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**LEAD MINES OF WEARDALE AND TEESDALE
REPORT BY INSPECTORS OF SALMON FISHERIES 1867**

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The Inspectors of Salmon Fisheries have recently visited the Lead Mines of Weardale and Teesdale, with a view of devising some method of getting rid of the "hush" from the lead mines, which so seriously affects the fish breeding and angling capabilities of the rivers in the North of England:-

The CORNISH MINE, on Bollyhope Pasture, is leased by the London Lead Company from the Dean and Chapter of Durham. The inspectors and party were met on their arrival by Mr. R.W. Bainbridge, the manager [34] for the company, and his son, Mr. Henry Bainbridge, who led the way to the ore-crushing mills, after which they took their visitors over the different parts of the establishment. The whole of the work in this mine is done by machinery, attended to by boys, who are under the superintendence of one man. The part of the establishment which the inspectors had come to see was the tanks provided for the water after it leaves the metal, which is technically known as the "hush." For the reception of this water three large tanks are provided, each being fitted with a number of longitudinal beams, which divide them into compartments, and forward the process of filtering the impurities of the lead from the water. Besides these tanks, through which the water passes in succession, there are two large pits, which were provided about four years ago at the suggestion of a commission on fisheries which was then sitting at Darlington.

The BURTREE PASTURE MINE is one of the oldest and richest in the North of England. It is the property of Mr. Beaumont, whose agent Mr. Thomas Sopwith, formed one of the party, and showed the inspectors over the establishment. The operation of washing the lead is the same as that pursued at the Cornish Mine, with the sole difference that whereas at the former the whole process is performed by machinery, here it is done by hand labour, boys preponderating over the men in the work. Mr. T. Sopwith stated that Mr. Beaumont wished to do all in his power to meet the views of the inspectors, and that three immense tanks were already in course of construction for the better purification of the "hush." He also pointed out that the man and boys on the establishment were perfectly healthy in every respect, and appeared as stalwart as the other inhabitants of the dale.

The WIREGILL rich lead mines, which discharge their "hush" into a brook that meets the Tees a little below Middleton, are leased by the London Lead Company, whose manager, Mr. R.W. Bainbridge, with his sons, Messrs. Henry and Charles Bainbridge, had made arrangements to accompany the inspectors and party over the principal mines of the company in Teesdale. The party having been joined by Mr. Wm. Lee, overman of the underground

department of the Wiregill Mine, Mr. Jacob Redshaw, washing agent of the company, and Mr. Joseph Pattinson, mining agent in the underground department, proceeded to inspect the crushing-mill, and afterwards the machinery performing the operations of "plunging," "hodging" and washing. An adjournment was then made to the "settling pits," which extract the lead from the water after it has done its work in the other departments of the above-ground operations of the mine. At this mine, which is one of the richest in the possession of the company, there are three sets of settling pits, through which the water, or "hush," passes in succession, and as a proof that they do their work efficiently, Mr. Bainbridge informed the inspectors that from experiments made it was found that the "hush" in [35] the first series of pits possessed 5 per cent. of lead, in the second only 2 per cent. and in the last this was reduced to a small proportion of $\frac{1}{4}$ per cent.

The COLDBERRY MINES are situated on a shoulder of the Pikelaw ridge, and derive their water supply, an indispensable adjunct to lead mining, from reservoirs formed near the top of the fell. The operations are carried on both by hand labour and by machinery, at several parts of the hill, the water descending from the reservoirs visiting the various places Where the "plunging," "hodging," and washing processes were being performed, and passing through various sets of "settling pits," until it was finally discharged into an immense reservoir close to the burn, into which the "hush" is turned at stated periods by means of a dam, after being allowed ample time to settle. The proportion of lead found in this tank has about the same proportion - $\frac{1}{4}$ per cent. - as at the Wiregill Colliery pits. At both of these places the inspectors recommended the erection of another series of "settling pits" as likely to further purify the "hush" before it was finally discharged into the neighbouring burns. The party afterwards ascended to the mouth of the mine, inspecting the various modes of separating the mineral on their route. At the entrance to the mine is the crushing machine, through which the blocks of ore are passed before the washing operation is gone through. The process is performed by a machine which was first invented in America, for the purpose of crushing stones for road making, and known as Blake's machine. A similar apparatus is in operation at the Wiregill Mines. The work above ground at both of these places is done by lads, who, with the miners, reside at Middleton, and have, consequently, in some instances, four or five miles to walk over mountain roads to their work.

The NEWBIGGEN MINE is the property of Messrs. Wilson and Crawhall. The work is performed by hand labour, and is not so extensive as the operations at Coldberry, on the opposite face of the ridge. The ore is obtained from the lode by means of a burn, which, descending as it does from a higher altitude, is dammed up until a sufficient weight of water is obtained, and is then turned loose down the sides of the hill, when it lays bare the ore beneath the surface. The separating process is performed by "cradling," after leaving which the "hush" is transferred into a series of "settling pits," from which it passes to the Tees at the foot of the fall near the village of Newbiggen. Before

leaving this point, Mr. Josh. Dodds handed round a letter which he had received from the secretary of the Severn Board of Conservators, which enclosed plans showing a superior mode of filtering, to be obtained by means of catch-pits provided with gravel and charcoal.

The PIKELAW MINE, which is also known in the neighbourhood as [36] Collinson's Harsh, from its owner, is situated in a ravine (formed by "washing") near the top of Pikelaw. This was the last place to be visited after leaving the Newbiggen. The work is done by hand labour, consists of laying the vein bare by flushing with water, and then the ore by hand picking, and afterwards submitting it to the of washing, as in other places; the "hush" after leaving the pits," running down the side of the fell to the Tees, as in case of its neighbour at Newbiggen.

No particular recommendations were publicly made at either of these mines, beyond the exercise of the utmost care in providing "settling pits," and keeping them in a thoroughly efficient state.

The Inspectors afterwards dined together, when Mr. Walpole said they had been met in the best spirit by the agents of the London Lead Company; and with regard to the task they had before them – the purification of the river - he was of opinion that much might yet be done by filtration, and recommended that the water from the mines should be forced upwards through the filtering-beds, and thus the whole of the deleterious substances would be left behind. Mr. Bainbridge had assured him that everything possible should be done by the Lead Company, and there was no doubt that both as a fishing river, and as a stream affording a supply of drinking water to a large community, the Tees might be placed in the first rank. Mr. Henry Pease, alluding to the Lead Company, said it was an association which had conferred immense benefit upon the population of that district, and had striven energetically and successfully to promote the physical and moral welfare of its workpeople. Col. Scurfield proposed the health of Mr. Bainbridge, and thanked him in the name of the assembled party for the very friendly reception he had given them, and the anxiety he had shown that they should become perfectly acquainted with the scientific processes of which he was the manager. Mr. Bainbridge, in an able speech, expressed the gratification he felt in meeting them. He referred to the improvements which the Lead Company had carried out in the Dale, and said they might rest assured that all that could be done by the company should be performed in preserving the purity of the streams. They had spared no effort in introducing modern appliances, and they were still ready to adopt every beneficial suggestion that might be submitted to them.

The Inspectors, who were accompanied by Mr. William Henderson, Mr. Ground and Mr. Caldcleugh (Secretary to the association), drove to Coxhoe and Kelloe, visiting the coal mines from which the poisonous water is pumped, by which the Croxdale Beck and river is so dreadfully polluted.

They expressed great surprise that no attempt had been made to neutralise the poisonous qualities of this water, in which they declared it impossible that either animal or vegetable life [37] could exist.

Submitted by Justin Brooke, Harrow-on-the-Hill, who remarks – Note the interesting alternative use of the word “hush”.

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