



This document is with a copy of the following article published by the Mining Heritage Trust of Ireland. It is provided for non-commercial research and educational use.

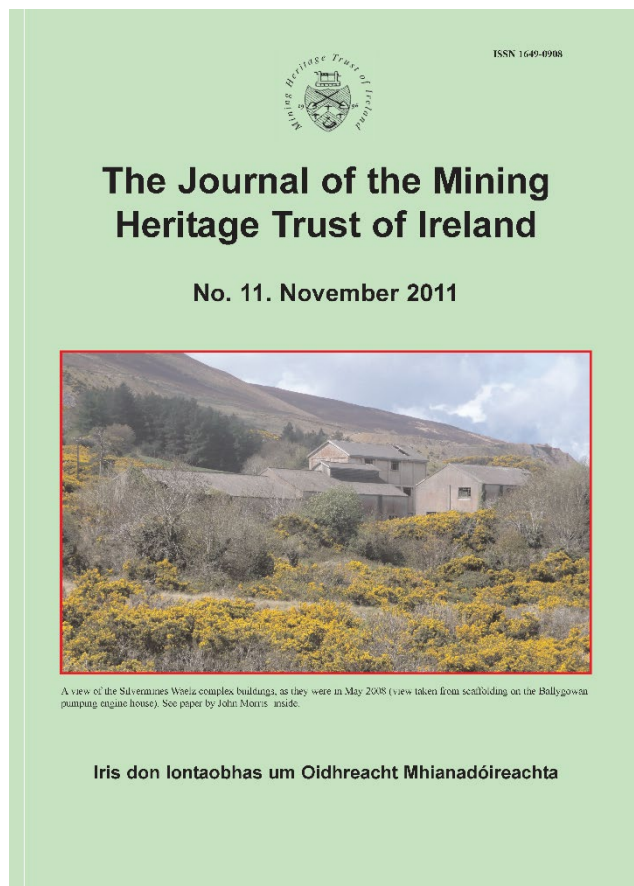
The Mining Heritage Trust of Ireland formally ceased its existence in 2019 but has provided a continuing website of resources with free access for those interested in the activities of the organisation in its various formats from 1996-2019, and in Irish mining heritage in a broader sense.

Schwartz, S. P., Critchley, M. F. (2011) 'Ringin in the Blews: the Avoca 'mine bell' *Journal of the Mining Heritage Trust of Ireland*, **11**, pp. 71-80

Copyright of this article remains with the Mining Heritage Trust of Ireland whose archives, intellectual assets and library have been transferred to the Natural History Division of the National Museum of Ireland. Please contact naturalhistory@museum.ie for any enquiries relating to the MHTI.

This cover page must be included as an integral part of any copies of this document.

Please visit www.mhti.com for more information.





RINGING THE BLEWS: THE AVOCA 'MINE BELL'

by Sharron P. Schwartz and Martin F. Critchley

Abstract: A short time ago, we were invited to view a bell that was formerly on display in the Parnell Room of the Vale View Hotel, Avoca. It was acquired by the former landlord, the late Mahon O'Brien, but where and when he obtained it is unknown. Cast in bronze with a polished finish, it was made by William Blews & Sons in England in the late 1860s. It is approximately 24 inches (64 cm) in diameter at the lip, 11 inches (28 cm) at the crown and 19 inches (49 cm) lip to crown, with six canons above the crown (loops cast as part of the bell, the purpose of which is to suspend the bell from a headstock by means of strap fixings). (Fig. 1) The bell had to be moved to a safe location last year following its attempted theft from the hotel which had suffered a fire in 2001, and although its surface is a little tarnished and paint splattered in places, it is in good overall condition. We were unable to weigh it, but, given its dimensions and assuming the thickness of the metal is similar, according to the Whitechapel Foundry bell guide (W&DCRA) it must weigh roughly in the region of 2cwt 3qtr 14lbs (about 146 kilos). As the clapper was bound with rags and the bell positioned on a palette, we were unable to hear it ring. Although the diameter of the bell is known, without its precise weight it is impossible to conclude what pitch note it would produce. It is accepted unquestioningly that the distinctive rhyolite intrusion known as Bell Rock in the Avoca Valley was named after a mine bell formerly sited there and that this is that very bell. This short article sets out to question that assumption and to explore whether or not the belief that this bell was a mine bell is at all credible. *Journal of the Mining Heritage Trust of Ireland*, 11, 2011, 71-80.

BIRMINGHAM BELLFOUNDERS

William Blews & Sons were a long established bronze article manufacturers (established in 1782 but taken over in 1891), based at New Bartholomew Street, Birmingham, England. They made chandeliers, gas fittings, and general brass foundry. In 1868 they added a church bell foundry to their works which enabled them to cast bells of considerable size or single bells up to eleven tons in weight. Orders immediately flowed in from the Midlands and further afield in Britain for a variety of bells (for places of worship, town halls, schools etc.), with others from places as far apart as New South Wales and Mexico (ABG 1869). Although the company began to advertise themselves as gold medal bellfounders and despite a Birmingham newspaper boasting that 'not a single waste bell has been cast by this company', Blews' bells were sometimes alleged to contain insufficient tin which affected the tone adversely.

The bronze commonly used in bell making, known as bell metal, is an alloy of about 78 per cent copper and 22 per cent tin, chosen for its musical properties, but the percentage of these metals did vary from foundry to foundry (Hibbert 2008, 35). For example, one of the bells cast by Blews for the church at Saltaire in England in 1870 proved to be defective in pitch and had to be replaced (Internet, Saltaire Bells). In 1981, the famed Whitechapel Foundry, London, replied to a query about the Blews bells at Cyngar's Church, Llangefni, noting that the bells cast by Blews were 'generally of poor tone' (NWACBR). However, numerous Blews bells survive in churches throughout Britain and further afield, including one of the largest bells ever cast by the foundry: the 58-inch tenor for St George's, Brailles, in Warwickshire (Church bells of Warwickshire).



Figure 1. The alleged Avoca Mine Bell. Photograph, M. F. Critchley, 2011.



Figure 2. Bellfounder's name, William Blews & Sons of Birmingham. Photograph, M. F. Critchley, 2011.



Figure 3. The date of manufacture is clearly cast in relief on the bell. Photograph, M. F. Critchley, 2011.

BELL ROCK, AVOCA

It is claimed that bells were used as communication devices throughout the mining townlands of the Vale of Avoca and that one of the larger ones was sited atop Bell Rock (Power 2011, 17) a sizeable and distinctive rocky outcrop that protrudes into the Avoca Valley, causing it to narrow. The Reverend Dempsey has probably done much to facilitate this belief, writing in the early twentieth century of Bell Rock:

... some think it derived the name from a bell which was placed either on the rock itself or close to it in the days of mining prosperity, by the sound of which the miners' hours of arrival at and departure from their work were announced.' (Dempsey 1912, 54).

Many local people believe that the Blews Bell is that very bell. However, there is a problem with this, because Bell Rock was known as such well before the bell we inspected was made, the year of which - 1869 - is cast in relief along with the maker's name just below the shoulder. (Figures 2,3). Bell Rock is named on the Ordnance Survey (OS) First Edition Six Inch Map (dating from the late 1830s); the fact that the Blews bell was cast many years after the name 'Bell Rock' appears on maps confirms that this particular bell did not lend its name to this hill.

A painting entitled *A View Near Ovoca*, by renowned Irish landscape artist, George Barret (c1732-1784), captures a scene of a weir on the fast flowing Avoca River with a large, lower breast-shot waterwheel at the foot of a craggy promontory that might be Bell Rock. Atop this promontory are several buildings, one

of which is a partially timbered square structure with a gable roof which could be mistaken as the housing for a bell. Edward Wingfield, Second Viscount Powerscourt (1729-1764), had leased the mines and mineral rights in Ballygahan and Knocknemota to Wicklow gentlemen, John Archer of Killoughter and George Brass of Johnstown, for thirty one years in 1757. A later lease (1787) included a sketch map of the area of land in question, which was just over seventeen acres in extent and situated in the 'Lands of Ballygahan called the Rock'. This is undoubtedly a reference to Bell Rock that was included in the area leased (MS 43,017/1 *et seq*, NLI).

Barret, one of the forerunners of the romantic landscape, was believed to have been introduced to Viscount Powerscourt by Edmund Burke, author of the aesthetic treatise, *A Philosophical Inquiry into the Origin of Our Ideas of The Sublime and Beautiful* (1757), a work that influenced the young artist greatly. Through this introduction, Barret was commissioned to paint several scenes of the Powerscourt demesne. Close inspection of his Ovoca painting reveals an axle protruding from the right side of the waterwheel that connects to a sheave wheel, from which a single looped cable travels upwards towards the wooden building in question. This suggests that it housed not a bell, but a primitive pump of some description in a shaft (Figure 4).

This early work, completed before the artist's departure to London in 1763, must surely be one of the very first depictions of mining activity in the Avoca Valley and quite possibly records the early working, by Archer and Brass, of his patron's Ballygahan Mine. It seems highly unusual that a shaft was sunk from the summit of Bell Rock, as the area is outside the outline of the ore-body and consists of hard ground. However, the ore-body dips at 70 degrees to the SE and in theory a vertical shaft could eventually intersect it. Later etchings and paintings show no such structures at the summit of Bell Rock (Coffey and Morris 2002; Coffey, Cowman and Morris 2003) and no buildings or shafts are depicted there on nineteenth century OS maps or mine plans. Yet the authors are assured by Gerard Clear, a mining engineer who worked at Avoca in the last reworking (1969-1982), that an old shaft definitely exists at the summit of Bell Rock, but has been in-filled (pers. comm. 2011). The conclusion must be that Barret's painting is somewhat idealised. It undoubtedly contains real features, such as the weir and the waterwheel working a pump on a shaft which he must have observed in action, very possibly on Viscount Powerscourt's Ballygahan Mine. The man made structures in his composition are, however, set within an imagined and exaggerated topographical site alive with the dramatic power and sublimity of nature, intended to depict man's attempt to harness the raw power and energy of the Avoca River, flowing swiftly through a narrow gorge of precipitous cliffs.



Figure 4. *'A View Near Ovoca', by renowned Irish landscape artist, George Barret (c1732-1784), depicts a highly stylised mining scene in the vicinity of what is assumed to be Bell Rock. Unframed oil on canvas, copyright of the National Gallery of Ireland.*

The Griffith Valuation (1852-3) undertaken almost a century after Barret's painting when the mines were in their hey-day, also throws doubt on Bell Rock being the site of a mine bell, as the land was noted as held in fee to the trustees of Viscount Powerscourt. Unlike the mid-eighteenth century mining leases, it had not been included in the lease held by Henry Hodgson, who was then working the nearby Ballygahan Mine, and was described as plantation which is clearly depicted on the accompanying First Edition Six Inch OS map.

Mining geologist, Jim Platt, who worked at Avoca during the last reworking, recalls being told that the name Bell Rock might relate to the rhyolite of which it is composed (pers. comm. 2011), which hypothesis is also mentioned in Dempsey's 1912 history of the Vale of Avoca. The rock is hard and fine grained, and in its fresh state gives a kind of ring when struck at an angle with a hammer. Dempsey's own conclusion was more prosaic: that Bell Rock was not named for a mine bell, but was so called simply because seen from certain vantage points it resembles

the shape of a bell (Dempsey 1912, 54). Alternatively, Bell Rock could be a topographical name containing an Anglicised corruption of the Irish place name element *béal* (meaning 'mouth', but in place names often has a more generalised meaning of 'opening', 'approach' or 'access') (Figure 5). 'Rock' *Carraig/Cloch* (and we know that Bell Rock was named thus in the mid-eighteenth century), would be a direct translation of the Irish into English. Price does not mention Bell Rock in his study of Irish place names in the Barony of Arklow, County Wicklow (Price 1941), but as the Irish language has not been spoken widely in Wicklow for 200-300 years it could be possible that Bell Rock is a corrupted native place name for a very distinctive promontory that marks the approach to the uppermost section of the Avoca Valley.¹

It must be stressed that the type of bell we are discussing is distinct from a signal bell found on a shaft and would have had a much deeper tone to have been clearly heard above the din of surface machinery, over a longer distance, and to prevent con-

¹ For example, Vinegar Hill in Wexford is the result of a direct English translation of *cnoc* 'hill', tacked on to a corrupt Anglicisation of the Irish *Fiodh na gCaor* 'wood of the berries', which phonetically sounds something like 'fee-na-gare'.



Figure 5. The distinctive rhyolite intrusion known as Bell Rock causes the Vale of Avoca to narrow somewhat. The remains of Viscount Powerscourt's plantation can be seen at the summit of Bell Rock in this 1945 photograph looking north up the valley. Courtesy of the Geological Survey of Ireland

fusion with a knocker line bell. Although there is documented evidence of clocks on nineteenth century British metal mines, these were only found on the largest and wealthiest enterprises. In Britain's onetime largest metalliferous mining region - Cornwall - these included Consolidated Mines at Gwennap (the purpose built tower of which is extant) and Fowey Consols, Tywardreath, which boasted a turret clock (*RCG*, 1867). As contemporary mineworkers often lived barely above subsistence level, timepieces were beyond the means of most. However, bells can be heard over long distances and would have served well to summon and dismiss mineworkers. But is there any documentary evidence for the use of such a bell on a mine?

FOR WHOM THE BELL TOLLS...

The presence of bells could be hinted at in curious mine names such as Ding Dong (near St Just in Penwith) and Ting Tang (Gwennap) in Cornwall which are likely to have been pre-nineteenth century nicknames that stuck. Indeed, documentary research has unearthed a treasure trove of details proving beyond doubt that bells were widely used on Cornish mines. Dr. Barham of Truro, sub-commissioner of the 1842 Commission on the Employment of Children (hereafter referred to as the Children's Commission), interviewed the clerk of Carnon Consols near Devoran in 1841 and was informed that the surface children, 'almost always run away home when the bell rings at half-past four' (BPP 1968, 836). Journalist, George Henwood, Cornish correspondent to the *Mining Journal*, noted the presence of a bell on a mine he visited in the late 1850s:

... the women's room, where a cooking apparatus is provided, in which they can warm up their pasties or other victuals, heat or prepare tea or coffee; and by a large pipe, filled with hot water running through the apart-

ment, they can warm their feet whilst enjoying their meals... and when the bell rings they are on the spot. (Burt 1972, 85).

As nineteenth century methods of dressing mineral ores were very labour intensive, the largest mines had many hundreds of surface workers. The mine bell was used as a way of regimenting and instilling a strict working regime on such a large number of people.

In Lord Kinnaid's 1864 Report on the Condition of all Mines in Great Britain (hereafter referred to as the Kinnaid Commission), evidence for this purpose of the bell at the mighty Dolcoath Mine near Camborne was given in relation to the dinner house/changing house:

We have 800 working at the surface and one advantage is, after the dinner hour it is closed, upon the ringing of the bell, the Captain is there to see that everyone is at their work within a minute. (BPP 1969, 377).

Noall also mentions a mine bell at Ding Dong where a foolish bal maiden lost her life in 1873 by becoming entangled in the crown wheel of the whim which she attempted to ride. It had been idle during dinner time ², but was restarted when the bell rang to indicate that the dinner break was over (Noall 1989, 174).

It is unlikely that the mine bell would have affected tributers, who were self-employed and worked the 'pitch' they had bargained for with the mine during hours that suited them. However, tutworkers and company account men were contracted to work paid 'stems' (shifts) at Cornish metal mines and there is intriguing evidence that they too were governed by the same bell that was used to regiment the surface workforce. In the

² In Cornwall, mealtimes are generally referred to as breakfast, dinner, tea and supper.

Kinnaird Commission, a witness stated that men coming off shift at a mine believed to be Botallack, became chilled after climbing the ladders by waiting in the draughty levels or on the ladder way, 'until the bell rings, to prevent a collision with the Agent' (BPP 1969, 305). In other words, they had to wait 'below grass' until the bell signalled their shift had ended because they would have been 'spalled' (fined) by the Agent if he caught them coming up too early. That this was indeed the case, and that the fine was hefty, is related by Christopher Childs, reporting that at a mine in the Liskeard district:

... the Tutwork men who have done their work below... are prohibited from coming to grass until the bell has been rung, which would summon them up; that if a man should come up to grass before the bell is rung he would be spalled the sum which the agent inflicts as a fine, and, as I am informed, that is usually 2s 6d (BPP 1969, 382).

Moreover, it was clearly stated in evidence gathered at one of the Caradon mines for the Kinnaird Commission that because the bell could not be heard far underground, miners therefore had to judge the time for coming off shift mainly by how long it took for their candles to burn down, as only a few carried a watch. Tutworkers, climbing up the ladder way as far as they



Fig. 6: The Ting Tang mine bell, cast in a copper alloy at Perran Foundry in 1844, is on display at the Poldark Mining Museum, Cornwall. This bell was commissioned by Captain William Martin who restarted this old mine as Ting Tang Consols, which was a short-lived affair. Photograph courtesy Roy Meldrum.

dared near the end of their shift, waiting and listening for the bell to toll in a place safe from the eagle eye of the Mine Agent, were as bound by it as all the other salaried workers at Cornish mines.

Among the images taken by H.G. Ordish in Cornwall during the 1920s, is one of what is likely to have been an old miners' dry in front of the count house (mine office) at Levant mine, atop which one can see the unmistakable stone housing for a bell (Trevithick Society 2011, 39). That mine bells were ubiquitous throughout Cornwall and west Devon, is further evidenced by inspection of itemised sale lists when the affairs of mines, both large and small, were wound up (see appendix one for a by no means exhaustive list).³ Many of these bells were described as made of 'brass', a generic term for a range of copper-zinc alloys and historically, bronze was sometimes referred to as 'brass'.

Fortunately, some mine bells survived after they fell under the auctioneer's hammer. At Poldark Mine Museum, Cornwall, there are two, one cast in a copper alloy dated 1777, mine unknown (but illustrating that these bells have a long pedigree on Cornish mines), and also a superb example from Ting Tang Mine, a bespoke bell cast by Perran Foundry in 1844 when the mine was restarted as Ting Tang Consols (Figure 6). This is rough cast in a copper alloy in contrast to the polished Blews bell, and features the mine name and date in cast relief. It is 20-

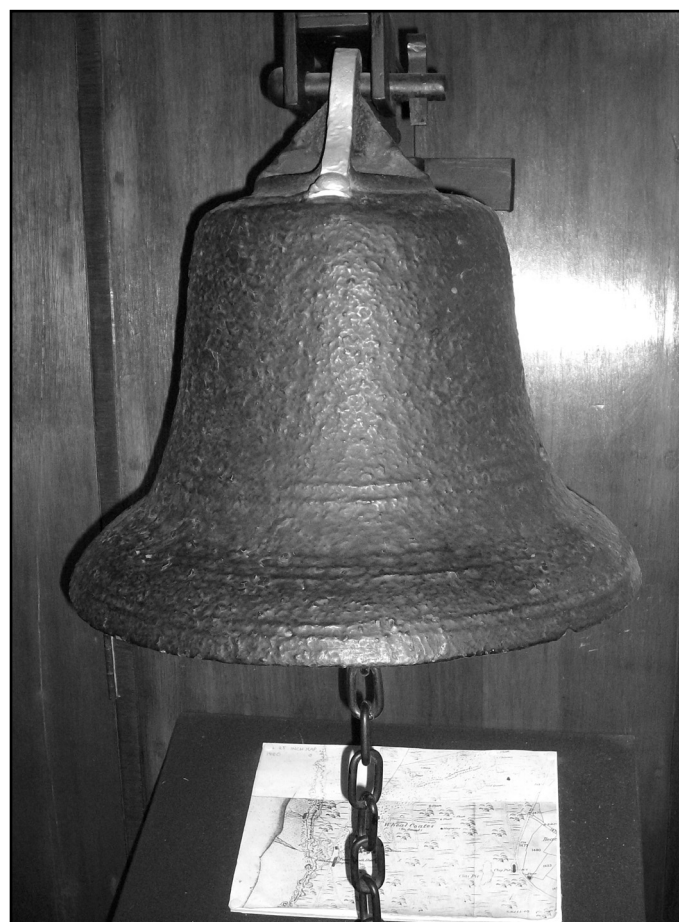


Fig. 7: The cast iron 'bal bell' from Wheal Coates on display at the St Agnes Museum, Cornwall, is thought to date from the 1880-81 working. Photograph courtesy Roy Morton.

³ Mine bells were not always itemised and were instead included under 'sundry or miscellaneous items'.

inches in diameter at the lip (50 cm) 9-inches at the crown (23 cm) and 13-inches (33 cm) lip to crown (pers. comm. 2011). The Wheal Coates 'bal bell' can be seen at St Agnes Museum, Cornwall. A little smaller than the Ting Tang bell with a diameter of 16-inches (41 cm) and measuring 18-inches (46 cm) from lip to crown, it is thought to date from the early 1880s reworking of the mine and is cast in iron with a deep patina, but bears no nomenclature (pers. comm. 2011) (Figure 7).

Further research has uncovered evidence for bells on other mines in Britain.⁴ Two surviving photographs of the Normanby ironstone mine in north Yorkshire, which closed in 1898, show a bell hanging in a simple frame at the site and there is documentary evidence of the manager at the adjoining Eston Mine in the 1880s ringing the bell to let the men finish early on a Good Friday (pers. comm. 2011). At the Laxley Mine on the Isle of Man, a bell was sited in the mines yard and is clearly depicted in its stand in a 1907 photograph (Scarffe 2004, 26). In the late nineteenth century, Penrhyn slate quarry near Bethesda, Wales, was the biggest in the world. Black and white film footage of the quarry at work in the 1940s depicts a large bell installed there in about 1876 (Foulkes 2009) being tolled to warn of impending blasting (Pathé Films) (Figure 8); a bell used for the same purpose is in situ at Little Johns china clay pit, St Austell, Cornwall and a fine example of an extant bell can be seen atop the old mine office at the Aberllefenni slate mine in Wales. No elaborate masonry bell tower would have been required for the mine bells we have described, just a simple stone housing like that depicted at Levant, or a wooden or metal headstock or 'stand' for stationary chiming, as at Penryhn quarry.



Figure 8. *The large bell used to warn of impending blasting at the world's largest slate quarry, Penrhyn, near Bethesda, Wales, shown here in the 1940s. Photograph, British Pathé Films.*

RING OUT THE OLD, RING IN THE NEW: BELLS ON IRISH MINES

It therefore comes as no surprise to find that Irish mines also had bells. Indeed, the 1842 Children's Commission on the mines in the South of Ireland by Frederick Roper Esq., (the North of Ireland was reported on by Thomas Martin Esq.), contains numerous references to them. As the Cornish were prominent in metalliferous mine management across Ireland from the mid-eighteenth century onwards, it is highly probable that the custom of regimenting surface workers and salaried underground miners by tolling bells was introduced by them. Corroborating this assumption is the specially cast mine bell in its stand outside Morphett's engine house at the Burra copper mine, South Australia. Burra was virgin mineral territory developed with a large Cornish labour force in the 1840s and where Cornish customs and technology reigned supreme (Ridgway n/d). (Figure 9).



Figure 9. *The Cornish introduced the custom of the mine bell to Australia. Here is the Burra mine bell in its characteristic wooden 'stand'. Cast by George Wyatt in his Adelaide Foundry in 1851 for the South Australian Mining Association (S.A.M.A.) it was installed at Schneider's engine house and moved in 1925 to its present position outside Morphett's pumping engine house. Photograph, S. P. Schwartz, 2004.*

Mineworkers across Ireland were reliant on the tolling of the mine bell to summon them for shifts, for announcing the beginning and ending of meal times and to indicate when their shift was complete. In evidence given to Roper in 1841 by forty year old widow, Bridget Kennedy, employed as an ore dresser at the Caimé lead mine, County Wexford, she states: 'The bell rings going to and coming from meals. I live close by here, I and my children go home to meals' (BPP 1968, 860). A similar picture emerges at the Knockmahon Mines in Waterford, where thirteen year old Helen Hawke noted:

⁴ The 1842 Children's Commission contains evidence of bells being used in some British foundries to summon workers in the same manner as those on metal mines, including Cheadle Brass and Copper Foundry, Oakamore, Staffordshire, Aberdulas Iron and Tin Plate Works and Colliery, Neath, Glamorgan, and the Carron Foundry, Stirlingshire, Scotland.

We come to work at six o'clock; half-past eight the bell rings for breakfast, we have half an hour. One o'clock the bell rings for dinner, we have an hour and then work till six o'clock, when the bell rings. In the winter we work as long as the light will permit (BPP 1968, 864).

Hawke's co-worker, Nancy Mulcahey, also mentions the mine bell which '... always rings at work and meal-times, coming and going' (BPP 1968, 864). As one did also at Allihies, County Cork, as remarked upon by thirty year old buddler, Joan Tobin, and jigger, Cornelius Kelly, who related:

We come to work as the bell rings and leave off as the bell rings, which is six at morning and six at night, half an hour for breakfast and an hour for dinner. My meals are sometimes brought to me and sometimes I go home for them' (BPP 1968, 866).

At the Kenmare copper and lead mines in County Kerry, overseen by Captain Thomas, a Cornishman, fifteen year old buckler Catherine Foley stated: 'We come to work at seven o'clock in the morning, when the bell rings'; this was also mentioned by other surface workers employed there: cobber, Norah Shea, and jigger, William Hagarty (BPP 1968, 866). Cobber, Michael Ryan, describes a similar regime on the Lackamore Copper Mine, County Tipperary, where the workforce was summoned:

... at six o'clock in the morning when the bell rings. We work till 12, then the bell rings for dinner. We have an hour for dinner and then work till six in the evening, when the bell rings' (BPP 1968, 870).

As Ryan's family lived close to the mine, his dinner was brought to him there, presumably when they heard the bell toll. The largest non-ferrous mine in Ulster, Newtownards near Belfast, managed largely by the Cornish over the course of its history, listed two bells among an itemised inventory of materials and equipment to be sold following its closure in 1864. (D 1071, PRONI). Similarly, Drumglass Collieries, Dungannon, County Tyrone, closed by the Hibernian Mining Company in 1852, itemised bells among the list of mine materials to be sold at auction (BNL 1852).

Unfortunately the workforce at the Avoca mines, estimated to have numbered about '2,000 miners and their labourers', were not featured in Roper's report. The reason given for their omission was because:

Formerly a good number of children were employed at these mines dressing copper ore but since the sulphur trade commenced, this has been entirely done away with... At none of them are either females or children employed, and but very few young men under 18 years of age. (BPP 1968, 855-6).

Henry Hodgson, owner of Ballygahan, and the only Avoca interviewee, stated to Roper in 1841 that his miners worked eight hour shifts and were then replaced by another set of hands, two shifts per day, none at night (BPP 1968, 858). They worked on contract (i.e., as tutworkers). By 1873 the Avoca mines accounted for over 75 per cent of the British production of iron pyrites and the mines would undoubtedly have employed many tutworkers (Mineral Statistics 1874). As Cornish customs prevailed on the Avoca mines, it seems logical to assume that bells would have been used to regiment mineworkers as elsewhere. And indeed, the notice of the sale by auction on 28 and 29 August 1879 of the plant and materials of the Ballygahan Mine includes 'two large farmyard bells' (IT 1879)⁵. These would have been rough cast like those that were used on Cornish mines.

Finally, the date of the Blews bell is somewhat odd. There was no obvious change of ownership on any of the Avoca mines or the launch of a new company around 1869 that might have signalled a reason for the arrival of a brand new mine bell. In the 1950s, when the Avoca mines attained a new lease of life, it is more than certain that bells had by then been superseded by hooters and whistles as elsewhere in the world.

AN ARTEFACT REPLETE WITH HISTORICAL RESONANCE?

Therefore, without corroborating documentary evidence it will probably never be proven beyond doubt that this bell, among the earliest to be cast at Blews & Sons, once summoned and dismissed the salaried workforce of an Avoca mine. It most certainly did not lend its name to Bell Rock and it seems doubtful that a mine bell was ever sited at its summit as local lore claims. Many puzzling questions surround this bell if one believes it to have been used on an Avoca mine, not least that of why a mining company would go to the expense of importing a bell from Birmingham when there were several bellfounders and foundries in nearby Dublin? These included the renowned O'Bryne's Fountain Head Bell Foundry, the Dublin Metal Works, Sheridan's Eagle Foundry and that of John Murphy (Lewis 2002), more than capable of casting a workaday mine or farmyard bell. ⁶ Moreover, the Blews bell has clearly been polished (and presumably tuned, a very involved process). None of the Cornish mine bells featured are this well finished, they are also smaller and crudely cast in comparison, intended to be purely utilitarian and are likely to be 'maiden bells' (mounted as cast); fine tuning was unnecessary to produce a precise note of the kind required for a church bell for example.

The fact that the Blews bell does not have the mine or mining company's name and date cast in relief upon it, like the Ting Tang and Burra bells for example, also throws doubt on it being cast for specific use on a mine. In fact, it looks suspiciously like a change ringing bell with its maker's inscription cast below its shoulder and intended for use as the treble in a ring of church

⁵ Bells were also used on estates where they were rung from the farmyard to mark the different stages of the working day: at starting time, to notify meal breaks and to let the estate workers know when they could down tools.

⁶ Had the bell been used at Tigroney or Cronebane, it is more than likely to have been cast at Perran Foundry, Cornwall (1791-1879). William Williams had an interest in this foundry which was bought out by the Williams brothers from the Foxes in 1858. Williams and Co. leased Tigroney and Cronebane for much of the nineteenth century.

bells. Perhaps it was originally imported to Ireland for this purpose? Close scrutiny of the bell reveals a small casting flaw that might have adversely affected its tone. Was it deemed defective like the Saltaire bell and therefore obtained and used by one of the local mines to signal the shift changes instead? Or maybe it was cast for use by an Irish place of worship or a local estate and never rang the shifts at an Avoca mine. We will probably never know.

Regardless of how unsure we are of the provenance and purpose of the Blews bell, perhaps its importance lies in the fact that it is replete with historical resonance, reminding us of a fact passed on in oral history and confirmed by documentary research, that bells that were formerly used on mines in the Avoca valley. If indeed this is a bell that once rang out on one of the Avoca mines, then it is a remarkable, possibly unique, survivor of a custom that was formerly widespread on Ireland's mines. It would therefore be an important Irish industrial and audio-archaeological artefact worthy of being displayed where its history could be properly appreciated.

ACKNOWLEDGEMENTS

The authors are indebted to Peter King for kindly allowing us to view the Blews bell; to Paul Tempan for assistance with Irish place name elements; to Paul Richards for assistance with documentary evidence for bells on Cornish mines; Richard Williams and Roy Morton for images and data on the Ting Tang and Wheal Coates bells respectively; Robin Willis for information on the Penrhyn bell and to various Aditnow members for help with identifying mine bells in Cornwall and elsewhere in Britain.

REFERENCES

Primary Source material

- 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.
- British Parliamentary Papers, 1864, XXIV.1 .2, *Report of Commissioners Appointed to Inquire into the Condition of all Mines in Great Britain to which the Provisions of the act 23 & 24 Vict. C 151 do not Apply*, Appendix A (otherwise known as the Kinnaird Commission). Reprinted as British Parliamentary Papers, *Mining Accidents - Reports on Explosions in Collieries and on Ventilation and Conditions of Mines in Great Britain 1846-64* Volume 6, Irish University Press, 1969.
- NLI - National Library of Ireland, Powerscourt Papers, MS 43,017/1 et seq.
- PRONI - Public Record Office of Northern Ireland, Belfast, Dufferin Papers, D1071 A/K8/4 No. 68.
- NWACBR - Records of the North Wales Association of Church Bell Ringers, XM9 945/2/6/5, Gwynedd Archives, Caernarfon Record Office.

Secondary Sources

- ABG - *Aris's Birmingham Gazette*, 10 April 1869.
- BNL - *Belfast News-Letter*, 9 January 1852.
- Burt, R. (ed.), *Cornwall's Mines and Miners: Nineteenth Century Studies* by George Henwood, Truro, 1972.
- Church Bells of Warwickshire: <http://www.warksbells.co.uk/brailles.htm> accessed 24 October, 2011.
- Coffey P. and Morris, J., 'A Compendium of Illustrations and Descriptions of Some Irish Historic Mine Workings from Rare, Out-of Print Publications and Other Sources', *Journal of the Mining Heritage Trust of Ireland*, 2002, pp. 65-75.
- Coffey, P., Cowman, D., and Morris, J., 'Further Illustrations of Historic Mining Activities in Ireland: Knockmahon, Co. Waterford and Avoca, Co. Wicklow', *Journal of the Mining Heritage Trust of Ireland*, 2003, pp. 3-7.
- Dempsey, P., *Avoca, A History of the Vale*, Dublin, 1912.
- Foulkes, E., 'The Penryhn Quarry Bell', Y Llechen, *Journal of the Penrhyn Railway Society* 19, 2009.
- Geological Survey of Great Britain, *Mineral Statistics of the Kingdom of Great Britain and Ireland for the Year 1873*, London, 1874.
- Hibbert W. A., 'The Quantification of Strike Pitch and Pitch Shifts in Church Bells', unpublished PhD Thesis, The Open University, 2008.
- IT - *Irish Times*, 23 August 1879.
- Lewis, C.A. 'Dublin founders of ringing bells', *The Ringing World*, No. 4754, 2002, pp. 565-567, 569.
- MJ - *Mining Journal*, 2 July 1853.
- Noall, C., *Cornish Mine Disasters*, Redruth, 1989.
- Pathé Films, <http://www.britishpathe.com/record.php?id=82210> accessed 24 October 2011.
- Personal communication - email from Richard Williams to S.P. Schwartz, 25 October 2011; email to S.P. Schwartz from Roy Morton 27 October 2011; email to S.P. Schwartz from Robin Willis, 29 October 2011; email to M.F. Critchley from Jim Platt, 27 October 2011; post on Aditnow from 'Simonrail' 24 October 2011 <http://www.aditnow.co.uk/>; email from Gerard Clear to S.P. Schwartz, 16 and 21 November 2011.
- Power, P., *The Bright Waters Walk from Woodenbridge to the Meetings of the Waters*, 2001, pp. 16-17.
- Price, L., 'The Place-Names of the Barony of Arklow, County of Wicklow. Their Early Forms Collected', *Proceedings of the Royal Irish Academy*, Section C: Archaeology, Celtic Studies, History, Linguistics, Literature, Vol. 46, 1940/1941, pp. 237-286.
- RCG - *Royal Cornwall Gazette*, 17 July 1830; 3 March 1832; 23 June 1837; 10 January 1840; 24 January 1840; 9 July 1841; 13 August 1841; 10 September 1841; 17 December 1841; 27 May 1842; 24 June 1842; 01 July 1842; 9 September 1842; 9 September 1842; 22 September 1843; 28 November 1845; 2 January 1846; 21 January 1848; 7 April 1848; 19 May 1848; 25 April 1851; 25 March 1853; 27 May 1853; 30 September 1853; 13 January 1854; 22 September 1854; 6 October 1854; 13 October 1854; 10 November 1854; 30 November 1855; 7 November 1856; 12 December 1856; 23 April 1858; 21 June 1861; 26 July 1861; 13 June 1862; 25 July 1862; 12 December 1862; 18 November

1864; 21 April 1865; Friday, 9 June 1865; 3 January 1867;
7 February 1867; 20 June 1867; 4 July and 21 November
1867; 6 August 1868; 8 October 1868; 19 February 1870; 18
May 1872; 28 February 1874; 17 October 1874; 11
December 1875; 18 January 1878; 5 April 1878; 18 January
1884 and 05 December 1884.

Ridgway, N., *Early water pumping technology in Australia*,
undated MSS.

Saltaire Bells, (<http://www.saltaireurbells.co.uk/history.html>)
accessed 21 October 2011.

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

W&DCRA - Worcestershire & Districts Change Ringing
Association,

(<http://www.wdcra.org.uk/study/weight.htm>) accessed 25
October 2011.

WB - *West Briton*, 7 October 1831.

Appendix One

Mine bells itemised for sale at auction in Cornwall and west Devon 1830-1884

Mine	Date	Notes
Wheal Penrose, Sithney	1830	An excellent metal bell
Wheal Tucker, Ponsanooth	1831	A capital mine bell, of best metal*
Wheal Busy, Chacewater	1832	A large mine bell
North Consols, St Agnes	1837	
Parbola, Gwinear	1840	Brass bell
Gunnislake	1840	
Marazion Mines, St Hilary	1841	Brass bell and stands
Trevaskus, Gwinear	1841	Brass bell and stand
North Wheal Alfred, Hayle	1841	Bell and stand
Wheal Concord, Syndeham, Devon	1841	Mine bell and stand
Carzise Consols, Crowan	1842	Brass bell and stand
Gwallon, St Hilary	1842	One brass bell
Gunnislake	1842	One brass and one iron bell and stand
Wheal Speed, Breage	1842	One brass bell and stand
Polgooth, St Austell	1842	Engine bell
Wheal Henry, Wendron	1842	Brass bell and rope
Bryn Tye, Roach	1843	
Wheal St Andrew, Gwithian	1845	
Lambo, Leedstown	1846	
Ventongimps, Perranzabuloe	1848	Brass bell
Wheal Gurlyn, St Erth	1848	Bell and stand
Bossulion, Grampound,	1848	
South Wheal Fortune, Breage	1851	Cast iron bell and stand
Wheal Elizabeth, Paul	1853	
Carthew Consols, St Issey	1853	
Tavistock United, Devon	1853	Brass bell and stand**
Boscarn, Wadebridge	1853	
Nancekuke, Porthtowan	1854	
Wheal Augusta, St Just in Penwith	1854	One brass bell
West Wheal Treasury near Hayle	1854	A brass bell
South Wheal Charlotte, St Agnes	1854	Brass bell
Gustavus, Camborne	1854	
Georgia, Towednack	1854	Brass bell
Trevena, Breage	1855	An excellent mine bell, 14 inches in diameter
Wheal Vyvyan, Constantine	1856	An excellent mine bell
Great Beam, St Austell	1856	Large brass bell
Wheal Guskus, St Hilary	1858	Brass bell
Wheal Lewis, St Erth	1861	One large brass bell and stand
St Dennis Consols, St Dennis	1861	Brass bell with stand
Pelyn Wood, Lanlivery	1862	Brass bell
Great Crinnis, St Austell	1862	
East Crinnis and South Par Consols	1862	
Wheal Guskus and Wheal Anna, St Hilary	1862	Brass bell
Wheal Mary Consols, St Neot	1864	
Wheal Prudence, St Agnes	1865	Brass bell
Wheal Prosper, Breage	1865	Brass bell on Mitchell's Shaft as distinct from the knocker bell and wire installed at this shaft, also advertised for sale
Wheal Lovell, Wendron	1867	
Wheal Sithney and Carnmeal United	1867	Brass bell with stand
Garlidna United, Wendron	1867	Brass bell
Criddis, Padstow	1867	
Grambler and St Aubyn, Gwennap	1868	One excellent tone brass bell
Great Wheal Fortune, Breage	1868	Large brass bell noted as situated on the old mine
Billia, Towednack	1870	Brass bell
Tremayne, Fraddam near Hayle	1872	Large brass bell with stand
Okel Tor, Calstock	1874	
West Caradon, Liskeard	1874	A very large brass bell
Wheal Seton, Camborne	1875	One good brass bell
Ambrose Lake, St Neot	1878	
Charlotte United, St Agnes	1878	Bell and stand
St Aubyn United, Gwennap	1884	Large brass bell
Wheal Jane, Kea	1884	Brass bell

All RCG except * (WB 1831) and ** MJ (1853)