REPORT

Peak District Mining Museum Matlock Bath, Derbyshire

This summer (1999) Peak District Mining Museum is 21 years old. Planned, constructed and operated by members of Peak District Mines Historical Society, it had taken a year for the first stage to be ready for opening and is still steadily developing. The project was initially sparked by the need to remove and then display the 1819 Wills Founder water-pressure pumping engine. This was half-buried in silt some 360 feet underground in the Winster mine, in a chamber which was normally flooded and likely to be lost for ever. Originally it was part of an attempt in the 1840s to sink below the toadstone, a volcanic basaltic lava, to the unknown and, thus, undoubtedly fabulously rich deposits below. This was not to be, but now the thirty feet high engine sits in a dry shaft right at the centre of the Museum.

Out of some twenty seven or so rocks and minerals which have been mined in the Peak, until iron and coal supplanted it, lead was for some 3500 years the most important. The main ore is galena which occurs in rakes (mineralised wrench faults), pipes (infilled or metasomatised stratiform deposits) and in widened joints known to "t'oad man" as scrins. A rich deposit of copper ore was mined at Ecton and nearby on the Derbyshire/Staffordshire border. Several minor minerals were often mined also, such as haematite and limonite, zinc blende and calamine and, mainly this century, the former waste or gangue minerals fluorite, barite and calcite have been worked on a considerable scale. Only one underground mine, Milldam at Hucklow, is still active for vein minerals, though another, at Middleton-by-Wirksworth, mines high grade limestone on a considerable scale.

For two centuries Derbyshire was the economic centre of the world lead industry. After the Dissolution of the Monastries in the 16th Century the availability of vast amounts of church roof-lead ruined the European lead industry and, out of the ashes, rose the Derbyshire industry. New smelting technologies made huge amounts of earlier waste-ore available from old hillocks: in the mid 17th century perhaps 40,000 people were dependent in the Peak on lead's prosperity. New skills in driving soughs or drainage tunnels in hard rock — including very early use of black-powder (i.e. gunpowder) — and then the development of steam power made huge quantities of lead ore available. About 1730 for example, Yatestoop mine in Winster probably had the World's greatest concentration of steam power, with three certainly and, possibly, four Newcomen engines installed (though the total power was probably hardly more than a family car can produce today). Fifty years later saw the beginning of a long decline which lasted until Mill Close Mine, Britain's largest ever lead mine, closed in 1939. Probably some two million tons of lead ore have been mined in total, with production now confined to by-product lead. The only lead now smelted in the Peak, however, comes from secondary sources, mainly batteries.

The oldest artefacts include a ceremonial lead axe from Middle Bronze Age times which was found at the hillfort on Mam Tor at Castleton and, about to come to the Museum, a bone tool from Ecton, recently radiocarbon dated at 3800-3600 years BP. The earliest major artefacts are a substantial number of lead ingots from the Roman period, though no certain mines have yet been located. About thirty ingots or pigs have been found on land, inscribed with "LVT" the mark for Lutudarum, reasonably established as the settlement now under Carsington Water near Wirksworth. But over 200 more ingots, some at least from Derbyshire, have been found in a Roman wreck off Ploumenac in Normandy — one marked ICENI, the tribe whose western border was probably the Trent. This river has always, with the Idle and Don, been an outlet for Derbyshire lead. Visitors to Nottingham's Brewery Yard can see a large pig of lead recovered from gravels near Colwick, marked with the monogram LW. The writer sees this as a particularly good omen! The Museum has about half a dozen lead ingots in its collection.

Until its poisonous properties outweighed its utility, *Lead the Precious Metal* (the title of a book published as recently as 1924*) was the equivalent of modern plastic. In a large house, such as Bess of Hardwick's late 16th century Hall (built with money earned by three deceased husbands from lead, iron, coal and land) the metal and its compounds were used lavishly. Her stone initials on the roof line were anchored in lead and the roof, gutters and downpipes were of the metal. The windows "Hardwick Hall, all glass no wall" were, of course fitted in lead cames. Water was kept in cisterns of lead, delivered in pipes of lead and sprayed in fountains from ornamental (lead) figures. Inside the house the tables and sinks were sometimes lead covered, and lead with tin was used as pewter or with tin and silver as a solder. Expensive tea and other spices arrived in lead-lined boxes and tobacco was traditionally kept in its lead jar. White, orange or red lead (oxycarbonate and oxides of lead respectively) would have been used in paints or as a base of other colours. Red lead was a major component of lead crystal glass too. White lead had even greater utility — perhaps as the glaze for Wedgwood's creamy Devonshire Ware, or for a perfect white face foundation powder, with linseed oil to waterproof the canvas roof of carriages, for enamelled trinkets, even as a poultice for a bruised thumbnail. It might also have been used for whitening bread (a well-located cornmill was said to be next to either a chalk pit or a paupers' grave yard and a white lead works!). Other salts such as the soluble acetate "sugar of lead" were useful for sweetening wine and for treating unfortunate ailments such as syphylis. And, for the sporting

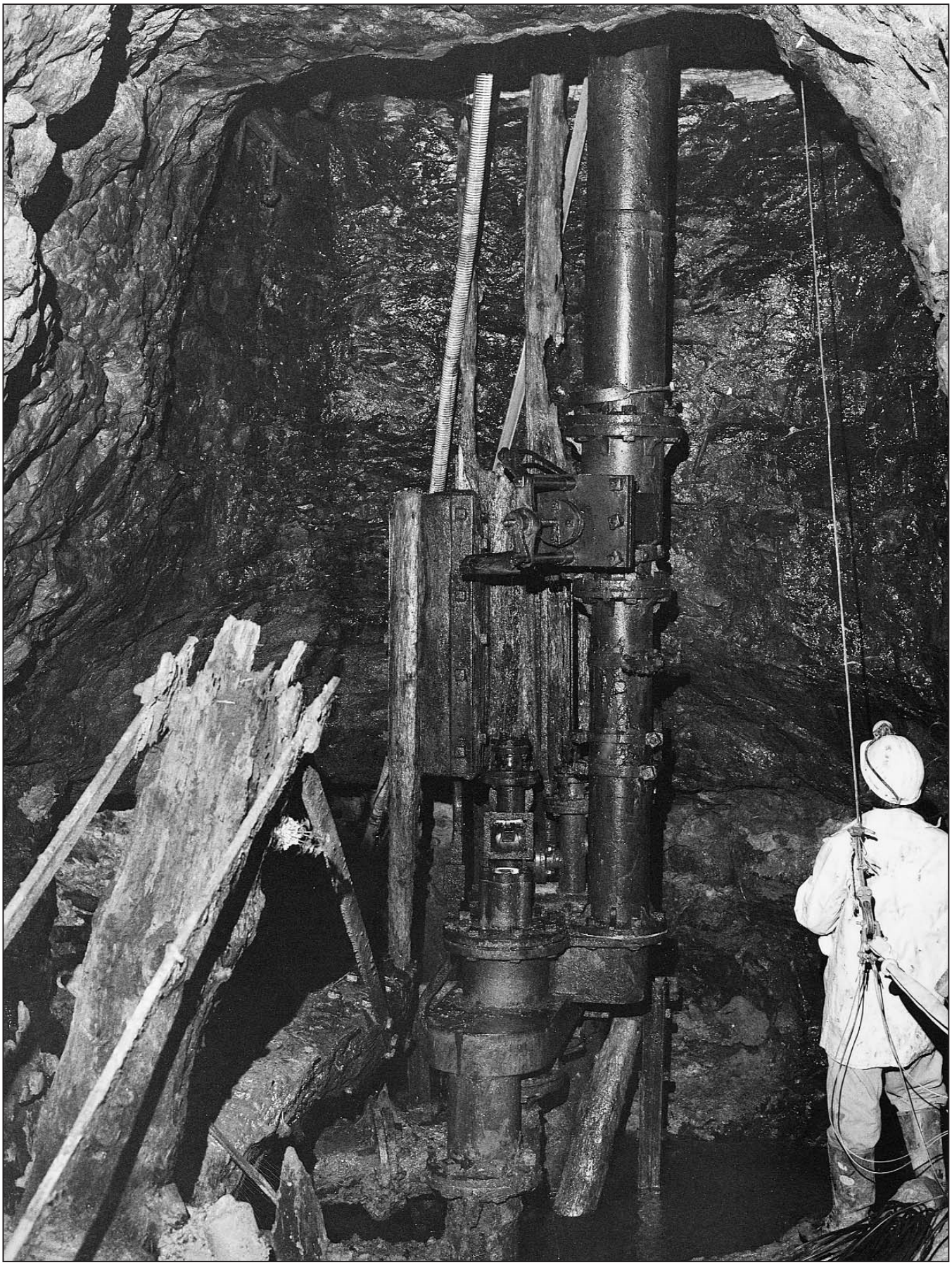

Fig. 1. The Wills Founder pumping engine at its original site deep in the Winster mind. The mine chamber is normally flooded, and the pumping engine is now in the Museum at Matlock.

Fig. 2. Pushing an ore tub through the Temple Mine at Matlock; this section of tunnel was driven in the dolomitised Matlock Limestone.

weekend, or for use of the regiment in times of war, lead was irreplaceable for shot and bullets. And at the end of a lead-shortened life, a lead-lined coffin.

The effect on the landscape was great too. The rakes and scrins still dominate wide areas of landscape in and alongside the Derwent Valley between Wirksworth and Castleton — there are especially good examples on High Tor at Matlock Bath. The mining villages and towns, mostly in decline until recent commuting habits reversed the trend, form some of the most unspoiled in the Peak: Wirksworth where the lead mining Barmoot Court still sits; Bonsall; Winster (Derbyshire's third largest settlement at its peak around 1750); Youlgreave (from *Auldgrove* or Old Mine); Ashford; Eyam and Bradwell. On the streams and rivers are the remains of leats and weirs of the smelting mills, the main user of water power until the usurper, cotton, took advantage of the decline. And in the soil, levels of lead contamination on old mine and smelting sites are high enough nowadays almost to be thought of as ore.

So the museum is about lead and lead mineral deposits, about the countryside around, about people and their houses and how they won the metal from the earth. At present we are developing our displays to tell something of the history of geology and how mineralisation occurs, including a recently installed display of one of the country's finest collections of minerals, that of Professor Howie of Deere, Howie and Zussman book-fame. Professor Howie liked our displays and felt a small museum would cherish his collection more than a larger: there are now about 200 of the most mouth-watering items on display, including the eponymous Howieite. Over the road, visits can be made to our lead and fluorite mine, with one of the best exposures of basaltic lava (toadstone) visible — the site of the only authenticated gold discovery in the County. The Museum is open every day (Telephone 01629 584322). For visiting groups the Society's field centre at Magpie Mine, Sheldon near Bakewell, has basic hostel accommodation.

* Harn, Orlando, C. 1924. *Lead the Precious Metal*. Jonathan Cape.

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