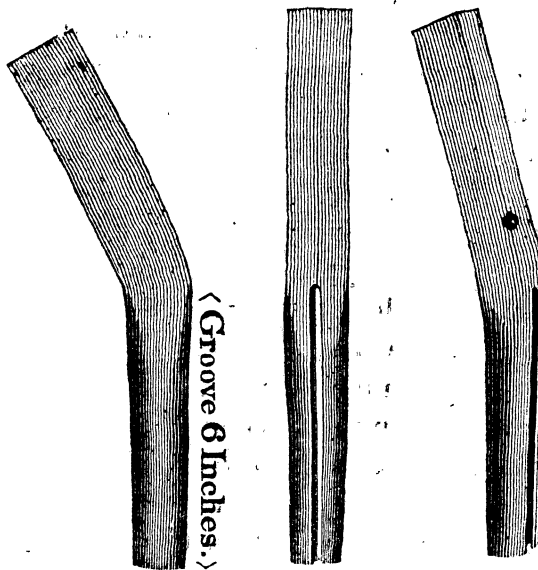


An Account of certain Instruments formerly used for the Purpose of Blasting in the Lead Mines of COLONEL and MRS. BEAUMONT, at Allenheads. Communicated by MR. THOMAS CRAWHALL, of Newcastle upon Tyne.



THESE sketches represent an iron instrument found in Allenheads leadmines, supposed to have been formerly used in blasting, the length of which was $2\frac{1}{2}$ or 3 feet; the upper part having since been cut off, there only now remain 6 inches above the bended part, which

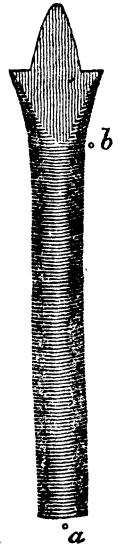
is $1\frac{1}{4}$ inches square to the elbow, forming an angle of about 10° ; is of a cylindrical shape, slightly tapering to the other end, which is one inch in diameter. On the outward side of the angle, along the circular part, is a groove 6 inches in length, of $\frac{1}{4}$ inch broad, and of similar depth, projected (it is supposed) to receive the train of gunpowder, pertaining to the charge:—the application of which, has been to drive it tightly into the hole bored in the rock above the powder, and the upper part fixed by strong timbers placed across the top, for the purpose of preventing it being thrown out, without the desired effect.

Another instrument of iron, found in the same lead mines, differs from the above, in wanting the square bar at top, and in place of the hollow on one side, is cylindrical, and has a tube, one inch diameter, to nearly the upper end, where it is flattened, and has a shoulder projecting half an inch on each side, resembling the head of a spear, and apparently intended for fixing across it bars of iron or timbers, to oppose the violence of the ignited gunpowder.

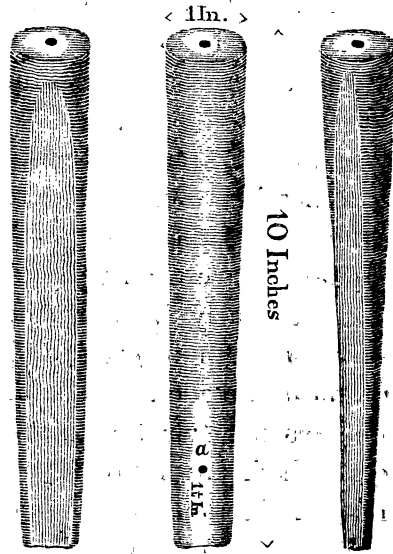
At the round end of the cylinder is a perforation *a*, communicating through the hollow tube, with another at *b*, placed for a touch hole on one side, $1\frac{1}{2}$ inches below the shoulder, and 8 inches distant from the other end.

A tradition exists among the miners, that formerly strong timbers and wedges were used for fixing down the charges in blasting, to hinder explosion without effect; but no further explanation, as to the mode in which this was achieved, is to be obtained, neither in regard to the process of charging, nor of the tools used: It is highly probable, however, that such application might have been, and was adopted, for securing the two instruments above described.

A series of five more of these instruments have been found in the same mine, of the respective lengths of $8\frac{1}{2}$, 10, $10\frac{1}{2}$, and 12 inches.



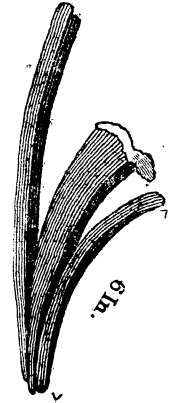
There was also discovered, in opening some old workings at the West end of Allenheads lead mines, about a month since (January, 1820), a tool, formerly used, it is conjectured, for the purpose of blasting with gunpowder, or rather, in forming a communication with it in the rock to be exploded. The spot where it was found, is in the Great Limestone there, about forty feet from the surface. The latest record of this place having been wrought, was in the year 1716, since which period this part of it has been entirely filled up with rubbish and fallings



in of the vein, and only recently re-opened; when the above, with some other instruments, were discovered in one of the flats in the limestone. The oldest workmen of the present day do not recollect their use, nor did they ever hear of such tools employed for the purpose; they seem, however, to have been meant for it, and their application as follows:— After having drilled a hole in the rock to be blasted, with a chissel or jumper sufficiently deep, the gunpowder is put into the bottom of it, say to the depth of three or four inches; next the tool above sketched, which is round at one end, one inch in diameter, with a hole in the centre about one-eighth of an inch, which communicates with another of the same dimensions, about one and one-fourth inches from the other end on the cylindrical side, the opposite being flattened from within one inch of the bottom, or circular end, to one-third of an inch thick at the other extremity; this hollow cavity appears to have been filled with powder, which, when the instrument was placed in the hole, would immediately communicate with the charge. In this situation, it is presumed, wedges (of wood) were driven against the flat side of the iron tube, to resist the force of the gunpowder, when fired through the touch

hole marked *a*, by a train or match laid for that purpose. How long this has been in disuse is altogether uncertain, even the name is forgotten: it is probable a century might since have passed away.

Nearly in the same spot with the above, to which I annex a sketch, a tool of more recent use was found, called by the miners the stock and feathers; and remembered by some to have been occasionally used about fifty years ago, particularly in wet situations, where gunpowder could not, without great difficulty, be applied. A perforation was made in the stratum, say four to six inches deep; placing two thin pieces of iron, called the feathers, which are rounded on one side and flat on the other, in this hole, the former being next to the rock, the wedge or stake was driven between until a portion of it split asunder.



This wedge also was found near the same place with the preceding, of six inches in length, and one and one-fourth inches square, tapering to a point, having a hole one-fourth inch square, through it, at one and a half inches from the top; this, according to the reports of very old miners, was intended to receive a small rod of iron, by which, one man held, whilst another drove the wedge; but not used during the life of any present workman.



At what period the present method of blasting was introduced into these mines cannot be ascertained. A person now residing there, recollects to have heard his father (who died thirty-nine years ago, at the age of sixty-seven) say, although it took place before his time, that prior to the pricker and drive-all being used, it was so hazardous an experiment, that two men were specially appointed, whose province it was to visit the different workings, for the express purpose of charging

and blasting, after the holes had been prepared. Another, who, as well as his father and grand-father before him, has been a pickman for sixty years past, has a faint remembrance of hearing very old men say, that formerly stemples were employed, but has no knowledge as to the process, nor ever saw any other mode practised than the present; but that the stock and feathers had been in use during both the lifetimes of his father and grand-father.