

BRITISH MINING No.30

FRONGOCH

LEAD & ZINC MINE

by

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NOTES AND REFERENCES.

Recurring references are indicated as follows:

B.G.S.	British Geological Survey, Aberystwyth.
Bick	Bick, David <i>The Old Metal Mines of Mid-Wales</i> , parts 1-6 (Newent: The Pound House, 1993).
Crosswood	Crosswood Deeds & Documents, National Library of Wales.
Jones	Jones, O.T. <i>Special Reports on the Mineral Resources of Great Britain Vol.20 Lead & Zinc: The Mining District of North Cardiganshire and West Montgomeryshire</i> (Sheffield: Mining Facsimiles, 1986. Reprint of 1922 Edition).
Jones MSS	O.T. Jones papers, NLW.
Lewis	Lewis, W.J. <i>Lead Mining in Wales</i> (Cardiff: University of Wales Press, 1967).
M.J.	<i>Mining Journal</i> .
M.W.	<i>Mining World</i> .
N.L.W.	National Library of Wales, Aberystwyth.
P.R.O.	Public Record Office, Kew.

PREFACE TO FIRST EDITION (1986)

This monograph had its origins in 1982, when the Welsh Mines Society drew the attention of the Royal Commission on the Ancient and Historical Monuments of Wales to the three Cornish Enginehouses and other structures at Frongoch.

The Commission responded with a detailed survey of this unique group of 19th century mine-buildings, and has also generously contributed towards the cost of publication.

Having known Frongoch for almost forty years, I have derived no little pleasure in compiling an historical account. An Appendix by Dr Stephen Briggs (Trefenter) has also been included, based on Moissenet's visit in 1860.

Though nature and man have dealt harshly with the remaining structures, enough still stands to form a basis for a first-class interpretative centre for the history of lead mining in the Principality, as well as a valuable area of general amenity. It is hoped that something can be done in this direction before decay renders the task insuperable.

I should like to take this opportunity to express grateful thanks to Professor D.G. Tucker and Mr Peter Smith, without whose interest in the furtherance of studies relating to Industrial Archaeology, this publication would not have come to pass.

My old friend George Hall has again assisted with references in the *Mining Journal*, and I have to thank him for introducing me to Pontrhydygroes, home of the Lisburne Mines, in 1947. I am also indebted for help in various ways to Douglas Hague, Richard Bird, Simon Timberlake, Jeremy Wilkinson, R. Alan Williams, Simon Hughes, A.J. Parkinson, Dr C.S. Briggs and the staff of the British Geological Survey and the National Library of Wales.

AUTHOR'S NOTE TO NEW EDITION

I am grateful to the NMRS for publishing this enlarged edition, and to Hazel Martell, Mike Gill, Roy Fellows, Mike Moore and Rob Southwick for help in various ways. The demand for the original book has illustrated the potential for further collaboration, and thanks are again due to the Royal Commission for financial aid.

As for the site itself, Scheduled Monument status has done nothing to arrest a continuing decay into hopeless ruin and, with it, all those aspirations expressed above. On the other hand, bearing in mind how integrity elsewhere has suffered in the name of amenity and conservation, perhaps it is better that things remain as they are. If there is an answer, we have not found it yet.

David Bick, FSA, Pound House, Newent, Glos.

November 1995

PART 1 – HISTORY

EARLY YEARS

The earliest reference yet discovered to mining at Frongoch is a 21-year lease dated May 30th 1759, of mines and lead ores under tenements called Frongoch, Troedyrhiw, Havod-y-rhyd and Rhiw-halog.^{1,2} It was granted by Lord Lisburne to Philip Pugh of Tuglin, Cardiganshire.

Subsequently nothing has come to light until the 1790s, when John Probert began to develop Frongoch and Llwynwnwch, immediately to the east and eventually absorbed by the former. Probert was already working Fairchance, Grogwinion, Logaulas, Esgairmwyn and Esgairhir, his manager being James Lowe of Dol-y-gors.

During the year ended December 1st 1792, Lowe expended £112 for work done at Frongoch, and these extracts from his accounts give a good idea of the venture.³

	£.	s.	d.
To William Hughes for opening an old level on the East End of the Workings, opening and timbering an old shaft and sumps and trenching in different parts to try for ore	2	7	6
William Lewis, Morgan Richard, Edward Edwards, Griffith Williams, ditto... 10 Lbs. Candles at 8d. per lb	15	3	2
2 Shovels at 1/9d each and 72 ft. of Boards and Rails		6	8
2 Water Barrels at 5/- each. 1 Clivis (?)		15	6
William Hughes raising Ore and driving Ground in the old Bottom. John Herbert, William Morgan, Evan Evans. ditto		11	0
28¼ lb. of Powder, 5¼ lb. of German Steel at 6d. and 1 Quire of brown Paper, at 4d	10	4	2
Joseph Dudlyke for Smith work in sharpening Tools, etc.		2	11
To John Parry for driving a Crosscut from the Bottom of the old Work to cut the North Vein and raising Ore and Black Jack in different Parts of the two Veins to try the same - 12 weeks 2 days at 8/6d per week.		15	0
John Davies, Evan Morgan, Morgan Richard, John Jones, John Roderick, Evan Shelby, John Davies, Evan John Jenkin. ⁴	28	9	0
To Thomas Davies for making a new Ore Bing, and a Shed over the Knockstones for the Washers, trenching the new Vein discovered to try the Ore		11	0
5 old Handles for Kibbles from Grogwinion Mines		3	0
James Lowe for superintending the Mines from December 1st 1791 to December 1st. 1792	20	0	0
John Oliver for his attendance in looking after the People, delivering out stores and other sundries from 1st December 1791 to 1st December 1792 at 1/- per week.		2	12 0

From the above, the rudimentary nature of the operations is apparent, though provision of a shed for the washers (ore-dressers) is interesting. In mid-Wales, this basic protection from the worst of the weather was something of a luxury and rarely encountered.

JOHN TAYLOR & SONS (1834-1878)

On May 1st 1834 the Lisburne Mines came into the possession of the cost-book company formed by John Taylor, who with his brothers and sons held 29 of the 100 shares.^{1,2} Seven more were held by three of the Francises, a Cornish family whom Taylor employed as managers.

Taylor was then aged 54 and had proved a shrewd and capable mining engineer and promoter, with many successes to his credit. He was currently managing lead mines in Flintshire, and it would be very interesting to know what persuaded this generally cautious man to take over a group of workings in a remote part of Wales, which one of the best known mining houses in Cornwall had signally failed to master. It is true that, after years of decline, the price of lead was at least beginning to rise, but that of itself could scarcely account for his decision. Perhaps he wanted to beat the Williamses at their own game. At all events the Lisburne mines under Taylor proved a wonderful success. It is worth recording the names of the original shareholders, as extracted from the first annual report of July 1835.

LIST OF THE ADVENTURERS IN THE LISBURN MINE

	Shares		Shares
Henry Birkbeck, Esq	5	Brought up	42
Edward Brice Bunny, Esq	5	Captain Daniel Pring, R.N.	2
Thomas Fowell Buxton, Esq	10	Captain Samuel Reed	1
Edward Chuck, Esq	2	Samuel Skinner, Esq	8
George Fossett, Esq	1	Messrs. Daniel and James Shears	2
Captain Absalom Francis	4	Thomas Stokes, Esq	10
Captain William Francis	2	John Taylor, Esq	20
Captain Matthew Francis	1	Richard Taylor, Esq	2
Charles Hopkinson, Esq	3	Edward Taylor, Esq	2
John Hutchings, Esq	1	John Taylor, Jun. Esq	3
Joseph Lyon, Esq	5	Richard Taylor, Jun. Esq	2
Charles Martineau, Esq	1	Philip Worsley, Esq	1
Colonel George Nelthorpe	2	Richard Williams, Esq	5

Shafts were often named after shareholders, e.g. Skinner's Shaft (Glogfach), Taylor's (Frongoch and Logaulas) and Worsley's (Logaulas). Philip Worsley married Taylor's eldest daughter, Anne. He was also an active partner in Whitbread's Brewery.

Matthew Francis became Taylor's resident manager of the Lisburne mines at the age of only 24. His uncle, Absalom Francis of Flintshire, had been in Taylor's employ for many years and no doubt assisted in obtaining the position.³ The first year of operations gave very encouraging results, as may be gathered from the annual report, clear and concise, and so lacking in the hyperbole usually associated with such occasions:-

PART 2 – INDUSTRIAL ARCHAEOLOGY

GENERAL DESCRIPTION

The continuous development of the site, culminating in the wholesale removal of much of the waste for re-processing, has left a very complicated palimpsest of remains. Most of the standing buildings are along the higher ground to the north-west of the dressing-floors, but from beneath the tipped rubble emerge walls and other structures, most of which can be identified.

Very little can now be recognised of the mine before the Taylors acquired it. There was an '*old engine shaft*', which presumably retained its name thereafter, and a pumping wheel (the location of which is uncertain) powered by water from at least two reservoirs.

The fifty years of working by the Taylors enlarged the workings very considerably, and most of the visible remains date from their period. Individual structures can be dated by reference to maps, to the known history, and occasionally by internal phasing within a building.

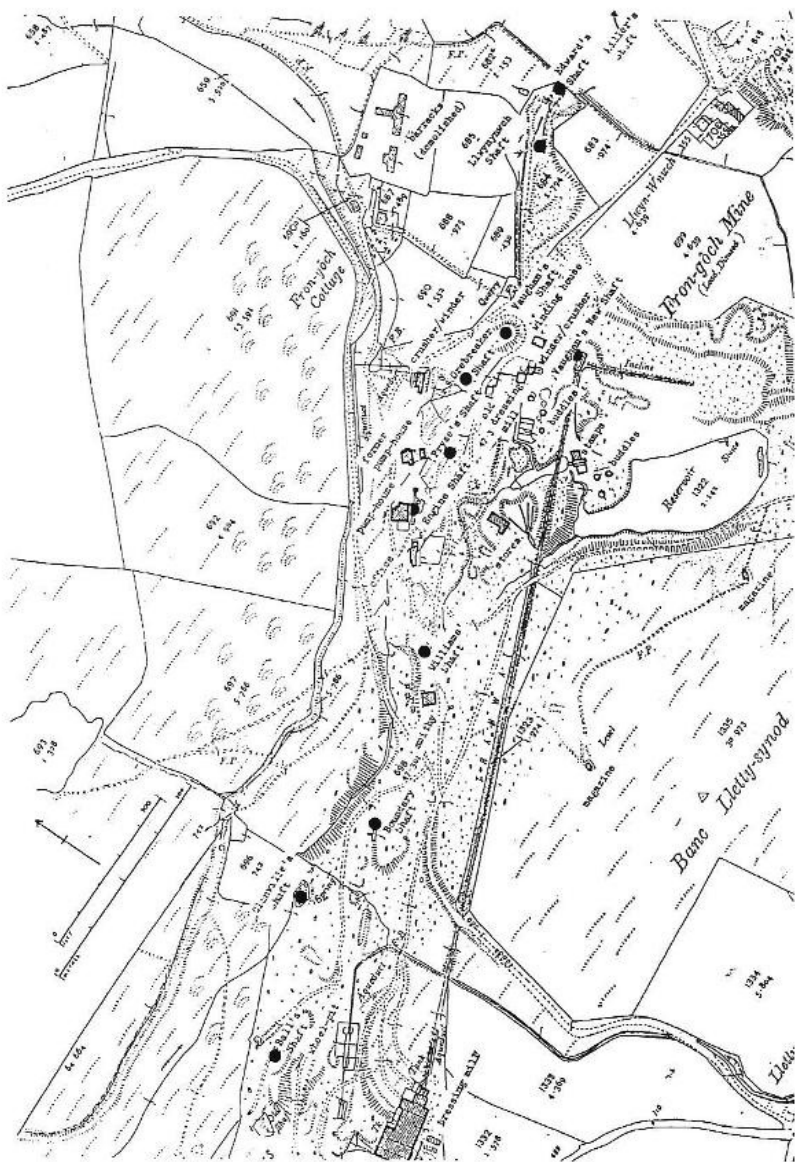
The earliest depiction appears to be the Tithe Award map of 1847. This shows the engine-house of 1841, a building to the south-west (perhaps next to Engine Shaft), the office with two smaller structures to the north-west, and another building further to the south-west in a plot described as '*Cae Gwaith Mwyn and Buildings*', which was listed as being under pasture. Above the buildings was a long leat, ending in a possible water-wheel near the Engine Shaft, and with a second branch ending just south-west of the engine-house.

Moissenet described the workings in great detail in 1860, and his plans are of considerable accuracy (see fig.17). He stated that two shafts were sunk below the 143 metres (78 fathom) level. On his plan, only Pryse's Shaft and Taylor's Shaft are indicated, both evidently productive since tramways ran from them to the dressing mills. The mills took advantage of the slope of the ground so that the spillway of one water-wheel either fed the next wheel in the sequence or provided water for the various buddles and separators.

By 1878 there had been considerable change again and the scale of this is apparent from the list of machinery in the inventory of that year (see p.45) and from the OS 25" map of 1885 which shows the enlarged dressing mills. It is equally clear, however, that many of the new buildings must have been insubstantial (like so many contemporary mine-buildings elsewhere), since by 1904 they had been removed and almost no trace now remains.

60 inch PUMPING ENGINEHOUSE

The most spectacular building remaining on the site, the enginehouse was built c.1870 to house a Cornish beam-engine with a 60" cylinder and 11 foot stroke built by the Sandicroft Foundry (Flintshire). The date of purchase is unknown, but it was probably soon after the opening of the railway to



APPENDIX IV

LÉON MOISSENET'S VISIT TO FRONGÔCH IN 1860

by

Stephen Briggs*

Introduction

The purpose of the writer's original contribution to this monograph, when printed in 1986, was to draw attention to the existence of important mid-19th century observations on British metalliferous mines, particularly those published in Paris by the remarkable French engineer Léon-Vivant Moissenet (1831-1906), in the hope of encouraging others to examine his and other early foreign travellers' accounts. Whilst at that time considerable effort was made both to offer a general overview and provide useful details about lead processing at the Lisburne Mines, because of the nature of that publication, translation was abbreviated to cover only a fraction of the original account. Since that shorter piece is retained here, readers keen to access Moissenet's observations in greater detail are referred to his original published paper.

During the last ten years, a welcome number of useful studies and reprints have appeared in this field of industrial history. These include edited translations of a metallurgical tour to Britain by Dufrénoy, Élie de Beaumont, Coste and Perdonnet (Martell and Gill 1989;1990), and one tour by Moissenet himself (Martell and Gill 1992). From these and others already in print, it is clear that the value of such sources is now fully appreciated by historical metallurgists.

Subsequent to the publication of the original Frongôch monograph, the writer briefly visited the library of the École des Mines in Paris, seeking more detail of Moissenet's industry, and hoping to discover whether or not any worthwhile manuscript testimony survived to his travels, or to those of any other early mining engineers.

The library possesses a limited amount of material in Moissenet's hand, including a travel diary to Wales in 1855. His honours certificates are also accessible, together with some brief funding requests and reports on a number of journeys abroad. But Moissenet's were not the only accounts. The library holds a register of its pupils' theses testifying to an apparent requirement for taking study tours at home or abroad as part of their courses. The writer's limited time and access meant that he was able to see only a representative group of 19th century diaries and notebooks, some then only recently rescued from a damp basement to be conserved.

French student engineers browsed or even penetrated a number of British extractive and processing industries, including those of coal, iron, copper and lead, as well as railways and some heavy engineering works. From the



PLATE XVIII. A view up Engine Shaft from adit level, showing two massive timber pump-rods and a collapsed iron rod on the left. A fourth rod, also timber, is obscured. (R.A. Southwick).