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**Adit** – A horizontal opening giving access to a mine.

**Abandoned Mine** – Excavations, either caved or sealed, that are deserted and in which further mining is not intended.

**Acid Mine Drainage** – Liquid drainage from bituminous coal mines containing a high concentration of acidic sulfates, especially ferrous sulfate.

**Air Shaft** – A shaft used wholly or mainly for ventilating mines, for bringing fresh air to places where men are working, or for exhausting used air.

**Airway** – Any underground gallery or passage through which a portion of the ventilation passes, that is, the air is carried. Sometimes referred to as an air course. Also called wind road.

**Anode** – The positive terminal of an electrolytic cell. Opposite of cathode.

**Anthracite** – A hard, black lustrous coal containing a high percentage of fixed carbon and a low percentage of volatile matter. Commonly referred to as hard coal. Anthracite ignites with difficulty, produces no smoke, burns at first with a very short blue flame that disappears after the coal is thoroughly ignited, and produces an intensely hot fire.

**Ash** – The inorganic residue remaining after ignition of combustible substances. In general, it differs in weight and composition from the original mineral matter.

**Auger Mining** – A mining method often used by strip-mine operators when the overburden gets too thick to be removed economically. Large-diameter, spaced holes are drilled up to 200 feet into the coal bed by an auger. Like a bit used for boring holes in wood, this consists of a cutting head with screw like extensions. As the auger turns, the head breaks the coal and the screw carries the coal back into the open and dumps it on an elevating conveyor; this, in turn, carries the coal to an overhead bin or loads it directly into a truck. Auger mining is relatively

inexpensive, and it is reported to recover 60 to 65 percent of the coal in the part of the bed where it is used.

## **B**

**Backfill** – The process of filling, and/or the material used to fill, a mine opening. In general refers to the material placed “back” to refill an excavation.

**Ballast** – Rough, unscreened gravel as used to form the bed of a railway or substratum for new roads.

**Bed** – The smallest division of stratified layers marked by more or less well-defined divisional planes.

**Belt Conveyors** – A moving endless belt that rides on rollers and on which coal or other materials can be carried for various distances.

**Belt Feeders** – Short loop of conveyor belt, or articulated steel plate, used to draw ore at a regulated rate from under a bin or stockpile.

**Belting** – One of the main parts of a belt conveyor. The belting consists of plies of cotton duck impregnated with rubber, and with top and bottom covers of rubber. The carrying capacity of the belt will vary depending on the running speed and the width of the belt.

**Bench** – The horizontal step or floor along which coal, ore, stone, or overburden is worked or quarried. In tunnel excavation, where a top heading is driven, the bench is the mass of rock left, extending from about the spring line to the bottom of the tunnel.

**Beneficiation** – The processing of ores to regulate the size of a desired product, remove unwanted constituents, and improve the quality, purity, or assay grade of a desired product. Concentration or other preparation of ore for smelting by drying, flotation, or magnetic separation.

**Bituminous Coal** – A coal which is high in carbonaceous matter, having between 15 and 50 percent volatile matter. Also known as soft coal.

**Blast** – The operation of blasting, or rending rock or earth by means of explosives.

**Block Coal** – A bituminous coal that breaks into large lumps or cubical blocks; also, coal passing over certain sized screens instead of through them, such as a 5-, 6-, and 8-inch block.

**Blower** – A fan employed in forcing air either into a mine or into one portion of a mine.

**Blunging** – The wet process of blending, or suspending, ceramic material in liquid by agitation.

**Bone Coal** – Coal with a high ash content, almost rock.

**Box Cut** – In surface mining, the initial cut driven in a property, where no open side exists; this results in a high wall on both sides of the cut.

**Brattice** – A board of plank lining, or other partition, in any mine passage to confine the air and force it into the working places. Its object is to keep the intake air from finding its way by a short route into the return airway.

**Brattice Cloth** – Fire-resistant canvas or duck used to erect a brattice.

**Briquet** – A block of compressed coal dust, used as fuel; also, a slab or block of artificial stone.

**British Thermal Unit (BTU)** – The amount of heat needed to raise 1 pound of water 1 degree F (equal to 252 calories). Symbol, Btu.

**Brown Coal** – A low-rank coal which is brown, brownish-black, but rarely black. It commonly retains the structures of the original wood. It is high in moisture, low in heat value, and checks badly upon drying.

**Bucket** – A vessel (as a tub or scoop) for hoisting and conveying material (as coal, ore, grain, gravel, mud, or concrete). A part of an excavator that digs, lifts, and carries dirt.

**Bug Dust** – Fine coal or rock material resulting from dry boring, drilling, or the use of other cutting machines in underground work places.

**Buggy** – A small wagon or truck used for short transportation of heavy materials (as coal in a mine or ingots in a steel mill).

**Bulldozer (Dozer)** – A highly versatile piece of earth excavating and moving equipment especially useful in land clearing and leveling work, in stripping topsoil, in road building and ramp building and in floor or bench cleanup and gathering operations.

**By-product** – A secondary or additional product; for example, the more common byproducts of coal ovens are gas, tar, benzol, and ammonium sulfate.

## C

**Cap Lamp** – The lamp which a miner wears on his safety hat or cap. For illumination only.

**Captive Mine** – A mine which produces coal or mineral for use by the same company.

**Cathode** – The electrode where electrons enter (current leaves) an operating system, such as a battery, an electrolytic cell, an X-ray tube, or a vacuum tube. Opposite of anode.

**Cinder Blocks** – A block closing the front of a blast furnace and containing the cinder notch.

**Coal** – A solid, brittle, more or less distinctly stratified, combustible carbonaceous rock, formed by partial to complete decomposition of vegetation; varies in color from dark brown to black; not fusible without decomposition and very insoluble. The boundary line between peat and coal is hazy (see brown coal) as is the boundary line between coal and graphite and the boundary line between carbonaceous rock and coal. In the formation of coal, the vegetable matter appears to have been very largely moss and other low forms of plants, but in places, coal contains much wood; the vegetal matter seems to have first taken the form of peat, then lignite, and then bituminous coal. The latter by the loss of its bitumen has in some places been converted into anthracite (hard coal) and finally into graphite.

**Coal Fields** – An area of country, the underlying rocks of which contain workable coal seams.

**Coal Gas** – Flammable gas derived from coal either naturally in place, or by induced methods of industrial plants and underground gasification.

**Coal Seam** – A bed or stratum of coal.

**Coal Tar** – Tar obtained by the destructive distillation of bituminous coal, usually in coke ovens or in retorts and consisting of numerous constituents (as benzene, xylenes, naphthalene, pyridine, quinoline, phenol, cresols, light oil, and creosote) that may be obtained by distillation.

**Coke** – Bituminous coal from which the volatile constituents have been driven off by heat, so that the fixed carbon and the ash are fused together.

**Coke Breeze** – The fine screenings from crushed coke or from coke as taken from the ovens, of a size varied in local practice but usually passing a 1/2-inch or 3/4-inch screen opening.

**Colliery** – A whole coal mining plant, generally used in connection with anthracite mining but sometimes used to designate the mine, shops, and preparation plant of a bituminous operation.

**Concentration** – The process of increasing the dissolved solids per unit volume of solution, usually by evaporation of the liquid; the quantity of solute dissolved in a unit volume of solution.

**Continuous Mining** – Mining in which the continuous mining machine cuts or rips coal from the face and loads it onto conveyors or into shuttle cars in a continuous operation. Thus, the drilling and shooting operations are eliminated, along with the necessity for working several

headings in order to have available a heading in which loading can be in progress at all times. The longwall machine and conveyor are in the same track which is situated between the last row of props and the face. The conveyor is moved forward progressively as the coal is cut and loaded by the machine. There are no separate or cyclic operations as in conventional machine mining and the aim is to make each shift a continuation of the previous shift. Where the conditions are favorable, faces up to 250 yards in length may be so worked.

**Conventional Mining** – The cycle of operations which includes cutting the coal, drilling the shot holes, charging and shooting the holes, loading the broken coal, and installing roof support. Also known as cyclic mining.

**Conveyor** – A mechanical contrivance generally electrically driven, which extends from a receiving point to a discharge point and conveys, transports, or transfers material between those points.

**Core Drill** – A drilling machine equipped with a hollow bit (core bit) and a core barrel which by rotation cuts out and recovers a rock core sample. A drill that removes a cylindrical core from the drill hole.

**Cropline** – A line following the outcrop.

**Crosscut** – A small passageway driven at right angles to the main entry to connect it with a parallel entry or air course.

**Crusher** – A machine for crushing rock or other materials. Among the various types of crushers are the ball-mill, gyratory crusher, Hadsel mill, hammer mill, jaw crusher, rod mill, rolls, stamp mill, and tube mill.

**Crushing** – Reducing ore or quartz by stamps, crushers, or rolls.

**Crystallization** – The formation of mineral crystals during the cooling of a magma or by precipitation from a solution.

**Cut** – In development work, the term cut refers to the location and direction of holes blasted first to provide a free face to which other holes may break. For example, draw cut, horizontal cut, pyramid cut, burned cut, etc.

**Cutting Machine** – A power-driven machine used to undercut or shear the coal to facilitate its removal from the face.

**D**

**Deep Mining** – The exploitation of coal or mineral deposits at depths exceeding about 3,000 feet. Also known as underground mining.

**Dragline** – A type of excavating equipment which casts a rope-hung bucket a considerable distance, collects the dug material by pulling the bucket toward itself on the ground with a second rope, elevates the bucket, and dumps the material on a spoil bank, in a hopper, or on a pile.

**Drift** – A horizontal underground passage. A drift follows the vein rather than intersect it like a crosscut.

**Drill** – Any cutting tool or form of apparatus using energy in any one of several forms to produce a circular hole in rock, metal, wood, or other material.

**Duckbill** – The name given to a shaking-type combination loading and conveying device, so named from the shape of its loading end and which generally receives its motion from the shaking conveyor to which it is attached.

## **E**

**Empties** – Empty mine or railroad cars. Empty railroad cars are called “flats” in Arkansas.

**Escapeway** – An opening through which the miners may leave the mine if the ordinary exit is obstructed.

**Exhaust Fan** – A fan which sucks used air from a mine and thereby causes fresh air to enter by separate entries to repeat the cycle.

## **F**

**Face** – A working place from which coal or mineral is extracted. The exposed surface of coal or other mineral deposit in the working place where mining, winning, or getting is proceeding.

**Fault** – A break in the continuity of a body of rock. It is accompanied by a movement on one side of the break or the other so that what were once parts of one continuous rock stratum or vein are now separated.

**Fines** – In general, the smallest particles of coal or mineral in any classification, process, or sample of the run-of-mine material.

**Fire** – To blast with gunpowder or other explosives. A word shouted by miners to warn one another when a shot is fired.

**Floor** – The rock underlying a stratified or nearly horizontal deposit, corresponding to the foot wall of more steeply dipping deposits. A horizontal, flat ore body.

**Freeze Dried Additives** – Chemicals added to the coal to prevent freezing during shipping.

**Front End Loader** – A tractor loader with a digging bucket mounted and operated at the front end of the tractor. A tractor loader that both digs and dumps in front.

## G

**Gather** – To assemble loaded cars from several production points and deliver them to main haulage for transport to the surface or pit bottom.

**Gathering Locomotive** – A lightweight type of electric locomotive used to haul loaded cars from the working places to the main haulage road, and to replace them with empties.

**Gob** – To store underground, as along one side of a working place, the rock and refuse encountered in mining. The material so packed or stored underground. The space left by the extraction of a coal seam into which waste is packed. Also called goaf.

**Gob Pile** – A pile or heap of mine refuse on the surface. An accumulation of waste material such as rock or bone.

**Gross Ton** – The long ton of 2,240 avoirdupois pounds.

**Ground Water** – Water at, and below, the water table; basal or bottom water; phreatic water. Used also in a broad sense to mean all water below the ground surface. Water derived from wells or springs, not surface water from lakes or streams.

**Gunite** – A mixture of sand and cement, sprayed with a pressure gun onto roofs and ribs to act as a sealing agent to prevent erosion by air and moisture.

## H

**Haulage** – The drawing or conveying, in cars or otherwise, or movement of men, supplies, ore and waste both underground and on the surface.

**Haulageway** – The gangway, entry, or tunnel through which loaded or empty mine cars are hauled by animal or mechanical power.

**Head House** – A covered timber framing at the top of a shaft, into which the shaft guides are continued that carry the cage or elevator. The term is sometimes applied to the structure

containing the hoisting engine, boilers, and other machinery, in addition to the actual hoisting cage, etc.

**Highwall** – The unexcavated face of exposed overburden and coal or ore in an opencast mine or the face or bank on the uphill side of a contour strip mine excavation.

**Hoist** – A power-driven windlass for raising ore, rock or other material from a mine and for lowering or raising men and material. Also called hoister.

## I

**In Situ** – In the natural or original position. Applied to a rock, soil, or fossil when occurring in the situation in which it was originally formed or deposited.

## J

**Jig** – A machine in which the feed is stratified in water by means of a pulsating motion and from which the stratified products are separately removed, the pulsating motion being usually obtained by alternate upward and downward currents of the water. Also called washbox.

## K

**Kerf** – Undercut in a coal seam from 3 to 7 inches thick and entering the face to a depth of up to 4 feet, made by a mechanical cutter. Also called kirve.

## L

**Lamp-House** – A room or building at the surface of a mine, provided for charging, servicing, and issuing all cap, hand, and flame safety lamps held at the mine.

**Layout** – The design or pattern of the main roadway and workings.

**Lignite** – A brownish-black coal in which the alteration of vegetal material has proceeded further than in peat but not so far as subbituminous coal.

**Liquid Oxygen Explosive (LOX)** – Sawdust or other suitable material, formed into cartridges and dipped into liquid oxygen before use in blasting.

**Loader** – A mechanical shovel or other machine for loading coal, ore, mineral, or rock.

**Loading Machine** – A machine for loading materials such as coal, ore, or rock into cars or other means of conveyance for transportation to the surface of the mine.

**Loading Ramp** – A surface structure, often incorporating storage bins, used for gravity loading bulk material into transport vehicles.

**Locomotive** – An electric engine, either operating from current supplied from trolley and track or from storage batteries carried on the locomotive.

**Longwall** – The coal seam is removed in one operation by means of a long working face or wall, thus the name. The workings advance (or retreat) in a continuous line which may be several hundreds of yards in length. The space from which the coal has been removed (the gob, goaf, or waste) is either allowed to collapse (caving) or is completely or partially filled or stowed with stone and debris. The stowing material is obtained from any dirt in the seam and from the ripping operations on the roadways to gain height. Stowing material is sometimes brought down from the surface and packed by hand or by mechanical means.

**Low Coal** – Coal occurring in a thin seam or bed.

**Lump Coal** – Bituminous coal in the large lumps remaining after a single screening that is often designated by the size of the mesh over which it passes and by which the minimum size lump is determined. Also, the largest marketable size.

## M

**Man Car** – A kind of car for transporting miners up and down the steeply inclined shafts of some mines, as at Lake Superior.

**Man Trip** – A trip made by mine cars and locomotives to take men rather than coal, to and from the working places.

**Marsh Gas** – Methane gas. If the decaying matter at the bottom of a marsh or pond is stirred, bubbles of methane rise to the surface, thus the name marsh gas.

**Methane** – Formed by the decomposition of organic matter, it is the most common gas found in coal mines. It is a tasteless, colorless, nonpoisonous, and odorless gas; in mines the presence of impurities may give it a peculiar smell.

**Methane Monitor** – A system whereby the methane content of the mine air is indicated automatically at all times, and when the content reaches a predetermined concentration the electric power is cut off automatically from each machine in the affected area. The mechanism is so devised that its setting cannot be altered. The system is used, mainly, in conjunction with the operation of continuous miners and power loaders.

**Metric Ton** – A unit of mass and weight that equals 1,000 kilograms or 2,204.6 avoirdupois pounds; abbreviation, MT.

**Middlings** – That part of the product of a washery, concentration, or preparation plant which is neither clean coal nor mineral nor reject (tailings). It consists of fragments of coal and shale or mineral and gangue. The material is often sent back for crushing and retreatment.

**Mine Car** – Cars which are loaded at production points and hauled to the pit bottom or surface in a train by locomotives or other power. They vary in capacity from 1 to 12 tons, and are either of wood or steel construction or combinations of both.

**Mine Inspector** – One who checks mines to determine the safety condition of working areas, equipment, ventilation, and electricity, and to detect fire and dust hazards.

**Miner** – One who mines; as (1) one engaged in the business or occupation of getting ore, coal, precious substances, or other natural substances out of the earth; (2) a machine for automatic mining (as of coal); and (3) a worker on the construction of underground tunnels and shafts (as for roads, railways, waterways).

**Mineral** – In a broad nontechnical sense, the term embraces all inorganic and organic substances that are extracted from the earth for use by man. A substance occurring in nature which has a definite or characteristic range of chemical composition, and distinctive physical properties or molecular structure. With few exceptions, such as opal and mercury, minerals are crystalline solids.

**Mineral Rights** – The ownership of the minerals under a given surface, with the right to enter thereon, mine, and remove them. It may be separated from the surface ownership, but, if not so separated by distinct conveyance, the latter includes it.

**Mine Run** – The product of the mines before being sized and cleaned.

**Mouth** – An opening resembling or likened to a mouth, as one affording entrance or exit to a mine.

**Muck** – Unconsolidated soils, sand, clays, loams encountered in surface mining; generally, earth which can be severed and moved without preliminary blasting. Useless material; earth or rock which may or may not be mixed with coal or minerals.

**Multiple-Seam Mining** – Mining two or more seams of coal, frequently close together, that can be mined profitably where mining one alone would not be profitable.

N

**Nonmetal** – A chemical element that is not classed as a metal because it does not exhibit most of the typical metallic properties. An element that, in general, is characterized chemically by the ability to form anions, acidic oxides and acids, and stable compounds with hydrogen.

## O

**Open-Cut (Pit) Mining** – A form of operation designed to extract minerals that lie near the surface. Waste, or overburden, is first removed, and the mineral is broken and loaded, as in a stone quarry. Important chiefly in the mining of ores of iron and copper. The mining of metalliferous ores by surface-mining methods is commonly designated as “open-pit mining” as distinguished from the “strip mining” of coal and the “quarrying” of other nonmetallic materials such as limestone, building stone, etc.

**Opening** – A short heading driven between two or more parallel headings or levels for ventilation.

**Outcrop** – A term used in connection with a vein or lode as an essential part of the definition of apex. It does not necessarily imply the visible presentation of the mineral on the surface of the earth, but includes those deposits that are so near to the surface as to be found easily by digging.

**Overburden** – Used by geologists and engineers in several different senses. By some, it is used to designate material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials, ores, or coal, especially those deposits that are mined from the surface by open cuts. By others, overburden designates only loose soil, sand, gravel, etc., that lies above the bedrock. The term should not be used without specific definition. Also called burden, cover, drift, mantle, surface.

**Overriding Royalty** – The term applied to a royalty reserved in a sublease or assignment over and above that reserved in the original lease.

## P

**Panel** – System of coal extraction in which the ground is laid off in separate districts or panels, pillars of extra size being left between.

**Parting** – A natural, usually smooth, separation between strata.

**Peat** – There are two types of peat, low moor (Flachmoor) and high moor (Hochmoor) peat. Low moor peat is the most common starting material in coal genesis. It therefore constitutes a caustobiolith of low diagenetic degree. Peat is formed in marshes and swamps from the dead, and partly decomposed remains of the marsh vegetation. Stagnant ground water is necessary for peat formation to protect the residual plant material from decay. Peat has a yellowish brown to brownish black color, is generally of the fibrous consistency, and can be either plastic or friable; in its natural state it can be cut; further, it has a very high moisture content (above 75 percent, generally above 90 percent). It can be distinguished from brown coal by the fact that the greater part of its moisture content can be squeezed out by pressure (for example, in the hand). Peat also contains more plant material in a reasonably good state of preservation than brown coal.

**Pillar** – An area of coal or ore left to support the overlying strata or hanging-wall in a mine. Pillars are sometimes left permanently to support surface works or against old workings containing water. Coal pillars, such as those in pillar-and-stall mining, are extracted at a later period.

**Pit** – Any mine, quarry, or excavation area worked by the open-cut method to obtain material of value.

**Pit Committee** – A joint committee of employer and workers dealing with the labor problems of a mine.

**Place** – The part of a mine in which a miner works by contract is known as his “place” or “working place.” A point at which the cutting of coal is being carried on.

**Post** – A mine timber, or any upright timber, but more commonly used to refer to the uprights which support the roof cross-pieces. Commonly used in metal mines instead of leg which is the coal miner’s term, especially in the Far West regions of the United States. The support fastened between the roof and floor of a coal seam used with certain types of mining machines or augers. A pillar of coal or ore.

**Powdered Coal (Pulverized Coal)** – Coal that has been crushed to a fine dust by grinding mills. The latter are often air swept, the velocity of the air being so regulated that particles of coal, when sufficiently reduced, are carried away. Pulverized coal particles of which about 99 percent are below 0.01 inch in diameter will burn very rapidly and efficiently. Low-grade coal may be pulverized and conveyed from the mill by air into the boiler plant.

**Power Shovel** – An excavating and loading machine consisting of a digging bucket at the end of an arm suspended from a boom, which extends crane-like from that part of the machine which houses the power plant. When digging the bucket moves forward and upward so that the machine does not usually excavate below the level at which it stands.

**Preparation Plant** – Strictly speaking, a preparation plant may be any facility where coal is prepared for market, but by common usage it has come to mean a rather elaborate collection of facilities where coal is separated from its impurities, washed and sized, and loaded for shipment.

**Proximate Analysis** – The determination of the compounds contained in a mixture as distinguished from ultimate analysis, which is the determination of the elements contained in a compound. Used in the analysis of coal.

## Q

**Quarrying** – The surface exploitation of stone or mineral deposits from the earth’s crust. Removal of rock which has value because of its physical characteristics.

## R

**Reclamation** – The costs incurred to restore land to its original (or better) condition.

**Rock Dusting** – The dusting of underground areas with powdered limestone to dilute the coal dust in the mine atmosphere thereby reducing explosion hazards.

**Roll** – Used to describe minor deformations or dislocations of a coal seam, for example, faults with small displacement to small monoclinical folds, to welts or ridges projecting from either the roof or floor into the coal, and to fillings of stream channels or low areas extending downward into the coal.

**Roof Bolting (Pinning)** – A system of roof support in mines. Boreholes from 3 to 8 feet long are drilled upward in the roof and bolts of 1 inch diameter or more are inserted into the holes and anchored at the top by a split cone or similar device. The bolt end protrudes below roof level and is used to support roof bars, girders, or simple steel plates pulled tight up to the roof by a nut on the bolt head. The bolts are put up to a definite pattern. The idea is to clamp together the several roof beds to form a composite beam with a strength considerably greater than the sum of the individual beds acting separately.

**Room** – A place abutting an entry or airway where coal has been mined and extending from the entry or airway to a face.

**Room and Pillar** – A system of mining in which the distinguishing feature is the winning of 50 percent or more of the coal or ore in the first working. The coal or ore is mined in rooms separated by narrow ribs or pillars. The coal or ore in the pillars is won by subsequent working, which may be likened to top slicing, in which the roof is caved in successive blocks. The first working in rooms is an advancing, and the winning of the rib (pillar) a retreating method. The rooms are driven parallel with one another, and the room faces may be extended parallel, at right angles, or at an angle to the dip. This method is applicable to flat deposits, such as coal, iron ore, lead, zinc, etc., that occur in bedded deposits.

**Rotary Dump** – An apparatus for overturning one or more mine cars simultaneously to discharge coal. They may rotate either 180 degrees or 360 degrees.

**Royalty** – A share of the product or profit reserved by the owner for permitting another to use the property. A lease by which the owner or lessor grants to the lessee the privilege of mining and operating the land in consideration of the payment of a certain stipulated royalty on the mineral produced.

**Runoff** – That portion of the rainfall that is not absorbed by the strata; is utilized by vegetation or lost by evaporation or may find its way into streams as surface flow.

## S

**Scraper Loader** – A machine used for loading coal or rock by pulling an open-bottomed scoop back and forth between the face and the loading point by means of ropes, sheaves, and a multiple drum hoist. The filled scoop is pulled on the bottom to an apron or ramp where the load is discharged onto a car or conveyor.

**Screen** – A large sieve for grading or sizing coal, ore, rock, or aggregate. It consists of a suitably mounted surface of woven wire or of punched plate. It may be flat or cylindrical, horizontal or inclined, stationary, shaking, or vibratory, and either wet or dry operation.

**Screenings** – Coal which will pass through the smallest mesh screen normally loaded for commercial sale for industrial use.

**Seam** – A stratum or bed of coal or other mineral; generally applied to large deposits of coal.

**Shaft** – An excavation of limited area compared with its depth, made for finding or mining ore or coal, raising water, ore, rock, or coal, hoisting and lowering men and material, or ventilating underground workings. The term is often specifically applied to approximately vertical shafts, as distinguished from an incline or inclined shaft. A shaft is provided with a hoisting engine at the top for handling men, rock, and supplies, or it may be used only in connection with pumping or ventilating operations.

**Shaker Conveyor** – A conveyor consisting of a length of metal troughs, with suitable supports, to which a reciprocating motion is imparted by drives. In the case of a downhill conveyor, a simple to-and-fro motion is sufficient to cause the coal to slide. With a level or a slight uphill gradient, a differential motion is necessary, that is, a quick backward and slower forward strokes. The quick backward stroke causes the trough to slide under the coal, while the slower forward stroke moves the coal along to a new position. Also called jigger.

**Shale** – A laminated sediment, in which the constituent particles are predominantly of the clay grade.

**Shearing** – Making a vertical cut or groove in a coal face, breast, or block, as opposed to a kerf, which is a horizontal cut. Called in Arkansas as cut or cutting.

**Shoot** – To break coal loose from the seam by the use of explosives; loosely used, also as applied to other coal breaking devices.

**Shooter** – The person who fires a charged hole after satisfying himself/herself that the area is free from firedamp. A shot firer.

**Shortwall** – The reverse of longwall, frequently used to mean the face of a room. A method of mining in which comparatively small areas are worked separately, as opposed to longwall; for example, room and pillar.

**Shot Firer** – A person whose special duty is to fire shots or blasts, especially in coal mines. A shot lighter.

**Shovel** – Any bucket-equipped machine used for digging and loading earthy or fragmented rock materials. There are two types of shovels, the square-point and the round-point. These are available with either long or short handles. The round-point shovel is used for general digging since its forward edge, curved to a point, most readily penetrates moist clays and sands. The square-point shovel is used for shoveling against hard surfaces or for trimming.

**Shuttle Car** – A vehicle on rubber tires or caterpillar treads and usually propelled by electric motors, electrical energy which is supplied by a diesel-driven generator, by storage batteries, or by a power distribution system through a portable cable. Its chief function is the transfer of raw materials, such as coal and ore, from loading machines in trackless areas of a mine to the main transportation system.

**Silt** – A fine-grained sediment having a particle size intermediate between that of fine sand and clay.

**Slack** – Small coal, usually less than 1/8 inch. It has a high ash content and is difficult to clean in the washery. High ash slack is being used increasingly in special boilers and power stations.

**Slice** – In an ore body of considerable lateral extent and thickness, the ore is removed in layers termed slices.

**Slope** – The main working gallery or entry of a coal seam which dips at an angle and along which mine cars are hauled. An entrance to a mine driven down through an inclined coal seam; also, a mine having such an entrance.

**Slope Mine** – A mine with an inclined opening used for the same purpose as a shaft or a drift mine. It resembles a tunnel, a drift, or a shaft, depending on its inclination.

**Sludge** – Mineral, mud, and slurry too thick to flow. A soft mud, slush, or mire; for example the solid product of a filtration process before drying (filter cake).

**Slurry** – The fine carbonaceous discharge from a colliery washery. All washeries produce some slurry which must be treated to separate the solids from the water in order to have a clear effluent for reuse or discharge. Also, in some cases, it is economical to extract the fine coal from the effluent.

**Spoil Bank** – To leave coal and other minerals that are not marketable in the mine.

**Stoker Coal** – A screen size of coal specifically for use in automatic firing equipment. This coal can be of any rank and the stoker is usually designed to fit the coal available. Factors of importance in the selection of coal for stoker use are: size limits, size consist, uniformity of shipments, coking properties, ash fusion characteristics, ash, sulfur and volatile-matter percentages.

**Strip** – In coal mining, to remove the earth, rock, and other material from a seam of coal, generally by power shovels. Generally practiced only where the coal seam lies close to the earth's surface. To remove from a quarry, or other open working, the overlying earth and disintegrated or barren surface rock.

**Strip Mine** – An opencut mine in which the overburden is removed from a coal bed before the coal is taken out.

**Subsidence** – A sinking down of a part of the earth's crust. The lowering of the strata, including the surface, due to underground excavations. Surface caving or distortion due to effects of collapse of deep workings.

**Surface Mining** – The mining in surface excavations. It includes placer mining, mining in open glory-hole or milling pits, mining and removing ore from open cuts by hand or with mechanical excavation and transportation equipment, and the removal of capping or overburden to uncover the ores. Mining at or near the surface. This type of mining is generally done where the overburden can be removed without too much expense. Also called strip mining, placer mining, opencast mining, opencut mining, or open-pit mining.

**Surface Rights** – The ownership of the surface of land only, where mineral rights are reserved. Those reserved to the owner of the land beneath which ore is being mined. The right of a mineral owner or an oil and gas lessee to use so much of the surface of land as may be reasonably necessary for the conduct of operations under the lease.

## T

**Timber** – Any of the wooden props, posts, bars, collars, lagging, etc., used to support mining works. One of the steel joists or beams which, in some mines, have replaced wooden timbers.

**Timbering** – The operation of setting timber supports in mine workings or shafts. The term support would cover the setting of timber, steel, concrete, or masonry supports.

**Timbering Machine** – An electrically driven machine to raise and hold timbers in place while supporting posts are being set after cut to length by the machine's power-driven saw.

**Tipple** – Originally the place where the mine cars were tipped and emptied of their coal, and still used in that sense, although now more generally applied to the surface structures of a mine, including the preparation plant and loading tracks.

**Trailing Cables** – A flexible electric cable for connecting portable face machines and equipment to the source of supply located some distance outby. The cable is heavily insulated and protected with either galvanized steel wire armoring, extra stout braiding hosepipe, or other material.

**Trolley Wire** – The means by which power is conveyed to an electric trolley locomotive. It is hung from the roof and conducts power to the locomotive by the trolley pole. Power from it is sometimes also used to run other equipment.

## U

**Undercut** – Excavation of ore from beneath a larger block of ore to induce its settlement under its own weight.

## V

**Volatile Matter** – Those products, exclusive of moisture, given off by a material as gas and vapor, determined by definite prescribed methods which may vary according to the nature of the material. In the case of coal and coke, the methods employed shall be those prescribed in the Standard Methods of Laboratory Sampling and Analysis of Coal and Coke (ASTM Designation D271) of the American Society for Testing Materials.

## W

**Wall** – The side of a lode; the overhanging side is known as the hanging wall and the lower lying side as the footwall. The face of a longwall working or stall, commonly called coal wall. A rib of solid coal between two rooms; also, the side of an entry.

**Washery** – A place at which ore, coal, or crushed stone is freed from impurities or dust by washing. Also called wet separation plant.

**Wheel Excavator** – A large-capacity machine for excavating loose deposits, particularly at quarries and opencast coalpits. It consists of a digging wheel, rotating on a horizontal axle, and carrying large buckets on its rim.

**Wire Rod** – Hot-rolled coiled stock that is made into wire.

**Working Place** – The place in a mine at which coal or ore is being actually mined.

## Y

**Yield** – The current annual dividend rate expressed as a percentage of the current market price of the stock.

JIMMY LANIYA