one a pumping engine and the other a double acting condensing engine. These were sited at North and Bog Shafts respectively.

56 He had explored the North Atlantic and was the author of *Letters from High Latitudes*. In 1871 he was created Viscount Clandeboye, of Clandeboye in the County of Down, and Earl of Dufferin, in the County of Down, and in 1888 was made Earl of Ava, in the Province of Burma, and Marquis of Dufferin and Ava, in the County of Down and in the Province of Burma. A prominent politician and administrator, he served as Governor General of Canada (1872-1879) and Viceroy of India (1884-1888).

knowledge that Ward had failed to honour what he perceived to be a gentleman's agreement when it came to the lands he enjoyed possession of in Conlig. These had been exchanged some years beforehand with Ward for land elsewhere, with the promise that he would be good enough to grant him the refusal of any future mining lease within Conlig. Since that time Dufferin had transformed the exchanged lands into a park, and in a letter to Ward (PRONI Correspondence between Dufferin and Ward *et seq.*) complained that '... it would be hardly right by a subsequent act to destroy the value of the property so converted and render abortive the result for which alone the exchange was made':

> To do so would be doing to me what the Greek in the fable did to the Trojan. He sold him the donkey, but he contended that he had not sold him the shadow. Only in my case, it is the substance rather than the shadow which will have slipt through my hands, for what service will be a few acres of barren rock and bog, if their beauty, the only value they really possessed shall have been destroyed.

He requested that Ward 'consider well the effect of such an arrangement' as that which he was contemplating, warning that if a lease was granted, he would in all likelihood have to sell Clandeboye (formerly known as Ballyleidy) for it would be, '... an extreme folly for anyone to go on spending money on a place, the amenities of which may be destroyed at any moment by factory chimneys cropping up in sight of the drawing room windows'.

Clandeboye was dear to Dufferin. He had lavished much money on this early Georgian mansion and improved its surrounding estate, including commissioning Scottish architect, William Burn, to design Helen's Tower, a turreted folly with views over the rolling parkland immortalised in Tennyson's poem of the same name.57 Finally completed in 1861, it was named in honour of his mother. He warned Ward that as 'the present shaft is all worked out' [Conlig Engine], once the lease was granted, the company could hardly open another without the chimney rising above the hill. 'It is only by the luckiest accident that the present chimney does not do so'. He ended his letter by reminding Ward that he had previously been much annoyed when the mines were opened in his father's time in the park, and he had felt certain that as soon as the short remainder of the lease was expired that Ward would '... be ready to make such an arrangement as would prevent the repetition of such a misfortune'. Dufferin offered to pay what may be considered the fairest price for Ward's interest in the mines, noting that all he asked for was 'the first refusal of them, and this you certainly were good enough to promise me'.

Ward was clearly rattled by Dufferin's veiled threat and his asinine allegory, writing some three weeks later from Dublin that short of a Chancery suit for breach of contract, he was

Fig. 16: ***Robert Edward Ward (1818-1904) of Bangor Castle, the Mineral Lord of Conlig. By kind permission of the copyright holder, the North Down Museum***

committed to a renewal of the lease to the mining company:

> ... I cannot close without alluding to your 'asinine illustration'. I am willing to think you did not intend it in an offensive sense – it is difficult however to avoid this or to make it in any way applicable to this case. I have not been guilty of any attempt to circumvent or practice unfair extortion in this nor do you, I conceive, stand as clear as the Trojan did from all imputation of not having used due circumspection in the matter now before us – It ought to have the effect perhaps of deterring me from any further negociation (sic) about mines with you but as Jokes may be exempt from strict construction I will end by expressing a hope that I have written as little as you have which will have the effect of making matters worse between us than the circumstances oblige.

Dufferin responded almost immediately, aware no doubt that he had offended Ward, and, ever the diplomat, attempted to play down the import of his previous letter by stating that he 'had no wish to make a quarrel out of this unfortunate business', noting that his donkey illustration was intended to be 'innocent and good-humoured'. However, he then proceeded to firmly remind Ward of the content of the gentlemen's agreement, which he believed he had entered into

57 *Helen's Tower here I stand,*
Dominant over sea and land.
Son's love built me, and I hold
Mother's love in lettered gold.

some years since: 'At the time we made our great exchange – I asked you one evening at Clandeboye, "Do you intend to reserve the Royalties" to which you replied, "I cannot say at present". Subsequently you wrote me a letter to the effect I have mentioned'. So keen was he to prove this was the case, he instructed his Estate Agent, Mortimer Thomson, to contact Ward (PRONI: Dufferin Thomson Correspondence *et seq.*):

> Mr Ward says he never made any such promise, but as you have often told Lord Dufferin that you perfectly remember Mr Ward's letter and the terms of his promise, his Lordship begs you will write him a letter which he can send to Mr Ward stating what you recollect about the promise.

Thomson did as instructed and wrote to Dufferin two days later noting that he had drawn a pencil line underneath the paragraph '... which certainly conveys Mr Ward's intentions not to let without giving your Lordship an opportunity of refusing', adding also that he distinctly remembered telling Mr. Lyle (Ward's Estate Agent) of this promise in Belfast.

In his previous letter to Dufferin, Ward had expressed his surprise at Dufferin's dislike of a chimney a mile and two thirds from Clandeboye and had appealed to his patriotic and liberal feeling towards industrial enterprise, to which Dufferin responded:

> I confess our experience of the last twenty years does not lend much weight to this argument for certainly the mining operations on the hill have failed to transform the village of Conlig into that centre of wealth and prosperity you picture. In fact there cannot in my opinion be a greater curse to a neighbourhood than the presence on a small scale of a single branch of so speculative and fluctuating an industry, collecting a population whose exertions indeed may put a few hundred pounds into the pockets of a few gentlemen in England but whose periodical poverty is a heavy burden on the local proprietor, to whose compassion they have to appeal directly the failure of a vein counsels their distant employers to stop their wages – I had to keep half the population of the village from starving last winter...

Moreover, he accused Ward of extinguishing '... a far more extensive and healthy industry than any likely to arise out of mining operations on Conlig' when he closed the Bangor Mills. Ward denied that he was responsible for their closure, as they had been worked by his uncles, Colonel John and William Ward, '... I had no hand in stopping the trade, and am therefore guiltless in this instance of an inconsistency between my theory and practice', and further insisted that he could not '... coincide with your opinion that the mines are detrimental to the country – to me they appear beneficial...' (PRONI Correspondence between Dufferin and Ward *et seq.*).

The unsavoury spate of letters between the two men came to an abrupt halt when Dumbell and the Board of Directors of the Newtownards Mining Company apparently 'with no power to make calls upon the shareholders' (BNL 1865), unexpectedly decided to put the mines up for sale. However, this was far more likely to have been the result of the fall out from events occurring in the Isle of Man. The Laxey Mine had cut rich at depth causing dividends to soar, but the relationship between Dumbell and Henry Bloom Noble had come to grief, with the latter making no secret of his dislike of the former. Besides being a Director and major shareholder of the Great Laxey Mining Company, Noble was also the Secretary of the Newtownards Mining Company. Following a series of bitter disagreements between the two men that had characterised the previous couple of years, Dumbell finally had Noble removed from the Laxey Board of Directors at the company's half-yearly meeting in September of 1865, resentful of the fact that he had become involved in setting up a new banking company to rival his own (Scarffe 2004, 9).

The impending sale seems to have caught Dufferin by surprise. From his London residence, he hurriedly contacted Thomson by telegram to tell him that he had received a somewhat cyrptic telegram from Ward saying that the Conlig mines were to be sold and suggesting he buy them. He erroneously thinks the sale is to be held at 'Garraway's Coffee House' in Belfast and instructs Thomson to attend, telling him a letter will be waiting for him at Belfast Post Office explaining the situation and to 'do your best and do not be afraid of any cost' (PRONI: Dufferin Thomson Correspondence *et seq.*). Yet in a letter sent to Thomson on 4 March 1865, two days before the impending auction, it is clear that Dufferin was not at all sure what was even being offered for sale:

> ... what is it that the company propose to sell? Their old materials? Their interest in the old lease? Their interest in the new lease which Mr Ward seems to have promised but not to have signed? Or what? It is of vital importance for us to get these mines.

Thomson, who had only just seen the newspaper advertisement, had managed to speak to Ward's Agent, Lyle, who untruthfully informed him that the letting was likely to be a transfer of mines and plant from the same company to one under a new name. He sent a telegram to Dufferin on the day of the sale correcting his error about the place it was to occur - London, not Belfast - informing him that both the Ward and Londonderry leases and all the plant were to be sold: 'This may yet be in time for some one to attend'. Fortunately, Dufferin received Thomson's telegram in time for the sale at Garraway's Coffee House, Cornhill, London, on 6th March 1865. The remainder of the two leases, two steam engines, crushing apparatus, the windmill, dwelling houses for Agent and Overseers, and a large quantity of itemised underground and surface plant, tools and materials, went under the auctioneer's hammer. As there were no other bidders against him, Dufferin bought the whole for £5 over the reserve price of £1,000.

Dufferin lost no time in contacting Dumbell just two days after the auction, requesting a statement of annual profit and expenditure for the last 5 years of operations in order to gauge '... opinion as to the chances of prosecuting further mining operations in that locality with success'. (PRONI, Correspondence between Dufferin and Dumbell regarding mineral production figures *et seq.*). He consequently learned

that from 1860 the mines had made a cumulative loss of £1,600. He was also aware that the former Mining Captain, William Henry Rowe, was keen for mining operations to resume on the escarpment and was busy trying to raise the capital to form a company with some friends (PRONI: Dufferin Thomson Correspondence *et seq.*). After the sale he wrote to Thomson asking him if '... he knew anything of Mr. Rowe, the man who lived up at Conlig and superintended the operations there?' Apparently, Rowe had informed Dufferin that '... the site was worked out apart from one spot between the two chimneys [South Engine and North Engine] and that £2,000 would be required to ascertain whether any ore goes to there or not'. By the terms of the new Conlig lease, the lessees had to spend £250 a year in working the mine and in making thorough explorations for new ore ground and Dufferin was well aware that as long as '... it is supposed a chance remains untried, Mr. Ward may insist' on him fulfilling the terms of the lease.

Rowe and his scheme must therefore have been a considerable fly in the ointment for Dufferin who stated to Thomson that he was '... all for shutting the whole thing up', but knew that '... we have to act warily as there are compulsory clauses in both the leases, and I have not yet been able to settle anything with Mr. Ward'. In order to placate Rowe and to be seen to be complying with the terms of both leases, he mooted allowing some exploration and development to occur on the setts with Rowe and his colleagues bearing half of the costs of the purchase price of the mines and £1,000 towards the reactivation of the plant and necessary purchase of new equipment which Dufferin would match. Any profits would be divided equally. If it turned out a successful experiment he would be reimbursed pecuniarily, '... if not, the question of further returns on Conlig will be put at rest for ever and Mr Ward will not be able to object to my taking down the machinery'.

Thomson stated that he did not know 'Roe' at all and warned Dufferin that as he only had the former Mine Captain's advice and report to go on, he would advise against a speculation where he took all the risk. He made it clear that he considered it imprudent for Dufferin to enter into a highly complicated speculation to which he was not privy to the intimate knowledge of all the circumstances to allow him to decide one way or the other. Thomson suggested a new course of action. Ward had let the Conlig Mine for 21 years on a lease commencing in November 1863 fixed at a rent of £20 per annum with 1/15th of the profits; the company taking on the lease were to spend £250 a year in exploration. He therefore suggested that Dufferin offer Ward a fixed amount in perpetuity as a much cheaper option, as the mines were thought to be exhausted and rehabilitating them '... would cost your Lordship no mean money'. He also warned Dufferin to consider the question of the possibility of a company working the Londonderry Mines, although '... not adjacent to Clandeboye, yet in a position as prominent almost as objectionable a position as the company working Mr. Ward's mines'.

In early April, Thomson was instructed to meet Rowe at the mines and to discuss with him the working expenses incurred for keeping the pumping engine going to maintain the water at the usual level and the future plans for the mine including what would become of the workforce. The old company still had some hands employed in finishing the dressing of ores, presumably those stockpiled at the mine, and the principal miners were 'hanging about to see if the mines will be re-opened'. Rowe was still trying to ascertain whether Dufferin was disposed to 'a small experimental venture', a more modest undertaking than that originally envisaged and which would have cost Dufferin about £500, perhaps less if he let the machinery to the company for the first four months, for which they would pay half the amount for the use of it. It is apparent from his correspondence with Ward that Dufferin held the mining industry in no great regard and had no real interest in promoting active mining with Rowe or any other company on mining setts that had not been turning a profit, so it is no surprise to learn that he applied to the Londonderry Estate for the surrender of the Whitespots lease.

As he could prove that it was a loss making venture, Dufferin was confident that the terms of the 1843 lease granted by the Third Marquis of Londonderry to George Dumbell meant that it would be voided and he had, to all intents and purposes, abandoned mining at Whitespots, removing the pumps and underground tramways. To his bewilderment, the Londonderry Trustees refused to surrender the lease and in June 1865 Dufferin received from Thomson, his Estate Agent, a copy of a letter from Robert Kelly of Belfast on behalf of Lord Londonderry (Correspondence between Mortimer Thomson and Lord Dufferin, Letter from Robert Kelly):

> The lead mines at Newtownards having been purchased by Lord Dufferin who since the purchase has discontinued their working, I have now on behalf of the Marquis of Londonderry under whom the mines are held, to direct your attention to the covenants in the lease and on the other side are extracts from several of the clauses which provides for the continued working of the mines and the maintenance and repair of all houses within the limits of the sett and the delivery up in good repair of all levels, shafts and outbuildings on the termination of the lease.

It appears that Frederick William Robert Vane, the 4th Marquis of Londonderry (1805-1872), lay behind this mischief-making. He made no secret of his dislike of Dufferin and set out to make life difficult for him.

Dufferin was no doubt heartened when the dispute with Ward was finally concluded in early July of 1865, Ward agreeing to surrender the Royalties of Conlig to him on the payment of £50 per year (PRONI Dufferin Thomson correspondence, Regarding dispute between Ward and Dufferin over Conlig lease).[58] He could now focus his energies on resolving the

58 After 1870, Dufferin became increasingly unsure of the Landed gentry's ability to maintain proprietary rights in Ireland and gradually sold his estates in County Down. In 1885-6 he considered selling the Clandeboye Demense. Then in Simla, the summer capital of British India, he instructed his Estate Agent, T.S. Howe, to contact Ward about buying out his share of the Conlig royalty to make the impending sale of this estate less complicated. He described the mines as 'a lifelong bother', but noted that from first to last Mr. Ward had 'always behaved in a very kind and gentlemanlike manner' and informed Howe, that he '... should be glad that he [Ward] should know how

Fig. 17: ***Frederick William Robert (Stewart) Vane, the 4th Marquis of Londonderry (1805-1872). By kind permission of the copyright holder, the National Trust***

dispute with Londonderry (Fig. 17) whom he met at Mountstewart to avoid matters escalating further. But after initial progress, negotiations broke down and the whole situation descended into a costly legal quagmire. At his wits end and probably as a last resort, Dufferin decided to contact 'Sir William', probably Sir William Alexander 3rd Baronet, Q.C. (1797–1873), a solicitor and serving Attorney General to the Duchy of Cornwall (1863–1873), in the hope that he would intercede in what threatened to become 'a grave personal misunderstanding' between himself and Lord Vane that he 'would most seriously deplore'. Londonderry's solicitors had made a sensational claim that Dufferin's purchase of the Whitespots mines was an 'inimical move'. Dufferin was unable to understand why his proposed surrender of the lease, if the mines were as productive as Londonderry claimed, should cause so much resentment: after all, was he not handing over a gift for which he had paid at least a moiety of the purchase price of £1,005? Obliged to operate within the boundaries of the law while the dispute with Londonderry raged, Dufferin had to meet the costs of keeping the mine sett unwatered and the plant maintained, which was costing him £140 per annum. In fact Londonderry's Agent, James Brownlow, was even negotiating with Thomson for the purchase of the mining plant from Dufferin in early 1867, and quibbling over the sum to be paid, which ranged from £800-900 (PRONI Correspondence between Mortimer Thomson and Lord Dufferin).

Dufferin's draft letter to Sir William elucidates the chain of events further. He repudiated Londonderry's claim that he had purchased the Whitespots lease with 'hostile spirit', noting that he could not buy the lease of Conlig (which was all he really wanted) without also buying that of Whitespots; moreover, he had done so at a public auction after due advertisement in the newspapers. It transpired that at a meeting held with the Londonderry trustees he had agreed to leave the valuation of the mines and Royalties to a gentleman of Lord Vane's choosing. That man was John Taylor junior, who in January of 1866 visited the mines with James Brownlow, Londonderry's Estate Agent, and inspected the underground maps and plans and also spoke to some of the men. Unbeknown to Dufferin, Taylor was, of course, familiar with the Newtownards Mine, having inspected it in 1842 for Lord Vane's father, the 3rd Marquis of Londonderry. His fee for the report was £52 10s, of which Dufferin bore half the cost. Taylor suggested £2,000 as a lump sum equivalent to '£100 a year for ever' [it is not clear what this means but it could equate to the money recieved if £2,000 was invested at 5 percent interest], a sum Thomson believed to be '... far beyond what it is ever likely to realise - but as we have no data to go on farther than Mr. Taylor's opinion it cannot be combated' (PRONI Correspondence between Mortimer Thomson and Lord Dufferin, arrangements for mining at Conlig *et seq.*).

Dufferin was forced to accept Taylor's award and even agreed to a supplementary condition of a very stringent nature, a circumstance which he submitted should have precluded Londonderry from repudiating the award. He furthermore expressed his opinion that it was unreasonable to expect him to continue to work the mines while he was discussing the terms at which he was to buy up the Royalties and he considered it most unfair to prefer a claim for compensation for a delay of seven months, caused not by him, but by Londonderry's valuator and solicitor. In the meantime, Dufferin had the mines inspected by 'the highest possible authority on the subject', a Cornishman nominated by Dumbell named Captain Edward Bawden (1805-1877), native of Perranuthnoe and Agent of the Foxdale lead mine in the Isle of Man, who concluded that they were 'exhausted'. He ended his draft letter by stating that, '... under such circumstances it is most illiberal for any landlord to drive any tenant into a hopeless and ruinous speculation'.

Perhaps due to the intervention of Sir William, the unfortunate affair was brought to a swift conclusion and Taylor's award was finally accepted allowing Dufferin to surrender the Newtownards lease to Londonderry. Woodrow states that on the basis of a one tenth royalty, Taylor's award, unless a purely arbitrary figure, presumably indicated that in his opinion the mine still held about £20,000 worth of ore. This meant that he believed some 1,400 or 1,600 tons of lead ore still lay in the ground (Woodrow 1978, 42). If this were so, it seems that the Londonderry trustees were correct in their assessment of the

sensible I am of his neighbourly conduct'. In the end, he decided against selling Clandeboye. (PRONI Estate Agent's Correspondence 1886).

MINING PLANT FOR SALE.

TO be SOLD by PUBLIC AUCTION, at the CONLIG MINES, Newtownards, Co. Down, on WEDNESDAY, 4th day of December next, at the hour of 11 o'clock, a.m., if not previously disposed of, and of which due Notice shall be given, the entire MINING PLANT, comprising—A beautiful Cornish pumping Engine, 36-inch Cylinder, 8½ feet stroke, with two tubular Boilers, 26 feet long and 5 feet diameter.

A double acting condensing Engine, 36-inch Cylinder, 5 feet stroke, with tubular Boiler 31 feet long and 6 feet diameter.

A splendid Lathe, a crushing Machine, Pumps, Chains, Blocks, Pulleys, Ropes, Rails, Ribbles, &c., &c., &c., of which printed Catalogues may be had on application to

MORTIMER THOMSON,
1st November, 1867. Killybogh, Co. Down.

Fig. 18: ***The final sale notice for the plant and equipment of the Conlig and Whitespots Mines, placed in the Manx Sun on the 23 November 1867***

mine's potential and challenges Bawden's negative report of it as being 'exhausted'. Philip Argall senior, who left Newtownards in 1858 for the Tigroney Mine in County Wicklow, throws more light on the true state of affairs, for he considered the mine bottomed except at the Bog Shaft. Here, however, the ore occurred in barite gangue which made it difficult to dress on the primitive dressing floors and the company failed in raising the lead to marketable grade (Rickard 1922). Undoubtedly ore reserves remained, but the cost of continuing to develop the mine at depth, of raising ore from ever-deepening workings and the difficulties experienced in dressing it without considerable investment in new dressing machinery, probably rendered the mine economically marginal at best. This fact was probably well understood by Dumbell who faced far better prospects at the Laxey Mine that had cut spectacularly rich at the 110 fathom level in the spring of 1865 (Scarffe 2004, 8-9).

Dufferin finally put the entire mining plant up for sale (Fig. 18) in the Ulster and Manx press in November 1867 (BNL 1867; MS 1867). The two engines and a very small portion of the plant sold on the day for £400, Thomson stating that he had declined £560 the night before the sale and £500 on the day by a man from Newtownards: '... I was very doubtful of what we might ultimately realise but I determined to have the sale and so far as I can see, after yesterday's proceedings, I think determined rightly'. He intended to hold another auction the following week to sell the remainder of the pumps and sundry equipment. The lease between Dufferin and Londonderry was eventually surrendered on 31 December 1867 (PRONI Surrender of the lease between Londonderry and Lord Dufferin 1867). By then those mineworkers who had not been able to find work in the area as railway labourers had drifted away, some to the metal mines, foundries and collieries in the rapidly industrialising centres of Durham and Cumberland in northern England and further afield to America.

DOWN IN THE DUMPS

The mines languished unwrought for around fourteen years until William Henry Rowe, the former Mine Captain, attempted to revive them. Following the closure of the mines, he had moved over to the Ramsay area of the Isle of Man where he continued to work as a Mining Engineer and took up a position as Second Captain at the Laxey Mine in 1876, a post he was to discharge for a further 20 years (Scarffe 2004, 112).[59] However, his connection to Newtownards was strong, for his wife, Mary (née Saunderson), was a native of that town where her father, William, ran the Londonderry Arms[60]. In 1875, not yet 40 years of age, with a growing family and a limited income, he had written to Dufferin requesting his assistance in pursuing a situation in mining or other commercial industry, stating that he regretted:

> ... having ever come into this circumscribed little spot [the Isle of Man]. My proper course evidently was abroad or to the busier parts of England. My greatest regret however, is that the old mines did not get the further trial with the aid of fresh capital some of my friends were preparing to find for them, and my firm belief is they would have been working professionally at the present moment had your Lordship not purchased.

Given the tone of his letter, Rowe's request unsurprisingly fell on deaf ears, and Dufferin requested Thomson to politely reply that he was unable to offer any help. However, Rowe did not give up his plan of re-working the Newtownards Mines and together with his brother in law, Frederick Saunderson (1841-1911), a Civil Engineer, and Peter Echlin who served as Mine Manager, he took out a lease for sixty years from Lord Londonderry in 1879 on around a thousand acres of land in County Down, at a royalty of 1/15th of lead and 1/18th of copper. The trio would have required substantial capital to rehabilitate a mine sett that had been abandoned, its plant sold off and the workings allowed to flood; the odds were therefore stacked against their 'Newtownards Mining Company'. James McConnell of Newtownards was taken on as the head ganger and among the 12 local men recruited to be mineworkers was Bobby Orme, otherwise known as "iron chest", who was then about 16 years old. He recalls rising at 6.00 am in the morning summer and winter and worked until 6.00 pm for 28s per month. When he started work there he recalls having to '... work for two weeks without a penny piece' and this fortnight's pay was kept until he left the mine. Due to the mine having been derelict for some years, only four shafts were then workable: Green Shaft, Moss Shaft, Black Shaft and the Cripple Shaft, so-called because the galleries in it twisted and turned more than in any of the others (TS 1935).

Peter Echlin met members of the Belfast Naturalists' Field Club in September 1881 and conducted them over the works which were then being rehabilitated. It was reported that 'A good beginning has now again been made, and it is to be

59 Isle of Man Census 1871, RG10; Piece: 5773; Folio: 144; Page 5. Frederick Saunderson was resident with the Rowe family.

60 Rowe had married her at the Parish Church of Bangor on 27 September 1860 (BNL 1860)..

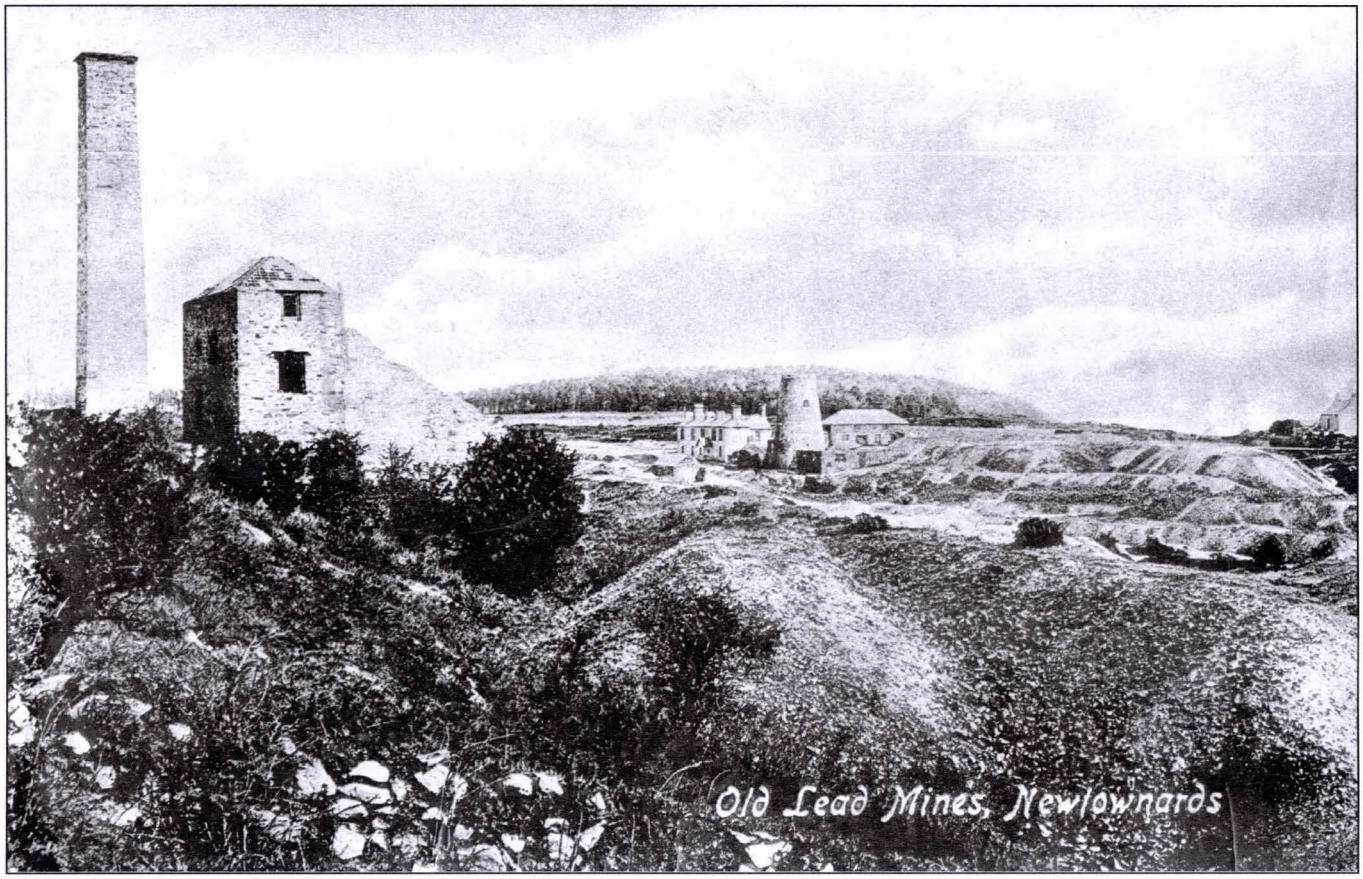


Fig. 19: ***A slightly different view of the Whitespots Mine taken around the turn of the twentieth century, showing the engine house at the South Engine Shaft with its distinctive square chimney and lean-to boiler house. Note the partially vegetated finger dumps in the foreground leading away from the shaft that was sited on the other side of the engine house. The large dumps of gangue and jig-tailing thrown off the dressing floors that were sited just to the south of the count house and windmill give some idea of the scale of the nineteenth century mine workings. Significant amounts of this spoil were removed during World War Two to create roads and runways in Ulster. Authors' Collection***

sincerely hoped that ere long the busy scenes of former activity will soon be equalled, if not excelled' (Proceedings 1883, 110). Some work was undertaken in the upper levels of the mine, illustrated by the fact that in 1881 a very large stone was allegedly maliciously rolled down one of the shafts which fortunately did not damage the ladders, for it was reported that it would have been impossible to reach the men at work there for almost a fortnight (IPN 1881). This 'diabolical act' was at first thought to be intentionally executed to entomb alive two miners who were going about their work, but afterwards dismissed as an accidental fall of ground (BNL 1881).

The *Mineral Statistics* record that between 1880 and 1885, approximately 105 tons of lead ore was raised, with the most produced in 1881 (26 tons), with just 14 tons of potter's ore raised in 1882 and by 1885 production amounted to only 5 tons. A description of the enterprise as employing only 'a few hands' in washing the gravel and sand which had been 'taken out of the shafts by the former company and thrown away as useless' (PRONI Our Local Industries), in other words, re-working the dumps, indicates that operations were small scale indeed. The Belfast Naturalists' Field Club returned to the Newtownards Mine in the summer of 1887, and their subsequent report describes a primitive ore dressing process using rectangular buddles and jigging hutches:

> The washing floors of the mines were first visited where the process of separating the galena, or lead ore, from the various impurities excited considerable interest. The ore, having been crushed to the size of fine gravel, is thrown upon a sloping floor over which water flows, when the pulverized rock and earthy matter are carried away, and a mixture is left, consisting chiefly of lead ore and baryta [sic], or heavy spar, which latter, on account of its high specific gravity, is very difficult to separate from the ore. This mixture is placed in rectangular boxes filled with water, to which an up-and-down vibratory motion is given, which causes the lead ore to slowly sink to the bottom of the boxes. The water is then run off, and the contents carefully removed in horizontal layers. The upper-most layers, containing hardly any ore, are thrown on one side. The middle layers are set aside to be washed again, while the lowest layers consist of nearly pure ore. From the ore thus obtained the metal is elsewhere extracted by roasting in the usual way (Proceedings 1886-7, 500-501).

It seems the company made no further returns to the *Mineral Statistics* after 1885 and were probably merely selling any ore raised to local potteries by that time. It is no surprise that this

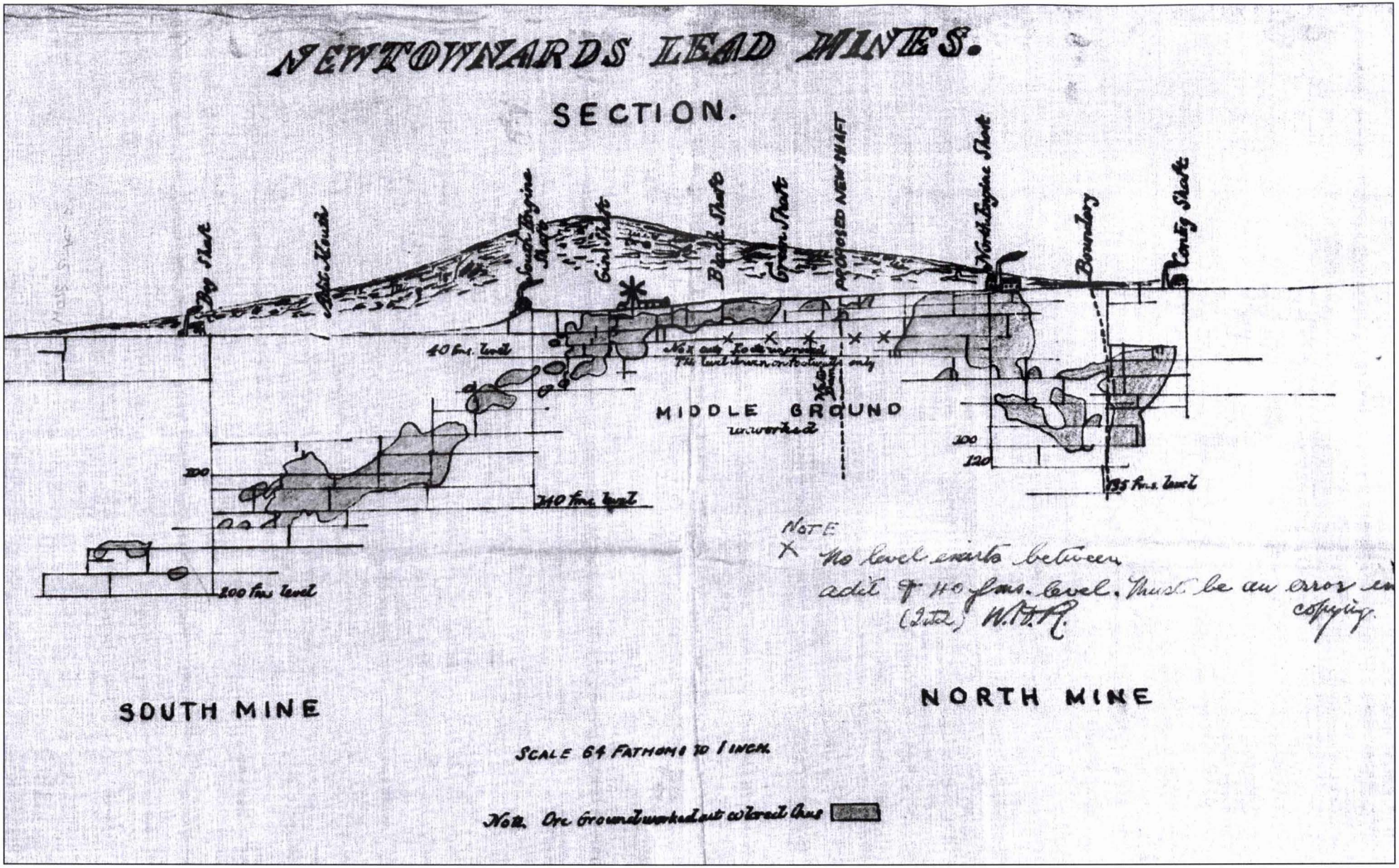


Fig. 20: *A section of the Newtownards Mines drawn in the early 1890's by William Henry Rowe, the former Mine Captain of the Newtownards Mining Company, who was attempting to reopen the mines. The new shaft he proposed sinking in the unwrought 'Middle Ground' is indicated by a dotted line.*
Section courtesy of the Geological Survey of Northern Ireland

small scale and basic enterprise seems to have fizzled out in the late 1880s, signalling the final demise of deep lode mining in County Down.

One other small, and unsuccessful mining venture might be mentioned here, and that is the 400 feet shaft sunk in 1875 by Cornish miners employed by Lord Newry, Francis Charles Needham, 3rd Earl of Kilmorey (1842-1915), at Leitrim, north of Kilkeel, in the search for silver-lead. A philanthropist eager to improve his estate in the Kingdom of Mourne and to discover new sources of wealth in order to benefit not just himself, but also his tenants, this was probably one such scheme (UD 1875). Although argentiferous lead was found, the yield did not prove sufficient to cover expenses (Bassett 1886. The Miners' Hole, some 7 km to the north in the Silent Valley, is contemporaneous with the Leitrim shaft and is probably a small trial made by the same Cornishmen (Evans 2005, 46).

In 1894 a meeting was held in the Assembly Rooms at Newtownards to take into consideration the propriety of forming a company to reopen and once more work the lead mines at Conlig. A circular had been issued along with the favourable reports of the mines by Captain William Henry Kitto (1855-1930), a Cornishman employed in the Isle of Man as Mine Agent of the Foxdale Mines[61], and Captain William Henry Rowe of the Great Laxey Mine. Frederick Saunderson, who, along with Rowe, was one of the original lessees, stated that the proposed capital was not large but was more than the lessees were disposed to subscribe. They had expended £2,000 on clearing out old shafts and levels, making surface trials and other preliminary work and they were willing that the entirety of this should be treated as share capital. Saunderson stated his belief that a company with £10,000 should be ample, and judging from the recent reports, he was firmly convinced that a new shaft [shown as a dotted line on the section of the mines drawn by Captain Rowe in Fig. 20] sunk in what was known as the middle ground with levels north and south, would result in a successful undertaking. Moreover, he noted that blende (zinc) and barites 'which were formerly of little value' were now sought after, the latter being worth £3 10s a ton.

Mr. Brownlow, Lord Londonderry's Estate Agent, stated that 'nothing would induce his Lordship to allow this mine to be used as a decoy to any company', but at the same time he saw the advantages to the town that might arise from a company being formed, and provided the town was supportive, he would be happy to assist in the way of subscribing for shares. Those assembled at the meeting seemed supportive of forming a company (BNL 1894). In the autumn of that year the editor of the *Belfast News-Letter* noted that some good specimens of lead ore had been received from a spot close to Newtownards, and that a prospectus was soon to be issued (BNL 1894). However, efforts to float a new company appeared to have been unsuccessful and the only record of production is that of 29 tons of lead ore in 1899. The Newtownards Mining Company is listed in the *Mineral Statistics* up until 1903. During this time, William McConnell, the father of James McConnell, was permitted to work one of the shafts on a small scale, presumably with the consent of Rowe to keep the lease active, and when he died, James, took over.[62] When James left for America, Rowe placed Bobby Orme in charge of the derelict mines (TS 1935).

No significant developments took place at Newtownards until about 1909. Orme recalls Rowe sending him a letter to inform him that a group of German and English gentlemen would be arriving to inspect the mines and that he should conduct them over the sett, which he duly did. After short-lived enterprises such as the Furnace Trust Ltd. and the Coonoor Syndicate, the Irish Mineral Tailings Ltd. was formed in March 1912 with the intention of re-working the estimated 300,000 tons of workable nineteenth century dumps 'using the most up to date plant procurable' by a process that could extract lead from its matrix in a manner hitherto impossible. Orme had been hired on as the chief ganger and instructed to recruit men from Newtownards who knew something about mining. Subsequently, 22 local men were employed including W. Meredith, George Gregory, Robert Hughes, David McKimm, Jack West, J. Christie and A. Sloan. William Hanna, a building contractor from Newtownards, was hired to erect a smelting house, store and sheds and to rehabilitate some of the old mine buildings; Tom Kelly supplied doors, windows and other fittings. The Buchholtz and Harvey furnaces came from Belfast and a specially chartered steamer arrived at Bangor with a cargo of oil for them. The furnaces, capable of dealing with 100 tons of ore each every 24 hours, were installed below the South Engine Shaft under the supervision of the patentee, Ernest Buchholtz, and the laying of tramways, erection of sheds and renovation of old buildings was overseen by the Mine Manager, David W. Stewart.[63] Work began on processing material from the old tips which was jigged and washed prior to being smelted.

At the company's inaugural dinner at the Grand Central Hotel, Belfast, in September 1912, held to announce the venture and to attract investment, Harold Oldham, one of the Directors, related how he and others had spent a considerable sum of money 'in proving the value of what was at the mines'; indeed, Philip Henry Argall noticed in 1911 that recent attempts had been made at re-working the mine dumps rich in barite, evidently with unsatisfactory results (Rickard 1922). But since the Irish Mineral Tailings Ltd. had taken over the property, Oldham noted that a great deal of further work had been done under the guidance of German, Mr. J. Kimber, a partner in the firm of Messrs. James Fuller and Co., mining engineers and agents, London, which had not only proved the

61 His father, William Kitto, a native of Rose, Perranzabuloe, managed Manx mines including Brada, before migrating in 1891 to O'Okiep, Namaqualand, South Africa, to take up a senior post with the Cape Copper Company Ltd.

62 This is confirmed by the 1901 Census for County Down which shows just one lead miner, James McConnell, resident at Whitespots and renting a house from Frederick Saunderson, who was employing him (1901 National Census Online).

63 Ernest Buchholtz and George Harvey were the two main partners. Buccholtz applied for a British patent in 1912 granted in 1913 (191210564-A) for his 'Furnace for roasting, smelting, or otherwise treating ores' and a US patent for the same in 1913 which was granted in 1914 (US1100711 A). On application for the US patent, he described himself as a subject of the German Emperor resident in London and of the Oil-Flame Furnace Company, Limited, of High Holborn, England (Patent Directory).

value as he and others had conceived it, '... but had proved the Whitespots property to be ten times more valuable than in his wildest dreams he had imagined', further claiming that the mine had made millions in profits to the former owners. A visit to the mines was afterwards undertaken by the Directors, a major shareholder and several potential investors (GSNI unidentified newspaper clipping 1912).

However, Oldham's claims were soon proven to be a wild dream indeed and there is no recorded production from Newtownards in the *Mineral Statistics*. Orme throws more light on the enterprise, stating it to have been an elaborate scam. Attempts to work some of the shafts produced few results and the furnaces were a failure. However, in order to impress the prospective investors travelling to the mines after the inaugural dinner, lead was secretly carted in from Belfast and put into pans to be melted. A cavalcade of 50 cars visited the mines, and when their occupants alighted at the smelter, '... they found the lead bubbling like molten silver in the pans'. He recollected that local people viewed the Germans as 'veritable millionaires', as they threw pennies for the children in the streets of Newtownards. But the potential investors were not as gullible and subscribers failed to materialise (TS 1835). In less than twelve months the concern collapsed, unable even to pay William Hanna what they owed him for refurbishing the old mine agent's house on the mines (McCavery article). The Irish Mineral Tailings Ltd. was placed into liquidation in February 1913 after showing gross liabilities to the value of £6,842; unsecured liabilities £3,481; assets valued at £2,550 and a total deficiency of £4,140 in regard to creditors and contributories (TT 1913). The company was finally dissolved in 1919.

An interesting sequel to this episode is the fact that one of the German immigrant mineworkers, 35 year old Paul George Wentzel, who had worked at the mines installing machinery since 1910 and remained in the area after the Irish Mineral Tailings Ltd. collapsed, fell under suspicion of being a spy on the outbreak of the First World War (II 1914). In early August, District-Inspector Ernest Gerrity, accompanied by a sergeant and constable, searched his house, a wooden shack near the disused smelting house. He was arrested and brought before a special court in Bangor where Gerrity informed the magistrate that he had found a pocket book containing cipher codes and sketches of a semaphore mast, fortifications and artillery; maps of Belfast Lough, Aldershot Military Barracks and the British Isles; photographs of naval vessels moored off Bangor, and a camera, rifle and ammunition. Wentzel was remanded in custody to be tried at the Ulster Winter Assizes in Belfast, where he was accused of having approached Orlock Signal Station with 'objects prejudicial to the interests of the State, and obtaining documents which might be useful to an enemy. It was noted that he had served in the German Army and was living '... mysteriously, with no business of any description'.

Wentzel, addressing the jury, denied ever having served in the German military and stated that the sketches were not of fortifications, but were made in relation to the experimental works at the lead mines. Moreover, he argued that the maps and photographs produced were sold in shops all over the country (II 1914; FJ 1914). He was found not guilty on this indictment but was detained to stand trail once more. He was finally found not guilty on a charge under the Official Secrets Act and discharged after the Irish Attorney-General intimated that the Crown would enter a *nolle prosequi* (FJ 1914).

POSTSCRIPT

In 1926 Mr. A. McCullough wrote a letter to the Ministry of Commerce outlining his interest in the mineral potential of the Newtownards lead mines, stating that a South African friend had approached Dublin Castle prior to partition with the intention of recommencing mining there, but his request for funding was turned down by the then government. McCullough's plan never got off the ground and during the Second World War the mines were used for small arms and grenade practice and for military manoeuvres. Additionally, about 200,000 tons of spoil was removed to build roads and runways in Northern Ireland (McCavery article), an activity that seriously degraded the historic mining landscape by destroying vital contextual archaeology. The site later fell victim to indiscriminate fly-tipping.

During the late-1940s, Noel Kirkpatrick was a regular visitor to the mines and he took some excellent photographs (Figs. 21 and 22) of the extant industrial remains and many years later provided an account of what he remembers at the site (Kirkpatrick 1993, 152-155). According to him, some shafts were still open and he descended several metres down North Engine Shaft observing wooden staging platforms but no ladderway. He recalls that one of the engine houses, probably at North Engine Shaft, was devoid of all its internal fittings, only a small section of the tiled roof remained and even the floor had been removed which is corroborated by the sale of the 36-inch vertical single action engine in 1867. The engine house was sited directly above this shaft:

> A semi-oval opening in the tall side of the engine house which faced the vertical drop of the shaft, had allowed the cables to enter the winding drum. At one side of the opening I was fascinated to find a deep groove which had been caused by the winding cable coming out of line and fouling the stonework during the time of its working life. This defect had been caused by the drive-shaft falling out of alignment and the steel cable rubbing against the stonework whilst in operation.

We believe this 'semi oval opening' to have been the plug doorway of the pumping engine house which would, of course, have had no cable entering it. The deep groove he describes is probably in connection with the eduction pipe leading from the engine to the condenser pit. He also describes the area adjacent to this shaft as being '... extremely hazardous in that large objects such as winding drums, axles, gearing etc., had been removed leaving holes in the ground up to five feet deep hidden by the long grass'. One such deep hole was undoubtedly the cataract pit and another possibly a man capstan shown on the 1901 6-inch OS Map (see Map 4). Both now seem to have vanished, probably in-filled with vegetation. At Conlig Engine House he recalls seeing 'large sections of the machinery and cable structure inside', probably in relation to the winding drum.

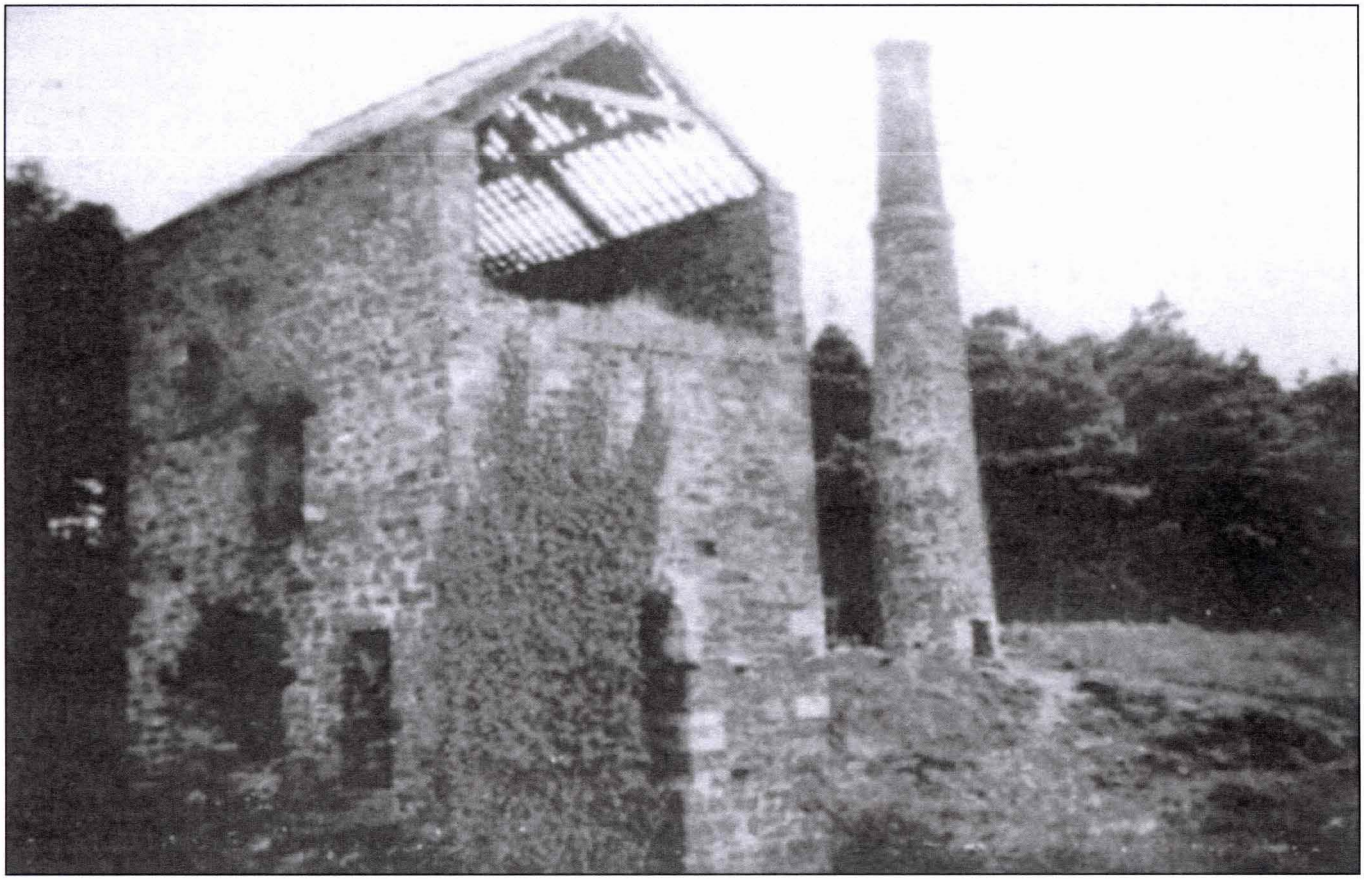


Fig. 21: ***The Cornish-type pumping engine house at the North Engine Shaft, seen here in 1949. The 36-inch cylinder vertical pumping engine was sold by Lord Dufferin in 1867. Photograph by the late Noel Kirkpatrick***

Fig. 22: ***The Bog Engine House in 1948/9 which housed a 36-inch rotative engine, sold in 1867. The flywheel slot can be seen on the left of the gear plinth in the foreground. The damaged walling (centre) was that of the crusher house and the square chimney, then free of ivy, can be seen to be telescopic. Photograph by the late Noel Kirkpatrick***

In 1957, Mr. Fitzsimmons of the Bangor Borough Council began campaigning for the lead mines of Conlig to be re-opened in order to address the lack of metallic lead for plumbing purposes then being experienced in the area and to provide local employment (PRONI Newtownards and Conlig Mines 1925-1967 *et seq.*). He encouraged the Mayor of Bangor to get involved and, with the support of Frank Yeates of London, attempts were made to interest Sydney Taylor of John Taylor and Sons, London, in getting together a syndicate to reopen the mines and in undertaking a preliminary survey. Stormont was approached for funding, but as the price of lead was then low and with the enormous cost involved in the re-opening of long abandoned mines, this request was denied. Hunting Technical Surveys were persuaded to undertake an interpretation of Ordnance Survey stereo aerial photographs from 1951 to detect any obvious geological structures, as Yeates thought the Newtownards dyke might continue on towards Belfast, but the conclusions were negative.

In 1965 a report on the Newtownards Mine compiled by P.R. Wilson (Dublin 1965 *et seq.*) following an induced polarisation survey of the D.C. pulse type undertaken by Hunting Surveys in 1964, concluded that the potentialities of the property were '... not sufficiently attractive to warrant the considerable expense which would be incurred if exploration were continued'. The Bog Shaft was then described as 'filled in' and the North Down Council was endeavouring to locate its collar with a view to opening it up for use as a source of water for a nearby factory. Wilson noted that judging by the gangue material in the dump, it was not a particularly successful undertaking and indeed, one local man commented that it was a 'dead shaft'. The Old Adit, sited between Bog Shaft and South Engine Shaft, had caved in and was difficult to locate due to old cars having been dumped in the vicinity.

South Engine Shaft, circled by a fence, was open for several hundred feet and water could be heard running into it part way down. Gin Shaft was open for about 80-100 feet and appeared to have been dry and partially filled in. It was fenced round. North Engine Shaft was filled in, with the suspicion that it was merely plugged in the upper part. Conlig Shaft was open for several hundred feet with water in the bottom, there was no collar or fence and it was considered dangerous. Many of the other shafts had caved or been filled with rubbish. Rather tellingly, Wilson noted in his report, '... it is known that the "old mines" is a favourite dumping ground for rubbish of all kinds, particularly old cars'. The issue of reworking the mines seems to have been finally laid to rest in 1966 when it was noted that Anglo United Development Corporation Ltd., which had undertaken surveys of all the disused lead mines in County Armagh in 1957, had concluded that lead in commercial quantities did not exist in any of the mines there (BNL 1958; Schwartz and Critchley 2012, 79; Fowler 1959, 37) and that the same probably held true for Newtownards. Indeed, Fowler (1959) concluded that Northern Ireland had no future for lead mining.

In 1995 the Department of Environment for Northern Ireland (DOENI) created the Whitespots Country Park incorporating a significant area of the old nineteenth century mines and efforts were made to landscape the site, to clean away dumped rubbish and information boards were erected along signed trails. The Whitespots-Conlig mine site was designated as an ASSI by the DOENI on 25 August 1998, largely based on its mineralogical and metallogenic importance, with an additional reference to the unusual diversity of plant species that grow on the spoil heaps and tailings areas. The Ulster Way and the Clandeboye Way pass through the Whitespots Country Park. Since the summer of 2012, all motorbike and quad bike access has been banned and the ruling enforced by Ards Borough Council, the police, staff from the Council's Safer Ards team and Community Safety Wardens. This action has caused considerable controversy and resentment in particular among local trial riders who have practised at the mines since the 1930s. They challenge the wisdom of this decision, claiming their sport does not cause environmental or archaeological damage within the park (BT 2013).

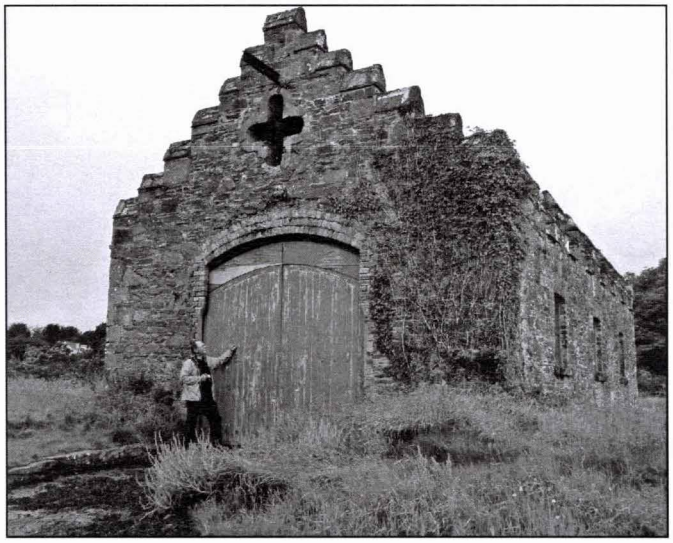


Fig. 23: ***The boat house at Dickson's Island, Castleward which dates from the late nineteenth century. This building with crenellated gables appears to have been constructed with materials recycled from the demolished mine engine house that formerly occupied the site***

THE MAIN MINE SITES TODAY

Castleward

The Castleward Demense is now in the care of the National Trust. A boathouse with crenellated gables dating from the late 1800s is the most prominent feature on Dickson's Island (Fig. 23). The use of fire brick around the windows and doorway suggest that the materials to build the boathouse were recycled from the demolished engine house and other buildings that formerly occupied the site. On the southern side of the building are fragments of the cobbled mine dressing floor. The three metre square outline of the in-filled Engine Shaft is just visible in heavily vegetated ground about 12 metres south of the boathouse. The eroded remains of a quay may be discerned on the north side of Dickson's Island and across the bay about 100 metres to the north, is a restored sturdy stone-built rectangular shed complete with slate roof known as 'the powder house' where the explosives were stored.

Fig. 24 Above: ***The tower of the mine windmill and the chimney of the South Engine house as seen from the escarpment in 2013. Compared to the views of the site taken around 100 years before, the change is dramatic. The vegetation has become thick and impenetrable on many parts of the mine and is obscuring and even threatening the integrity of the industrial archaeology. The engine houses and the windmill are all Scheduled National Monuments, yet ivy is seen creeping up the side of the South Engine chimney (which has no lightning conductor) and the former dressing floor area has vanished under a dense canopy of alder. Although much of the escarpment is now incorporated into the Whitespots Country Park, it must not be forgotten that this area is first and foremost a former mine site***

Fig. 25 Opposite: ***The masonry tower of the Newtownards windmill, the most iconic feature at the mine site in 2014. This Scheduled National Monument is only one of two extant mine windmills in Ireland and Britain (the other being at Parys Mountain in Anglesey, Wales), and is therefore of significant heritage value. It was fitted with 'self adjusting sail apparatus' which would have allowed the sails to be regulated without stopping the mill, which was quite rare in Ireland. An attempt has been made in the past to consolidate the stonework, but unfortunately using Portland cement and not lime mortar, as is best practice in the conservation of historic buildings. No lightning conductor has been fitted***

Tullyratty

The site is denoted by the name of a field called Mine Park, but the heart of the historic mine complex is now partially covered by farm sheds and a yard sited on private property. On the flank of Slievetriplog Hill some 50 metres northeast of the farm buildings, are the extant remains of a stone built storehouse. A further small stone building with a corbelled roof 20 metres to the north was the powder house (see Fig. 10). There were several shafts sunk in this area during the nineteenth century, the location of just two of which are now known: a decline (in-filled) near the mine house that was operated by horse whim and another across the road from the farm which is marked as a well on the 1976 OS map.

Newtownards: Whitespots and Conlig

The Newtownards Mines cover a large area, around 1.5 km in extent from north to south and contain a variety of industrial archaeological features, including five Scheduled National monuments. Unfortunately, many of the on site interpretation boards have been subject to vandalism and are now shabby and largely incomprehensible; there is residual evidence of former rubbish dumping; the trails are overgrown and muddy and most importantly, the vegetation is obscuring the industrial archaeology and is badly damaging some of the extant remains. Parts of the mine site are contaminated with lead, notably the area covered by a twentieth century tailings dump to the southeast of the South Engine Shaft and in soils in a field between the tailings area and the Bog Shaft where very severe contamination is encountered (Moles *et al* 2004).[64] A recent article has reiterated the fact that high levels of toxic heavy metals are present at the site and it is imperative to forestall further contamination of soil horizons in the field to the north of Bog Shaft, caused by the redeposition of contaminants as a result of the erosion of spoil heaps and tailings dumps (Kingsley *et al* 2013). Clearly, there is a pressing need to address the improved management of the site to ensure that the above issues are tackled. Benign neglect is not an option.

The most iconic building is undoubtedly the stump of the eighteenth century windmill on the Whitespots escarpment (Figs. 24 and 25), one of only two extant tower mills that we are aware of in Britain and Ireland deployed for mining purposes (the other being at Parys Mountain, Anglesey, Wales). It is therefore unique in an Irish context and is of significant heritage value. It featured in Season Three (2013) of the fantasy drama television series *Game of Thrones*. At 13 metres high (a modest size for a tower mill), it is constructed of stone and probably had four sails. A series of post holes for a timber stage, which was erected four metres above the ground, are visible around the circumference of the structure. Two doorways led out onto this platform which made it easier to set the sails and to operate the winding gear In the 1864 mine sale inventory, the windmill is described as being fitted with 'self adjusting sail apparatus' which would have allowed the sails to be regulated without stopping the mill which was quite rare in Ireland. A door leads into the ground floor of the tower and there are two windows in the upper storey.

Two apertures, now sealed with brick infill, can be seen on the north and south sides of the windmill; each presumably accommodated a drive shaft to power machinery including rolls crushers (as described by George Harrison in 1846) and jigging apparatus housed in buildings around the base of the tower. Indeed, close to the sealed aperture on the south side of the tower is a line of lime mortar that indicates where a building shown on historic mapping and photographs was attached. A further small aperture located close to the door in the eastern side of the tower probably accommodated a drive shaft to operate a lathe sited in the mine yard behind the windmill. Traces of grease can be seen on the exterior masonry close to the top of the stone tower where the rotatable wooden cap that supported the fantail and accommodated the brake wheel, windshaft and the upper portion of the drive shaft would have been located. Fragments of concrete at the base of the windmill tower are probably connected to a post 1867 working.

There has been some attempt to conserve this Scheduled National Monument (SM NO 6:504) by installing a concrete lintel over the western doorway and re-pointing of the stonework, but unfortunately using Portland cement instead of lime mortar which is recommended in best practice guidelines for the conservation of historic buildings (Sharpe 2005). Of the complex of structures surrounding the windmill tower and the line of buildings including the count house to the north, nothing obvious remains as the land has been much disturbed. The area once occupied by the dressing floors is now very water logged and densely vegetated with alder and other deciduous trees. Only a partial footprint of the rectangular building shown opposite the windmill and a fragment of moss covered masonry of what appears to be a circular buddle to the south has been observed here.

In the woods at Conlig are the extant remains of an engine house (Fig. 27) densely covered with ivy that was constructed by the Ulster Mining Company in approximately 1836. Sited about 20 metres east of Conlig shaft (run-in and surrounded by a circular vegetated bund) in an E-W orientation, this Scheduled National Monument (SM NO 6:501) accommodated an in house (totally enclosed) vertical rotative engine similar to that at Levant in Cornwall (Fig. 26). Its external footprint measures approximately 11 metres long and 5 metres wide. Extant walls are present on three sides surrounding the cylinder end of the house and the lack of extensive rubble from the missing walls suggests that the stone has been robbed for reuse elsewhere. Bolt holes on the cylinder platform suggest a 36-inch diameter cylinder. However, it should be noted that some engine houses in Cornwall had bolt spacing larger than the cylinder in order to accommodate the possible installation of a larger engine at a later date (Brown *et al*, 2005). Lack of irrefutable documentary evidence means that it is not possible to be absolutely sure of this engine's cylinder size.

Slots in the floor of the western end of the house accommodated

64 Lead levels in the most contaminated soils at Newtownards are in the region of 5-10 percent, whereas at the other major nineteenth century lead mining centre in the Wicklow Uplands, values of up to 19.5 percent have been recorded at the Ballinafunshoge dressing floor in Glenmalure and 14.5 percent at the Hero dressing floor in Glendasan.

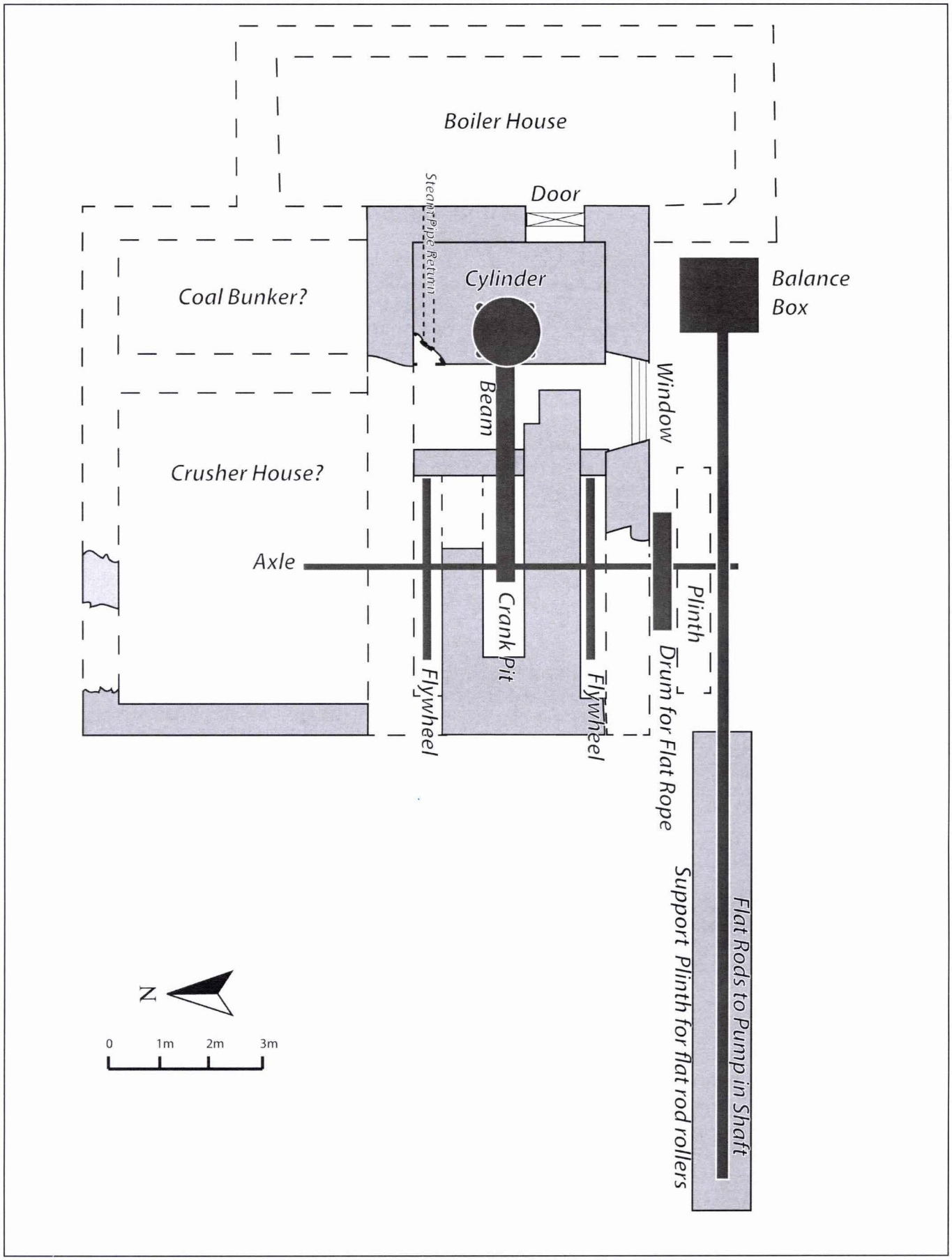


Fig. 26: ***Conjectural layout of the Conlig Engine House which accommodated what we believe to have been a 36-inch cylinder rotative engine. The light grey areas indicate extant features, the dark grey areas depict the probable positions of the machinery and the dashed areas represent walling no longer extant***

Fig. 27: ***The extant remains of the Conlig Engine House. Here the ivy poses a grave threat to the surviving walling. Image taken in 2014***

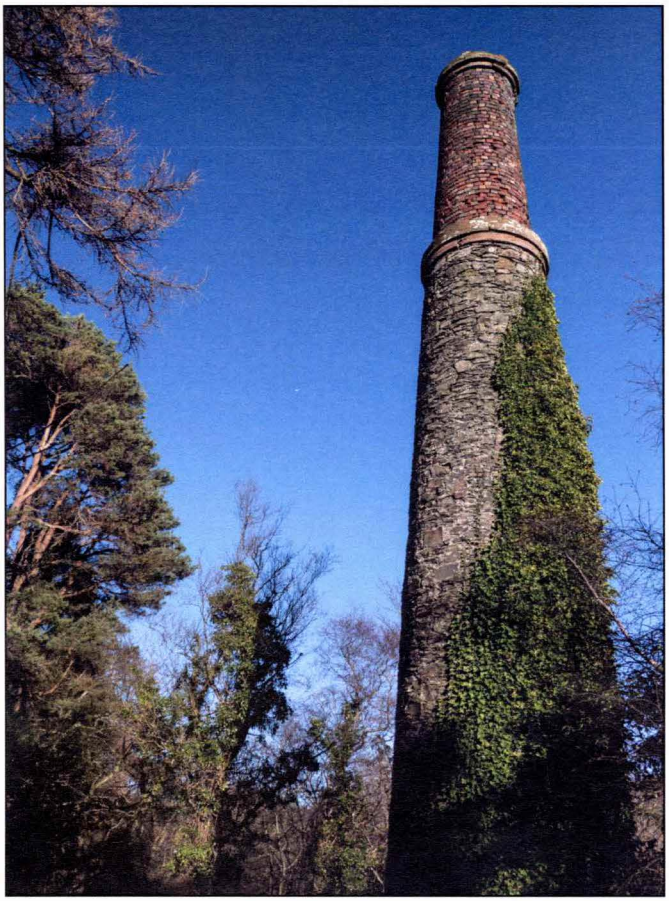


Fig. 28: ***This chimney is the most visible remains of the North Engine House making it imperative to protect this Scheduled National Monument which is being colonised by ivy and has no lightning conductor. Image taken in 2014***

the crank and flywheels. The internal flywheel on the south side of the house would have linked to a winding drum and crank for pumping flat rods. As the crank pit is slightly offset to the left of the centre of the engine cylinder, this probably indicates that the crank itself was on the left side of the engine sweep rod. There is no visible sign of a winding drum plinth outside. A square pit outside the SE corner of the engine house which has a slot on its western side probably housed a balance box for flat rods leading to the shaft. A slot on the north floor of the engine appears to have housed a second flywheel which possibly drove a rolls crusher in an attached building to the north.

The boiler house was attached to the cylinder (east) end of the engine house and is unusual in that it is transverse to the engine rather than the normal parallel alignment along one side. The probable reason for this was that the flat rods precluded building the boiler house on the south side and the Ordnance Survey 25 inch map of 1901 shows a building attached to the north side of the engine house which possibly housed the crusher and a coal bunker. Fragments of the walls of this structure, which was approximately 9.7 metres long and 5 metres wide, can be discerned. The boiler house measures approximately 11 metres long and 4 metres wide and appears to have housed a single boiler. A 43 inch (1.1 metre) wide door at the back of the engine house was probably the cylinder doorway through which the engine was taken during installation. The boiler house was most likely built after the installation of the engine and the cylinder doorway then effectively became the boiler house door leading from the engine house. A hole in the NE corner of the engine house was the likely route of the steam pipe from the boiler to the cylinder, whilst a tunnel underneath the cylinder platform housed the return pipe to the boiler for the condensed exhaust steam from the engine.

An above ground flue leading from the boiler house to a chimney on the rising ground to the east of the engine house (to provide sufficient up draught for the boiler) has been truncated by the current track but may be followed SE uphill for 35 metres. It leads to the stump (in the region of 1.5 metres high) of a square chimney that was in all likelihood demolished by Lord Dufferin in the immediate years after his acquisition of the Conlig mine sett in the summer of 1865.

The 14 metre high stone built circular chimney stack of the North Engine House (Fig. 28) has survived relatively intact, although it is being slowly colonised by ivy and its brick upper section and sandstone capping are in need of urgent attention. A void over a quarter of a metre in diameter near the bottom of the chimney opposite the enlarged flue entry is rendering the structure prone to collapse. Given the chimney's proximity to one of the main pathways, it poses a significant risk to pedestrians and should therefore receive immediate attention.

Fig. 29: ***Extant masonry approximately 2 metres in height of the bob wall of the North Engine House which accommodated a 36-inch cylinder vertical beam engine, the only engine of this kind on the Newtownards Mines. The house, of quintessential Cornish-type, collapsed in 1976. The plug doorway is visible in the centre. The chimney can be seen centre right. Image taken in 2014***

In addition, there is no lightning conductor on this Scheduled National Monument (SM NO 6:502) which is also a major cause for concern. The associated engine house of quintessential Cornish design which accommodated a 36-inch cylinder single acting vertical pumping engine (Figs. 8 and 29), the only example of its type on the Newtownards Mines, collapsed in 1976. It was then the only remaining engine house of this type in Ulster. In dense vegetation below the pathway, the ivy-covered remains of the lower part of the bob wall including the opening for the plug doorway solidly built of dressed greywacke blocks is extant to a height of around two metres. Fragments of the walling of the boiler house, which was contiguous to the north wall of the engine house and accommodated two 26 feet long 5.5 feet diameter flue boilers, are also discernible. The shaft has been blocked since the 1960s and is now covered with additional masonry rubble from the fallen engine house sited directly above.

The 14 metre high square stone built chimney, a Scheduled National Monument (SM NO 6:503), is the only clearly visible extant remains of the South Engine House (Figs. 9, 19 and 24). Partially colonised by ivy on its south side, it does not have a lightning conductor, but is in fair condition despite the re-pointing of its stonework with Portland cement, instead of lime mortar. Half of a cylinder bedstone lies to the east of the footprint of the engine house bearing two bolt holes 18 inches apart, suggesting a cylinder of 18 inches in diameter which is indeed confirmed by documentary evidence. Historic photographs of the engine house show that this was an in house (totally enclosed) rotative engine like that at Levant Mine in Cornwall and would have been used both for pumping and winding. A lean-to boiler house was situated on the east side of the engine house, the faint footprint of which remains above a slope down which is strewn a considerable amount of clinker. There was a gap between the west side of the house and the detached chimney where presumably the winding drum was located. The engine house was built upon a rock outcrop and the 1901 Ordnance Survey map plots the line of an above ground flue between the boiler house and the chimney which has now disappeared.

Between South Engine Shaft and the Gin Shaft, nineteenth century mapping shows a line of small square structures which we believe were bouseteams (ore slides) and not nine cottages as asserted by Woodrow (1978, 51). A particularly well preserved cobbled feature (minus its retaining walls) built into

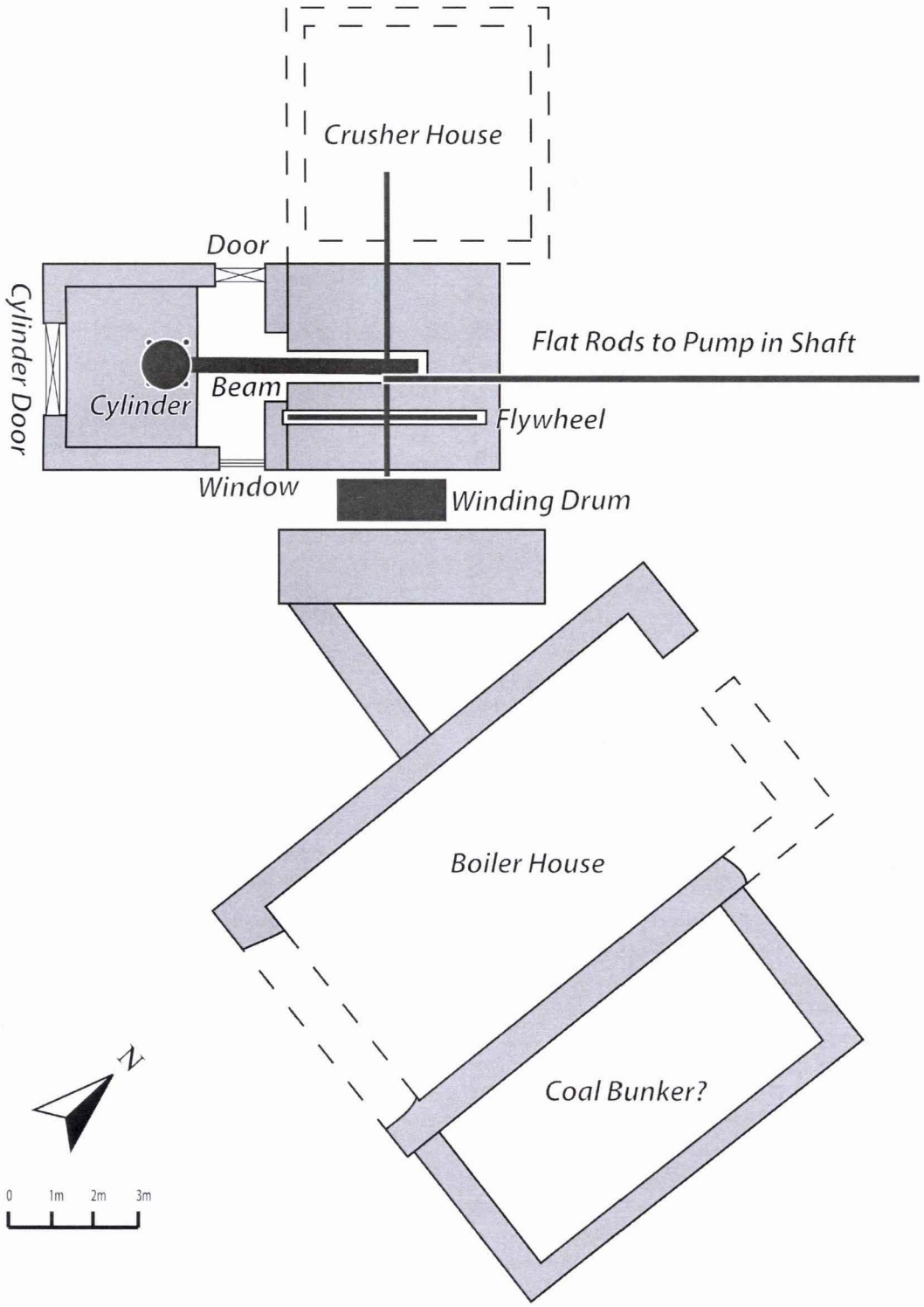
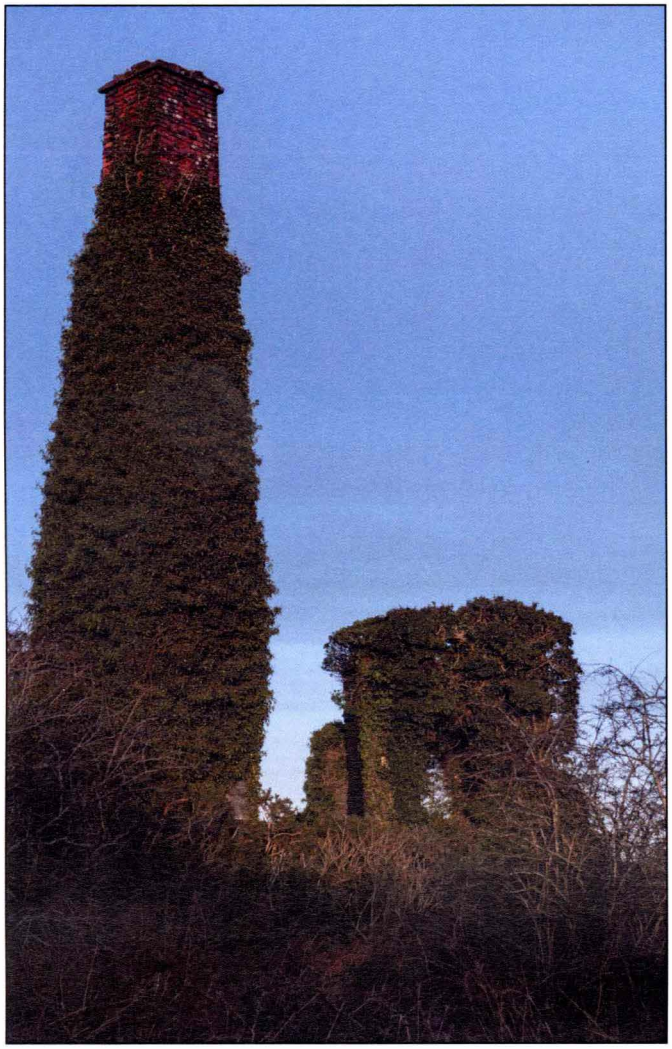
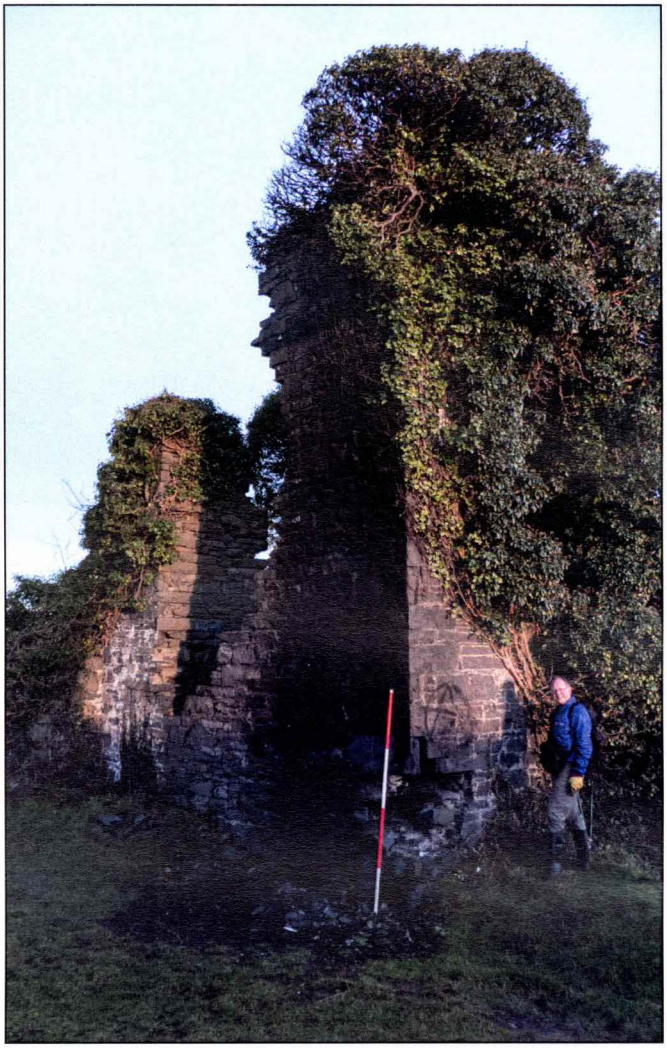


Fig. 30: ***Conjectural layout of the Bog Engine House which accommodated a 36-inch cylinder rotative engine. The light grey areas indicate extant features, the dark grey areas depict the probable positions of the machinery and the dashed areas represent walling no longer extant***





Figs. 31 left and 32 right: ***The extant remains of the Bog Shaft engine house, built in 1850 to accommodate a 36-inch rotative engine which operated a crusher as well as winding and pumping from the Bog Shaft. The colonization by ivy has left these buildings in a particularly parlous condition and the chimney has no lightning conductor. Image taken in 2014***

the natural slope above a level area that once accommodated a tramway leading to the dressing floors, mark the remains of one of these ore slides. Below and to the southeast of the South Engine Shaft is a large area of pale grey clayey soil, the tailings dumped by late-nineteenth and early-twentieth century operators reworking the old tips for lead. These are being eroded by the tyres of mountain and trail bikes.

A complex of structures at Bog Shaft (Figs. 7 and 30) surround the engine house built of greywacke blocks for a 36-inch rotative steam engine which is being severely damaged by ivy that has almost totally colonised the extant walling (Figs. 31 and 32). The main beam of the engine was pivoted on the bob wall of this Scheduled National Monument (SM NO 6:505), with half of the beam being inside the house and half outside. All four walls of the engine house have extant masonry, but with extensive damage to the north western wall probably arising during the removal of the engine following the sale of equipment by Dufferin in 1867. The engine house is almost square, measuring 5.5 metres long and 5.2 metres wide. The bedstone of the cylinder is missing which confirms that the engine was sold (with the bedstone). At the south eastern side of the house is a partially damaged arched cylinder doorway which is 81 inches (2.06 metres) wide. Using the formula given by Brown *et al* (2005) such a wide doorway would suggest an engine with a cylinder of 60 inches in diameter. However there is no documentary evidence for an engine of this size at Newtownards. The 1901 Ordnance Survey 25-inch map shows a large building adjoining the west side of the engine house which accommodated a rolls crusher.

At the front of the engine house (to the north east) is a masonry gear plinth measuring 4 metres long and 5.2 metres wide. There are slots in the top of this plinth for a flywheel and the crank which drove the flywheel, plus a square recess for the condenser. The plinth has wooden load bearings on either side. Those on the south eastern side would be associated with the winding drum, whilst those on the north western side are very possibly associated with the crusher. To the east of the engine house and separated by a gap of 1.07 metres is another masonry plinth which supported one side of the winding drum. This plinth (and the gear plinth in front of the engine house) had substantial timber baulks in the lower half. Such timbers have been seen on other engine houses in Ireland (notably at Allihies) and probably acted as shock absorbers for stresses associated with the motion of the engine, winder and

crusher. Today most of the wood has rotted away leaving a void and this lack of support seriously undermines the integrity of the structure which is prone to collapse as a result. This engine also was used for pumping water from Bog Shaft, denoted by a large, partially vegetated spoil heap to the north of the engine house. The pumps in the shaft would have been activated by flat rods probably attached directly to the crank on the flywheel which would convert the vertical motion of the engine to a horizontal motion. A 'T' angle bob at the shaft would have converted this motion back to a vertical direction to operate the pumps. The 1901 map shows some structures adjacent to the shaft; field observation has detected only a fragment of masonry walling close to the shaft, which has collapsed.

The boiler house, which accommodated a 31 feet long 6 feet diameter flue boiler, is sited some distance from the engine house. A smaller building connected to the east of the boiler house was probably the coal bunker. An above ground flue led to the square chimney, but there is no trace of this in the field. The chimney with its stone built lower section and inset brick upper section, is in a poor state of repair, heavily colonised by ivy and located about 30 metres south west of the engine house. There is no lightning rod attached.

The 1858 6-inch and 1901 25-inch OS Maps depict a line of what appear to be eight ore bins, similar to those observed near the South Engine Shaft described above, which suggests that some primary ore processing was taking place here. However, the site of the ore bins is now occupied by dense and impenetrable vegetation making direct observation difficult. A leat indicated on the 1858 6-inch Ordnance Survey map probably conveyed water, not just for the engine, but also for washing the raw ore at grates prior to some preliminary dressing. A quantity of spoil from the primary dressing of the ore is indeed depicted on the 1858 6-inch and 1901 25-inch OS Maps to the south of the engine house.

The Newtownards Mines Site was among the most important lead producing areas in Ireland and, with its engine houses and iconic windmill, is the most visible example of the nineteenth century metalliferous mining industry in Northern Ireland. It is of significant heritage value. In May 1997, the then Mining Heritage Society of Ireland led a field visit to the Newtownards Mines and stressed the importance of conserving and promoting the site. Progress since then has been slow. Quite aside from addressing the pressing environmental issues caused by the presence of heavy metals in a Country Park, we would urge that a comprehensive structural survey of the extant remains of the industrial buildings at the site be undertaken as soon as possible. Rampant vegetation is destroying the visual integrity of this former mine site and should not be allowed to obscure, overwhelm and/or damage the industrial archaeology.

Associated features such as spoil heaps that are not heavily contaminated should remain exposed for their mineralogical and archaeological value. Lightning conductors must be installed on the remaining chimneys and the windmill stump as a matter of urgency and funding sought for a restoration programme to ensure the consolidation of the buildings. Defaced and damaged interpretation boards and rusting vehicles should be removed from the site as this creates a bad impression and only encourages more vandalism or rubbish dumping. New boards with up to date and accurate information should be installed to explain the important industrial features of the site and the history of the mines to the visiting public, to engender a greater sense of pride of place for the local community and visitors alike.

APPENDIX ONE: MINERAL PRODUCTION FIGURES FOR THE NEWTOWNARDS MINES

There are no complete production figures for the Newtownards mines, but some general idea of the tonnages raised can be gleaned from a variety of sources. For the first phase of mining under the Bangor and Newtown Company, which started work in 1780, we have a record of less than 60 tons of ore raised from Whitespots mine in the three year period to the end of September 1783 (PRONI Newton and Bangor Day Book). The Whitespots mine continued on until the late-1780s but was abandoned when visited by Thomas Weaver in 1825 and it is not known how much ore, if any, was extracted after the last day book entry in September 1783, although Weaver made an estimate of 150 tons. Mining recommenced at Whitespots in 1827, but the cost books are missing (except for a short period in 1827). Ore production figures are only available from 1845 onwards until the closure of Whitespots in 1865; firstly for the years 1845 to 1847 in the *Memoirs of the Geological Survey of Great Britain*. Statistics for the period 1848 to 1852 were published in the Records of the School of Mines (in 1853) and those for subsequent years as *Geological Survey Memoirs*. It should be noted that production records relied upon the voluntary returns of ores raised or sold and it was not until 1872 with the passing of the Metalliferous Mines Act that submission of records became compulsory.

An alternative source of production figures is from the results of ticketing sales published in the *Mining Journal* (firstly as listings of individual sales and latterly as quarterly summaries). Ticketing sales of lead ores from Newtownards (at least from the early 1850s) took place in Douglas (the Isle of Man), Bagillt and Holywell (both on Deeside in North Wales). Interestingly, the ticketing sales for Newtownards lead ores record that a ton was comprised of 20 cwt (not the 21 cwt often used for copper ores in order to allow for loss on shipping). The ticketing sales figures do not always agree with the annual production figures given in the *Mineral Statistics* because sales may not occur in the same year of production and because ticketing sales exclude any on-site mine sales of ores. An example of the discrepancies can be seen in the production figures for 1850 where the *Mineral Statistics* give a figure of 1,200 tons whilst the ticketing sales from the *Mining Journal* give a figure of 1,425 tons. In addition, from 1845 the owner of the Mineral Royalty, Lord Londonderry, took his 10 percent duty as ore (rather than in cash after the sale of the ore as previously) and sold this ore separately by ticketing at Holywell. However, it is assumed that the sales of the Newtownards Duty Ore are included in the ticketing sales given in the *Mining Journal*.

For the period from 1829 to 1851 it is also possible to estimate production figures from the value of royalties received by Lord Londonderry. In November 1851, Londonderry's Estate Agent produced a summary of these royalty figures (PRONI Londonderry Royalty Figures 1851). Woodrow (1978) observed that as the Royalty was 1/10th, then multiplying the royalties by 10 for each year should give the actual value of ore sales for each year. Woodrow then estimated that the lead ores contained on average 60 percent lead metal (not unreasonable as we show later); he divided the calculated value of ores by 60 percent of the published lead price (from the *Mining Journal*). This method, however, does not take account of other factors (such as fixed costs in shipping and smelting the ore, plus smelters' profit margin). Burt (1984, 206) gives a formula which takes account of these cost by the deduction of a fixed Returning Charge. Nevertheless, Woodrow's simple approach seems to give ore prices and production figures which correspond well with those given in the reported ticketing sales and the *Mineral Statistics* from 1845 onwards. For example in 1850, the lead metal price was £17-03-06 and using Woodrow's method based upon 60 percent lead content, he gave an ore price of £10-10-00 which more or less correlates with the published (*Mining Journal*) average ticketing price of £10-16-00 for Newtownards ore.

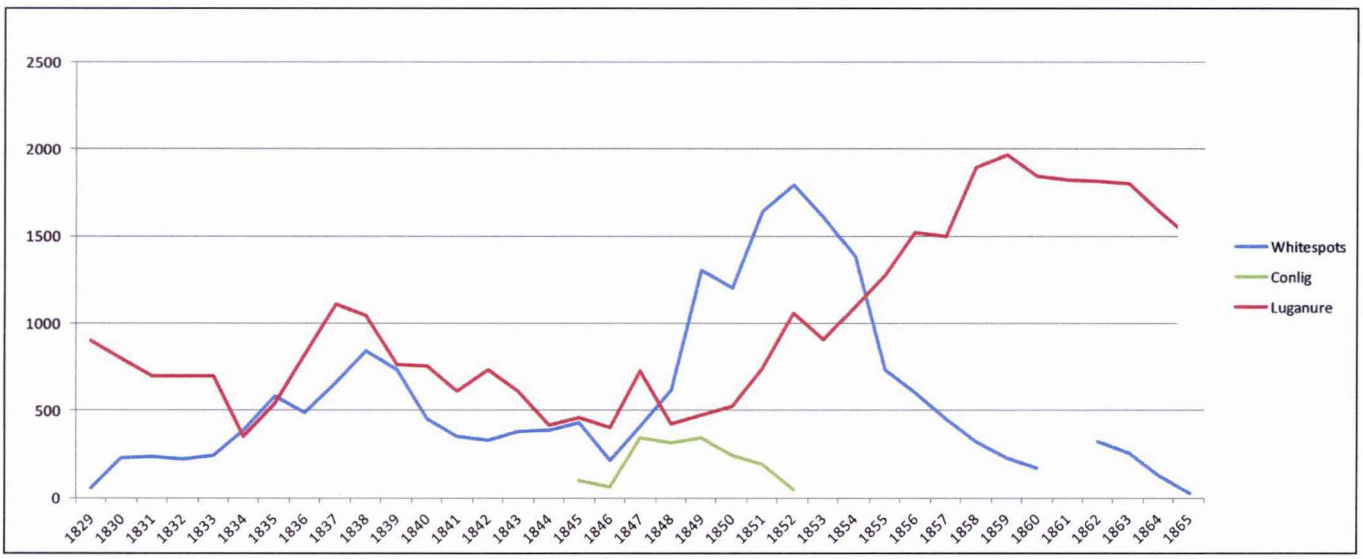


Fig. 33: ***Lead ore production from Whitespots and Conlig Mines compared with the Luganure Mines in County Wicklow***

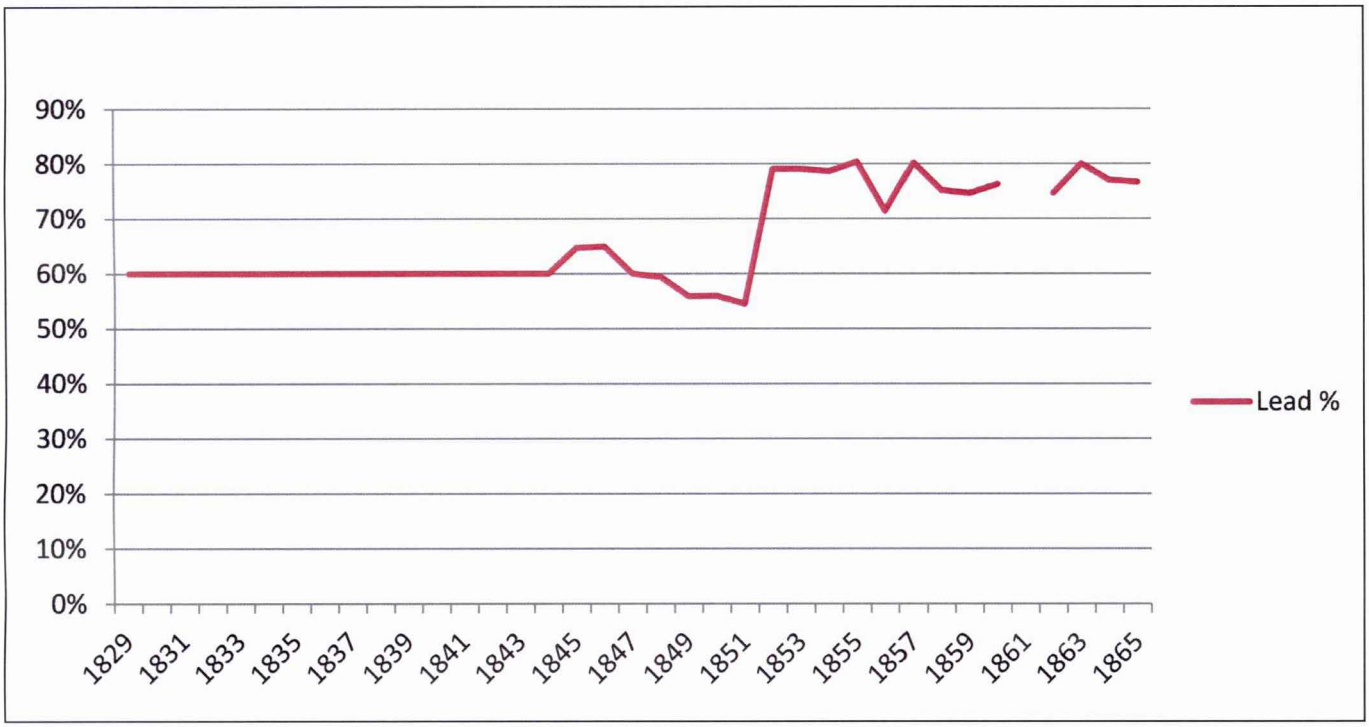


Fig. 34: ***Percentage of lead metal in ores raised at the Whitespots Mine***

Using this estimated ore price and the royalty payment for 1850 (£1733-19-7½), gives an estimated production figure of 1,651 tons compared with 1,643 tons from the *Mineral Statistics* and 1,200 tons from the ticketing sales. Because of the reasonable correspondence using Woodrow's method and the *Mineral Statistics* it seems safe to adopt his estimates for ore production for the period 1829 to 1844.

Using the published statistics and the estimates for 1829-1844 the approximate lead ore production for Whitespots between 1829 and 1865 was 20,429 tons. Small scale working from 1880 to 199 produced a paltry 133 tons of ore. For comparison during the same period, the Luganure mines in County Wicklow produced 36,914 tons of ore (and during its main period of working from 1825 to 1889 Luganure produced about 65,000 tons of ore). Thus the Whitespots mine was not the largest lead producer in Ireland but it was particularly important in the middle of the nineteenth century. Fig. 33 shows the lead ore production over time (with a comparable graph for Luganure). It can be seen from this figure that Whitespots outstripped Luganure for lead ore production in the decade 1848 to 1858. During this period the mine accounted for almost 40 percent of all lead produced in Ireland, while in 1853 it actually accounted for over 50 percent of the total lead produced in Ireland.

However, Whitespots' heyday was short lived. Production fell off rapidly after 1854 where it was overtaken by the Luganure mines which continued to produce an average of over 1,400 tons of lead ore per annum for another 36 years until their closure in 1889. The grade of the Whitespots ore varied during the course of the lifetime of the mine (ignoring the flat rate estimate of 60 percent lead during the period 1829-1844) we see from Fig. 34 that lead content hovered around the 60 percent mark until 1851. After this date, lead content increased markedly to around the 80 percent value. This increase in lead content could be due to the discovery of rich ore in the South Mine, but improvements in ore dressing could also have played a part.

In many lead mines in the British Isles, silver was a valuable by-product of ores. Silver content was measured in ounces per ton and many mines had silver contents of 10 to 20 ounces per ton of lead. The Newtownards mines seem to be particularly poor in silver with only about 2 ounces per ton and silver production is only shown for the years 1859 to 1865 as amounting to less than 2,000 ounces in total. For comparison, the Luganure mines ran at 10 ounces per ton of lead and consistently produced over 10,000 ounces per annum in the 1860s (giving a valuable additional source of income).

Compared to Whitespots, the ore production figures for Conlig are not fully known. *Mineral Statistics* record 1,656 tons of ore in the years 1845-1852 (see Fig. 33) but there are no records before this period. Curiously, a report in November 1846 stating that the mine was 'finally' bringing to the surface 1,500 tons of ore (estimated to yield 1,200 tons of dressed ore), after a decade of working (FJ 1846), does not match the reported annual production figures in the *Mineral Statistics.* It is difficult to explain this discrepancy unless the 1,500 tons was merely a predicted figure that did not materialise, or it took many additional years to extract it. Furthermore the *Mineral Statistics* show production prior to 1845 which is in conflict with the newspaper report. In the absence of wholly reliable ore production figures for Conlig, it is possible to make an estimate from the mapped extent of the workings. An inspection of the cross section of the mine workings (see Fig. 20) shows that the stoped out workings in Conlig cover only about 10 percent of the cross sectional area of those in the Whitespots Mine. Assuming similar ore widths and grades we

might estimate that Conlig only produced about 10 percent of the ore raised by Whitespots. Therefore, it would be a fair estimate to state that Conlig probably produced around 2,000 tons of ore.

The majority of the mine workings were on land under the mineral rights of Lord Londonderry. The letter from Londonderry's agent in November 1851 (PRONI Report on the Lordship of the Lead Mines), calculated the total royalties in the period 1829 to 1851 amounted to £12,484. Using the production figures from 1852 until the closure in 1865, coupled with the estimated ore price (using Woodrow's method of 60 percent of the metal price), we are able to estimate the sales income for this period. Assuming that Londonderry's duty was still 1/10th, then the estimated royalty for this period is £10,563, giving a total royalty of about £23,000 over the period 1829 to 1865. The modern day value of this (calculated using the website, Measuring Worth) is about £2 million according to the retail price index, or £14 million according to wage inflation. Given the amount of royalties received by the Londonderry Estate, it is no surprise that the 4th Marquis was keen to see the mines resume after their closure in 1865.

ACKNOWLEDGEMENTS

The authors express their grateful thanks to Ainsley Cocks, for accompanying them to the Newtownards Mines on two separate occasions to help with surveying of the industrial archaeology and for his valuable comments and advice. We are greatly indebted to Alastair Lings for photographs, historical references and for meticulously proof reading the final draft of this paper and to Norman Moles for the provision of several of his academic papers. Our thanks also to Rita Kirkpatrick, Comber, for permission to use her late husband's photographs of the mines. We also acknowledge the kind assistance received from archivists at the Public Record Office of Northern Ireland, Belfast; Manx National Heritage, Douglas; the National Library, Dublin the Registry of Deeds, Dublin and the North Down Museum, Bangor. Last but by no means least, we thank Claire McGinn of the Geological Survey of Northern Ireland, Belfast, for the provision of maps and plans and for her attentive assistance. Every effort has been made to trace the Estate of artist, Robert Cresswell Boak, without success. All images those of the authors unless stated otherwise.

REFERENCES

PRIMARY SOURCES

BPP British Parliamentary Papers, 1842 (380.) XV.1, *Report of Commissioners for inquiring into the Employment and Condition of Children in Mines and Manufactories*, Appendix 1 to the first report (otherwise known as the 1842 Children's Commission). Reprinted as *Industrial Revolution Children's Employment* Volume 7, Irish University Press, 1968.

GSNI Geological Survey of Northern Ireland, unidentified newspaper clipping, 14 September 1912.

Mineral Statistics *The Mining and Mineral Statistics of the United Kingdom of Great Britain and Ireland for the Year 1882, Parliamentary Papers, 1884* (for the year 1882).
Summaries of Reports of the Inspectors of Mines to Her Majesty's Secretary of State, and the Mineral Statistics of the United Kingdom of Great Britain and Ireland, including Lists of Mines and Mineral Works for the Year 1883, HMSO, 1884 (for the year 1883).
The Mineral Statistics of the United Kingdom of Great Britain and Ireland, including Lists of Mines and Mineral Works, HMSO, 1885 - 1888 (for the years 1884 to 1887).
Mineral Statistics of the United Kingdom of Great Britain and Ireland, with the Isle of Man. HMSO, 1891-1897 (for the years 1888 to 1896).
Mines and Quarries: General Report, with Statistics. Part III - Output, HMSO. 1897 - 1916. (for the years 1897 to 1914, the last detailed mine by mine return is for 1913).

MNLA Manx National Library and Archives, MS 11652, Memorandum book relating to Newton Ards Mine, Newtownards, County Down, Ireland.

NLI National Library Ireland, Dublin, Hibernian Mining Company Papers, MSS 657.

PRONI Public Record Office of Northern Ireland, Belfast,
Ward Papers
Killough, D2092/1/1 and D2092/1/3.
Ringhady, D2092/1/2.
James Millar, Bangor and Newtown Mining Co. receipt for £25 to Edward Ward (1784), D2092/1/9.
Bundle of 250 Documents inc. Correspondence of the Castleward United Mining Company, D2092/14/1.
Londonderry Papers
Journal of the work carried on by the Bangor and Newton Co. D654/P/1.
Report on the Lordship of the Lead Mines, D654/P/3.
Lease between Londonderry and G.W. Dumbell 1843, D654/P/4.
Miscellaneous Lead Mine Papers 1858-1860, D654/P/5.
Assignment between G.W. Dumbell and Lord Dufferin 1865, D654/P/6.
Surrender of the lease between Londonderry and Lord Dufferin 1867, D654/P/7.

Report on the Lead Mines by John Taylor 1842, D654/P/8.
Report on the Lead Mines by G. Elliott 1852, D654/P/9.

Dufferin Papers

Ward Letter to Dufferin January 1864 D1071/A/K/3/B/3 (regarding the Newtownards Mining Co. renewal of Conlig lease).
Correspondence between Dufferin and Dumbell and Dufferin and Ward D1071/A/K/3/B/4 (related to the Conlig Lease and mineral production figures).
Correspondence between Mortimer Thomson and Lord Dufferin D1071/A/K/1/B/14/1 (Letter from Robert Kelly, Belfast 1865).
Correspondence between Mortimer Thomson and Lord Dufferin D1071/A/K/1/B/15/1 and 2 (Regarding dispute between Ward and Dufferin over Conlig lease).
Correspondence between Mortimer Thomson and Lord Dufferin D1071/A/K/1/B/16/1 and 2 (arrangements for mining at Conlig).
Correspondence between Mortimer Thomson and Lord Dufferin D1071/A/K/1/B/17/1 (Discussions over sale of mining plant to Londonderry).
Estate Agent's Correspondence Jan-Dec 1886 D1071 A/K/1C/10/1.

Downshire Papers

Letter from the Hibernian Mining Company about starting a company, D671/C/311.
Letters to Downshire from the Hibernian Mining Company, D671/C/1.

Miscellaneous Papers

Harrison's Address to the Newtownards Mining Company 1846, D952/2.
Richard Rickard's Journal, T3210.
Outletter Book of William Blacker, D1606/5/1.
Letters to Andrew Nugent 1812-1833, D552/A/6/4 (related to Mining Company of Ireland requesting permission to explore for lead in Portaferry).
Lease of Mines in the Manor of Strangford 1850 D366/721.
Our Local Industries, 1885, Anon., D1195/5/2/1.
Isometrical View of Castleward Mine, T/3862/2.
Newtownards and Conlig Mines 1925-1967, COM/59/1/36.

Registry of Deeds, Dublin, B 337 p. 564, No. 228343; B 338 P. 401, No. 228315.

SECONDARY SOURCES

Books and Articles

Burnett, H., 'The lead mine at Castleward', Lecale Miscellany No.6, *Journal of the Lecale Historical Society*, 1988, pp. 14-16.

Burnett, H., 'Lead Mines in the Barony of Lecale', Lecale Miscellany No.6, *Journal of the Lecale Historical Society*, 1988, pp. 22-24.

Bassett, G.H., *County Down 100 Years Ago: A Guide and Directory*, Belfast, 1886.

Belfast Naturalists' Field Club, *Annual Report and Proceedings of the Belfast Naturalists' Field Club for the Year Ending 31st March, 1882*, Series II Volume II. Part II, Belfast, 1883.

Belfast Naturalists' Field Club, *Annual Report and Proceedings of the Belfast Naturalists' Field Club 1886-87*, Series II Volume II. Part VII, Belfast, 1887.

Boate G. and Hartlib, S., *Ireland's Natural History*, London 1652.

Brown, K., Morris, J.H., Pérez Sánchez, A.A. and Critchley, M., *Interpreting the Ruins of Cornish Design Engine Houses*, Killhope, 2005.

Burt, R.,*The British Lead Mining Industry*, Redruth, 1984.

Burt, R., *John Taylor: Mining Entrepreneur and Engineer 1779-1863*, Buxton 1977.

Canny N., 'Rowland White's 'Discors Touching Ireland', c. 1569, *Irish Historical Studies*, 20:80, 1977, pp. 439-463.

Chappell, C., *The Dumbell Affair*, Prescot, 1981.

Claughton, P. and Rondelez, P., 'Early silver mining in Western Europe: An Irish perspective', *Journal of the Mining Heritage Trust of Ireland*, 2013, pp. 1-8.

Committee for the Relief of the Distressed Districts in Ireland, *Committee for the Relief of the Distressed Districts in Ireland: appointed at a General Meeting held at the City of London Tavern, on the 7th May, 1822, with an Appendix*, London 1823.

Cowman, D., 'The Mining Boom of 1824-'25: Part One, *Journal of the Mining Heritage Trust of Ireland*, 2001, pp. 49-54.

Critchley M.F. and Schwartz, S.P., 'Unearthing the Past: The Rediscovery of Blundell's Mine(s), Edenderry, County Offaly', *Journal of the Mining Heritage Trust of Ireland*, 2012, pp. 35-46.

Dubourdieu, J., *Statistical Survey of the County of Down, With Observations on the Means of Improvement, Drawn up for the Consideration and by Order of, the Dublin Society*, Dublin, 1802.

Evans, E.E., *Centenary Edition of Mourne Country: Landscape and Life in South Down*, Belfast, 2005.

Fay, A.H., *A Glossary of the Mining and Mineral Industry*, Washington, 1920.

Fowler, A., 'The non-ferrous minerals of Northern Ireland', in *The future of non-ferrous mining in Great Britain and Ireland: a symposium*, Institution of Mining and Metallurgy, London. 1959.

Griffith, A E and Wilson, H E., 'Geology of the country around Carrickfergus and Bangor', *Memoir of the Geological Survey of Northern Ireland*, Sheet 29 (Northern Ireland) 1982.

Hamilton, H.C. (ed.), *Calendar of the State Papers relating to Ireland, of the reigns of Henry VIII, Edward VI. Mary, and Elizabeth, 1509-1603*, London 1860.

Hamilton Jenkin, A.K., *Mines of Devon Volume 1: The Southern Area*, Newton Abbot, 1974.

Harris, W., *The Antient and Present State of the County of Down: containing a chorographical description, with the natural and civil history of the same. Illustrated by observations made on the baronies, parishes, towns, villages [... &c.] with a survey of the new canal; as also, a new and correct map of the county*, Dublin, 1757 edition.

Hooson, W., *The Miners Dictionary*, Wrexham, 1747.

House of Lords, 'Report from the Select Committee on the Employment of the Poor in Ireland', *The Sessional Papers, 1801-1833*, Volume 165, 1824.

Hunt, R., 'The Produce of Lead and Lead Ores in the United Kingdom for the Years 1845 to 1846', in *Memoirs of the Geological Survey of Great Britain and the Museum of Practical Geology in London*, Vol. II Part II. HMSO, 1848, pp 703-713. (for the years 1845 to 1847).

Hunt, R., *Records of the School of Mines and of Science Applied to the Arts*, Vol. I Part IV. HMSO, 1853 (for the years 1848 to 1852).

Hunt, R., *Memoirs of the Geological Survey of Great Britain and the Museum of Practical Geology: Mining Records: The Mineral Statistics of the United Kingdom of Great Britain and Ireland*, HMSO, 1853 to 1882 (for the years 1853 to 1881).

Kane, R., *Industrial Resources of Ireland*, Shannon, 1971, reprinted edition.

Kingsley, E.C., Ajibola, B. and Louis, I.A., 'Heavy metals contamination at Whitepots-Conlig, Newtownards, Northern Ireland', *Journal of Natural Sciences Research*, 3:5, 2013, pp. 45-53.

Kirkpatrick, N., *Take a Second Look Around County Down,* Comber, 1993.

Lewis, S., *A Topographical Dictionary of Ireland*, Vol. 2, Second edition, London, 1847.

Lings, A., 'Copper Mining Near Belderrig, County Mayo, With a Note on Martin Boundy', *Journal of the Mining Heritage Trust of Ireland*, 2011, pp. 19-23.

Mining Company of Ireland, *Reports of the Mining Company of Ireland From April 1824 to December 1855*, Dublin, 1855.

Mackenzie, E., *An Historical, Topographical and Descriptive View of the County of Northumberland and those Parts of County Durham Situated North of the River Tyne with Berwick on Tweed and Brief notices of Celebrated Places on the Scottish Border*, Second Edition, Vol. 1, Newcastle on Tyne, 1825.

Moles, N. R., Smyth, D., Maher, C.E., Beattie, E.H. and Kelly, M., 'Dispersion of Cerussite-rich tailings and plant uptake of heavy metals at historical lead mines near Newtownards, Northern Ireland', *Transactions of the Institution of Mining & Metallurgy* 113, Section B (Applied Earth Sciences), B21-30, 2004, pp. 21-30.

Moles, N.R. and Nawaz, R., 'Harmotome associated with Tertiary dyke intrusion in mineralization breccia at Newtownards, Northern Ireland', *Irish Journal of Earth Sciences* 15, 1996, pp. 145-153.

Morris, J.H., 'An 1854 Catalogue of Mines and Mineral Occurrences in Ireland', *Journal of the Mining Heritage Trust of Ireland*, 2001, pp. 25-37.

Nawaz, R., and Moles, N.R., 'Tullyratty, near Castleward', *National Museums of Northern Ireland, Earth Sciences Conservation Review*, 2001.

Parnell, J. 'Sulphide vein mineralisation in Northern Ireland: Constraints on fluid sources', in J. Pasava, B. Kribek and K. Zak (eds.), *Mineral deposits: From their origin to their environmental impacts*, Rotterdam, 1995, pp. 373-376.

Patton, M., *Bangor: An Historical Gazetteer*, Ulster Architectural Heritage Society, new edition, 1999.

Pattrick, R.A.D. and Russell, M.J., 'Sulphur isotopic investigation of Lower Carboniferous vein deposits of the British Isles', *Mineralium Deposita* 24, 1989, pp.148–53.

Rickard, D.S., *Blessed Shall be Thy Basket and Thy Store: An Algerine Story*, Exeter, New Hampshire, 1960.

Rickard, T.A., *Interviews with Mining Engineers*, San Francisco, 1922, pp. 5-39.

Rowse, AL., *The Cornish in America*, Redruth, 1967.

Russell, M.J. and Haszeldine, R.S., 'Accounting for geofractures', in A.A. Bowden, G. Earls, P.G. O'Connor and J.F. Pyne (eds.), *The Irish Minerals Industry - 1980-1990*, Dublin, 1992, pp. 135-142.

Scarffe, A., *The Great Laxey Mine*, Manx Heritage Foundation, 2004.

Schwartz, S.P., and Critchley, M.F., 'Creggan and the History of the Silver-Lead Mines of the Marches of Armagh and Monaghan', *Journal of the Mining Heritage Trust of Ireland*, 2012, pp. 57-86.

Sharpe, A., *The conservation of historic mine buildings in Cornwall: practical guidelines to assist conservation of similar buildings internationally*, Killhope, 2005.

Slater, I., *Slater's National Commercial Directory of Ireland*, London, 1846.

Smith M.T. and Bittles A. H., 'Genetic structure of the Ards Peninsula, Northern Ireland: evidence from civil registers of marriage 1840-1911', *Human Biology*, 74:4, 2002, pp. 507-524.

Stewart, D., 'The Report of Donald Stewart, Itinerant Mineralogist to the Dublin Society', *Transactions of the Dublin Society for the Year 1800*, Vol. I part II, Dublin 1800, pp. 56-64.

Symes, E.P., 'Sir James Dombrain and the Coastguard', *Dublin Historical Record* 56:1, 2003, pp. 56-70.

Thom, A., *Thom's Irish Almanac and Official Directory with the Post Office Dublin City and County Directory for the Year 1852*, Dublin.

Thom, A., *Thom's Irish Almanac and Official Directory with the Post Office Dublin City and County Directory for the Year 1854*, Dublin.

Traill, W.A., and Egan F.W., 'Explanatory memoir to accompany sheets 49, 50, and part of 61 of the maps of the Geological Survey of Ireland, including the area around Downpatrick, and the shores of Dundrum Bay and Strangford Lough, County of Down', *Memoirs of the Geological Survey*, H.M.S.O., Dublin, 1871.

Weaver, T., 'Memoir on the Geological Relation of the East of Ireland', *Transactions of the Geological Society of London*, 5, 1821.

Wheeler, G., 'John Lynn - Architect/Contractor/Engineer', Lecale Miscellany No. 15, *Journal of the Lecale Historical Society*, 1997, pp. 45-46.

Wilson, P.R., *Conlig-Newtownards Lead Mines County Down, Northern Ireland Supplemental Report*, Dublin, 1965.

Woodrow, A., 'A History of the Conlig and Whitespots Lead Mines', *British Mining* No. 7., Northern Mines

Research Society, 1978.

Newspapers and Periodicals

BNL *Belfast News-Letter*, 10 October 1834; 29 March 1842; 25 May 1849; 24 May 1850; 23 and 28 May and 14 July 1851; 8 March, 16 August and 1 December 1852; 12 July 1854; 2 November 1857; 25 October and 3 December 1859; 10 January and 29 September 1860; 3 and 24 February 1865; 26 November 1867; 3 October 1872; 25 July 1881; 30 May and 11 October 1894; 24 September 1958.

BOU *Banner of Ulster*, 12 and 22 March 1850.

BT *Belfast Telegraph*, 29 August 2013.

DN *Daily News*, 23 August 1852; 10 June 1853; 22 February 1854; 30 August 1862.

DR *Downpatrick Recorder*, 8 April 1837; 14 Apr 1849; 28 August 1852.

FJ *Freeman's Journal and Daily Commercial Advertiser*, 4 November 1846; 16 and 23 March 1853; 8 January and 2 July 1861; 7 January 1862; 7 January and 16 October 1863; 10 and 11 December 1914.

II *Irish Independent*, 10 August and 10 December 1914.

IT *The Irish Times*, 7 January 1862; 9 July 1862.

IOMT I*sle of Man Times*, 17 December 1887.

IPN *Illustrated Police News*, 30 July 1881.

LM *Liverpool Mercury*, 19 August 1864.

MH *Mona Herald*, 12 November 1839; 2 February 1853.

MJ *Mining Journal*, 28 September, 12 October and 16 November 1839; 8 August 1840; 9 April 1842; 16 March and 12 October 1850; 20 March and 15 May 1852; 18 March, 6 May and 11 June 1853; 13 December 1856; 8 August 1857; 11 January 1862;

ML *Manx Liberal*, 18 July, 8 and 29 August and 12 September 1846; 6 February 1847; 30 March 1850.

MS *Manx Sun*, 27 September 1839; 4 October 1839; 7 March 1846; 22 November 1851; 23 November 1867.

NC *Newcastle Courant*, 18 April 1807.

NW *Northern Whig*, 3 February 1865.

PG *Preston Guardian*, 3 March 1849.

RCG *Royal Cornwall Gazette*, 20 March 1824; 12 April 1850.

S *The Standard*, 18 August 1853.

SMH *Sydney Morning Herald*, 21 July 1864; 9 January 1919.

TS *The Spectator*, 15 June 1935.

TT *The Times,* 10 January 1846; 8 and 21 January 1847; 21 February 1913.

UD Unidentified newspaper clipping, 24 June 1875.

WB *West Briton*, 15 March 1850.

Internet Resources

Derek Beattie's History of Newtownards, http://www.derek-beattie.comxa.com/townland-drumhirk.htm accessed 23 August 2013.

GSNI *Geology of northern Ireland*, 2008, http://www.bgs.ac.uk/gsni/minerals/downloads/GSNI_MineralsFlyers.pdf accessed 21 August 2013.

McCavery, T., The Lead Mines at Whitespots, undated article, http://www.ards-council.gov.uk/getattachment/9e0e16d3-93d4-4e90-8498-b5d1e5ebed3a/The-Lead-Mines-at-Whitespots.aspx accessed 21 August 2013.

Measuring Worth, www.measuringworth.com accessed 22 August 2013.

MHSI Methodist Historical Society of Ireland http://methodisthistoryireland.org/ accessed on 28 August 2013.

National Archives Census for 1901 and 1911 http://www.census.nationalarchives.ie/ accessed 22 August 2013.

Patent Directory http://patent.ipexl.com/inventor/Buchholtz_Ernest_1.html accessed 27 January 2014.