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THE NORTH PENNINE METALLIFEROUS MINING FIELDS

A GLOSSARY OF TECHNICAL TERMS USED IN THE AREA

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Introduction

In view of the present interest in the old mines of the North Pennine area and the enthusiasm of those who actively delve into the history of the industry, it is felt that a glossary of the terms used may be of general interest.

To the non-technical man (and even to some of the younger technical men), many of the terms used in old reports and on old mine plans will be more or less meaningless, while examination of the mine areas may well show many things which are frankly puzzling to such people. A glossary such as this may then be of some very real assistance in the correct interpretation of such things.

More important perhaps is correctness of description in the writing-up of reports on present exploration, since it is the intention of many people who engage in this type of exploration that they will put upon permanent record the results of their work. It seems most important that such records be expressed in clear and unambiguous terms, so that they will not be misunderstood by later workers in times when, perhaps, the direct evidence may no longer be accessible for observation.

A hypothetical example may suffice to demonstrate the sort of mistake one finds in descriptions of this sort of exploration, carried out by non-technical persons. An explorer describes how his party entered, 'Speculation level, which we followed for 550 feet in a southerly direction. At this point we found crosscuts going east and west, and there were workings in Lucky vein in both directions'. To a mining man there is certainly something wrong with the above description, and an examination shows that Speculation level itself is in fact the crosscut and that east and west levels on Lucky vein are drifts in the vein. The point here is that it is important to recognise that a crosscut is a tunnel driven in barren rock to cut a vein, while tunnels driven in the vein itself are known as drives or drifts. The above description should therefore have been written in this manner; 'Speculation level, which we followed for 550 feet in a south-easterly direction, is a crosscut to the Lucky vein. At its intersection with the vein, we found that drifts had been driven east and west of the crosscut and the vein worked in both directions'.

In addition to the desirability of writing clear and technically correct reports of such exploration, it is felt advisable that the physical dangers involved in such activity for those unused to underground work should be emphasised. It should be clearly understood that most old mine workings are dangerous places, even to the experienced man who understands the conditions and is able to interpret what he sees into practicalities.

A GLOSSARY OF TECHNICAL TERMS

The points mentioned in the list given below are a few of the most obvious dangers which will confront the explorer of old mine workings. Many of these dangers are not readily apparent to the casual visitor.

[5]

1. Bad air is often present in old workings and this is particularly insidious since its effects are often gradual and not appreciated until it is too late to escape.
2. The older mines were often driven in soft ground for ease of driving, and such ground is now often unstable and liable to collapse.
3. An accumulation of mud or water on the floor of a tunnel may well disguise the fact that there are open, but water-filled workings, winzes or shafts in the bottom of the level.
4. Where a tunnel is dry underfoot, the floor may be set upon old timbering which was set above open stopes and is now rotted to the point where it is liable to sudden collapse.
5. Ladders and stagings in old workings have probably been in place in a damp atmosphere for many years and have almost certainly become rotted to a dangerous state.
6. Old shafts are particularly dangerous, since even though they may appear to be soundly walled or timbered when looking down from the top, such walling was often set upon a timber frame further down and this will probably be soft or rotten, thus rendering the whole structure unsound. In addition, old shafts are particularly liable to accumulations of carbon dioxide, or blackdamp.

The exploration of old mine workings is undoubtedly a fascinating subject, but unfortunately all too little is available by way of published advice and assistance to those who wish for experience. It is not possible to give anything like a full description of the subject here, for an exhaustive description would require a book to itself. The following hints are however offered to intending explorers:-

1. Never explore old mine workings alone.
2. Always tell someone responsible outside where you are going and what you hope to achieve.
3. Always carry a candle or flame lamp with you if you are using electric lights, also have plenty of dry matches with you, preferably in a watertight tin.

A GLOSSARY OF TECHNICAL TERMS

4. Always test the atmosphere by lighting a candle or oil safety lamp from time to time, if you feel no ventilation current in the workings. If a candle or safety lamp will not burn in the atmosphere get out at once. A carbide lamp will not suffice for this purpose, since it will often continue to burn when the atmosphere is unfit to breathe. Naked lights are not usually dangerous in Pennine metalliferous mines, since accumulations of explosive gases are practically unknown.
5. Never interfere with old hopper-mouths or timbers, as they may be rotten and disturbance may cause a serious collapse or run of loose rock.
6. Always keep an eye on the floor of the tunnel as well as the top. If any open holes can be seen in the floor, be particularly careful, as the timbers at the top of old shafts and winzes are often very unsafe.
7. Always carry a stout stick if the tunnel has a stream of water or soft mud in it. Use the stick to poke heavily into the floor ahead of you as you go. A ducking in such conditions is very unpleasant at least and may well be exceedingly dangerous.
8. Never try to climb up or down old ladders, even if they seem to be quite sound when you first see them.

[6]

9. Never try to go down an old shaft or winze by any means until you have lowered a flame lamp or candle to ascertain that the air is breathable.
10. Always carry some food and drink with you on such explorations in case you become trapped and have to wait for rescue.
11. Always wear suitable clothes to protect you against dirt, cold or wet and always wear a hard hat underground.
12. Remember your carelessness in omitting any reasonable precautions may lead not only to extreme danger to your own life, but also to much trouble, effort and danger being caused to those who will be forced to get you out of it again. It can happen to you, so always think before you act and if in any doubt-don't. Persuade an experienced person to accompany you on such explorations whenever possible.

The glossary of technical terms which follows is not comprehensive and there are doubtless many omissions, though as many of the commonly used terms as possible have been included. It should be remembered however, that both in form and usage, such terms tend to vary somewhat from place to place and from time to time. As far as possible, the most generally used interpretation, or the last known interpretation in case of obsolete words, have been put against the terms included here. Local variations in form or usage are bound to be noticed however, since some terms varied in such manner almost from mine to mine.

Glossary of Terms

- Adit.** A tunnel driven into a hillside to drain a mine, as distinct from a tunnel which is not driven as a drain.
- Adit Level.** The level to which a mine is drained by an adit, below which the workings must be kept clear of water by pumping.
- Adventurer.** One who ventured his capital in a mining project.
- Aerial Tramway or Aerial Flight.** A system of transporting materials in buckets, suspended from pulleys which run on a cable. A system of transport which is very suitable for mines in remote or difficult situations.
- Agent.** An old term sometimes applied to the General Manager or Mines Superintendent. One who represents the owners at the mine.
- Air Course or Airway.** The underground route by which the ventilation current circulates through a mine.
- Air Door.** A door placed in a tunnel to prevent the ventilating current from taking a short-cut through the workings.
- Air Drill.** A rock drill operated by compressed air.
- Air Hoist.** Hoisting machinery operated by compressed air.
- Airway.** See Air Course.
- Alive.** In the mining sense, that part of a vein which shows a content of valuable minerals. A vein is said to be alive when it looks promising for development.
- Alluvium.** Unconsolidated material which has been deposited by a stream.
- Alstonite, (Bromlite).** A barium-calcium carbonate, $(\text{Ba.Ca}) \text{CO}_3$. Similar to barytocalcite. Fairly common in the North Pennine areas.
- Anticline.** Rock folded into an arched shape.

[7]

- Arch, (Arching).** A method of supporting a tunnel by lining it with drystone arching. Very common in old mines in the North Pennine areas, where timber was expensive and scarce in past days. A tunnel is said to be arched when so lined.
- Assay.** To test ores or minerals by chemical examination.
- Assayer.** A person whose occupation is to make regular assays of ores.
- Azurite.** Blue copper carbonate, $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$. Sometimes found in traces at outcrop in Pennine ore deposits.
- Back(s).** The height of ground above a mine tunnel and available for working the minerals from the vein. Sometimes also used as a term for an open joint in rocks.
- Back Filling.** Filling an open working with waste material.
- Back Holes.** Holes drilled for blasting in the roof or back of a working place.
- Backshift.** A second working shift in one day.
- Bail Hill.** An ancient smelting place, usually on an exposed hill top where the

A GLOSSARY OF TECHNICAL TERMS

prevailing wind would provide a more or less regular stream of air for smelting. Such places are very common in the North Pennine areas.

Banded Structure. A vein which has distinct layers of mineral in it, parallel to the walls.

Bank. Surface, or the top of a shaft.

Banking. Dealing with material raised from a mine when it reaches the surface.

Banksman. A man stationed at the surface level of a hoisting shaft to handle materials raised from the shaft.

Barite, (Barytes, Heavy Spar, Terra Ponderosa). Natural barium sulphate, BaSO_4 . A common gangue mineral in Pennine veins and deposits. The mineral is now of value in its own right and is often worked as the principle product of a mine.

Barren. Not containing any valuable minerals.

Barrier, (Boundary Pillar). Ground left unworked between two mines.

Barytocalcite. A carbonate of barium and calcium, $\text{BaCO}_3, \text{CaCO}_3$. Many Pennine veins contain large quantities of this mineral, especially in the Swaledale area. It is of no economic importance at present, owing to the difficulty of separating the contents.

Bate, (Bait). North of England term for miners' lunch.

Beater. An intermediate set of timber, put in to strengthen existing timber sets which have become weak through rot or weight.

Belland. Dusty lead ore.

Bing. An old measurement of lead concentrates, commonly used in the North of England until the late 19th century. A bing is 8 hundredweight. The term also referred to a heap of stored ore.

Bingstead. A place where mined ore was tipped for dressing. Bingsteads were commonly built in rows and consisted of a series of semi-circular pits dug into a hillside and lined with brick or stone. A tramway would be constructed above them and the mined ore would be tipped into them and stored until required for dressing. Numerous examples may still be seen at many mines in the Pennines.

Bing-tale. This was what was known in Cornwall as working on tribute, under which parties of miners contracted to produce ore for a proportion of its value when dressed.

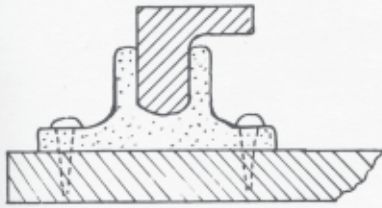
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Black Jack. Another name for the dark variety of sphalerite; the principle zinc ore, which see.

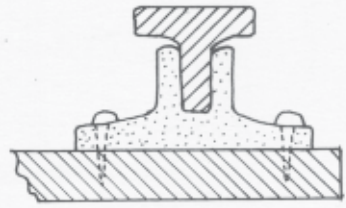
Blackstrap. A dark, heavy grease, used to lubricate old-type mine car wheels.

Blast. To break up rock with explosives. This term was also applied to a ventilation current and is sometimes used at present to refer to a supply of compressed air for working tools.

Blende or Sphalerite. The principal ore of Zinc. It is zinc sulphide, ZnS ., and is fairly common constituent of some Pennine veins.

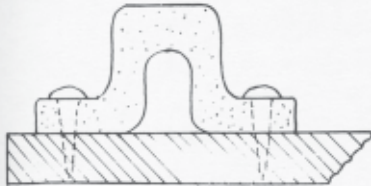


Angle Rail

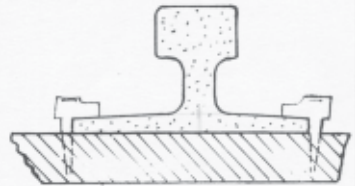


Tee Rail

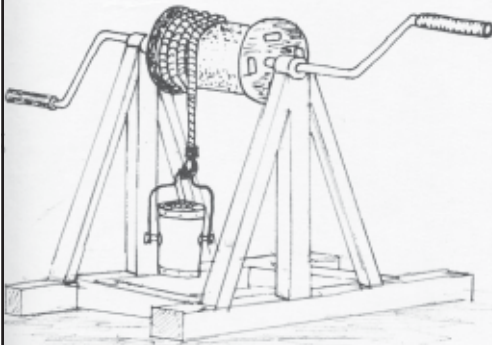
Types of Mine Rails



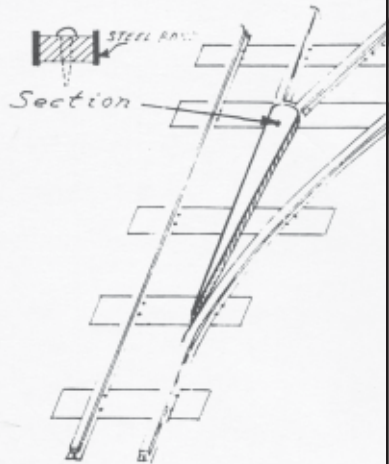
Bridge Rail



Modern Rail



Jack Roll or Windlass



Turn Rail

A GLOSSARY OF TECHNICAL TERMS

- Blind Vein.** A vein having no outcrop at the surface.
- Blue Lead Ore.** Another name for galena, which see.
- Boat Level.** An adit level in which the water is allowed to be deep enough so that boats may be used for transportation.
- Bob, (Pump Bob).** A rocking beam to which the rods of a Cornish pump are attached.
- Bogie.** A flat truck used for the transportation of timber or other material in the mine.
- Bole.** An ancient smelting site, (see also Bail Hill).
- Bouse, (Boose).** Run-of-mine ore, as delivered from the mine to the dressing plant for treatment.
- Branch.** A small vein splitting off from a larger one.
- Brangled.** A vein in which the ore values are spotted throughout a mass of gangue is said to have a brangled appearance.
- Brattice.** A tunnel or shaft which has been divided by timber and hessian into two compartments for ventilation purposes is said to be bratticed. The hessian material is called brattice cloth. The use of this term in metalliferous mining is thus somewhat different from its use in coal mining.
- Bridge Rails.** Not in common use at present. These rails are in the form of an inverted U, with flanges, which are nailed down to the sleepers.
- Bromlite, see Alstonite.**
- Buck.** To break up or pulverise by hand.
- Bucking Hammer and Plate.** A hammer with a large flat face which was used in connection with a flat metal plate for crushing ore by hand.
- Buddle.** A shallow circular pit in which fine ore was concentrated. Not normally used nowadays.
- Bull.** An iron rod used for punching out a shot hole in clay or other soft ground.
- Bunch.** A small orebody in a vein.
- Bunning.** A timber staging in a working on a vein, or in a shaft.
- Buntons.** Timbers placed across a shaft for support or to divide the shaft into compartments.
- Cage.** The vehicle which is used in a shaft for lifting or lowering materials in tubs or mine cars.
- Cage Guides, (Skeets).** Vertical runners of wood, iron or steel fixed in a shaft and between which the cages or skips run.
- Calamine.** Oxidised ores of zinc, as distinct from the more common and primary sulphide are collectively referred to by this name. They are normally found at or near outcrop.
- Calcite.** Natural calcium carbonate, CaCO_3 . A common gangue mineral in Pennine veins.
- Calc Spar.** Another name for calcite.

Carbon Monoxide, (White Damp). A poisonous gas, sometimes encountered in

A GLOSSARY OF TECHNICAL TERMS

mines, especially during or after an underground fire. CO.

Carbon Dioxide, (Blackdamp). CO₂. Often present in mine workings, and may be given off from the strata, especially in the lower parts of workings, in sumps or shafts, where it may represent a considerable danger, since although it is not actually poisonous, it is not breathable if in sufficient quantities in the atmosphere.

Cauk, (or Caulk). A variety of Barite, possibly secondary after witherite. It is usually massive and fine-grained and may be white, grey or yellow in colour.

Cave, (or Cave-in). A collapse of ground in mine workings.

Chalcopyrite. A primary copper ore, called also Copper Pyrites. It is copper sulphide, containing more or less iron, Cu.FeS₂. Found in small or trace quantities in most Pennine veins.

Chamber Deposit. A cave filled with mineral.

Cheeks. Sides or walls of a vein.

Chert. A compact, siliceous rock, often occurring in the upper part of limestone beds in the Pennine area, especially in Swaledale.

Choke Damp. Any foul, unbreathable atmosphere in a mine. Often in fact, an atmosphere with a lack of oxygen rather than the presence of any poisonous or noxious gas.

Chute, (Shoot). A channel or shaft underground through which ore falls for loading into mine cars or tubs, or for transferring ore from one level to another. Also refers to a body of ore in a vein, (Oreshoot).

Concentrate. Ore which has been dressed so as to be ready for market or for the smelter.

Contorted Strata. Strata compressed into narrow sharp folds.

Cornish Pump. A pump operated by rods attached to the beam of a single-acting, condensing steam engine.

Country Rock. The unmineralised rock adjacent to a vein or deposit.

Course of Ore. Another name for an Oreshoot, which see.

Course of Vein. The strike line of a vein.

Cousin Jack. Nickname for a Cornish miner.

Crosscourse. A vein crossing the general strike line of the normal veins of a district at a sharp angle. Sometimes a crosscourse shows a considerable variation in mineralisation from the normal veins of a mining area.

Crosscut. A tunnel driven across the strata from one vein or deposit to another, or to reach a deposit from the surface. A crosscut is driven in barren country rock and not along a vein.

Cross Vein. See Crosscourse above.

Crude Ore. Ore as mined. Run-of-mine ore.

Cupola. A shaft smelting furnace of old-fashioned design.

Cut. To cut a vein is to intersect it by crosscutting or drilling.

Darg. A quantity of mineral agreed between workmen and management to be produced in a shift for an agreed sum of money.

A GLOSSARY OF TECHNICAL TERMS

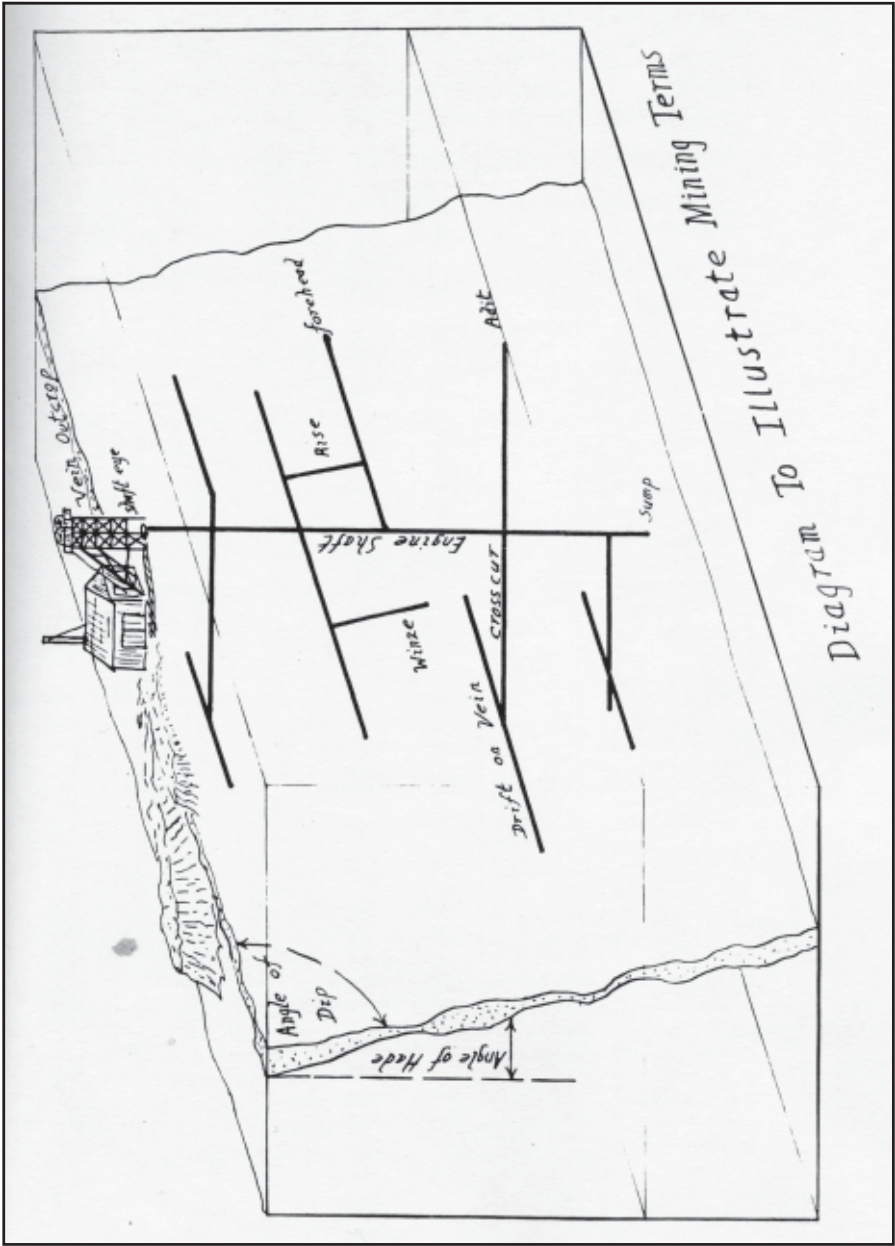


Diagram To Illustrate Mining Terms

A GLOSSARY OF TECHNICAL TERMS

- Day.** A miners' term, used to signify the surface around a mine. "Driven from day would mean a tunnel or shaft driven from the surface.
- Day Man.** A man paid by the day at a fixed wage and not engaged upon piece work or contract work.

[10]

- Dead Ground.** Rock which must be removed from a mine, but which contains no mineral of value.
- Dead Vein.** A vein too poor to work, or quite barren of valuable mineral.
- Dead Rent.** A fixed minimum rent, paid by a lessee, whether a mine is worked on the property rented or not.
- Deads.** Waste rock, often used to fill old workings.
- Deadwork.** Necessary work in a mine which only produces waste rock.
- Dial.** This term is commonly used in the Pennine areas to denote any surveying instrument, although strictly it should refer to one instrument only, namely the Miner's Dial.
- Diallers.** A term used to denote Surveyors.
- Dialling.** Surveying.
- Dip Drift, (Dib Drift).** An inclined haulage tunnel, operated by a hoist.
- Dogtooth Spar.** A variety of calcite with sharp pointed crystals.
- Donk.** Clay or soft earth found in cross veins or flats.
- Doorstead.** Upright timbers in the sides of tunnels for support.
- Douk, (Douke or Dowk).** A soft clay found in veins, usually on the hanging or footwalls, or along any plane of movement in the vein channel, where faulting has taken place.
- Downthrow.** That side of a fault (or vein) on which the strata has moved downward relative to the other.
- Drag.** Material torn from its place of deposition by faulting.
- Drawing Shaft.** A winding shaft. A shaft through which ore is drawn.
- Dress.** To treat run-of-mine ore in such a manner as to discard the waste material contained and produce a concentrate of ore suitable for market or smelter.
- Dresser.** A man employed in a dressing plant.
- Dressing Plant, (Dressing Floor).** The plant in which dressing or concentrating the ore is carried out. Also known as the Mill.
- Drift.** A horizontal tunnel, driven on a vein, as distinguished from a crosscut, which is driven in barren ground to intersect a vein. A drift may also be called a Drive or Level. This usage of the word drift conflicts with coal mining terminology, where a drift refers to a tunnel driven in barren ground to connect coal seams. The term is also used to denote unconsolidated surface material of glacial origin, or Boulder Clay.
- Drowned.** Flooded with water. (Also known as Drowned-out).
- Drumming.** Sounding the roof or sides of a working to discover whether the surrounding rock is loose or solid.

A GLOSSARY OF TECHNICAL TERMS

- Dry.** An open, barren joint cutting across a vein, sometimes partly clay filled.
- Drystone.** Constructed of stones not cemented together.
- Due.** The amount of Royalty payable to the mineral owner by a mine operator.
- Duty Ore.** The landlord's share of the ore produced, or Royalty.
- Dying Out.** Applied to a vein which becomes narrower and narrower on being followed, until it ceases entirely.
- Dynamite.** A term now applied to any high explosive used in mining. These explosives are often referred to as Mite in the North Pennine area.
- End.** The inner extremity of a tunnel, or the working face of a tunnel.

[11]

- Engine Shaft.** Originally this term was applied to any shaft in which a pumping engine was installed, but more recently the term was applied to any shaft at which either pumping or hoisting machinery was installed.
- Eye.** The top of a shaft.
- Face.** The end at which work is progressing or was last done.
- Fall.** A collapse of ground in a mine working.
- Famp.** Decomposed limestone.
- Fathom.** Six feet measure. Depths of mines are commonly measured in fathoms in the North of England.
- Fault.** A break in the continuity of a bed of rock, attended by movement of one side relative to the other.
- Fault Block.** A body of rock bounded by faults.
- Fault Fissure.** The fissure or line of displacement produced by a fault, which may afterwards have become mineralised and so become a vein. Most mineral veins show more or less fault movement.
- Feigh.** An old term for waste rock washed from lead ore.
- Ferruginous.** Containing iron.
- Field.** In the sense implied here, a mining area, such as a coalfield or an orefield.
- Fines.** Very small material produced in breaking up large lumps, such as are produced in a dressing plant.
- Fire Engine.** An old term for a steam engine used at a mine.
- Fire Setting.** An ancient method of mining, used before the introduction of explosives. It consisted of lighting a fire against a rock face to make it very hot, after which it was cooled rapidly by throwing water on to it. This broke up the solid ground and enabled the miners to drive the tunnel on with picks.
- Fissure.** An extensive crack or fracture in the rocks.
- Fissure Vein.** A crack in the rocks, usually of a steeply inclined or almost vertical nature, which has become filled with mineral matter different from the surrounding rocks and which may be of economic interest.
- Flank Level.** A crosscut driven at an acute angle towards a vein, so that it converges

A GLOSSARY OF TECHNICAL TERMS

upon it rather than being driven directly towards it by the shortest possible distance.

- Flask.** A tinned vessel in which miners used to carry oil for machines or, in earlier times, a beverage for their lunch.
- Flat.** A horizontal ore deposit, usually associated with a normal vein, in which mineralising substances have replaced all or part of the original strata which was amenable to chemical attack. Sometimes referred to as a Flot in the Wensleydale and Swaledale areas. Such deposits have sometimes proved extensive and very rich.
- Flat Working.** Mining in a flat deposit, as above.
- Float.** Pieces of ore or mineralised matter occurring in surface soil near the outcrop of a mineral deposit and removed from it by weathering.
- Floor.** Another term for Flats, which see.
- Fluccan.** A course of clay in a vein.
- Fluorite, (Fluorspar).** Calcium fluoride, CaF_2 . A very common vein mineral in the Pennine area. It was of no commercial value until the late 19th century, but is now mined in many places. It is often well crystallised and of varied and beautiful colours.

[12]

- Fodder.** A unit of weight measurement for lead, consisting of 21 hundredweights. The term is no longer in use.
- Fool's Gold.** Iron pyrite, a sulphide of iron, FeS_2 .
- Footwall.** The wall under the vein, or the underlying wall.
- Footway.** The series of ladders by which miners enter or leave mine workings .
- Forebreast.** The working face of a mine tunnel.
- Forefield.** The end of the workings of a mine furthest advanced from the shaft or portal.
- Forehead.** The same as Forebreast, which see.
- Forepole.** To drive timber horizontally ahead of a drift face in soft ground to ensure safe working and support.
- Fother.** A rather loose term. A weight by which lead used to be sold and which varied between 19 and 24 hundredweight. It was supposed to be divided in 30 Fotmals.
- Fotmal.** An old weight for lead, usually about 70 pounds. See Fother above.
- Gad.** A steel wedge used to split rocks. The term also refers to hand drill steel.
- Galena.** Lead sulphide, PbS . The principal ore of lead. Common in many veins in most of the Pennine areas.
- Gangue, (Gang).** The non-valuable minerals occurring in a vein.
- Gank.** A red or yellow ferruginous vein filling extending through joints and fissures and sometimes considered as a good sign of there being lead ore nearby.
- Gash Vein.** A shallow vein which does not extend vertically through more than a single stratum of rock.

A GLOSSARY OF TECHNICAL TERMS

- Gate.** A term used for a haulage road underground. (More usually a coal mining term).
- Get.** To work minerals.
- Gig.** A kibble or a cage in a shaft.
- Gin, (Whim).** A drum and frame by which material was hoisted from a mine. Originally the term was applied to an apparatus worked by a horse, but steam driven hoists were also later known as whims, or steam whims.
- Gin Pit.** A shallow shaft, worked by a gin or whim.
- Gin Ring.** The circle around which a horse walked while operating a gin.
- Gob.** To stow an underground working with waste rock.
- Gossan, (Gozzan).** A ferruginous deposit in the upper parts of mineral veins, consisting largely of hydrated oxides of iron. The term means “iron-hat”.
- Gouge.** Soft clayey material on the wall of a vein or fault. (See Fluccan and Douk or Dowk).
- Grant.** A tract of land leased for mining purposes.
- Grass Roots.** A miners’ term for the surface.
- Green Lead Ore.** Pyromorphite, or lead chloro-phosphate. Sometimes called Greens on old lead mine reports.
- Grip.** A drainage channel in a mine level.
- Grit.** A coarse sandstone or quartzite.
- Groove, (Grove).** An old term for a mine, specifically a lead mine.
- Groover, (Grover).** A miner.
- Ground.** The rock mass in which an ore deposit occurs.
- Guides.** The timbers or rails at the sides of a shaft, set to guide the cages or skips.
- Gulf.** A barren, open joint, crossing the line of a vein.

Hack. A miners’ pick.

[13]

- Hade.** The angle of inclination of a vein, measured from the vertical.
- Halvans.** An old term meaning ores still mixed with waste.
- Hanging Wall, (Hanging).** The rock on the upper side of a vein, or deposit.
- Hazle.** Sandstone or quartzite beds in the North Pennine area.
- Headgear, (Headframe).** The structure at the top of a shaft which carries the pulleys for the winding rope and the surface arrangements for landing hoisted materials.
- Heading.** A tunnel or level, usually one which is driven in a vein for development work.
- Heads.** The concentrated ore which is produced from a dressing plant.
- Headstocks.** Another term for the headframe at a shaft.
- Headtree.** A horizontally placed timber, supported by vertical posts (or door steads), used to support weak ground.
- Hearth.** A lead smelting furnace, the remains of which are common in the Pennine mining areas.

A GLOSSARY OF TECHNICAL TERMS

Heavy Spar. Another name for Barite, which see.

Heugh. A place where mineral is worked.

High Grade. Rich ore.

Hitch. A hole or ledge cut into the rock sides of a working to hold a headtree or other horizontally placed timber.

Hogger. A hose pipe, specifically for compressed air or water hoses used in connection with rock drills.

Hoist. An engine for raising material from a shaft or incline, sometimes also called a Winding Engine.

Hole or Hole Through. To connect one underground working with another.

Horse Gin, (Horse Whim). A winding drum driven by horse power. (See Gin).

Horse Level. A main haulage level in a mine which is operated by horses pulling the trains of tubs or wagons to surface or a shaft.

Hotching. A term for jigging mineral in the dressing plant.

Hush. The process of clearing the surface soil and other loose material from an outcrop by allowing sudden rushing discharges of water to flow from a reservoir on high ground. Hushing was a common method of prospecting in the North Pennines in early times, and some veins were even worked by a modification of the method.

Hushes. The large gashes in hillsides resulting from hushing operations.

Inby, (Inbye). Towards the working face, or the furthest workings of a mine.

In Place. Said of rock or vein material which has not been disturbed since it was originally deposited. Undisturbed ground.

Inside Foreman. Underground foreman.

In Situ. In its natural place. Compare with In Place above.

Intake. The route through which fresh air enters the workings of a mine.

Jack. Another name for Blende or Sphalerite, which see.

Jackhammer. A compressed air driven hammer drilling machine.

Jackroll. A windlass worked by hand. (See also Windlass).

Jaggers or Jagger Galloways. Men and horses employed in transporting ore from remote mines to a smelter.

Jig. A machine for concentrating ore on a screen or sieve, in water; by a reciprocating motion of the screen. To separate heavier from lighter particles by agitation in water. Separation is by specific gravity.

[14]

Jim Crow. A rail bending device.

Joint. A crack or fissure in rocks, which is one of a set of such fissures having a similar trend or strike.

Jowl. To sound the roof or sides of a working place in testing the ground for weaknesses.

A GLOSSARY OF TECHNICAL TERMS

- Jumper.** A boring tool which consists of a steel bar, sharpened to a bit at one end and which is jumped up and down in a hole.
- Keeps. (Keps).** Catches to hold a cage at the top or bottom of a shaft while loading or unloading is in progress.
- Kindly.** Ground which is considered to be congenial for carrying ore.
- Kindly Ground.** Those rocks in which veins generally become productive in a mining district .
- Lagging.** Planks or small timbers placed over or behind timber sets in bad ground to prevent runs of collapsed material.
- Lander.** The man who receives the loaded cage at the shaft top or bank and despatches empty tubs from the surface into the mine. Also known as the Banksman.
- Landing.** A level in the shaft at which the cage or skip may be loaded or unloaded.
- Leader.** A small vein which leads to a larger one.
- Learies.** Old workings.
- Level.** A horizontal tunnel or drift in a mine.
- Likely.** A vein or deposit is said to be likely if it gives a promising appearance for being productive when cut.
- Loth Hole.** A large cavity in a vein, sometimes lined with crystalline minerals or filled with water when cut.
- Lode.** Another term for a Vein, which see.
- Lodge, (Lodgement).** An underground space or reservoir for accumulating water to be pumped out of the mine. A sump.
- Low Grade.** Poor ore.
- Make of Water.** The amount of water flowing into a mine working.
- Malachite.** Green basic copper carbonate, $2\text{CuO}\cdot\text{CO}_2\cdot\text{H}_2\text{O}$. A mineral, common in trace quantities in Pennine veins. It is mostly seen as a green stain on other materials and is an alteration product from chalcopyrite.
- Master Vein.** The principal; or most productive vein in a series or district.
- Measuring Day.** The day upon which the mine manager or agent measures up the amount of work which has been done by the contractors in a given period.
- Mell.** A large hammer, used for breaking up rocks.
- Middlings.** The second quality of ore obtained from dressing.
- Mill.** Another term for a dressing plant.
- Milling Ore.** Ore of a suitable quality for dressing.
- Mine Captain.** Underground Manager in modern terms.
- Mineral Deposit.** In the mining sense, any deposit of mineral or minerals which is of actual or potential economic value.
- Mineral Field.** An area in which mineral deposits are known to occur.
- Mineralisation.** The processes by which ore deposits were emplaced.
- Mineral Right.** The ownership of the minerals under a given area of surface.
- Mineral Vein.** A vein containing ore minerals.

A GLOSSARY OF TECHNICAL TERMS

Mine Royal. A mine containing enough values in gold or silver to be claimed by the Crown.

Mine Shop. A lodging house at a remotely situated mine in the North Pennine area. In past times, when transportation was slow, miners would stay in the mine shop during the working week, returning to their homes in the Dales villages only at the week ends. The use of mine shops in this area ceased at about the end of the 19th Century. The remains, however, of many of them may still be seen in the area.

Misfire. The failure of a blasting charge to explode when fired.

Mistress. A wooden or tin box, having a partly open front, in which the miner carried his candle in the mine. A crude form of mine lamp.

Moil. A length of hand drill steel, sharpened to a point and used for cutting timber hitches.

Muck. Worthless rock, or waste.

Nest. A small isolated pocket of ore in a vein.

Nip. A narrow part of a vein.

Old Man. Old workings of which no record remains.

Old Men. Previous workers in a mining area, of whose work no record remains.

Onsetter. A man whose duties are to load the cages or skips at the bottom of a shaft. The person in charge of operations at the shaft bottom.

Opencut. A surface working, open to the daylight. Also called Opencast.

Open Light. A naked light. Not a flameproof or safety lamp.

Opens. Large caverns encountered in mine workings.

Openwork. Another name for an opencut working.

Ore. This is, strangely, a very difficult word to define precisely. It may be described as any natural mineral substance, usually containing a metal, which is of economic value, or is potentially so.

Oreshoot, (Orechute). A course of rich ground in a vein or ore deposit.

Outcrop. The place at which a stratum of rock, a vein or other deposit reaches the surface of the earth.

Overburden. The waste rock or surface soil which overlies a mineral deposit or valuable stratum of rock.

Overshot Wheel. A waterwheel which is driven by water and which is fed to its upper rim.

Pack. To fill a mine working with waste rock. Also called Stowing.

Pair, (Pare). A pair of men, in the mining sense, is any partnership of miners who undertake to do specific work underground, which partnership may actually consist of as many as eight or ten men.

Paragenesis. The order of formation or deposition of a set of minerals contained in a given deposit.

Parcel. A heap of dressed ore, ready for sale.

A GLOSSARY OF TECHNICAL TERMS

Pare. See Pair above.

Parting. A small joint or crack in a rock.

Pass. An opening through which ore or waste rock is delivered from one level to another in a mine, as Orepass or Waste Pass.

Passbye. A siding in a haulage road where trains may pass each other.

[16]

Pillar. A block or rib of ore or rock left in place in the mine for support.

Pinch. A wide vein which becomes narrower on being followed is said to be pinched.

Pinch Out. A vein which becomes narrower and narrower until it dies away altogether is said to be pinched out.

Pipe. An elongated body of ore or valuable mineral, usually lying in an almost vertical attitude and often occurring at a junction of two joints or veins, where the cavity may have been widened out by solution and afterwards filled with mineral matter. Also called a Pipe Vein. Common in limestone country.

Pit. A shaft is sometimes referred to as a pit, especially in coal mining country, where a whole colliery may be referred to as a pit.

Pit Bank. The surface works around a shaft. This term also is more often used in connection with coal mines.

Pitch. An old term referring to a part of a mine assigned to a party of tributers. The term is also used to denote the dip of a vein.

Pit Head Gear. Surface structures around the top of a shaft. See Headgear.

Pit Top. The mouth of a mine shaft.

Place. That part of a mine in which a miner works. A working place.

Plate, (Plate Bed). Black shale bed or stratum.

Plug and Feather. An old means of breaking rock in a mine. The plug is a steel wedge and the feathers are two short pieces of steel, half-round, the curved sides of which fit into a drill hole in the rock around the plug. The plug is then driven between the feathers, thus splitting the rock apart.

Pocket. A small body of ore in a vein.

Pockety. Said of a vein which contains only small isolated bodies of ore.

Poling. Protecting the face workers in a tunnel by driving poles ahead of the foremost set of timber. See Forepoling or Spiting.

Pony Putter. A man or boy who drives a pony in the mine.

Pop, (pophole). A short blasting hole, usually employed to split up large boulders. Secondary blasting.

Portal. The entrance to a tunnel or level.

Post. A mine timber, set in more or less vertical position. The term also refers to a particular stratum or bed in a set of strata, as used in the North Pennine area.

Potters Ore. Lump galena, used by potters to prepare a green glaze. Any coarse galena product has become known as potters ore.

Prop. See Post above.

A GLOSSARY OF TECHNICAL TERMS

Prospect. A mine working newly started, the value of which has not yet been proved.

Prospecting. Searching for mineral deposits.

Prove. To find out by mine development the extent to which ore is present.

Put. To push mine cars or tubs by hand.

Putter. A man employed to push mine cars or tubs.

Quartz. Silicon dioxide, SiO_2 , in crystalline or massive form. A common vein mineral in the Pennine areas.

Quartzite. A coarse sandstone, composed largely of grains of quartz.

Quick. Sometimes applied to a productive vein, as distinguished from a poor or barren one.

Quick Water. A heavy inflow of water into mine workings is spoken of as quick.

[17]

Race. A water race is an artificial channel used for a supply of water to or from a mining plant.

Raft Yard. A walled-in yard at the surface where smiths, carpenters, etc., work.

Rag Pump. A chain pump; an endless chain which raises water.

Raise, (Rise). An opening driven upwards in a vein or in connection with steep workings.

Raising, (Rising). Driving a raise.

Rake, (Rake Vein). A fissure vein. This term is most commonly used in the Derbyshire area, but has also been used in the North Pennines.

Random. Denotes a given horizon in mine workings or strata.

Rap. To give signals by striking something or by single bells.

Rapper. A signalling apparatus, normally in connection with hoisting.

Recovery. That proportion of the crude ore which is recovered as a saleable concentrate in dressing operations.

Replacement. The process by which one mineral takes the place of an existing mineral or minerals by chemical means.

Replacement Deposit. An ore deposit in which certain minerals which originally existed have passed into solution and been carried away, while other minerals have been deposited in their place from the solution. This process is called Metasomatism.

Reserves. Ore which has been proved to exist by mine development, but which has not yet been broken down and taken from the mine.

Return. Air which has circulated through the mine workings to the outlet, or upcast.

Rider. A mass or rib of country rock enclosed in a vein.

Right Running. A vein carrying ore in beds which are usually unproductive.

Rise. Another name for a Raise, which see.

Riser. An upthrow fault.

Rob. To extract pillars of ore left in previous working.

Rods. Vertical or inclined timbers for actuating Cornish pumps.

A GLOSSARY OF TECHNICAL TERMS

Rolls. A type of ore crusher, used for fairly friable ores.

Roof. The rock lying above a vein, or Hanging Wall.

Ropeway. See Aerial Ropeway.

Rousey, (Rowsey). Another name for a windlass.

Royalty. A mineral estate or area. A field of mining operations. Also means the amount paid by the lessor of a mine to the mineral owner for the right to work the mine; usually based upon a certain payment per ton of concentrate sold from the mine.

Run. A run of ore is another expression for an oreshoot. The term may also be used to indicate soft ground which collapses or runs into mine workings.

Run of Mine Ore. Crude ore as it comes from the mine.

Runner. A feeder or spring of water.

Sands. Crushed ore which is too fine for jigging, but not so fine as to be classed as slime (or mud).

Scaling Bar. A long steel bar, used for removing loose rock from the top and sides of a working after blasting.

Scotch Hearth. A smelting furnace with one tuyere, used for smelting rich lead ores. Many of these furnaces were formerly used in the Pennine areas.

Scrin. A narrow vein. This term is commonly used in Derbyshire.

[18]

Selective Mining. Mining only the high-grade ore, usually involving the sorting by hand of broken ore underground. A common practise in Pennine mines in past times.

Selvage. A layer of clay or decomposed rock on the footwall of a vein .

Set. A timber frame for the support of a tunnel or shaft. The term is also used to denote a train of tubs or mine cars.

Sett. The area of a mining lease.

Setting. Contracting with miners for work to be done.

Setting Day. A day set aside for the management of a mine to agree terms of contract, or tribute with parties of miners, or to “set bargains”.

Shake, (Shakehole). A solution cavern in limestone, often collapsed into a hollow in the ground at surface.

Shift. A period of work. Also used to indicate a gang of men set to work for a given period of time; the word is also used to indicate a fault.

Shiver. Another name for shale.

Shode, (Shoad). A loose fragment of veinstone in the soil, (see Float).

Shoot of Ore. See Oreshoot.

Shop. See Mineshop.

Shot. A blasting charge.

Shothole. A borehole in which a blasting charge is placed.

Show. The appearance of a vein.

Sill. An intrusive sheet of igneous rock, injected among normal sedimentary strata

A GLOSSARY OF TECHNICAL TERMS

(as is the Whin Sill in the North Pennine area). The term has however become corrupted in the Pennine area, so that strata in general have become known as **Sills**, and a particular stratum as a **Sill**.

Single Jack. A light, single-hand hammer, used in hand drilling.

Sink. Another name for a solution cavern in limestone, or Shake. The word is also used to indicate a sump or shaft; a place which is sunk.

Sinker. One who sinks a shaft.

Sink Hole. See Shake.

Sinking Pit. A shaft which is being sunk.

Skip. A bucket-like vehicle, usually running on tracks, used for hoisting in an inclined shaft, or between guides, for hoisting in a vertical shaft. The vehicle is usually so arranged as to be self-dumping on reaching the top of the shaft.

Slab. A flat piece of timber, used for lagging behind sets.

Slide. A vein of clay intersecting a productive vein and usually associated with more or less faulting of the vein.

Slime. A very finely divided product of wet crushing or grinding.

Slip. Another name for a fault, usually one of small movement.

Slit. When the richest part of a vein only has been worked, leaving the remainder standing, the vein is said to have been slit.

Smiddam, (Smiddum or Smeddam). The smaller particles of ore which, in jigging, pass through the sieve of the hutch.

Smiddam Tails. Ore sludge.

Smithsonite. Carbonate of zinc, $ZnCO_3$. Found in the oxide zone of veins.

Snap. A miners' lunch. This term is used in Yorkshire.

Snap Time. Lunch time.

Sole. The bottom of a level or working.

Sollar. A timber platform in a working or shaft.

[19]

Sough. An adit level. This term is used in Derbyshire.

Sounding. Tapping the roof of a working to test its soundness. See also (Jowl).

Spar. Almost any transparent or translucent, crystalline material found in veins or other deposits. The term was used very confusingly in many old mining reports and descriptions, since it was not qualified therein by naming the variety, such as calcspar, fluorspar, heavy spar, etc.

Spell. A rest period.

Sphalerite. Zinc sulphide, ZnS. Also called Blende or Black Jack. The principal and primary ore of zinc. Common in parts of the Pennines.

Spile. See Forepoling.

Spit. To light a fuse for blasting.

Split. A vein branching or dividing, is said to be split.

Spoil. Mined waste rock.

Spoil Heap. Dump of waste rock at surface.

A GLOSSARY OF TECHNICAL TERMS

Squib. A slow-burning fuse lighter.

Stamps, (Stamp Mill). A crushing machine which relied upon the falling of a mechanically raised heavy weight to break up the ore. These machines are now obsolete.

Staple, (Winze). A shaft or sink, usually in the vein, sunk from underground.

Steel Ore. A variety of fine-grained galena.

Stemple. Cross bars of wood fixed in a shaft for climbing.

Stick. A round timber, used as a prop or stull.

Stink Damp. Sulphuretted hydrogen, H₂S. A poisonous gas sometimes found in mine workings, especially where acid water is in contact with pyrite, or where a quantity of old timber is rotting.

Stope. A place where ore is extracted from a vein, other than in a development tunnel or drift, raise or winze.

Stoping. The process of extracting ore from a vein.

Stow. To pack a working with barren rock or other rubbish.

Stowce. A windlass or hand-powered hoisting device, also known as a jackroll or rowsey.

String. A very small vein. Also called a Stringer.

Strum. Burnt safety fuse.

Stuff, (Orestuff). Run of mine ore.

Stull. A timber placed horizontally across a working for support.

Sublevel. An intermediate level, between main working levels.

Sump. An excavation below a working level. Also a storage place for water which is to be pumped from mine workings.

Switch, (Turnout or Point). A junction in a rail track.

Tail, (Tailing). The worthless material rejected in the dressing plant.

Tail of the Level. The delivery end or portal of an adit level.

Take. The extent of a mineral lease.

Tamp. To charge a hole for blasting, also known as Stem.

Terra Ponderosa. Another name for Barite, which see.

Thirl. To hole through. Also an old term meaning a mark at the limit of a tributer's pitch.

[20]

Throw. The magnitude of relative movement between the strata on one side of a fault and that on the other side.

Thrown. Faulted.

Ticket. A sealed bid for ore offered for sale at a mine.

Trade, (Tread). An old term denoting waste rock or rubbish.

Tram. To haul or push tubs or mine cars about the workings of a mine.

Trammer. One who pushes mine' cars along a track.

Tram Rail, (Tramway). A rail track in or about a mine.

A GLOSSARY OF TECHNICAL TERMS

- Travelling Road.** The underground route through which miners pass on their way to and from their places of work.
- Travelling Way.** As above, but may also include ladderways.
- Tree.** A heavy round timber used for ground support.
- Trend.** The general line of strike of a fault, vein, dyke or other geological phenomenon.
- Trial.** A small mining work, carried out for exploratory purposes.
- Tribute.** Work done under contract and rewarded by a part of the value of the concentrate produced.
- Tribute Pitch.** The limits of a piece of ground to be worked on tribute.
- Tributer.** One who works on tribute.
- Trip.** A train of mine cars.
- Trod.** A footpath.
- Trommel.** A revolving screen for sizing ore.
- Trouble.** A fault or other dislocation of the strata or veins.
- Tub.** A mine car.
- Tub Way.** A tramway.
- Turnout.** A siding or pass bye on the tramway in a mine.
- Turnrail.** An old type of switch for a turnout or passbye. Some of these are still in use at various mines in the Pennine area.
- Tutwork.** Piecework performed at a fixed price for a given measurement or weight of produce.
- Tye.** A point where two veins cross.
- Tythe.** An ancient custom by which miners gave a part of their produce to the priest.
- Underlay, (Underly).** The departure of a vein from the vertical.
- Underlay Shaft.** A shaft sunk on the vein, where it is not vertical.
- Unwater.** To pump the water from flooded workings.
- Upcast.** The passage through which foul air is drawn from the mine.
- Upper.** A blasting hole which is drilled in an upward direction.
- Upthrow.** The strata on that side of a fault which has moved upwards relative to that on the other side.
- Values.** The proportion of valuable ore in a vein or deposit.
- Vein.** A fissure, usually associated with more or less faulting, which has become filled with mineralised matter which is of actual or potential economic value. Also called a Lode.
- Vein Minerals.** Those minerals which are usually associated with deposits in veins.
- Veinstuff.** The contents of a vein, apart from the ore. Gangue or veinstone.
- Virgin, (Virgin Ground).** Unworked ground or deposits.

Vug (Vugh). A cavity in a vein or in the rocks which is usually lined with crystals of minerals. See also Loch Hole.

A GLOSSARY OF TECHNICAL TERMS

- Vuggy Vein.** A vein which is particularly subject to the occurrence of vugs.
- Wagon.** A mine car or tub, used for transporting mineral from the mine workings.
- Wallet.** The pack which miners in the North Pennine areas used to take to the mines on Mondays and which contained their week's supply of food while they were living in the mineshop.
- Wall Rock.** The un-mineralised rock on each side of a vein or deposit.
- Waste.** That product from the mine which has no value.
- Water Blast.** The discharge of water down a shaft to induce a ventilation current in the mine workings.
- Watered.** Containing much water.
- Water Gin.** A hoist operated by a waterwheel.
- Water Level.** The level at which water will stand naturally in a mine. The term is also used to denote an adit level.
- Wayleave.** A payment made to a landowner for permission to convey minerals across his property which have not been worked there.
- Whim, (Whimsey).** An old term for hoisting apparatus at a mine.
- White Damp.** Carbon monoxide, CO.
- Win.** To extract mineral from a deposit.
- Winding Engine.** A hoist at a shaft.
- Windy Pick.** A pneumatic pick, used for trimming rock and cutting hitches.
- Winze.** An opening, sunk from one level to a lower one, or below the lowest level of a mine; usually sunk in the vein.
- Witherite.** Natural barium carbonate, BaCO₃. This mineral occurs in some North Pennine veins, and this area is the only mining field in the world where the mineral has been produced on a commercial scale.
- Work.** Broken ore in the mine, or before it is dressed. See Bouse.
- Workings.** The underground parts of a mine.
- Yield.** The proportion of concentrate produced to the total amount of vein stuff extracted from a mine.
- Zone.** An area in which a particular mineral or minerals have been extracted, or are likely to occur.

15th July, 1961.

Middleton-in-Teesdale.