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THE MINERAL STATISTICS AND DERBYSHIRE MINING

by Roger Burt and Michael Atkinson

The regular collection and publication of statistics of British mineral production began in 1845 and has continued, on a changing basis, until the present day. Using these returns, this article looks at the character and structure of Derbyshire lead mining during the years 1845 to 1881 and its role in the national industry.

The Mineral Statistics

The first regular collection and publication of annual lead production figures was undertaken by Robert Hunt, who was appointed by the Government as The Keeper of Mining Records in 1845. He occupied that post for the next 37 years assembling material voluntarily supplied by mine owners, engineers and agents, smelters, local mineral offices (such as the Stannary Courts) and other informed sources. The initial figures for lead and ore production, for the years 1845-7 were published in *Memoirs of the Geological Survey of Great Britain* Vol. II, Pt. 2; the figures for 1848-52 were published in *Records of the School of Mines*, Vol. I, Pt. 4; and from 1853 to 1881 they appeared annually in the *Mineral Statistics of the United Kingdom*. A sharp change in the method of presenting the statistics after 1881 gives us our finishing date.

The returns provide us with a wide range of data consisting principally of the output of all minerals produced, their market value and the amount and value of metal obtained from the ore. This data is usually presented by mine and classified on a county basis. Also listed in the *Mineral Statistics* are the details of imports and exports of ore and metal, differentiating between the ports engaged in the trade and the sources and destinations abroad. Appended to each return from 1859 is a list of mines at work, with their location, owners, managers and agents.

There are several major problems involved in using these returns to study Derbyshire mining. Firstly, unlike most other areas where returns were made by mine from the outset, the Derbyshire figures are shown only in aggregate form until 1872 — an isolated year of itemised returns — and it was not until 1876 that the detailed figures began to be published on aregular basis. The main reason for this appears to have been principally one of publishing convenience and economy. Whilst the production of most other counties could be recorded by entries for 20 or 30 sizable producers, in Derbyshire the very large number of small producers required several pages of what the publishers apparently regarded as pointless detail. Secondly, there is a problem of inconsistent production series. For the period down to 1876 the Mining Record Office used returns made by the smelters to prepare their summary list of Derbyshire production but thereafter switched to the mine returns, which they clearly now regarded as more reliable. For the remaining years to 1881 both the smelters' and the mine returns are given in the annual reports and in nearly every case the smelters returns show a lower level of ore and lead production than the mines'. In 1878, for example, the Derbyshire smelters recorded 2,876 tons of ore and 1,079 tons of lead less than the mines recorded representing a discrepancy of more than 25%! It could be that the mines were exaggerating their returns though there seems to be no valid reason for this. Equally the smelters could have been increasing their stocks or a rising percentage of Derbyshire production might have been sent outside of the district for smelting. Whatever the explanation there is the serious implication that the earlier aggregate returns for the county, based on the smelters returns alone, underestimate the real level of production. If this was the case we can only hope that the underrecording was not too large since as far as we know there is no reliable way of checking it. Finally we might mention several miscellaneous problems, such as simple arithmetic errors occasionally made in the returns by their nineteenth century compilers and the problem of interpreting the metal content of the 'linnets' or 'offal' ores which periodically appear in the lists. These appear to have been aggregated with other ores in the returns and may partly account for the relatively low metallic yields of the Derbyshire ores compared with other districts. In our analysis of Derbyshire's role within the national industry and of the relative importance of different categories of mines within the county, we have accordingly used the metallic lead rather than the ore returns.

The Role of Derbyshire in the Lead Trade

The most significant characteristic of the British lead trade during this period was a rapid increase in the level of retained imports of foreign lead and, particularly after the mid-1870s, a decline of domestic production in the face of declining prices dictated by low-cost foreign producers. The following table illustrates this decline in the importance of home production and the increasing dependence on imports:

Table 1

Year	*Domestic Production*	*Imports*		*Re-exports*	*Exports*	*Retained Lead for Domestic Consumption*
		Ore	Lead			
1846	50,161	–	7,900	4,700	7,400	45,961
1856	73,129	–	10,300	–	23,100	60,329
1866	67,391	10,200	36,900	–	27,400	84,541*
1876	58,668	12,500	80,600	6,800	35,900	105,943*
1881	48,587	15,200	93,600	5,400	43,000	105,187*

* Totals calculated using an assumed 75% metal content of imported ore.

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In 1846 Britain was still an important net exporter, sending abroad more than 8% of her output and domestic price levels were still principally determined by the level of domestic production costs. By 1881, however, Britain had become a net importer relying on foreign sources for more than 53% of her needs.

Table 2. Lead production in the U.K. 1845-81, ranked by metal produced.

Area	*Ore*	*%UK*	*% metal in ore*	*lead*	*%UK*	*Av. annual prod. of ore*
Durham & Northumberland	763,629	23.8	75.2	574,096	24.7	20,639
Cardigan & Montgomery	393,775	12.3	74.1	291,915	12.6	10,643
Denbigh & Flint	347,964	10.9	75.6	262,974	11.3	9,404
Yorkshire	288,158	9.0	70.1	201,919	8.7	7,788
Derbyshire	244,541	7.6	68.9	168,477	7.3	6,609
Cornwall	249,567	7.8	67.4	168,260	7.2	6,745
Cumberland	222,152	6.9	71.9	159,674	6.9	6,004
Shropshire	182,058	5.7	76.2	138,820	6.0	4,920
Isle of Man	125,488	3.9	72.7	91,247	3.9	3,392
Scotland	96,735	3.0	71.3	68,983	3.0	2,614
Ireland	78,456	2.4	67.6	53,013	2.3	2,120
Devon	62,011	1.9	63.7	39,518	1.7	1,676
Westmoreland	54,040	1.7	71.5	38,637	1.7	1,461
Caemarthen	30,921	1.0	73.4	22,706	1.0	836
Caernarvon	19,309	0.6	75.4	14,552	0.6	522
Somerset	25,468	0.8	45.1	11,482	0.5	688
Pembrokeshire	9,439	0.3	69.0	6,511	0.3	255
Merionethshire	3,801	0.1	68.2	2,594	0.1	103
Staffordshire	2,604	0.1	73.6	1,916	0.1	70
Radnorshire	805	0.0	72.9	587	0.0	22
Glamorgan	235	0.0	73.2	172	0.0	6
Breconshire	135	0.0	72.6	98	0.0	4
Cheshire	274	0.0	35.8	98	0.0	7
		99.8			99.8	
TOTAL	3,202,370		72.4	2,320,185		86,551

It was now foreign rather than domestic mining costs which determined the price levels and a rapidly increasing number of British lead mining companies were forced into liquidation because they were unable to compete. This trend continued, with brief interruptions, through the late nineteenth and early twentieth centuries and had virtually eliminated British producers by the late 1930s.

The changing role of Derbyshire in the supply of the domestic market must be assessed against this background. As Fig. 1 shows, after a sharp decline in the mid-1840s, when Derbyshire production fell from 11.38% to 6.31% of national lead output, the county recovered rapidly, doubling its output during the next ten years to reach a mid-century output of over 6,000 tons of lead in the late 1850s; around 9% of national output. Thereafter production began to fall off, rapidly at first and then falteringly until it reached a trough in the mid-1870s. With few remaining rich reserves to draw on in the face of falling prices this decline was faster than the national average and in 1875 the county produced only 3.64% of the national total. Derbyshire shared in the brief recovery of the late 1870s but thereafter the downward course was rapidly resumed and in 1881 the county contributed no more than 2.73% of total domestic production.

An impression of Derbyshire's performance over the period as a whole is given in Table 2. As can be seen, the north Pennine field in Durham and Northumberland was easily the largest producer, frequently achieving an annual output twice as large as that of its nearest competitor and experiencing annual fluctuations which were greater than the total production of the Derbyshire field. After being probably the country's major supplier of lead when at its peak in the third quarter of the eighteenth century, Derbyshire now lay fifth in the production league. Over the period as a whole it was marginally ahead of the old and declining Cumberland field and noticeably in advance of the new small but productive Shropshire district. It is significant that the percentage metal content of Derbyshire ore was considerably lower than the national average. This could have resulted from the inferior ore dressing techniques used at many of the smaller mines but was more likely because of the higher percentage of total output derived from waste and as a secondary product from barytes and fluorspar mining. This latter suggestion would also help explain the similarly low percentage yields of some other areas, particularly the small and declining districts of Devon, Somerset, Cheshire, and Cornwall.

Partly because of its long mining history and the exhaustion of most of the major lodes and partly because of the local customary laws and traditions of the Peak which favoured small ventures, Derbyshire mining was distinguished from that of other areas by a great multitude of very small producers. Whereas other areas, including the great north Pennine and central Wales fields, counted their active mines in tens, those in Derbyshire were counted in hundreds. As has been suggested, it was not until 1876 that the Derbyshire returns were separately shown by mine in the official Mineral Statistics, thirty years after most

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other districts. However, when the returns do appear, they make interesting reading. Notwithstanding the great multiplicity of working mines, a very large percentage of the total output was produced by a few major producers:

Table 3. Production of mines with an annual output of more than 50 tons

Mine	*1876*	*1877*	*1878*	*1879*	*1880*	*1881*
Backdale	55.9		52.0			
Bage		161.0	138.0	172.0	244.0	545.0
Black Sheep	64.8					
Brights Friendly		211.0	75.0			
Broadlow		116.0				
Cabins	53.0	59.0				
Eyam	219.0	263.6	198.4	334.2	122.8	265.5
Highrake					62.0	
Little Pasture		69.0				
Mill Close		1383.0	3346.0	2605.0	2516.0	1433.0
Mill Dam	452.3	1290.9	1299.5	222.6	119.1	73.0
Moorhigh	51.0			55.9		
New Edge				67.7		
Peak Forest			520.0			
Pindale	214.0	159.2				
Seedlow					59.5	
Silence				151.6	252.1	
Sparrow Pit				101.3		
Wakebridge	360.0	423.0	582.0	514.0	496.0	492.0
Wheels Rake						274.2
White Coe		78.2		187.4	74.1	
Total	1470.0	4213.9	6210.4	4411.7	3945.6	3082.7
Total Derbyshire Production	2264.0	5066.0	6995.0	5439.0	4820.0	3834.0
% of total prod. from mines of more than 50 tons	64.9	83.2	88.8	81.1	81.8	80.4

Thus, for example, in 1878 eight mines producing more than 50 tons accounted for 89% of total Derbyshire production. In the same year there were at work over 200 mines producing less than 30 tons of ore, including 130 recorded as producing less than 5 tons. The 15 mines producing 30 tons or more accounted for no less than 93% of total Derbyshire production.

In conclusion, it is clear that by the second half of the nineteenth century Derbyshire could no longer be regarded as a major producer of lead. As we well know, this situation was to be reversed in the twentieth century when Derbyshire, principally in the form of the great Mill Close mine, again became a producer of around half of Britain's domestic lead output. To note this, however, together with our findings in this report, is to approach the conclusion that any meaningful history of Derbyshire mining after the mid-nineteenth century is essentially little more than a history of Mill Close!

M.S. Received 30th October 1975

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Editor's Note — Appeal for Information

Dr. Burt has written to say that he has a major research project which is basically an attempt to compile data on production of ores by quantity and by value of all metalliferous minerals; on prices of ore and of smelted metal; on imports and exports of both ore and metal; on company organization and investment and on employment in the mining and related industries. All the data is to be "banked" in a computer in an attempt to analyse trends and factors. Many readers are known to have records of production etc. of scattered mines which are unpublished and they are urged to let Dr. Burt have details (c/o Dept. of Economic History, The University, Exeter. EX4 4RJ.)

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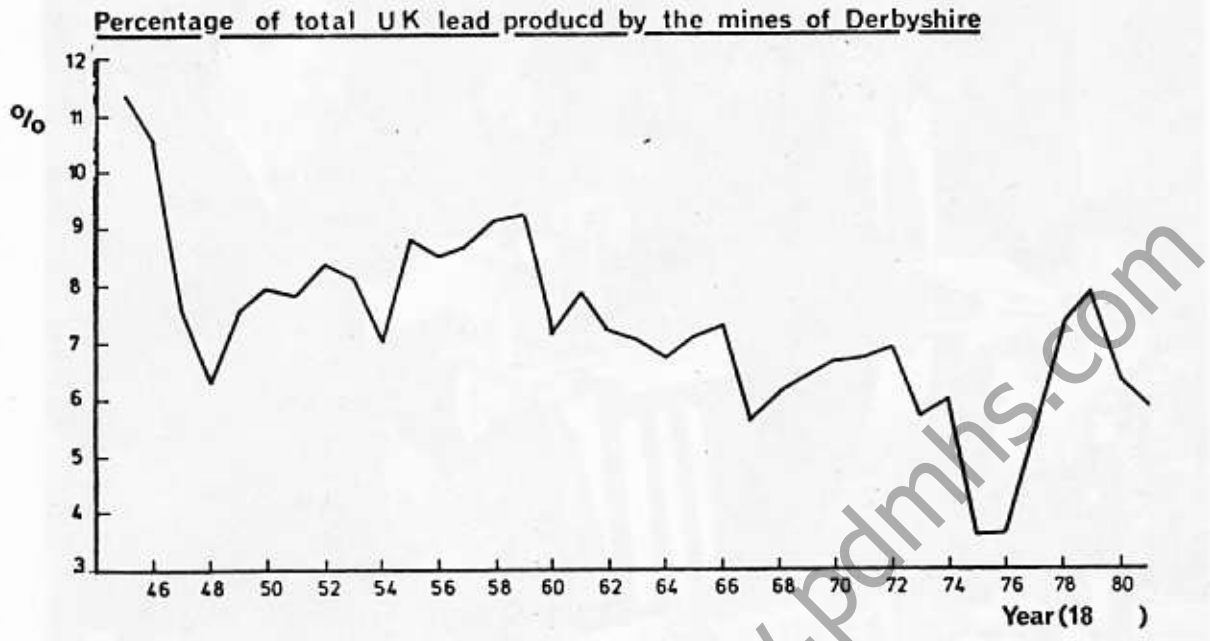

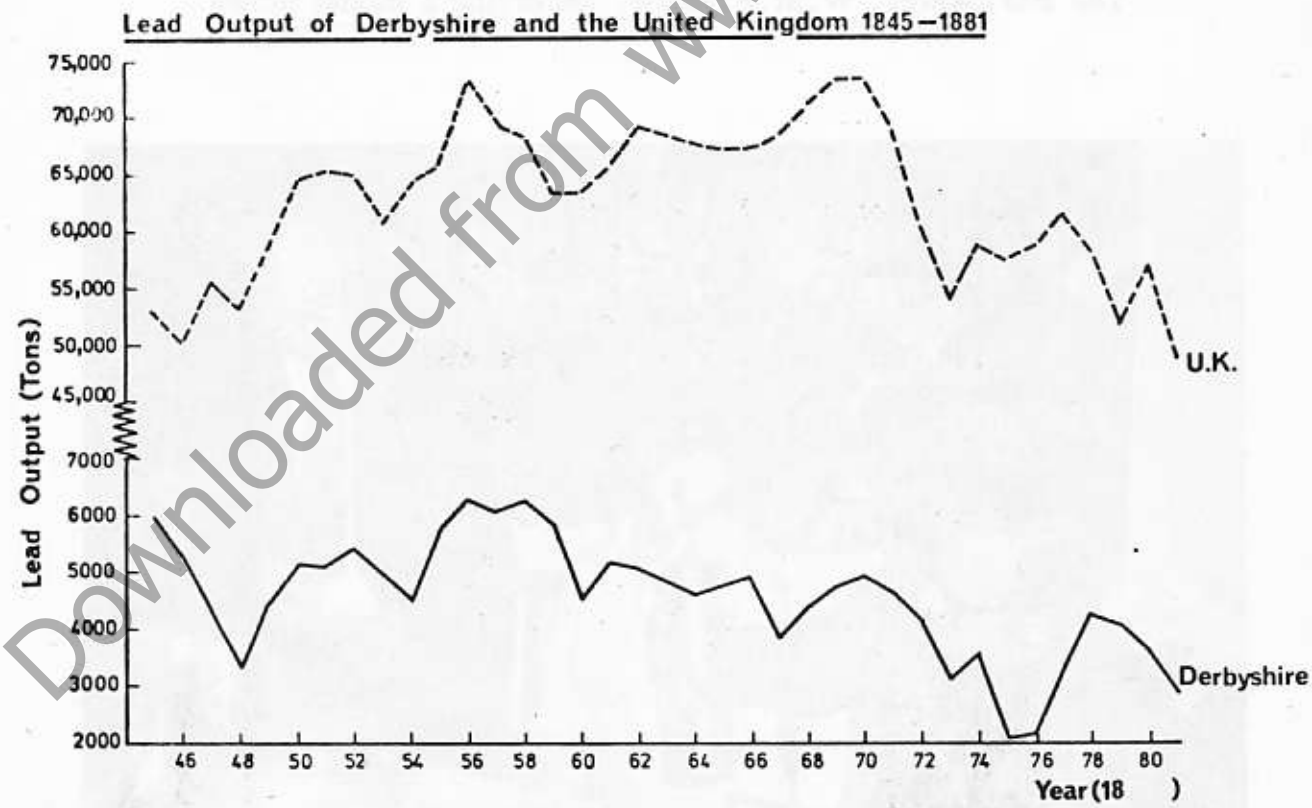

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