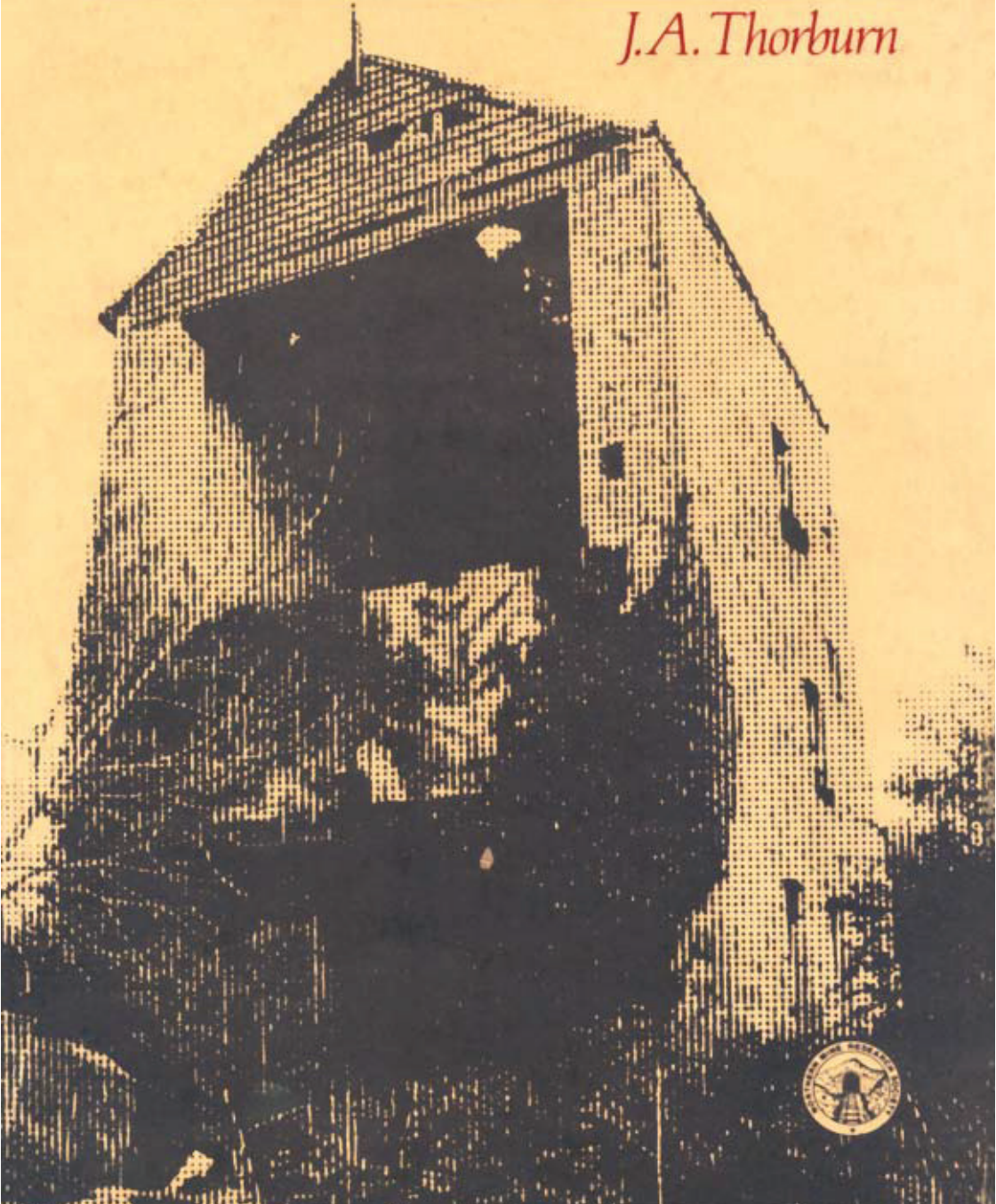
BRITISH MINING No. 31

TALARGOCH MINE

J.A. Thorburn



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by

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FRONTISPEACE. Talargoch from the north-west: In the centre of Graig Fawr: to the left is the old core of Meliden village and the east end of the mine; in the centre is Talargoch proper; to the right is Clive engine house at the west end of the mine. (Clwyd-Powys Archaeological Trust)

PREFACE

My interest in metal mines was first awakened in the hills of north Ceredigion. It was some time before I realised that I had been brought up in an area as equally important in mining history; in a community which had grown up around one of the largest and oldest of Welsh mines.

The north-east Wales ore field has been generally neglected in the recent literature. The reasons are not difficult to find. Fieldwork among the industrial decay of Deeside, or elsewhere in the area, is an unattractive prospect compared with that in the more remote, though probably less important, metal-mining areas of Wales. Nor are there many surviving structures from the mining period to stimulate interest: many of the largest and most famous mines are now marked by no more than levelled spoil tips. The historical background to the industry in the area is complicated by a series of family and business relationships which need to be untangled before any understanding of the area's mining history can be reached. Further work on the area is required.

Some attempt has therefore been make in this work to present the general history of mining in the area as a background to the history of Talargoch, and this is heavily based on W.J. Lewis's account in Lead Mining in Wales.

My main research was in the National Library of Wales, Aberystwyth, and the Clwyd Record Office, Hawarden. A large amount of material exists but, bearing in mind the long history and size of the mines, the documentary evidence is fragmentary and for certain key periods conspicuously absent. The photographic record is particularly poor. As far as I am aware, no photographs exist of the mine or its workforce during its working life.

ACKNOWLEDGEMENTS
My thanks are due to the staff of the National Library of Wales, Aberystwyth for their valuable assistance; to the staff of the Clwyd Record Office, Hawarden, and in particular Mr C.J. Williams for his interest and advice; to the staff of University College of North Wales Library, Bangor; to the staff of the Mining Record Office; to the members of the Dyserth Field Club (in particular Miss G. Kermode) for their interest and local knowledge; to Dave Corbett and Simon Timberlake for the underground exploration; to Alan Morton for reading the manuscript; and to Susan for all her support.

DOCUMENTARY SOURCES
The following sources have been consulted and are fully referenced at the end of each chapter.

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Clwyd Record Office (CRO):
Erddig MSS (D/E); Keene and Kelly MSS (D/KK); Mostyn MSS (D/M);
Absalom Francis papers (NT/).

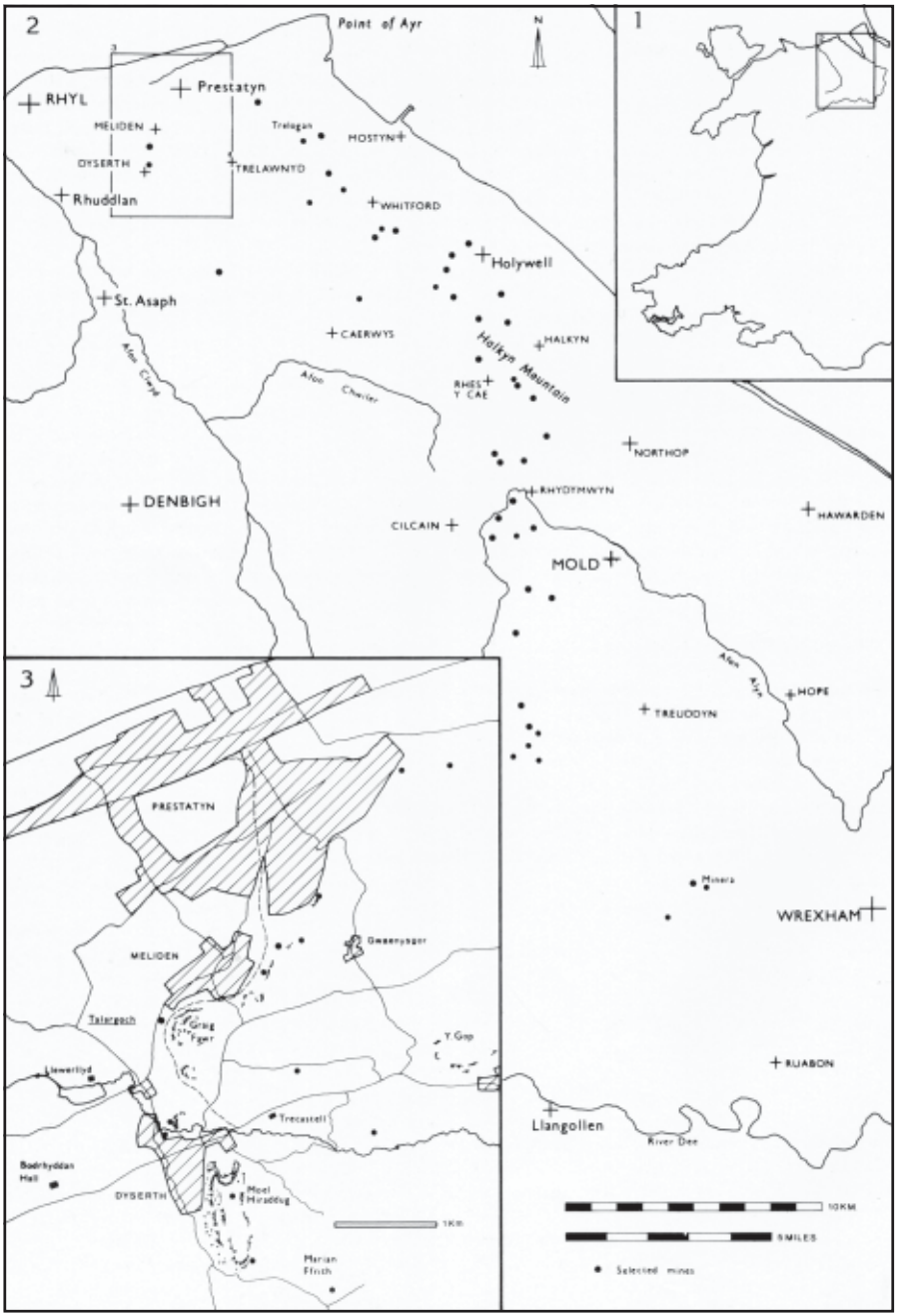

FIG. 1
Location map. Selected mines in the north-east orefield are shown.

INTRODUCTION

Talargoch is the most north-westerly mine of the north-east wales mining province (Fig.l), one of the most productive areas in Britain of lead and zinc ores. Between 1845 and 1938 the counties of Flintshire and Denbighshire produced 657,660 tons of lead ore and 341,695 tons of zinc ore (13% and 27% respectively of British production). Despite its relatively early demise in 1884, Talargoch was prominent in the orefield. Its production figures alone (57,752 tons of lead ore and 49,810 tons of blende between 1845 and 1884) qualify it for a place among the leading Welsh mines such as Minera, Frongoch or Van, but Talargoch's importance lies equally in its long and celebrated history. The history of Talargoch, however, is not typical of the orefield in general. In many ways the mine was unique; its geology and topography, its ownership and management, and its relative isolation from the main focus of mining.

The documented medieval mining for lead and copper at Talargoch appears to have been an isolated venture. Although the appropriation of Flintshire as Crown lands after the defeat of Llewellyn ap Gruffydd may well have been prompted by the promise of mineral wealth, the main area of activity was in the area to the south of Talargoch. The most important area was Halkyn Mountain and miners in the Holywell district were given official recognition in the 'Laws and Customs of the Mine' in 1352.

The reasons for a revival of mining in the 1630s are obscure. Although the low silver content of the north-east Wales ores freed the area from the restrictions of the Crown monopoly of the Mines Royal, various grants and awards of mineral rights existed over much of the area. The Grosvenor family had been awarded a grant of lead mines in Flintshire and Denbighshire in 1630, and in 1634 Richard Grosvenor received a grant of all the lead mines in the hundreds of Coleshill and Rhuddlan thus establishing the basis of the family's wealth. These grants did not affect mining in the north of the county, in the Prestatyn hundred in which lay Talargoch. This apparent lack of concern on behalf of the major mineral owning families in the mines at Talargoch changed, in the 1650 s to active attempts, through litigation, to claim the mines as part of the mineral grants of various landowners. The disputes resulted in legal confirmation that the mines and mineral rights were the property of the landowner and not subject to general grants of rights. Indeed, Talargoch was apparently exempted from a general grant of mines in the Prestatyn hundred made to Roger Grosvenor in 1660. For the following century the mine was to be managed under a series of leases made to mine adventurers. Many of these lessees came from outside the area and brought with them the technical expertise necessary to work the mines at increasing depth.

The late 17th century is usually regarded as a period of relative prosperity in the lead industry. At Talargoch however the disturbing effects of the break-up of the Hughes estate and a successful partnership with Derbyshire miners left the mines in a depressed condition. Furthermore, by the late 1600s the easily gained ores on the hill of Carreg

Ffaylon were showing signs of having been exhausted. This prompted a move to mine the ores outcropping above the Talargoch vein. These ores, however, were mixed with the gravel drift which was heavily water-laden. This was the end of cheap mining at Talargoch. For the remaining history of the mine its survival was to be dependant upon the ability to drain the mines effectively, a problem exacerbated by the low-lying site of Talargoch. The problems of deeper mining led to the failure of at least one venture in the early 18th century. The Quaker Company, who were so influential in other parts of the ore field, were unwilling to repeat their expensive operations at Trelogan, where drainage problems had forced them to use a Newcomen engine, and apparently regarded Talargoch as exhausted.

The presence of the Quaker Company in north-east Wales delayed, to some extent, the move towards ownership and capitalisation of the industry by a growing class of industrialists, merchants and the wealthier gentry. In Derbyshire and Yorkshire this trend seems to have started by the early 1700s but it is not until the second half of the century that a similar process can be seen in Flintshire. The process is difficult to describe and cause and effect are lost in the confusion of growing wealth and investment in all areas of industrialisation. In Flintshire the greatest stimulus came from the lead smelters and manufacturers who included existing mineral owners but also owners of cotton factories and coal mines. The working arrangements of these partnerships varied, but if, as in the case of the Pantons and Talargoch, the partners included men who married their commercial acumen to an active interest in technological innovation and mining practice, the results was a far-sighted and enlightened management.

The Panton company was comprised of a close-knit grouping of a small number of shareholders and throughout the later history of the mine control was to remain in the hands of a small group of principals. A strong sense of family tradition of interest in the mine can be seen through the late 18th and 19th centuries. Thus the Pantons, Williamsons, Mostyns and some lesser families retained control of the mine through inheritance. This remained true even after reforms of the financial structure of the company following the Joint Stock Act of the 1850s and other financial legislation. In this way ownership of Talargoch remained in the hands of local people at a time when many of the mines in Wales were owned by national or ‘foreign’ companies.

The continuity and stability of the management of the mine reflected a period of stability and prosperity at Talargoch. Leases were regularly renewed and royalties gave a regular return to the landowners with little risk. Royalties in northeast Wales were considered to be generally higher than elsewhere but, during the period of prosperity at least, this [7] did not seem of any great concern to the companies. Only in the later stages of working at Talargoch, when costs of pumping had risen to an unacceptably high level and royalty payments were in arrears, were serious moves made to reduce them. The situation was complicated at Talargoch by having to

negotiate with three different landowners, but this allowed some opportunity to play one off against the others. Eventually, as the arrears piled up, a sliding scale of royalties were introduced.

Contemporaries believed that the burden of royalty rates were very largely to blame for the close of the mine in 1884. In truth, it would seem that the landowners were far from callous in their dealings with the company but the situation was impossible. When closure came it was sudden. Even in its final years Talargoch ranked among the top ten or so British mines. Receipts from ore sales were comparatively high but not high enough to offset the high cost of mining. Furthermore, in the later years of mining there had been a notable lack of investment in new machinery, a substantial amount of which was necessary to the future working of the mine. The antiquated dressing process and the wasteful pumping machinery were particularly at fault. As a result Talargoch was among the least efficient of the large mines in terms of output per man. The mine seems to have survived from the late 1870s on the rich zinc ore deposits found in the lower levels of the works. The final years of production saw a hand-to-mouth system of working as ore was extracted without thought of future exploration to recover costs as quickly as possible.

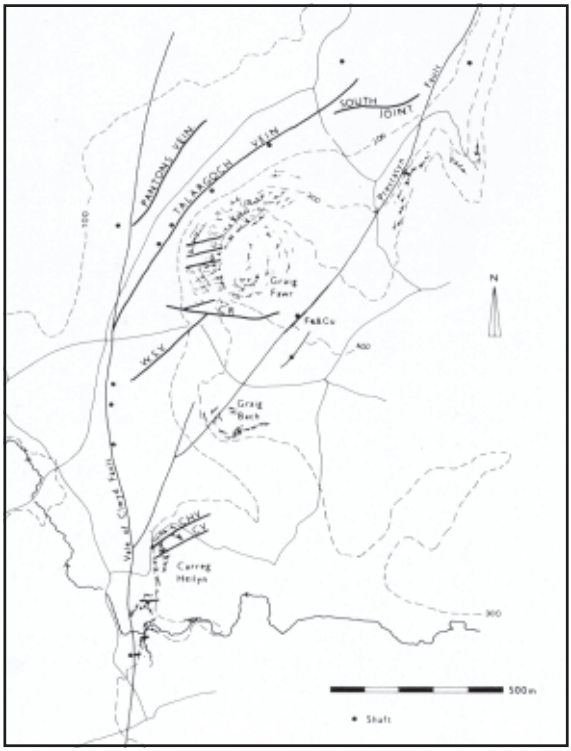

FIG.2
Geological sketch map. The main veins and faults in the area are shown. CR China Rake; WSV White Sand Vein; CHV Carreg Heilyn Vein; CV Chert Vein. (after Strahan)

What future the mine may have had if a new owner with sufficient capital had been found in 1884 is uncertain. By the early 1880s the great ore deposits of the USA and Australia were being mined and exported on a scale which had a catastrophic effect on world metal prices. The depression in the home industry drove all but the most competitive to the wall. Talargoch, with its crippling costs of mining and its steadily exhausted and limited vein, was unable to attract new investment or to sustain any revival in later years.

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CHAPTER 1 GEOLOGY AND MINERALISATION[1]

The ores of the north-east wales mining field occur largely in the middle and upper beds of the Carboniferous Limestone and the lower beds of the Cefn y Fedw Sandstones, or the Chert Beds in northern Flintshire. These ore-bearing beds outcrop over a large part of what was Flintshire and east Denbighshire, and dip eastwards below the Coal Measures of the North-East Wales Coalfield. The mines are grouped in three main areas (Fig.1): Prestatyn and Dyserth to Holywell; Holywell and Halkyn to Llanarmon; and the Minera district. The ores normally occur in the thin veins, but locally the presence of cavities in the limestone give rise to pipes or flats which provide larger ore bodies. The lodes occur in two main sets: i. veins, mainly east-west; ii. cross-courses, mainly north-south. The mineralisation in the veins and cross-courses is slightly different both in composition and age.

In the north of the mining field, these relationships change as the strike of the ore-bearing beds swings westwards. At Talargoch the situation is further complicated by the presence of numerous fault intersections at the north-east corner of Dyffryn Clwyd, including the Vale of Clwyd Fault and the Prestatyn Fault. The limestone reef knoll of Graig Fawr complicates the strike of the beds as they sweep around its base.

The Talargoch mine worked three main veins (Figs. 2,3): Panton's Vein on the north-west; Talargoch Vein in the centre; and South Joint to the north-east. All hade to the north-west and are roughly parallel in strike. The Talargoch Vein alone runs the whole length of the mine, about 1400 yards, and was the most productive vein. These veins are cut off in the north-east by a series of faults which bring unproductive shale and coal layers against the Black Limestone.

At the south end of the mine, a number of smaller strings of ore, generally at right-angles to the main veins, run up the slopes of Graig Fawr and Graig Bach. These were the earliest deposits to be worked. Several thin veins, up to a few centimetres wide, can be still seen outcropping on the bare rock of Graig Fawr. The largest of these ore veins was that known as the China Rake because of its silicious vein-stuff which had been used in potteries. Another similar vein, which weathers readily, is the White Sand Vein which joins the China Rake. Both these veins must have provided a ready source of ore easily available when the vein-stuff had weathered.

The Talargoch Vein varies in width between 0.3m and 9m, being narrowest in the Lower White Limestone where it is pinched for long distances. The dip of the vein varies between 1 in 2 and 1 in 7, but it is generally about 1 in 4. The lead and zinc ores are separated in the vein (Fig. 4), the blende being uppermost, and occur together with calcite, chert, and fragments of limestone. The relative proportions of ore-material and their grade vary according to the depth of the vein in relation to the limestone beds. In the Lower Limestones the ore is more regularly distributed but less rich than

that in the Middle Limestone. The blende of the latter averages 53%-54% zinc and that of the former 50%-51 %. Silver is the most important of the metals associated with the lead and zinc ores. In the most favourable areas the grades reached about 140z per ton of lead. Silver content was also higher in the Middle Limestones than the Lower and consequently in the 1880s when these beds were reached the ore raised was worth an extra £1 or more per ton. Due to the dip of the limestone beds these changes did not correspond with the depth of the workings, and the deep workings at the north-east end of the mine were mainly blende-producing. The greatest effect of local mineralisation on the day-to-day running of the mine was made by the large bodies of ore, generally associated with impermeable shale bands, found in the Middle Limestones. In the 1840s and 1850s ore bodies of 400-500 tons were discovered at the branching of small faults on the south side of the Talargoch Vein.

The greatest geological influence on the economics of the mine, particularly in its later years, was the expensive problem of drainage. The Carboniferous Limestones of north-east Wales have been compared to a box of building blocks tilted at a slight angle. Water poured in at the top finds its way by devious routes to the bottom. The Limestone acts as an aquifer storing large amounts of water in faults, bedding plane fissures, and in solution cavities. This led to enormous problems in draining the workings as the miners reached any depth. Furthermore, the concomitant lack of surface drainage meant that water for powering pumps was in short supply. This problem, and the nearness of the Flintshire/Denbighshire coalfield, meant that the area (unlike the Cardiganshire/West Montgomery orefield) saw the early introduction of steam power. At Talargoch the drainage problems were aggravated by the low-lying site of the main mine which made adit drainage at any great depth impossible: when production ceased, water was having to be raised over 300 yards to the adit level.

A further feature of the mine was the great thickness of drift deposits which cover the coastal plain. At Walker's Shaft the drift was 171ft. thick; and at another, unspecified shaft, 204ft. of the 284ft. recorded was gravel containing the bones of various glacial fauna. Because of the thickness of the drift, a large amount of sinking was needed to reach the vein in shafts; but the work was relatively easy, even if timber or brick linings had to be used. The gravel also contained a large amount of water which added to the drainage problem. One benefit derived from the drift was the large amount of ore it contained in the form of water-worn lumps which were mined by a maze of tunnels meandering through the drift.

Other mineralised veins in the vicinity of Talargoch have been worked on a small-scale or intermittently. A section of the Prestatyn Fault shows copper and haematite mineralisation where it crosses the back of Graig Fawr. The mineral extracted was a decomposed iron ore containing green lumps of copper carbonate and oxide. Some ore was as rich

as 16% copper, the average was about 6%. In later years the lode was worked by a 40yd. deep shaft but open works along the vein are probably very much earlier. The combination of minerals makes this the most likely location of the medieval and 17th century copper mining although pebbles of copper ore were reported in the gravel ore. A number of small lead veins outcrop at Carreg Heilyn to the south and in the vicinity of Dyserth waterfalls, where they have been worked by shafts and adits including Dyserth Shaft and Ash Tree Shaft.

1. Information for this chapter is based on the following.

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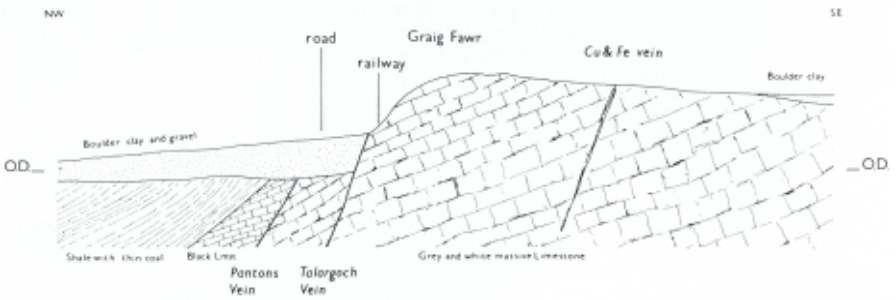

FIG.3
Diagrammatic geological section. (after Strahan)

PLATE I. The memorials of the Hughes family of Llewerllyd and Trecastell in Dyserth churchyard. The tombs are of an unusual type, restricted to north Wales, known as hooded tombs. Sadly, their maintenance has been neglected: the sandstone has weathered and one of the hoods lies broken on the ground.