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LEAD MINERS TOOLS AND EQUIPMENT ILLUSTRATED FROM EXAMPLES IN THE BACKHOUSE COLLECTION OF PHOTOGRAPHS, CENTRAL LIBRARY, LEEDS.

Robert T. Clough, A.R.I.B.A., F.S.A. (Scot.)

In the Central Library, Leeds, are a number of interesting books of old mining records which were collected by the late James Backhouse, formerly of York.

These records were collected mainly during the first decade of this century when James Backhouse and his companion William Herdman, F.G.S., of Scordale, near Appleby, were making intensive weekend visits to the scenes of most of the northern lead mining ventures. Backhouse did most of his travelling by train and bicycle, staying overnight at country inns and carefully noting his conversations with old miners and recording any other hearsay which he might have picked up during the day.

The records contain many informative letters relating to lead mining matters; but the information should be applied with some caution as Backhouse, although he sought reliable sources, naturally quoted his information as it had been obtained. He was later to be involved in several lead mining ventures himself and when the Victoria County History of Yorkshire was first published in 1912, it was James Backhouse who was asked to compile the section dealing with the more recent lead mining in the county.

Many of the very rare and interesting bygones of the industry illustrated in this article, would never have been saved if it had not been for the enthusiasm of William Herdman, and his generosity in handing a great number of the items to his old friend Backhouse, who then carefully photographed them for his personal records. These records have now been rebound and comprise some five large quarto volumes, (Ref. MSQ., 622-344, B12Y).

The author has examined the above records and made tracings of all of the items collected which are illustrated by photographs.

The descriptions with places of origin of all of the items illustrated in the old photographs contained in the Backhouse Papers are now illustrated on plates 1 – 4, following:

Abbreviations,
B. – Backhouse (James)
Y.Phil.S.Y. – Yorkshire Philosophical Society Museum, York.
Bruff, (Trans. Y.D.S.) – Bruff, H.J.L. "A Glossary of Mining Terms in Common use among miners of Greenhow Hill, in Yorkshire" (In Trans. Yorkshire Dialect Society, Pt.XXIV, Vol.IV, pp.23-55, 1923)

Plate One

1. Old iron hatchet, used with a short handle, which was found more convenient for use in working confined places. (Given to B. by W. Longthorn, 1905. Y.Phil.S.Y.)

2. "Old axe head used in the lead mines by Mr T. Hall and lent by him, (to B.). "R.H." on the head refers to maker Robert Harker of West Witton, who made it in 1852." (B. "Wensleydale" 54.) Mr. T. Hall: "A Derbyshire Man, now considerably over 70 years old. Came to Yorkshire in January 1851 and worked first at Keld Heads Mine, secondly at Braithwaite Mine, (both in Wensleydale) which at that time belonged to Colonel Wood). (B., April 1905, "Wensleydale" 11).

3. Old iron hatchet. "originally much wider in the blade and formerly in the possession of the late Mr. Thos. Beadle of Lunehead Mines; used by him in those mines first; subsequently at his own house to which he retired at Middleton in Teesdale. Pres. to J.B. by Mr. W. Herdman, F.G.S., Scordale (Scordale Mining Company, West- [29] -morland and a very old friend of James Backhouse). The blade would originally be much broader than it is now, probably two inches" (B., "Lunedale", 9)

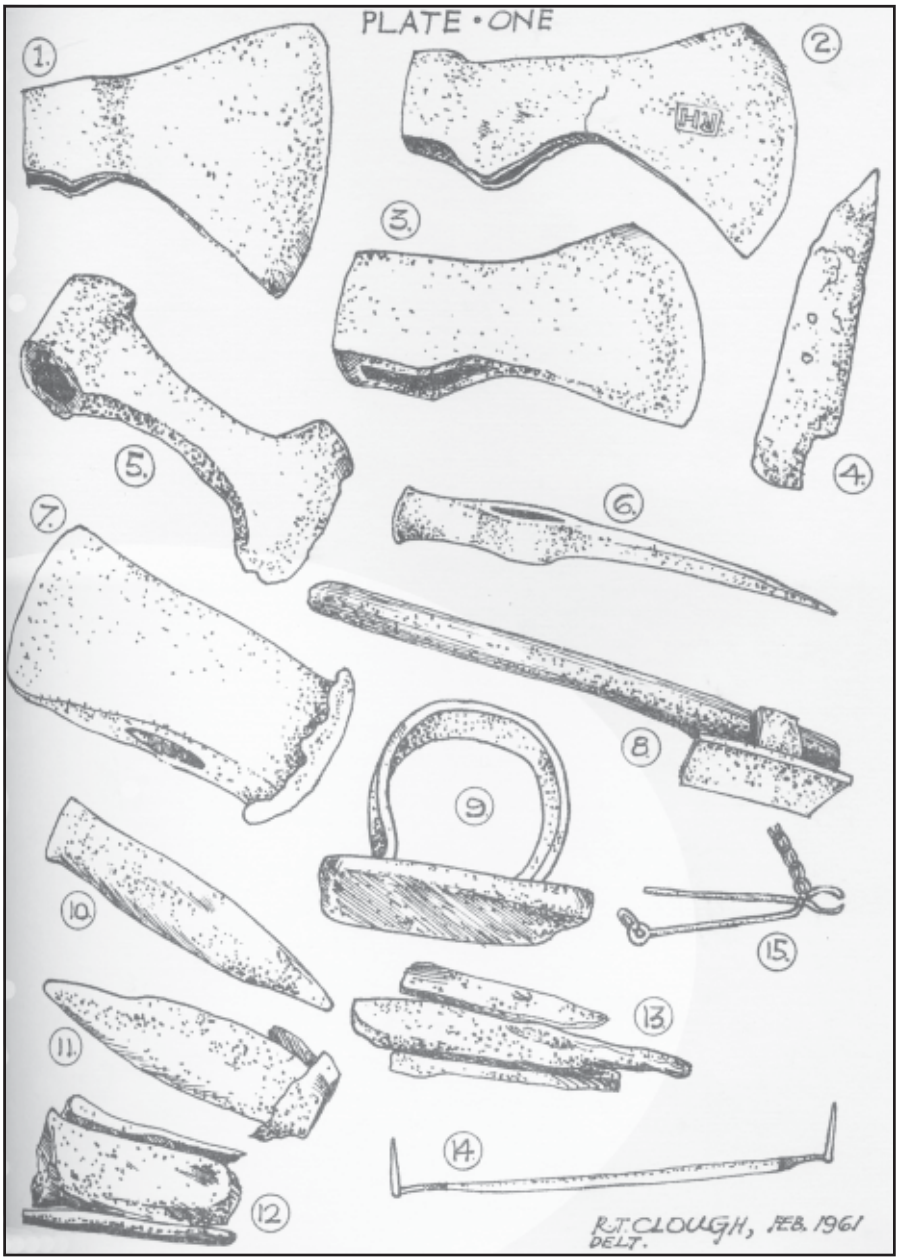
4. "Portion of a pick-head found at Lunehead Mines by T. Tingley, 1904, very ancient"". (B., "Lunedale", 10)

5. Old iron hatchet. Found in the Swaledale Mines, in the possession of S. Wells, (?). (B., "Swaledale", 40)

Note on the miner's axe The miner's axe was in the Greenhow·Hill area always known as a hatchet. According to Bruff it had a flat face adjacent to the cutting edge; this edge curved back towards the shaft hole. The hatchet had a cutting edge on one face only. The handle curved away from the outer face; this enabled the miner to get more closely to his work with the cutting edge. The cutting edge was always broad and crescent shaped. Hatchets could either be right or left-handed (gallac); the latter being very rare indeed." (Bruff, Trans.Y.D.S., hatchet, 36)

6. "Old 'powley pick', a type of hammer pick which has passed out of use in Yorkshire Lead Mines for many years." Found by J.B. at old Cockhill Mines. Length, 14 inches. (B. "Nidderdale", 44)

Poley hack or poley pick: "This is a very old fashioned tool and never used nowadays. It was shaped like a prospector's pick, having a hammerhead on one side and a pick point on the other. They were quite light with a short handle. Poley hacks had a large oblong shaft hole. This, however, is always the case with old mining tools, as good shaft-wood was not usually to be



got, and to get sufficient resistance and strength the shafts were made heavy at the point where they shafted." (Bruff, op. cit., 44)

Hammer Head. Found in the Scordale Mines, by W. Herdman, 1904. (B., "General", 62)

Bucker: "from Greenhow Hill Mines, now in York Museum. Heavy metal head and wooden handle, [30] about 18 inches long, used by boys for crushing lumps of ore on a special flag-stone for the purpose, in the washing mill. Length of head, 6 inches. (B., "Nidderdale", 48)

9. Bucker head. No details given. (B., "Lunedale", l2a)

Bucker or Boocker: "This is a kind of hammer with a broad and flat face, wherewith the ore or bowse is crushed small into a reasonable size on the 'knockstone'. The foregoing operation is called to 'bucker' or 'boocker'". (Bruff, op. cit., 26)

10."Ancient iron Wedge of a rare type, found by J.B. at the 'Close House' Mines, (Lunedale), Sept., 1904." Length, 5 inches. (B., "Lunedale", 10)

11."O1d iron wedge of a type no longer used, Lunehead Mine. Pres. to Y.Phil.S.Y. by Mr. W. Herdman." Length, 3 inches. (B., "Lunedale", 14)

12.A set of "stooks and feathers from Lunedale mine," 1904. Length 2½ inches. (B., "Lunedale", 15)

13."Stooks and Feathers as used in lead mines to wedge out the rock before explosives were used. It is probable that after this period lime was used (suddenly slaked)" – W. Herdman. Length 4 inches. (B., "Lunedale", 16). Compare with "Plugs and Feathers" – See Clough, R.T. *Lead Smelting Mills of the Yorkshire Dales*, Keighley, 1961, p.18, plate 7, Plug and Feather Drilling, Fremington Chert Mine, Swaledale.

14."Old 'scraper' for raking over small ore on a 'grating'. The tool had wooden handles on the upturned spikes. Greenhow Hill mines. Pres. by W. Longthorn now in Y.Phil.S.Y. Width, 16 inches. (B., "Nidderdale", 49)

15.Kibble Tongs. "Stoney Grooves Mines, (Greenhow Hill area) at shaft head there is a chain hanging [31] to which is a long pair of pincers, hung by a loop. These were used to tip up the loaded kibbles. The hook at the bottom of the chain passing through an eye in the tool just below the jaws, gives a most powerful leverage. The jaws catch hold of the loop at the kibble bottom." Length, 2 ft 6 ins., (B., "Nidderdale", 12)

Plate Two.

16."Old Hand winder". "In working at Blayshaw Gill they recently holed into an old shaft where they discovered an old hand winder. Fortunately this was preserved. (B. Ramsgill, Sept., 1904). A – A, oak roller. B – B, iron

spindle, diam. 4½ inches. The overall length of the oak roller and iron spindles was 3 ft 6 ins. (B., "Nidderdale", 21)

"Jack-Roll." (Bruff): "Windlass with wooden roll and either iron or wooden crank handles. The
two sides which are called 'stosses' or 'stowblades' are morticed into the two sole trees at the bottom, and at the top are connected with a piece of timber called the 'spin'le'." (Bruff, op. cit., 38)

17 & 18. Wooden Shovels. "Tools in the possession of Mr. John Metcalfe of Pateley Bridge." These two shovels are amongst several items on an old card mounted photograph, by W. Davey of Harrogate. (B., "Nidderdale" , 30)

19.Wooden Shovel. "Lent by S. Wells Esq., Richmond." (B., "Swaledale", 46)

20.Iron Bar, used for drilling shot holes. Length 15 inches. Greenhow Hill mines. (B., "Nidderdale", 46). (A "Jumper".)

21.Iron Bar. Length 20 inches. (B., "Nidderdale", 46) Greenhow Hill mines.

22.Iron Bar. Length 23 inches. (B., "Nidderdale", 47) Greenhow Hill mines.

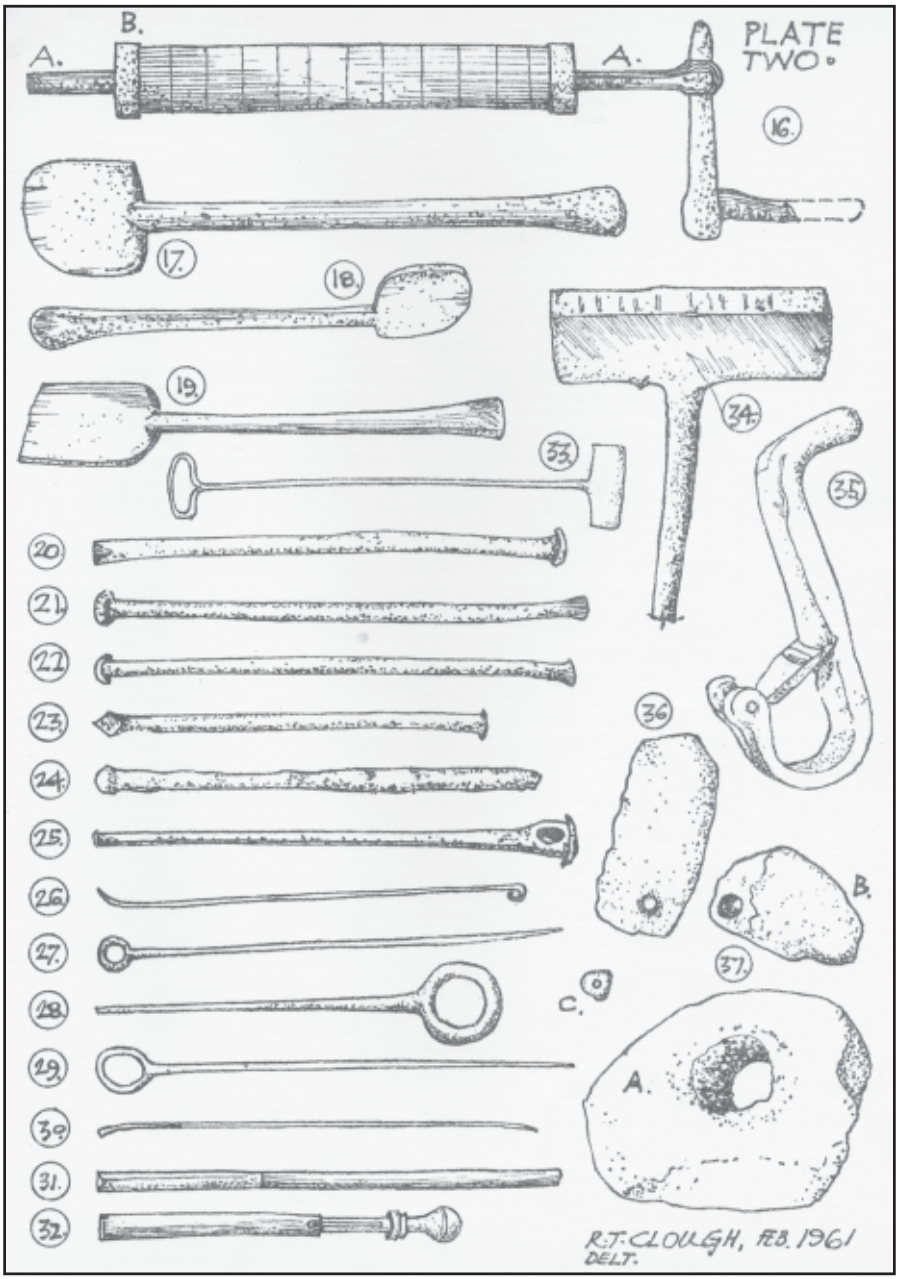
[32]

23.Iron Bar. Length 19 inches (B., "Nidderdale", 47) Greenhow Hill mines.

24.Rough Iron Bar. Length 14 inches. (B., "General", 65) Area not known.

25."Bull" in iron from Hardshins Level, (Scordale, Westmorland). This level was driven by one John Bland in 1560. Found by Wmo Herdman and given to Backhouse. "Bull" – when a cavity ("lough-hole") is encountered in boring the rock; the miners, after stuffing it as full as possible with clay, force in the "Bull"; as a borer, turn it round by a jumper put through the loop at the top and when "easy" withdraw it from the clay. Into the hole thus left in the clay a charge of powder was set off. (B., "General", 64) Bruff calls this a "bulling iron" namely: "an iron bar, pointed at one end, used for opening up wet bore holes which have been filled up with clay and stemmed hard. The powder would then be inserted in a paper into the reamered hole, which would then be tamped or stemmed in the usual way. If the hole was not too wet this method would allow the hole to be fired before the powder got too damp. If a hole was "running water", it might become necessary to enclose the powder in a tin tube." Length 29 inches. (Bruff, op.cit., 27)

26.Iron Scraper. Scargill Mine, Wharfedale. Length 18 inches. (B., "General", 63)



27.Iron-Pricker. "Property of Mr. Thos. Hall of West Burton and used by him in West Burton Mine several years ago". Length 22 inches (B., "General", 63)

28.Iron Pricker. “Used in Silver Band Mine, Teesdale. Found by and presented to J.B. by Mr. J. Beadle Shield of Howick, 1904”. Length 11 inches. (B., “Teesdale”, 15) Silver Band Mine, (1-in-6-in, West, 5NE) at 2,400 feet on Great Dun Fell.

29.Iron Pricker. “Tool used in blasting to keep open the ‘tamped’ clay in the boring until a ‘Squib’ or later on a fuse could be inserted and [33] fired”. From Lunehead Mines, found by W. Herdman, 1904. Length,17 inches. (B., “Lunedale”, 11)

Bruff says that: “the pricker was an iron, or later a copper rod, one end formed into a ring. It was fairly stout, being from ¼ inch to $^{3}/_{8}$ inch diameter and tapering to a point. They were about is inches long. After the hole had been cleaned out with the scraper and charged with powder, a piece of dry paper was pushed into the-hole and firmly driven in with a Stemming-bar, the point of the pricker was pushed through the paper, and the hole tamped with the stemming-bar for about 6 inches. The pricker would then be withdrawn a couple of inches, and more stemming material inserted and tamped. It was necessary always to have at least four inches of the pricker in the hole when tamping, as one otherwise risked the hole made by the pricker collapsing. When a hole had been well tamped it required a considerable pull on the pricker to move it. The harder the hole was stemmed or tamped, the better was the effect of the powder; a loosely tamped hole would blowout the tamping. The straw fuse was inserted into the hole formed by the pricker, the distance to the powder having been carefully measured before tamping commenced. Sometimes a chalk mark was made on the pricker when starting, but such marks were liable to be rubbed out.” (Bruff, op.cit., 45)

30. Scraper. Found in Hardshins Level. Length 27 inches. (B., “General”, 64.)

31.Powder Measure. “Found at Lunehead Mines by T. Tinkler, 1904 and presented to J.B. by W. Herdman. “The powder was held in the metal tube, the amount being adjusted according to the position of the wood rod within the tube.” Length 22 inches. (B., “Lunedale”, 20).

32.“Powder-can: merely a term used by the miners. The article is really a powder measure. The handle drawing in and out to the required length, [34] the powder for the charge being filled in at the end. Very old and very rare. “Found by W. Herdman at Lunehead mines, 1904. Pres. to J.B.” Length 11 inches. (B., “Lunedale”, 21)

33.& 34. “An old tool used for branding pigs of lead (from Sargill Mine).” Overall length, 28 inches, width of head 5 inches. Weight of the Sargill pigs was 13 stones. Found by B. and pres. to Y.Phil.S.Museum. (B., “Wensleydale”, 53).

35.“Ancient iron hook used for attaching to kibbles for drawing ‘work’ out of the lead mine shaft. (strong spring safety catch still in working order)”. B. calls this a “Clivice”, (B., “Nidderdale”, 43). Bruff calls this a “Clevis”, namely the hook which is attached to the end of a winding rope and he notes that they generally had a spring to prevent the kibble from being knocked out of the hook when raised or lowered. (Bruff op.cit., 28). Clevis spring, he also notes, were always rubbed with candle grease before being plunged into water when they were being tempered. The old miners were of the opinion that they became more resilient by this treatment. (ibid.)

36.Charm Stone, found at Kinning Mine, Swaledale. Length, about 3 inches. (B., “Swaledale”, 46).

37. A Group of three Charm Stones. B. : “All from Lunehead Mine. This set of stones which has actually been in use as above described is unique”. Obtained by B. from W. Herdman, April 1905.

(A). Stone to hang in the “mine shop” or smithy.
(B). Stone to hang at the entrance to the mine.
(C). Stone to hang on the watch-chain of the overman or manager.

(B., “General”, 60). See also “Gwerin”, Vol.II, 1958, Plates c and d, for details of naturally perforated charm stones found in Cambridgeshire and Shropshire.

Bruff says of charm stones: “I have frequently found stones with natural holes in them placed in conspicuous positions in old workings opened up by me. I did not at first realise their object, and like the present generation looked upon them as curios, until an old miner told me [35] they were ‘lucky stones’. In the past, these stones were placed in conspicuous places to scare away witches and evil beings. The evil spirits would often try and follow the spirits of dead miners down below and in particular if the man had been killed by an accident. Anniversaries were particularly favourable times for the spirits to gain power over other miners, especially relations of those killed, who refrained from entering the workings and never did a night shift at such times.” (Bruff, op. cit., 54).

The late Harald Bruff of Greenhow Hill often spoke to the author of the strange happenings in and around the mines and he was a firm believer that these occurrences were not merely legend. Georgius Agricola writing in the 16th century, “De Re Metallica” Hoover, 1950, Bk.VI, 217) fully accepted the presence of demons and gnomes in the mines, stating that, “in some of our mines, however and though in very few, there are other pernicious pests. These are demons of ferocious aspect, about which I have spoken in my book ‘De Animantibus Subterraneis’. (Froben, Basle, 1549). Demons of this kind are expelled and put to flight by prayer and fasting.”

In the Yorkshire Dales lead mining areas the imaginative instinct of the lead miner often led him to people the dark underworld of the mines with spirit forms, was in the 19th century turned by the preaching of Wesley and others into different channels, thereby having its outward appearance changed.

Plate Three

38.Old Lantern: "Handle is covered by a ___ on lid and being hollow was used to keep a candle in, ready for an emergency, – a candle of very ancient make was actually inside when found." Lunehead mines, 1904. Found by T. Tinkler, pres. by W. Herdman to B., 1904. Height 9 inches. (B., "Lunedale", 30).

39.Horse Lantern, found in the Lunehead mines., by B., 1904. (B., "Lunedale", 29)

40."Ancient Candle Mould" for six candles, Lunehead Mines. Height 9 inches. Purchased for Y.Phil.S.Y., July, 1904. (B., "Lunedale", 32)

41.Old Striking "Steel". Lunehead Mines. Pres. By W. Herdman, April 1905. Length 2¾ inches (B., "Lunedale", 27)

42. & 43.Old "steels", Lunehead Mines. Found by W. Herdman. Lengths 2 and 3½ inches. (B., "Lunedale", 28)

44.Old miner's Tinder Box. (B., "Swaledale", 46)

45."Metal 'Bottle' used by miners at 'bate time'". Lunehead Mines. Found by W. Herdman, 1904. (Pres. to Y.Phil.S., Y.).

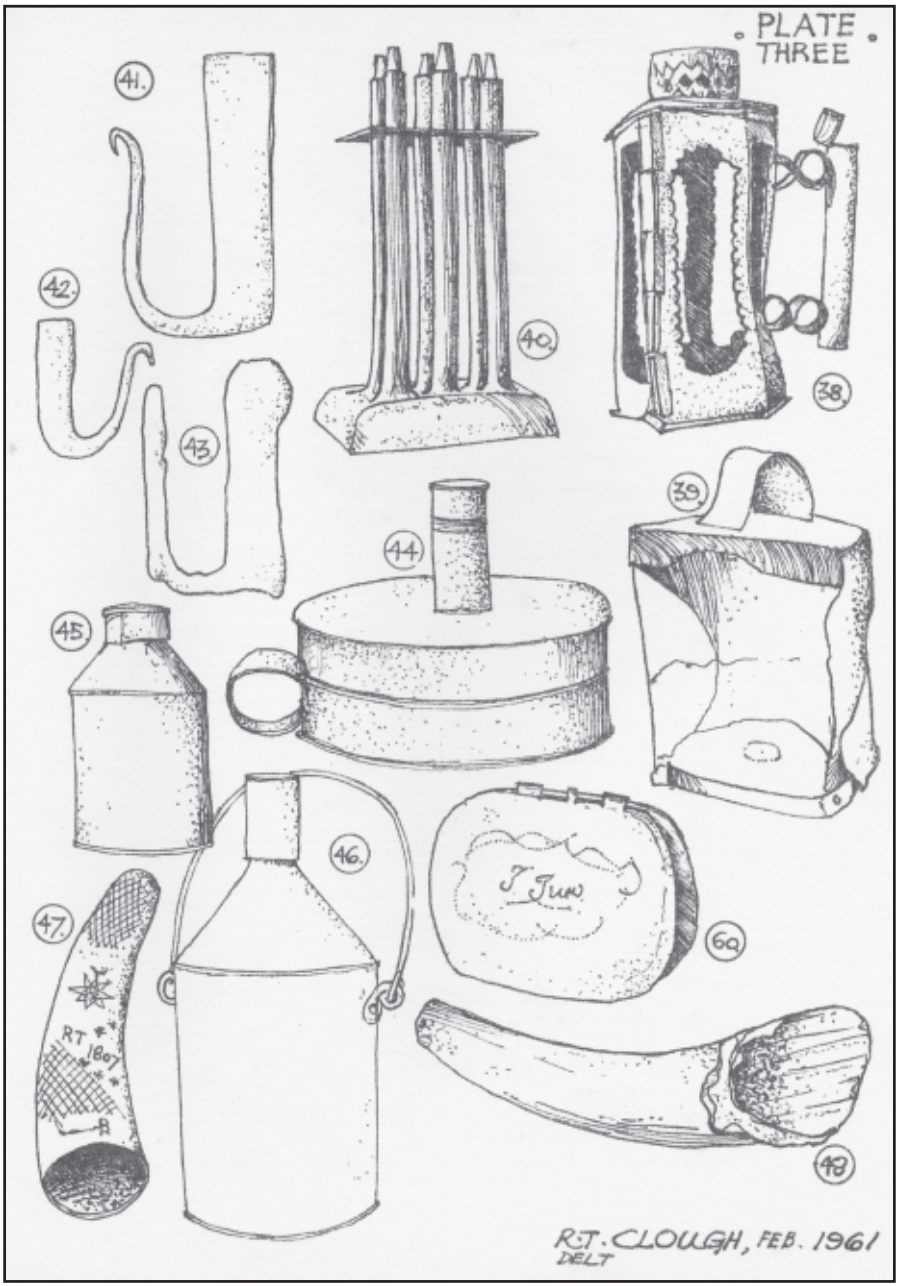
46."Ancient Powder Can from Scordale Mines." Found by W. Herdman, 1904. Height 14 inches. (B., "General", 68)

47."Ancient horn 'powder carrier' from Lunehead Mines. The initials "R.T." are those of Robert Tinkler. The horn has several dates carved on it, the earliest being 1807. Purchased in 1904 from the Tinkler family of Hilton, Westmorland, in whose family it had been for generations." Length, 8½ inches (B., "Lunedale", 17).

48.Old miner's powder horn. Location probably Teesdale. (B., "Teesdale", 18)

Plate Four

49.Powder Carrier. "High Stoney Grooves Mine. Found by B. Very rude powder carrier made of a piece of sheet zinc, in the form of a cylinder fastened with copper nails round the wooden end pieces, – would probably contain a weeks' supply." Height 10 inches, diam. 5½ inches. (B., "Nidderdale", 51).



50.Powder Bottle in gutta percha, used in Silver Band Mine, Cronkley Fell (Teesdale). Purchased by W. Herdman for B. in 1904. Height [37] 14 inches. (B., “Teesdale”, 16)

51.“New gutta percha powder bottle, hardly used, found at Silver Band Mine in Teesdale. Purchased for J.B. by W. Herdman, 1904”. This bottle could hold about 5 pounds of powder; the cap could be used as a measure. Height 13 inches. (B., “Teesdale”, 17)

52.Miner’s Candle Box. Lunehead. Height 9 inches. (B., “Lunedale”, 31)

53.Old Candle Box of Sheet Iron. Found in Green Lawe Mine, Weardale, by W. Herdman. Length 10 inches. (B., “General” , 70).

54.“Old Pocket Dial, formerly belonging to and regularly used by the late Joseph Baynes of Bellowfield Farm.” (between Haw Bank and the Ure) The name of this farm is interesting as it appears to denote an early smelting place. (B., “Wensleydale”, 55).

55.Old Elm Waggon Rail. Found in Hardshins Level, which was driven in 1560. (B., “General”, 66)

56.Metal rail and chair. Lunehead Mine. “This is a portion of one of the first type of iron rails used in the Yorkshire mines after the wooden ones were discontinued. Pinned through surface by rough screw bolts. This type of rail was shortly followed by the inverted ‘T’ shape rail.” Pres. by W. Herdman, 1905. (B., “Lunedale”, 22).

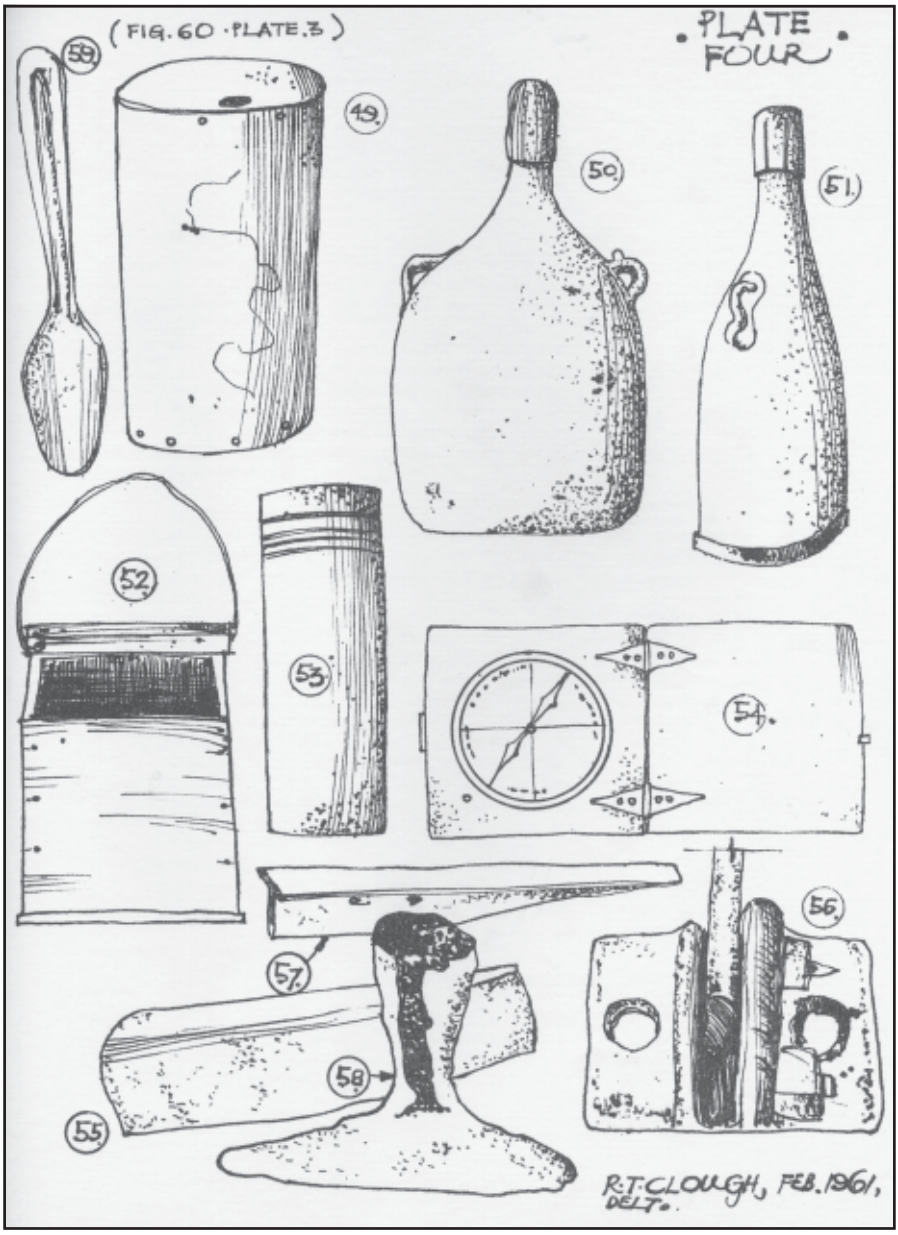
57.Metal waggon rail. Lunehead Mine. Used in early part of 19th cent. Found by W. Herdman. (Y.Phil.S., Y.)

58.Rake Head. Used for raking together small ore. Lunehead Mines. Found by T. Tinkler and given by W. Herdman to J.B., 1904. (B., “Lunedale”, 12)

59.Old iron spoon. Formerly used by the miners at Lunehead and presented by W. Herdman, April 1905. (Y.Phil.S., Y.)

60.Brass tobacco box. Found by T. Tinkler in old workings at Lunehead Mines, 1904. (B., “Lunedale”, 26)

The above illustrations were traced from the original old photographs and are reproduced in all cases to the same size as the details shown on the photographs. Many of these photographs, all over 50 years of age are now showing signs of fading. No other copies of these interesting record photographs are known to exist, hence as a society we feel that it is particularly important that copies should be made for reference. The actual sizes of the various objects are determined from small scales set on practically each photograph. Dimensions are therefore approximate.



A future issue of these transactions will illustrate and describe the Northern Cavern and Mine Research Society Collection of lead mine tools and equipment at present housed at the Society Study Centre on Greenhow Hill.

Dr. Arthur Raistrick, of Linton, and a member of the Society, has for many years held the original negatives of the above photographs which were purchased from the late Mr. Backhouse. During April, Dr. Raistrick offered to hand over to the society for a very nominal sum a collection of some sixty of the original Backhouse quarter plate negatives from which the photographs in the Backhouse papers were prepared; this is a valuable asset to the society collection and we are indebted to Dr. Raistrick for his gesture in making these negatives available for society members. Should the society at any time cease to function and be disbanded, the above collection of negatives is to be given to the Central Library, Leeds; to supplement the Backhouse Material already housed there.

The Leeds City Librarian, Mr. F.G.B. Hutchings in a letter to the Editor, thanks the society for that kindness in promising to deposit these photographic negatives in the above library should the society cease to exist; but hopes that the society has a long and fruitful existence.