

Glossary of Mining Terms

A

Abutment - In coal mining, (1) the weight of the rocks above a narrow roadway is transferred to the solid coal along the sides, which act as abutments of the arch of strata spanning the roadway; and (2) the weight of the rocks over a longwall face is transferred to the front abutment, that is, the solid coal ahead of the face and the back abutment, that is, the settled packs behind the face.

Acid deposition or acid rain – Refers loosely to a mixture of wet and dry "deposition" (deposited material) from the atmosphere containing higher than "normal" amount of nitric and sulfuric acids. The precursors or chemical forerunners of acid rain formation result from both natural sources, such as volcanoes and decaying vegetation, and man-made sources, primarily emissions of sulfur and nitrogen oxides resulting from fossil fuel combustion.

Acid mine water - Mine water that contains free sulfuric acid, mainly due to the weathering of iron pyrites.

Active workings - Any place in a mine where miners are normally required to work or travel and which are ventilated and inspected regularly.

Adit - A nearly horizontal passage from the surface by which a mine is entered and dewatered. A blind horizontal opening into a mountain, with only one entrance.

Advance - Mining in the same direction, or order of sequence; first mining as distinguished from retreat.

Air split - The division of a current of air into two or more parts.

Airway - Any passage through which air is carried. Also known as an air course.

Anemometer - Instrument for measuring air velocity.

Angle of dip - The angle at which strata or mineral deposits are inclined to the horizontal plane.

Angle of draw - In coal mine subsidence, this angle is assumed to bisect the angle between the vertical and the angle of repose of the material and is 20° for flat seams. For dipping seams, the angle of break increases, being 35.8° from the vertical for a 40° dip. The main break occurs over the seam at an angle from the vertical equal to half the dip.

Angle of repose - The maximum angle from horizontal at which a given material will rest on a given surface without sliding or rolling.

Anticline - An upward fold or arch of rock strata.

Aquifer - A water-bearing bed of porous rock, often sandstone.

Arching - Fracture processes around a mine opening, leading to stabilization by an arching effect.

Area (of an airway) - Average width multiplied by average height of airway, expressed in square feet.

Auger - A rotary drill that uses a screw device to penetrate, break, and then transport the drilled material (coal).

Auxiliary operations - All activities supportive of but not contributing directly to mining.

Auxiliary ventilation - Portion of main ventilating current directed to face of dead end entry by means of an auxiliary fan and tubing.

Azimuth - A surveying term that references the angle measured clockwise from any meridian (the established line of reference). The bearing is used to designate direction. The bearing of a line is the acute horizontal angle between the meridian and the line.

B

Back - The roof or upper part in any underground mining cavity.

Backfill - Mine waste or rock used to support the roof after coal removal.

Barren - Said of rock or vein material containing no minerals of value, and of strata without coal, or containing coal in seams too thin to be workable.

Barricading - Enclosing part of a mine to prevent inflow of noxious gasses from a mine fire or an explosion.

Barrier - Something that bars or keeps out. Barrier pillars are solid blocks of coal left between two mines or sections of a mine to prevent accidents due to intrushes of water, gas, or from explosions or a mine fire.

Beam - A bar or straight girder used to support a span of roof between two support props or walls.

Beam building - The creation of a strong, inflexible beam by bolting or otherwise fastening together several weaker layers. In coal mining this is the intended basis for roof bolting.

Bearing – A surveying term used to designate direction. The bearing of a line is the acute horizontal angle between the meridian and the line. The meridian is an established line of reference. Azimuths are angles measured clockwise from any meridian.

Bearing plate - A plate used to distribute a given load. In roof bolting, the plate used between the bolt head and the roof.

Bed - A stratum of coal or other sedimentary deposit.

Belt conveyor - A looped belt on which coal or other materials can be carried and which is generally constructed of flame-resistant material or of reinforced rubber or rubber-like substance.

Belt idler - A roller, usually of cylindrical shape, which is supported on a frame and which, in turn, supports or guides a conveyor belt. Idlers are not powered but turn by contact with the moving belt.

Belt take-up - A belt pulley, generally under a conveyor belt and in by the drive pulley, kept under strong tension parallel to the belt line. Its purpose is to automatically compensate for any slack in the belting created by start-up, etc.

Bench - One of two or more divisions of a coal seam separated by slate or formed by the process of cutting the coal.

Beneficiation - The treatment of mined material, making it more concentrated or richer.

Berm - A pile or mound of material capable of restraining a vehicle.

Binder - A streak of impurity in a coal seam.

Bit - The hardened and strengthened device at the end of a drill rod that transmits the energy of breakage to the rock. The size of the bit determines the size of the hole. A bit may be either detachable from or integral with its supporting drill rod.

Bituminous coal – A middle rank coal (between subbituminous and anthracite) formed by additional pressure and heat on lignite. Usually has a high Btu value and may be referred to as "soft coal."

Black damp - A term generally applied to carbon dioxide. Strictly speaking, it is a mixture of carbon dioxide and nitrogen. It is also applied to an atmosphere depleted of oxygen, rather than having an excess of carbon dioxide.

Blasting agent - Any material consisting of a mixture of a fuel and an oxidizer.

Blasting cap - A detonator containing a charge of detonating compound, which is ignited by electric current or the spark of a fuse. Used for detonating explosives.

Blasting circuit - Electric circuits used to fire electric detonators or to ignite an igniter cord by means of an electric starter.

Bleeder or bleeder entries - Special air courses developed and maintained as part of the mine ventilation system and designed to continuously move air-methane mixtures emitted by the gob or at the active face away from the active workings and into mine-return air courses. Alt: Exhaust ventilation lateral.

Bolt torque - The turning force in foot-pounds applied to a roof bolt to achieve an installed tension.

Borehole - Any deep or long drill-hole, usually associated with a diamond drill.

Bottom - Floor or underlying surface of an underground excavation.

Boss - Any member of the managerial ranks who is directly in charge of miners (e.g., "shift-boss," "face-boss," "fire-boss," etc.).

Box-type magazine - A small, portable magazine used to store limited quantities of explosives or detonators for short periods of time at locations in the mine which are convenient to the blasting sites at which they will be used.

Brattice or brattice cloth - Fire-resistant fabric or plastic partition used in a mine passage to confine the air and force it into the working place. Also termed "line brattice," "line canvas," or "line curtain."

Break line - The line that roughly follows the rear edges of coal pillars that are being mined. The line along which the roof of a coal mine is expected to break.

Breakthrough - A passage for ventilation that is cut through the pillars between rooms.

Bridge carrier - A rubber-tire-mounted mobile conveyor, about 10 meters long, used as an intermediate unit to create a system of articulated conveyors between a mining machine and a room or entry conveyor.

Bridge conveyor - A short conveyor hung from the boom of mining or lading machine or haulage system with the other end attached to a receiving bin that dollies along a frame supported by the room or entry conveyor, tailpiece. Thus, as the machine boom moves, the bridge conveyor keeps it in constant connection with the tailpiece.

Brow - A low place in the roof of a mine, giving insufficient headroom.

Brushing - Digging up the bottom or taking down the top to give more headroom in roadways.

Btu – British thermal unit. A measure of the energy required to raise the temperature of one pound of water one degree Fahrenheit.

Bug dust - The fine particles of coal or other material resulting from the boring or cutting of the coal face by drill or machine.

Bump (or burst) - A violent dislocation of the mine workings which is attributed to severe stresses in the rock surrounding the workings.

Butt cleat - A short, poorly defined vertical cleavage plane in a coal seam, usually at right angles to the long face cleat.

Butt entry - A coal mining term that has different meanings in different locations. It can be synonymous with panel entry, submain entry, or in its older sense it refers to an entry that is "butt" onto the coal cleavage (that is, at right angles to the face).

C

Cage - In a mine shaft, the device, similar to an elevator car, that is used for hoisting personnel and materials.

Calorific value - The quantity of heat that can be liberated from one pound of coal or oil measured in BTU's.

Cannel coal - A massive, non-caking block coal with a fine, even grain and a conchoidal fracture which has a high percentage of hydrogen, burns with a long, yellow flame, and is extremely easy to ignite.

Canopy - A protective covering of a cab on a mining machine.

Cap - A miner's safety helmet. Also, a highly sensitive, encapsulated explosive that is used to detonate larger but less sensitive explosives.

Cap block - A flat piece of wood inserted between the top of the prop and the roof to provide bearing support.

Car - A railway wagon, especially any of the wagons adapted to carrying coal, ore, and waste underground.

Car-dump - The mechanism for unloading a loaded car.

Carbide bit - More correctly, cemented tungsten carbide. A cutting or drilling bit for rock or coal, made by fusing an insert of molded tungsten carbide to the cutting edge of a steel bit shank.

Cast - A directed throw; in strip-mining, the overburden is cast from the coal to the previously mined area.

Certified - Describes a person who has passed an examination to do a required job.

Chain conveyor - A conveyor on which the material is moved along solid pans (troughs) by the action of scraper crossbars attached to powered chains.

Chain pillar - The pillar of coal left to protect the gangway or entry and the parallel airways.

Check curtain - Sheet of brattice cloth hung across an airway to control the passage of the air current.

Chock - Large hydraulic jacks used to support roof in longwall and shortwall mining systems.

Clay vein - A body of clay-like material that fills a void in a coal bed.

Cleat - The vertical cleavage of coal seams. The main set of joints along which coal breaks when mined.

Clean Air Act Amendments of 1990 – A comprehensive set of amendments to the federal law governing the nation's air quality. The Clean Air Act was originally passed in 1970 to address significant air pollution problems in our cities. The 1990 amendments broadened and strengthened the original law to address specific problems such as acid deposition, urban smog, hazardous air pollutants and stratospheric ozone depletion.

Clean Coal Technologies – A number of innovative, new technologies designed to use coal in a more efficient and cost-effective manner while enhancing environmental protection. Several promising technologies include: fluidized-bed combustion, integrated gasification combined cycle, limestone injection multi-stage burner, enhanced flue gas desulfurization (or "scrubbing"), coal liquefaction and coal gasification.

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.

Coal dust - Particles of coal that can pass a No. 20 sieve.

Coal Gasification – The conversion of coal into a gaseous fuel.

Coal mine - An area of land and all structures, facilities, machinery, tools, equipment, shafts, slopes, tunnels, excavations, and other property, real or personal, placed upon, under, or above the surface of such land by any person, used in extracting coal from its natural deposits in the earth by any means or method, and the work of preparing the coal so extracted, including coal preparation facilities. British term is "colliery".

Coal reserves - Measured tonnages of coal that have been calculated to occur in a coal seam within a particular property.

Coal washing – The process of separating undesirable materials from coal based on differences in densities. Pyritic sulfur, or sulfur combined with iron, is heavier and sinks in water; coal is lighter and floats.

Coke – A hard, dry carbon substance produced by heating coal to a very high temperature in the absence of air.

Collar - The term applied to the timbering or concrete around the mouth or top of a shaft. The beginning point of a shaft or drill hole at the surface.

Colliery - British name for coal mine.

Column flotation – A precombustion coal cleaning technology in which coal particles attach to air bubbles rising in a vertical column. The coal is then removed at the top of the column.

Comminution - The breaking, crushing, or grinding of coal, ore, or rock.

Competent rock - Rock which, because of its physical and geological characteristics, is capable of sustaining openings without any structural support except pillars and walls left during mining (stalls, light props, and roof bolts are not considered structural support).

Contact - The place or surface where two different kinds of rocks meet. Applies to sedimentary rocks, as the contact between a limestone and a sandstone, for example, and to metamorphic rocks; and it is especially applicable between igneous intrusions and their walls.

Continuous miner - A machine that constantly extracts coal while it loads it. This is to be distinguished from a conventional, or cyclic, unit which must stop the extraction process in order for loading to commence.

Contour - An imaginary line that connects all points on a surface having the same elevation.

Conventional mining – The first fully-mechanized underground mining method involving the insertion of explosives in a coal seam, the blasting of the seam, and the removal of the coal onto a conveyor or shuttle car by a loading machine.

Conveyor - An apparatus for moving material from one point to another in a continuous fashion. This is accomplished with an endless (that is, looped) procession of hooks, buckets, wide rubber belt, etc.

Core sample – A cylinder sample generally 1-5" in diameter drilled out of an area to determine the geologic and chemical analysis of the overburden and coal.

Cover - The overburden of any deposit.

Creep - The forcing of pillars into soft bottom by the weight of a strong roof. In surface mining, a very slow movement of slopes downhill.

Crib - A roof support of prop timbers or ties, laid in alternate cross-layers, log-cabin style. It may or may not be filled with debris. Also may be called a chock or cog.

Cribbing - The construction of cribs or timbers laid at right angles to each other, sometimes filled with earth, as a roof support or as a support for machinery.

Crop coal - Coal at the outcrop of the seam. It is usually considered of inferior quality due to partial oxidation, although this is not always the case.

Crossbar - The horizontal member of a roof timber set supported by props located either on roadways or at the face.

Crosscut - A passageway driven between the entry and its parallel air course or air courses for ventilation purposes. Also, a tunnel driven from one seam to another through or across the intervening measures; sometimes called "crosscut tunnel", or "breakthrough". In vein mining, an entry perpendicular to the vein.

Cross entry - An entry running at an angle with the main entry.

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

Cutter; Cutting machine - A machine, usually used in coal, that will cut a 10- to 15-cm slot. The slot allows room for expansion of the broken coal. Also applies to the man who operates the machine and to workers engaged in the cutting of coal by pick or drill.

Cycle mining - A system of mining in more than one working place at a time, that is, a miner takes a lift from the face and moves to another face while permanent roof support is established in the previous working face.

D

Demonstrated reserves – A collective term for the sum of coal in both measured and indicated resources and reserves.

Deposit - Mineral deposit or ore deposit is used to designate a natural occurrence of a useful mineral, or an ore, in sufficient extent and degree of concentration to invite exploitation.

Depth - The word alone generally denotes vertical depth below the surface. In the case of incline shafts and boreholes it may mean the distance reached from the beginning of the shaft or hole, the borehole depth, or the inclined depth.

Detectors - Specialized chemical or electronic instruments used to detect mine gases.

Detonator - A device containing a small detonating charge that is used for detonating an explosive, including, but not limited to, blasting caps, exploders, electric detonators, and delay electric blasting caps.

Development mining - Work undertaken to open up coal reserves as distinguished from the work of actual coal extraction.

Diffusion - Blending of a gas and air, resulting in a homogeneous mixture. Blending of two or more gases.

Diffuser fan - A fan mounted on a continuous miner to assist and direct air delivery from the machine to the face.

Dilute - To lower the concentration of a mixture; in this case the concentration of any hazardous gas in mine air by addition of fresh intake air.

Dilution - The contamination of ore with barren wall rock in stopping.

Dip - The inclination of a geologic structure (bed, vein, fault, etc.) from the horizontal; dip is always measured downwards at right angles to the strike.

Dragline – A large excavation machine used in surface mining to remove overburden (layers of rock and soil) covering a coal seam. The dragline casts a wire rope-hung bucket a considerable distance, collects the dug material by pulling the bucket toward itself on the ground with a second wire rope (or chain), elevates the bucket, and dumps the material on a spoil bank, in a hopper, or on a pile.

Drainage - The process of removing surplus ground or surface water either by artificial means or by gravity flow.

Draw slate - A soft slate, shale, or rock from approximately 1 cm to 10 cm thick and located immediately above certain coal seams, which falls quite easily when the coal support is withdrawn.

Drift - A horizontal passage underground. A drift follows the vein, as distinguished from a crosscut that intersects it, or a level or gallery, which may do either.

Drift mine - An underground coal mine in which the entry or access is above water level and generally on the slope of a hill, driven horizontally into a coal seam.

Drill - A machine utilizing rotation, percussion (hammering), or a combination of both to make holes. If the hole is much over 0.4m in diameter, the machine is called a borer.

Drilling - The use of such a machine to create holes for exploration or for loading with explosives.

Dummy - A bag filled with sand, clay, etc., used for stemming a charged hole.

Dump - To unload; specifically, a load of coal or waste; the mechanism for unloading, e.g. a car dump (sometimes called tipple); or, the pile created by such unloading, e.g. a waste dump (also called heap, pile, tip, spoil pike, etc.).

E

Electrical grounding - To connect with the ground to make the earth part of the circuit.

Entry - An underground horizontal or near-horizontal passage used for haulage, ventilation, or as a mainway; a coal heading; a working place where the coal is extracted from the seam in the initial mining; same as "gate" and "roadway," both British terms.

Evaluation - The work involved in gaining a knowledge of the size, shape, position and value of coal.

Exploration - The search for mineral deposits and the work done to prove or establish the extent of a mineral deposit. Alt: Prospecting and subsequent evaluation.

Explosive - Any rapidly combustive or expanding substance. The energy released during this rapid combustion or expansion can be used to break rock.

Extraction - The process of mining and removal of cal or ore from a mine.

F

Face – The exposed area of a coal bed from which coal is being extracted.

Face cleat - The principal cleavage plane or joint at right angles to the stratification of the coal seam.

Face conveyor - Any conveyor used parallel to a working face which delivers coal into another conveyor or into a car.

Factor of safety - The ratio of the ultimate breaking strength of the material to the force exerted against it. If a rope will break under a load of 6000 lbs., and it is carrying a load of 2000 lbs., its factor of safety is 6000 divided by 2000 which equals 3.

Fall - A mass of roof rock or coal which has fallen in any part of a mine.

Fan, auxiliary - A small, portable fan used to supplement the ventilation of an individual working place.

Fan, booster - A large fan installed in the main air current, and thus in tandem with the main fan.

Fan signal - Automation device designed to give alarm if the main fan slows down or stops.

Fault - A slip-surface between two portions of the earth's surface that have moved relative to each other. A fault is a failure surface and is evidence of severe earth stresses.

Fault zone - A fault, instead of being a single clean fracture, may be a zone hundreds or thousands of feet wide. The fault zone consists of numerous interlacing small faults or a confused zone of gouge, breccia, or mylonite.

Feeder - A machine that feeds coal onto a conveyor belt evenly.

Fill - Any material that is put back in place of the extracted ore to provide ground support.

Fire damp - The combustible gas, methane, CH₄. Also, the explosive methane-air mixtures with between 5% and 15% methane. A combustible gas formed in mines by decomposition of coal or other carbonaceous matter, and that consists chiefly of methane.

Fissure - An extensive crack, break, or fracture in the rocks.

Fixed carbon – The part of the carbon that remains behind when coal is heated in a closed vessel until all of the volatile matter is driven off.

Flat-lying - Said of deposits and coal seams with a dip up to 5 degrees.

Flight - The metal strap or crossbar attached to the drag chain-and-flight conveyor.

Float dust - Fine coal-dust particles carried in suspension by air currents and eventually deposited in return entries. Dust consisting of particles of coal that can pass through a No. 200 sieve.

Floor - That part of any underground working upon which a person walks or upon which haulage equipment travels; simply the bottom or underlying surface of an underground excavation.

Flue Gas Desulfurization – Any of several forms of chemical/physical processes that remove sulfur compounds formed during coal combustion. The devices, commonly called "scrubbers," combine the sulfur in gaseous emissions with another chemical medium to form inert "sludge" which must then be removed for disposal.

Fluidized Bed Combustion – A process with a high degree of ability to remove sulfur from coal during combustion. Crushed coal and limestone are suspended in the bottom of a boiler by an upward stream of hot air. The coal is burned in this bubbling, liquid-like (or "fluidized") mixture. Rather than released as emissions, sulfur from combustion gases combines with the limestone to form a solid compound recovered with the ash.

Fly ash – The finely divided particles of ash suspended in gases resulting from the combustion of fuel. Electrostatic precipitators are used to remove fly ash from the gases prior to the release from a power plant's smokestack.

Formation – Any assemblage of rocks which have some character in common, whether of origin, age, or composition. Often, the word is loosely used to indicate anything that has been formed or brought into its present shape.

Fossil fuel – Any naturally occurring fuel of an organic nature, such as coal, crude oil and natural gas.

Fracture - A general term to include any kind of discontinuity in a body of rock if produced by mechanical failure, whether by shear stress or tensile stress. Fractures include faults, shears, joints, and planes of fracture cleavage.

Friable - Easy to break, or crumbling naturally. Descriptive of certain rocks and minerals.

Fuse - A cord-like substance used in the ignition of explosives. Black powder is entrained in the cord and, when lit, burns along the cord at a set rate. A fuse can be safely used to ignite a cap, which is the primer for an explosive.

G

Gallery - A horizontal or a nearly horizontal underground passage, either natural or artificial.

Gasification – Any of various processes by which coal is turned into low, medium, or high Btu gases.

Gathering conveyor; gathering belt - Any conveyor which is used to gather coal from other conveyors and deliver it either into mine cars or onto another conveyor. The term is frequently used with belt conveyors placed in entries where a number of room conveyors deliver coal onto the belt.

Geologist - One who studies the constitution, structure, and history of the earth's crust, conducting research into the formation and dissolution of rock layers, analyzing fossil and mineral content of layers, and endeavoring to fix historical sequence of development by relating characteristics to known geological influences (historical geology).

Goaf - The term applied to that part of the mine from which the coal has been removed and the space more or less filled up with waste. Also, the loose waste in a mine. Also called goaf.

Global climate change – This term usually refers to the gradual warming of the earth caused by the greenhouse effect. Many believe this is the result of man-made emissions of greenhouse gases such as carbon dioxide, chlorofluorocarbons (CFC) and methane.

Grain - In petrology, that factor of the texture of a rock composed of distinct particles or crystals which depends upon their absolute size.

Grizzly - Course screening or scalping device that prevents oversized bulk material from entering a material transfer system; constructed of rails, bars, beams, etc.

Ground control - The regulation and final arresting of the closure of the walls of a mined area. The term generally refers to measures taken to prevent roof falls or coal bursts.

Ground pressure - The pressure to which a rock formation is subjected by the weight of the superimposed rock and rock material or by diastrophic forces created by movements in the rocks forming the earth's crust. Such pressures may be great enough to cause rocks having a low compressional strength to deform and be

squeezed into and close a borehole or other underground opening not adequately strengthened by an artificial support, such as casing or timber.

Gunite - A cement applied by spraying to the roof and sides of a mine passage.

H

Haulage - The horizontal transport of ore, coal, supplies, and waste. The vertical transport of the same is called hoisting.

Haulageway - Any underground entry or passageway that is designed for transport of mined material, personnel, or equipment, usually by the installation of track or belt conveyor.

Headframe - The structure surmounting the shaft which supports the hoist rope pulley, and often the hoist itself.

Heading - A vein above a drift. An interior level or airway driven in a mine. In longwall workings, a narrow passage driven upward from a gangway in starting a working in order to give a loose end.

Head section - A term used in both belt and chain conveyor work to designate that portion of the conveyor used for discharging material.

Heaving - Applied to the rising of the bottom after removal of the coal; a sharp rise in the floor is called a "hogsback".

Highwall - The unexcavated face of exposed overburden and coal in a surface mine or in a face or bank on the uphill side of a contour mine excavation.

Highwall miner - A highwall mining system consists of a remotely controlled continuous miner which extracts coal and conveys it via augers, belt or chain conveyors to the outside. The cut is typically a rectangular, horizontal cut from a highwall bench, reaching depths of several hundred feet or deeper.

Hogsback - A sharp rise in the floor of a seam.

Hoist - A drum on which hoisting rope is wound in the engine house, as the cage or skip is raised in the hoisting shaft.

Hoisting - The vertical transport coal or material.

Horizon - In geology, any given definite position or interval in the stratigraphic column or the scheme of stratigraphic classification; generally used in a relative sense.

Horseback - A mass of material with a slippery surface in the roof; shaped like a horse's back.

Hydraulic - Of or pertaining to fluids in motion. Hydraulic cement has a composition which permits it to set quickly under water. Hydraulic jacks lift through the force transmitted to the movable part of the jack by a liquid. Hydraulic control refers to the mechanical control of various parts of machines, such as coal cutters, loaders, etc., through the operation or action of hydraulic cylinders.

Hydrocarbon – A family of chemical compounds containing carbon and hydrogen atoms in various combinations, found especially in fossil fuels.

I

Inby - In the direction of the working face.

Incline - Any entry to a mine that is not vertical (shaft) or horizontal (adit). Often incline is reserved for those entries that are too steep for a belt conveyor (+17 degrees -18 degrees), in which case a hoist and guide rails are employed. A belt conveyor incline is termed a slope. Alt: Secondary inclined opening, driven upward to connect levels, sometimes on the dip of a deposit; also called "inclined shaft".

Incompetent - Applied to strata, a formation, a rock, or a rock structure not combining sufficient firmness and flexibility to transmit a thrust and to lift a load by bending.

Indicated coal resources – Coal for which estimates of the rank, quality, and quantity have been computed partly from sample analyses and measurements and partly from reasonable geologic projections. The points of observation are ½ to 1 ½ miles apart. Indicated coal is projected to extend as an ½ mile wide belt that lies more than ¼ mile from the outcrop or points of observation or measurement.

Inferred coal resources – Coal in unexplored extensions of the demonstrated resources for which estimates of the quality and size are based on geologic evidence and projection. Quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repletion of which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. The points of observation are 1 ½ to 6 miles apart.

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.

Intake - The passage through which fresh air is drawn or forced into a mine or to a section of a mine.

Intermediate section - A term used in belt and chain conveyor network to designate a section of the conveyor frame occupying a position between the head and foot sections.

Immediate roof - The roof strata immediately above the coalbed, requiring support during the excavation of coal.

Isopach - A line, on a map, drawn through points of equal thickness of a designated unit. Synonym for isopachous line; isopachyte.

J

Jackleg - A percussion drill used for drifting or stopping that is mounted on a telescopic leg which has an extension of about 2.5 m. The leg and machine are hinged so that the drill need not be in the same direction as the leg.

Jackrock – A caltrop or other object manufactured with one or more rounded or sharpened points, which when placed or thrown present at least one point at such an angle that it is peculiar to and designed for use in puncturing or damaging vehicle tires. Jackrocks are commonly used during labor disputes.

Job Safety Analysis (J.S.A.) - A job breakdown that gives a safe, efficient job procedure.

Joint - A divisional plane or surface that divides a rock and along which there has been no visible movement parallel to the plane or surface.

K

Kettle bottom - A smooth, rounded piece of rock, cylindrical in shape, which may drop out of the roof of a mine without warning. The origin of this feature is thought to be the remains of the stump of a tree that has been replaced by sediments so that the original form has been rather well preserved.

Kerf - The undercut of a coal face.

L

Lamp - The electric cap lamp worn for visibility. Also, the flame safety lamp used in coal mines to detect methane gas concentrations and oxygen deficiency.

Layout - The design or pattern of the main roadways and workings. The proper layout of mine workings is the responsibility of the manager aided by the planning department.

Lift - The amount of coal obtained from a continuous miner in one mining cycle.

Liquefaction – The process of converting coal into a synthetic fuel, similar in nature to crude oil and/or refined products, such as gasoline.

Lithology - The character of a rock described in terms of its structure, color, mineral composition, grain size, and arrangement of its component parts; all those visible features that in the aggregate impart individuality of the rock. Lithology is the basis of correlation in coal mines and commonly is reliable over a distance of a few miles.

Load - To place explosives in a drill hole. Also, to transfer broken material into a haulage device.

Loading machine - Any device for transferring excavated coal into the haulage equipment.

Loading pocket - Transfer point at a shaft where bulk material is loaded by bin, hopper, and chute into a skip.

Longwall Mining – One of three major underground coal mining methods currently in use. Employs a steel plow, or rotation drum, which is pulled mechanically back and forth across a face of coal that is usually several hundred feet long. The loosened coal falls onto a conveyor for removal from the mine.

Loose coal - Coal fragments larger in size than coal dust.

Low voltage - Up to and including 660 volts by federal standards.

M

Main entry - A main haulage road. Where the coal has cleats, main entries are driven at right angles to the face cleats.

Main fan - A mechanical ventilator installed at the surface; operates by either exhausting or blowing to induce airflow through the mine roadways and workings.

Manhole - A safety hole constructed in the side of a gangway, tunnel, or slope in which miner can be safe from passing locomotives and car. Also called a refuge hole.

Man trip - A carrier of mine personnel, by rail or rubber tire, to and from the work area.

Manway - An entry used exclusively for personnel to travel from the shaft bottom or drift mouth to the working section; it is always on the intake air side in gassy mines. Also, a small passage at one side or both sides of a breast, used as a traveling way for the miner, and sometimes, as an airway, or chute, or both.

Measured coal resources – Coal for which estimates of the rank, quality, and quantity have been computed from sample analyses and measurements from closely spaced and geologically well-known sample sites, such as outcrops, trenches, mine workings, and drill holes. The points of observation and measurement are so closely spaced and the thickness and extent of coals are so well defined that the tonnage is judged to be accurate within 20 percent of true tonnage. Although the spacing of the points of observation necessary to demonstrate continuity of the coal differs from region to region according to the character of the coal beds, the points of observation are no greater than ½ mile apart. Measured coal is projected to extend as a ¼-mile wide belt from the outcrop or points of observation or measurement.

Meridian -- A surveying term that establishes a line of reference. The bearing is used to designate direction. The bearing of a line is the acute horizontal angle between the meridian and the line. Azimuths are angles measured clockwise from any meridian.

Methane – A potentially explosive gas formed naturally from the decay of vegetative matter, similar to that which formed coal. Methane, which is the principal component of natural gas, is frequently encountered in underground coal mining operations and is kept within safe limits through the use of extensive mine ventilation systems.

Methane monitor - An electronic instrument often mounted on a piece of mining equipment, that detects and measures the methane content of mine air.

Mine development - The term employed to designate the operations involved in preparing a mine for ore extraction. These operations include tunneling, sinking, cross-cutting, drifting, and raising.

Mine mouth electric plant – A coal burning electric-generating plant built near a coal mine.

Miner - One who is engaged in the business or occupation of extracting ore, coal, precious substances, or other natural materials from the earth's crust.

Mineral - An inorganic compound occurring naturally in the earth's crust, with a distinctive set of physical properties, and a definite chemical composition.

Mining Engineer - A person qualified by education, training, and experience in mining engineering. A trained engineer with knowledge of the science, economics, and arts of mineral location, extraction, concentration and sale, and the administrative and financial problems of practical importance in connection with the profitable conduct of mining.

Misfire - The complete or partial failure of a blasting charge to explode as planned.

MSHA - Mine Safety and Health Administration; the federal agency which regulates coal mine health and safety.

Mud cap - A charge of high explosive fired in contact with the surface of a rock after being covered with a quantity of wet mud, wet earth, or sand, without any borehole being used. Also termed adobe, dobie, and sandblast (illegal in coal mining).

N

Natural ventilation - Ventilation of a mine without the aid of fans or furnaces.

Nip - Device at the end of the trailing cable of a mining machine used for connecting the trailing cable to the trolley wire and ground.

O

Open end pillaring - A method of mining pillars in which no stump is left; the pockets driven are open on the gob side and the roof is supported by timber.

Outby; outbye - Nearer to the shaft, and hence farther from the working face. Toward the mine entrance. The opposite of inby.

Outcrop – Coal that appears at or near the surface.

Overburden – Layers of soil and rock covering a coal seam. Overburden is removed prior to surface mining and replaced after the coal is taken from the seam.

Overcast (undercast) - Enclosed airway which permits one air current to pass over (under) another without interruption.

P

Panel - A coal mining block that generally comprises one operating unit.

Panic bar - A switch, in the shape of a bar, used to cut off power at the machine in case of an emergency.

Parting - (1) A small joint in coal or rock; (2) a layer of rock in a coal seam; (3) a side track or turnout in a haulage road.

Peat – The partially decayed plant matter found in swamps and bogs, one of the earliest stages of coal formation.

Percentage extraction - The proportion of a coal seam which is removed from the mine. The remainder may represent coal in pillars or coal which is too thin or inferior to mine or lost in mining. Shallow coal mines working under townships,

reservoirs, etc., may extract 50%, or less, of the entire seam, the remainder being left as pillars to protect the surface. Under favorable conditions, longwall mining may extract from 80 to 95% of the entire seam. With pillar methods of working, the extraction ranges from 50 to 90% depending on local conditions.

Percussion drill - A drill, usually air powered, that delivers its energy through a pounding or hammering action.

Permissible - That which is allowable or permitted. It is most widely applied to mine equipment and explosives of all kinds which are similar in all respects to samples that have passed certain tests of the MSHA and can be used with safety in accordance with specified conditions where hazards from explosive gas or coal dust exist.

Permit – As it pertains to mining, a document issued by a regulatory agency that gives approval for mining operations to take place.

Piggy-back - A bridge conveyor.

Pillar - An area of coal left to support the overlying strata in a mine; sometimes left permanently to support surface structures.

Pillar robbing - The systematic removal of the coal pillars between rooms or chambers to regulate the subsidence of the roof. Also termed "bridging back" the pillar, "drawing" the pillar, or "pulling" the pillar.

Pinch - A compression of the walls of a vein or the roof and floor of a coal seam so as to "squeeze" out the coal.

Pinch – A compression of the roof and floor of a coal seam so as to "squeeze" out the coal.

Pinning - Roof bolting.

Pitch - The inclination of a seam; the rise of a seam.

Plan - A map showing features such as mine workings or geological structures on a horizontal plane.

Pneumoconiosis - A chronic disease of the lung arising from breathing coal dust.

Portal - The structure surrounding the immediate entrance to a mine; the mouth of an adit or tunnel.

Portal bus - Track-mounted, self-propelled personnel carrier that holds 8 to 12 people.

Post - The vertical member of a timber set.

Preparation plant - A place where coal is cleaned, sized, and prepared for market.

Primary roof - The main roof above the immediate top. Its thickness may vary from a few to several thousand feet.

Primer (booster) - A package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator.

Prop - Coal mining term for any single post used as roof support. Props may be timber or steel; if steel--screwed, yieldable, or hydraulic.

Proximate analysis - A physical, or non-chemical, test of the constitution of coal. Not precise, but very useful for determining the commercial value. Using the same sample (1 gram) under controlled heating at fixed temperatures and time periods, moisture, volatile matter, fixed carbon and ash content are successfully determined. Sulfur and Btu content are also generally reported with a proximate analysis.

Pyrite - A hard, heavy, shiny, yellow mineral, FeS₂ or iron disulfide, generally in cubic crystals. Also called iron pyrites, fool's gold, sulfur balls. Iron pyrite is the most common sulfide found in coal mines.

R

Raise - A secondary or tertiary inclined opening, vertical or near-vertical opening driven upward from a level to connect with the level above, or to explore the ground for a limited distance above one level.

Ramp - A secondary or tertiary inclined opening, driven to connect levels, usually driven in a downward direction, and used for haulage.

Ranks of coal – The classification of coal by degree of hardness, moisture and heat content. "Anthracite" is hard coal, almost pure carbon, used mainly for heating homes. "Bituminous" is soft coal. It is the most common coal found in the United States and is used to generate electricity and to make coke for the steel industry. "Subbituminous" is a coal with a heating value between bituminous and lignite. It has low fixed carbon and high percentages of volatile matter and moisture. "Lignite" is the softest coal and has the highest moisture content. It is used for generating electricity and for conversion into synthetic gas. In terms of Btu or "heating" content, anthracite has the highest value, followed by bituminous, subbituminous and lignite.

Reclamation – The restoration of land and environmental values to a surface mine site after the coal is extracted. Reclamation operations are usually underway as

soon as the coal has been removed from a mine site. The process includes restoring the land to its approximate original appearance by restoring topsoil and planting native grasses and ground covers.

Recovery - The proportion or percentage of coal or ore mined from the original seam or deposit.

Red dog - A nonvolatile combustion product of the oxidation of coal or coal refuse. Most commonly applied to material resulting from in situ, uncontrolled burning of coal or coal refuse piles. It is similar to coal ash.

Regulator - Device (wall, door) used to control the volume of air in an air split.

Reserve – That portion of the identified coal resource that can be economically mined at the time of determination. The reserve is derived by applying a recovery factor to that component of the identified coal resource designated as the reserve base.

Resin bolting - A method of permanent roof support in which steel rods are grouted with resin.

Resources – Concentrations of coal in such forms that economic extraction is currently or may become feasible. Coal resources broken down by identified and undiscovered resources. Identified coal resources are classified as demonstrated and inferred. Demonstrated resources are further broken down as measured and indicated. Undiscovered resources are broken down as hypothetical and speculative.

Respirable dust - Dust particles 5 microns or less in size.

Respirable dust sample - A sample collected with an approved coal mine dust sampler unit attached to a miner, or so positioned as to measure the concentration of respirable dust to which the miner is exposed, and operated continuously over an entire work shift of such miner.

Retreat mining - A system of robbing pillars in which the robbing line, or line through the faces of the pillars being extracted, retreats from the boundary toward the shaft or mine mouth.

Return - The air or ventilation that has passed through all the working faces of a split.

Return idler - The idler or roller underneath the cover or cover plates on which the conveyor belt rides after the load which it was carrying has been dumped at the head section and starts the return trip toward the foot section.

Rib - The side of a pillar or the wall of an entry. The solid coal on the side of any underground passage. Same as rib pillar.

Rider - A thin seam of coal overlying a thicker one.

Ripper - A coal extraction machine that works by tearing the coal from the face.

Rob - To extract pillars of coal previously left for support.

Robbed out area - Describes that part of a mine from which the pillars have been removed.

Roll - (1) A high place in the bottom or a low place in the top of a mine passage, (2) a local thickening of roof or floor strata, causing thinning of a coal seam.

Roll protection - A framework, safety canopy, or similar protection for the operator when equipment overturns.

Roof - The stratum of rock or other material above a coal seam; the overhead surface of a coal working place. Same as "back" or "top."

Roof bolt - A long steel bolt driven into the roof of underground excavations to support the roof, preventing and limiting the extent of roof falls. The unit consists of the bolt (up to 4 feet long), steel plate, expansion shell, and pal nut. The use of roof bolts eliminates the need for timbering by fastening together, or "laminating," several weaker layers of roof strata to build a "beam."

Roof fall - A coal mine cave-in especially in permanent areas such as entries.

Roof jack - A screw- or pump-type hydraulic extension post made of steel and used as temporary roof support.

Roof sag - The sinking, bending, or curving of the roof, especially in the middle, from weight or pressure.

Roof stress - Unbalanced internal forces in the roof or sides, created when coal is extracted.

Roof support – Posts, jacks, roof bolts and beams used to support the rock overlying a coal seam in an underground mine. A good roof support plan is part of mine safety and coal extraction.

Roof trusses - A combination of steel rods anchored into the roof to create zones of compression and tension forces and provide better support for weak roof and roof over wide areas.

Room and pillar mining – A method of underground mining in which approximately half of the coal is left in place to support the roof of the active mining area. Large "pillars" are left while "rooms" of coal are extracted.

Room neck - The short passage from the entry into a room.

Round - Planned pattern of drill holes fired in sequence in tunneling, shaft sinking, or stopping. First the cut holes are fired, followed by relief, lifter, and rib holes.

Royalty - The payment of a certain stipulated sum on the mineral produced.

Rubbing surface - The total area (top, bottom, and sides) of an airway.

Run-of-mine - Raw material as it exists in the mine; average grade or quality.

S

Safety fuse - A train of powder enclosed in cotton, jute yarn, or waterproofing compounds, which burns at a uniform rate; used for firing a cap containing the detonation compound which in turn sets off the explosive charge.

Safety lamp - A lamp with steel wire gauze covering every opening from the inside to the outside so as to prevent the passage of flame should explosive gas be encountered.

Sampling - Cutting a representative part of an ore (or coal) deposit, which should truly represent its average value.

Sandstone - A sedimentary rock consisting of quartz sand united by some cementing material, such as iron oxide or calcium carbonate.

Scaling - Removal of loose rock from the roof or walls. This work is dangerous and a long bar (called a scaling bar) is often used.

Scoop - A rubber tired-, battery- or diesel-powered piece of equipment designed for cleaning runways and hauling supplies.

Scrubber – Any of several forms of chemical/physical devices that remove sulfur compounds formed during coal combustion. These devices, technically know as flue gas desulfurization systems, combine the sulfur in gaseous emissions with another chemical medium to form inert "sludge," which must then be removed for disposal.

Seam - A stratum or bed of coal.

Secondary roof - The roof strata immediately above the coalbed, requiring support during the excavating of coal.

Section - A portion of the working area of a mine.

Selective mining - The object of selective mining is to obtain a relatively high-grade mine product; this usually entails the use of a much more expensive stopping system and high exploration and development costs in searching for and developing the separate bunches, stringers, lenses, and bands of ore.

Self-contained breathing apparatus - A self-contained supply of oxygen used during rescue work from coal mine fires and explosions; same as SCSR (self-contained self rescuer).

Self-rescuer – A small filtering device carried by a coal miner underground, either on his belt or in his pocket, to provide him with immediate protection against carbon monoxide and smoke in case of a mine fire or explosion. It is a small canister with a mouthpiece directly attached to it. The wearer breathes through the mouth, the nose being closed by a clip. The canister contains a layer of fused calcium chloride that absorbs water vapor from the mine air. The device is used for escape purposes only because it does not sustain life in atmospheres containing deficient oxygen. The length of time a self-rescuer can be used is governed mainly by the humidity in the mine air, usually between 30 minutes and one hour.

Severance – The separation of a mineral interest from other interests in the land by grant or reservation. A mineral deed or grant of the land reserving a mineral interest, by the landowner before leasing, accomplishes a severance as does his execution of a mineral lease.

Shaft - A primary vertical or non-vertical opening through mine strata used for ventilation or drainage and/or for hoisting of personnel or materials; connects the surface with underground workings.

Shaft mine – An underground mine in which the main entry or access is by means of a vertical shaft.

Shale - A rock formed by consolidation of clay, mud, or silt, having a laminated structure and composed of minerals essentially unaltered since deposition.

Shearer - A mining machine for longwall faces that uses a rotating action to "shear" the material from the face as it progresses along the face.

Shift - The number of hours or the part of any day worked.

Shortwall – An underground mining method in which small areas are worked (15 to 150 feet) by a continuous miner in conjunction with the use of hydraulic roof supports.

Shuttle car – A self-discharging truck, generally with rubber tires or caterpillar-type treads, used for receiving coal from the loading or mining machine and

transferring it to an underground loading point, mine railway or belt conveyor system.

Sinking - The process by which a shaft is driven.

Skid - A track-mounted vehicle used to hold trips or cars from running out of control. Also it is a flat-bottom personnel or equipment carrier used in low coal.

Skip - A car being hoisted from a slope or shaft.

Slack - Small coal; the finest-sized soft coal, usually less than one inch in diameter.

Slag - The waste product of the process of smelting.

Slate - A miner's term for any shale or slate accompanying coal. Geologically, it is a dense, fine-textured, metamorphic rock, which has excellent parallel cleavage so that it breaks into thin plates or pencil-like shapes.

Slate bar - The proper long-handled tool used to pry down loose and hazardous material from roof, face, and ribs.

Slickenside - A smooth, striated, polished surface produced on rock by friction.

Slip - A fault. A smooth joint or crack where the strata have moved on each other.

Slope - Primary inclined opening, connection the surface with the underground workings.

Slope mine – An underground mine with an opening that slopes upward or downward to the coal seam.

Sloughing - The slow crumbling and falling away of material from roof, rib, and face.

Solid - Mineral that has not been undermined, sheared out, or otherwise prepared for blasting.

Sounding - Knocking on a roof to see whether it is sound and safe to work under.

Spad – A spad is a flat spike hammered into a wooden plug anchored in a hole drilled into the mine ceiling from which is threaded a plumbline. The spad is an underground survey station similar to the use of stakes in marking survey points on the surface. A pointer spad, or sight spad, is a station that allows a mine foreman to visually align entries or breaks from the main spad.

Span - The horizontal distance between the side supports or solid abutments along sides of a roadway.

Specific gravity - The weight of a substance compared with the weight of an equal volume of pure water at 4 degrees Celsius.

Split - Any division or branch of the ventilating current. Also, the workings ventilated by one branch. Also, to divide a pillar by driving one or more roads through it.

Squeeze - The settling, without breaking, of the roof and the gradual upheaval of the floor of a mine due to the weight of the overlying strata.

Steeply inclined - Said of deposits and coal seams with a dip of from 0.7 to 1 rad (40 degrees to 60 degrees).

Stemming - The noncombustible material used on top or in front of a charge or explosive.

Strike - The direction of the line of intersection of a bed or vein with the horizontal plane. The strike of a bed is the direction of a straight line that connects two points of equal elevation on the bed.

Stripping ratio – The unit amount of overburden that must be removed to gain access to a similar unit amount of coal or mineral material.

Stump - Any small pillar.

Subbituminous – Coal of a rank intermediate between lignite and bituminous.

Subsidence – The gradual sinking, or sometimes abrupt collapse, of the rock and soil layers into an underground mine. Structures and surface features above the subsidence area can be affected.

Sump - The bottom of a shaft, or any other place in a mine, that is used as a collecting point for drainage water.

Sumping - To force the cutter bar of a machine into or under the coal. Also called a sumping cut, or sumping in.

Support - The all-important function of keeping the mine workings open. As a verb, it refers to this function; as a noun it refers to all the equipment and materials--timber, roof bolts, concrete, steel, etc.--that are used to carry out this function.

Surface mine – A mine in which the coal lies near the surface and can be extracted by removing the covering layers of rock and soil.

Suspension - Weaker strata hanging from stronger, overlying strata by means of roof bolts.

Syncline - A fold in rock in which the strata dip inward from both sides toward the axis. The opposite of anticline.

T

Tailgate - A subsidiary gate road to a conveyor face as opposed to a main gate. The tailgate commonly acts as the return airway and supplies road to the face.

Tailpiece - Also known as foot section pulley. The pulley or roller in the tail or foot section of a belt conveyor around which the belt runs.

Tail section - A term used in both belt and chain conveyor work to designate that portion of the conveyor at the extreme opposite end from the delivery point. In either type of conveyor it consists of a frame and either a sprocket or a drum on which the chain or belt travels, plus such other devices as may be required for adjusting belt or chain tension.

Tension - The act of stretching.

Tertiary - Lateral or panel openings (e.g., ramp, crosscut).

Through-steel - A system of dust collection from rock or roof drilling. The drill steel is hollow, and a vacuum is applied at the base, pulling the dust through the steel and into a receptacle on the machine.

Timber - A collective term for underground wooden supports.

Timbering - The setting of timber supports in mine workings or shafts for protection against falls from roof, face, or rib.

Timber set - A timber frame to support the roof, sides, and sometimes the floor of mine roadways or shafts.

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

Ton - A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a metric ton is approximately 2,205 pounds.

Top - A mine roof; same as "back."

Torque wrench - A wrench that indicates, as on a dial, the amount of torque (in units of foot-pounds) exerted in tightening a roof bolt.

Tractor - A battery-operated piece of equipment that pulls trailers, skids, or personnel carriers. Also used for supplies.

Tram - Used in connection with moving self-propelled mining equipment. A tramming motor may refer to an electric locomotive used for hauling loaded trips or it may refer to the motor in a cutting machine that supplies the power for moving or tramming the machine.

Transfer - A vertical or inclined connection between two or more levels and used as an ore pass.

Transfer point - Location in the materials handling system, either haulage or hoisting, where bulk material is transferred between conveyances.

Trip - A train of mine cars.

Troughing idlers - The idlers, located on the upper framework of a belt conveyor, which support the loaded belt. They are so mounted that the loaded belt forms a trough in the direction of travel, which reduces spillage and increases the carrying capacity of a belt for a given width.

Tunnel - A horizontal, or near-horizontal, underground passage, entry, or haulageway, that is open to the surface at both ends. A tunnel (as opposed to an adit) must pass completely through a hill or mountain.

U

Ultimate analysis - Precise determination, by chemical means, of the elements and compounds in coal.

Undercut - To cut below or undermine the coal face by chipping away the coal by pick or mining machine. In some localities the terms "undermine" or "underhole" are used.

Underground mine - Also known as a "deep" mine. Usually located several hundred feet below the earth's surface, an underground mine's coal is removed mechanically and transferred by shuttle car or conveyor to the surface.

Underground station - An enlargement of an entry, drift, or level at a shaft at which cages stop to receive and discharge cars, personnel, and material. An underground station is any location where stationary electrical equipment is installed. This includes pump rooms, compressor rooms, hoist rooms, battery-charging rooms, etc.

Unit train - A long train of between 60 and 150 or more hopper cars, carrying only coal between a single mine and destination.

Universal coal cutter - A type of coal cutting machine which is designed to make horizontal cuts in a coal face at any point between the bottom and top or to make shearing cuts at any point between the two ribs of the place. The cutter bar can be twisted to make cuts at any angle to the horizontal or vertical.

Upcast shaft - A shaft through which air leaves the mine.

V

Valuation - The act or process of valuing or of estimating the value or worth; appraisal.

Velocity - Rate of airflow in lineal feet per minute.

Ventilation - The provision of a directed flow of fresh and return air along all underground roadways, traveling roads, workings, and service parts.

Violation - The breaking of any state or federal mining law.

Virgin - Unworked; untouched; often said of areas where there has been no coal mining.

Void - A general term for pore space or other reopenings in rock. In addition to pore space, the term includes vesicles, solution cavities, or any openings either primary or secondary.

Volatile matter - The gaseous part, mostly hydrocarbons, of coal.

W

Waste - That rock or mineral which must be removed from a mine to keep the mining scheme practical, but which has no value.

Water Gauge (standard U-tube) - Instrument that measures differential pressures in inches of water.

Wedge - A piece of wood tapering to a thin edge and used for tightening in conventional timbering.

Weight - Fracturing and lowering of the roof strata at the face as a result of mining operations, as in "taking weight".

White damp - Carbon monoxide, CO. A gas that may be present in the afterdamp of a gas- or coal-dust explosion, or in the gases given off by a mine fire; also one of the constituents of the gases produced by blasting. Rarely found in mines under other circumstances. It is absorbed by the hemoglobin of the blood to the exclusion of oxygen. One-tenth of 1% (.001) may be fatal in 10 minutes.

Width - The thickness of a lode measured at right angles to the dip.

Winning - The excavation, loading, and removal of coal or ore from the ground; winning follows development.

Winze - Secondary or tertiary vertical or near-vertical opening sunk from a point inside a mine for the purpose of connecting with a lower level or of exploring the ground for a limited depth below a level.

Wire rope - A steel wire rope used for winding in shafts and underground haulages. Wire ropes are made from medium carbon steels. Various constructions of wire rope are designated by the number of strands in the rope and the number of wires in each strand. The following are some common terms encountered: airplane strand; cablelaid rope; cane rope; elevator rope; extra-flexible hoisting rope; flat rope; flattened-strand rope; guy rope; guy strand; hand rope; haulage rope; hawser; hoisting rope; lang lay rope; lay; left lay rope; left twist; nonspinning rope; regular lay; reverse-laid rope; rheostat rope; right lay; right twist; running rope; special flexible hoisting rope; standing rope; towing hawser; transmission rope.

Working - When a coal seam is being squeezed by pressure from roof and floor, it emits creaking noises and is said to be "working". This often serves as a warning to the miners that additional support is needed.

Working face - Any place in a mine where material is extracted during a mining cycle.

Working place - From the outby side of the last open crosscut to the face.

Workings - The entire system of openings in a mine for the purpose of exploitation.

Working section - From the faces to the point where coal is loaded onto belts or rail cars to begin its trip to the outside.