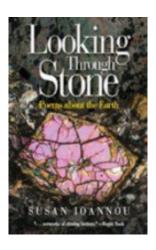
Glossary



Looking Through Stone: Poems about the Earth

by Susan Ioannou

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Glossary

agate: a fine-grained translucent quartz, with colours in stripes, blended in clouds, or showing moss-like forms

Agricola, Georgius: 1494–1555, physician in Saxony who founded the science of geology based on observing and classifying rocks by their location and physical properties, rather than by their fabled magical powers

alchemy: a Mediaeval science/philosophy that sought a way to change base metals into gold, cure every disease, and find eternal life

Alexander the Great: 356 B.C.–323 B.C., the King of Macedon who spread Greek culture as he conquered Persia, Egypt, and other territories as far away as northern India

alpha ray: a positively charged particle thrown off at high speed during certain radioactive transformations

Amazon: in Greek mythology, a tribe of female warriors who waged battle, while their husbands kept house

anion: a negatively charged ion

antimatter: subatomic particles having electric and magnetic properties opposite to those of matter; combined, antimatter and matter destroy each other

aqua regia: a highly corrosive mixture of nitric and hydrochloric acids that dissolves gold or platinum

argentum: the Latin word for silver, its symbol Ag

Artemis: in Greek mythology, the moon goddess, often depicted as a virgin huntress

atom: the smallest particle of an element that can exist either alone or in combination, made up of a nucleus surrounded by an electron cloud

aureole: above ground, a halo of light; below ground, a ring-shaped zone around igneous rock.

aurum: the Latin word for gold, its symbol Au

azurite: a semiprecious blue stone derived from copper ore

basalt: a dark grey to black, dense to fine-grained igneous rock

base metal: any non-precious metal, such as copper, lead, nickel, or zinc

Berkeley Pit: in Butte, Montana, an open-pit mine 1.5 miles wide and 1,800 feet deep, where after it closed in 1982, groundwater leaked in and mixed with heavy metal deposits and chemicals to form acid that killed 342 migrating snow geese

beryl: a species of very hard, transparent green (emerald), bluish-green (aquamarine), yellow (heliodor), or pink (morganite) precious stone found in pegmatites

beta ray: a high-speed electron given off by a radioactive nucleus when its atomic number is transformed to +1 or -1

biotite: a black or dark-green platy mica often found in igneous rocks

bornite: a brittle metallic-looking mineral that is a valuable copper ore

bronze: an alloy of copper and tin and sometimes other elements

caduceus: in Roman mythology, a herald's staff entwined by two snakes, with two wings at the top, carried by the god Mercury

Caesar, Gaius Julius: 100 B.C.–44 B.C., a dictator and civil reformer whose military conquests extended the Roman Empire and culture across Gaul (France) and into Britain.

cage: a mesh elevator for carrying men and equipment up and down a mine shaft

calcite: a calcium carbonate mineral found in limestone, chalk, and marble

carat: a unit of weight for precious stones equal to 0.2 grams

cassiterite: a brown or black mineral found in pegmatites or high-temperature veins that is the chief source of metallic tin

cat's eye: a gem containing a fine silver-white line that appears as a moving light ray

cation: a positively charged ion

chakra: in yoga, any of several points of physical or spiritual energy in the human body

chalcopyrite: a brass-yellow mineral that is the most important ore of copper

chi: in Far Eastern belief, the vital life force within the human breath and body

chloride: a compound of chlorine and another element

cinnabar: a vermillion-coloured ore of mercury

conductivity: the ability to transmit heat or electricity

cone: the outer pointed mound of a volcano

core: the long cylinder of material (commonly 27.0 to 47.6 mm in diameter) that a diamond drill brings to the surface for analyzing mineral content

crucible: a porcelain vessel for melting a substance at high heat without fusing it

crust: the outermost Earth layer, holding the continents and oceans, composed mainly of crystalline rocks

crystal: a mineral with atoms organized into one or more of six basic geometrical shapes and smooth outer symmetrical planes, such as amethyst, aquamarine, diamond, emerald, garnet, moonstone, and pegmatite

cupel: a small porous cup, often made of bone ash, used in assaying to separate precious metals from base elements such as lead.

cuprum: the Latin word for copper, its symbol Cu

cyanide: the chemical used to dissolve gold and silver from ore

Cyclops: in Greek mythology, a giant with a single eye in the centre of his forehead

De Re Metallica: 1556, Georgius Agricola's pioneering, profusely illustrated volume on mining and smelting

de Ulloa, Antonio: 1716–1795, the Spanish scientist and naval officer, co-discoverer with Jorge Juan of platinum in Peru

dendrite: a tree-like figure produced in a mineral by the crystal growth of another, different mineral

devitrification: the gradual clouding of transparent volcanic glass as crystals grow within it

Diana: in mythology, the Roman name for the Greek goddess Artemis

diffusion: the intermingling and spreading out of particles of liquids, gases, or solids

diopside: an important green to white rock-forming mineral found in several metamorphic and basic to ultra basic igneous rocks, and also in meteorites

drift: a nearly horizontal mine passageway connecting two larger tunnels

dripstone: an icicle-like deposit hanging from the roof a cavern

druse: an irregular cavity encrusted with crystals of the same material as the surrounding rock

ductile: able to be drawn out to the thinness of a wire or thread

eggstone: a small oval calcium carbonate particle that clusters on limestone

electron: a tiny particle that orbits the nucleus of an atom.

elektron: in Greek, the word for amber that reflects its static electrical properties

element: a fundamental substance consisting of only one kind of atoms that alone or combined make up matter, such as copper, gold, lead, mercury, platinum, silver, tin, uranium, and zinc

enrichment zone: an area underground where acidic solutions leach metals downward to enhance existing sulphide metals

Evil Eye: a person or glance believed able to cause harm

Exodus: the second book of the Bible

facet: a small plane surface on a cut gem

fault: a fracture in rock along which the two sides have shifted in opposite directions

feldspar: any of the aluminum silicate minerals, the most abundant in the Earth's crust

ferrum: the Latin word for iron, its symbol Fe

fiammé: pumice and volcanic glass fragments in lava flow, welded into dense flame-shaped rock

fold: any bending or winding of rock strata under pressure

foliated: made of or separable into layers

forklift: a machine fronted with a large steel horizontal fork to hoist and move heavy objects

fusible: able to melt together when heated

galena: a soft, lustrous bluish-grey heavy mineral that is a principal ore of lead and an important source of silver

gamma ray: highly penetrating electromagnetic radiation from within the nucleus of an atom that has waves shorter than X-rays

Geiger counter: an instrument that measures radioactivity by counting ionizing particles

Genesis: the first book of the Bible

geode: a hollow sphere, partially lined with sparkling mineral crystals different from the surrounding rock.

glass: a material produced by lava cooling too fast for crystals to form

gluon: an elementary particle that binds two quarks together

gneiss: a layered or banded metamorphic rock similar to granite

GPS: a global positioning satellite for tracking movement on and inside Earth

grade: the amount of valuable metal or minerals in each tonne of ore

granite: a medium- to coarse-grained, light-coloured igneous rock

graphite: a soft, lustrous-black form of carbon that conducts electricity

grossular: a variety of garnet, most commonly green

groundwater: water below the Earth's surface that supplies wells and springs

gryphon: in Greek mythology, a beast that was half eagle (in front) and half lion (at rear)

Hades: in Greek mythology, the underground realm of the dead; also the name of its god

hard rock mining: removing minerals from igneous and metamorphic rock by blasting or drilling

heap leach: percolating a solution through a pile of crushed ore to dissolve out valuable metals such as gold and silver

heap-leach pad: the large impermeable foundation on which the crushed ore is piled

heating: a method for deepening a gemstone's colour

hematite: a black or red ore of iron

Hephaestus: in Greek mythology, the god of fire and metalworking whose forge was in the underworld

hydra argyrum: the Latin word for mercury, its symbol Hg

igneous rock: a crystalline solid formed from magma cooling, either at the Earth's surface (extrusive) or beneath (intrusive)

inclusion: foreign matter enclosed inside a mineral

interference: in physics, the meeting of two or more waves to create a new pattern of light and dark lines

intrusion: molten igneous rock that forced itself into the surrounding rock, then solidified there

ion: a charged subatomic particle

Iron Mountain: 1860s–1963, an improperly closed gold mine in northern California that will leak heavy metals and acid for 3,000 years

Isis: in Egyptian, Greek, and Roman mythology, the sister/queen of Osiris, god of the underworld, and a goddess of fertility, shown wearing a headdress of a solar disk cupped between cow's horns

isotope: two atoms of a chemical element with the same atomic number but different atomic mass and physical properties

jardin: the garden-like inclusions in an emerald

kimberlite: the dark-green to blue material within a volcanic pipe that carries diamonds up from great depths to the surface, where it weathers to yellow

klint: a coral reef forming a knob or ridge after surrounding rock eroded away

knapped flint: flint with outer flakes or bits broken off to form a tool for digging

lamellar: having thin scales or membranes (like gills)

lapidary: an artisan who cuts, polishes, or engraves precious stones

lapis lazuli: a rich azure semiprecious stone often spangled with iron pyrite

lattice: in a crystal, the geometrical arrangement of atoms

lava: molten rock erupted from a volcano or a fissure in the Earth's surface

limestone: a rock formed of accumulated shells or coral, and giving off lime when burned, used for building

limonite: a minor yellow-brown ore of iron

lithification: the process whereby sediment is cemented, compacted, and crystallized into solid rock

lithosphere: the outer solid rock layer of Earth about 80 kilometres thick

lode: a mineral deposit, such as a vein, in solid rock

lodestone: magnetite that has the polarity to attract iron objects

macrodiamond: a diamond more than 0.5 mm in diameter that has crystals large enough to see with the naked eye

magma: molten rock within the Earth that cools into igneous rock

magnetite: an opaque black, strongly magnetic ore of iron

magnetometer: an instrument for measuring the intensity of a magnetic field, used to locate mineral deposits

major: one of the large, established mining companies

malachite: a bright-green mineral and minor ore of copper used in making ornamental objects

malleable: able to be stretched or shaped by beating with a hammer or pressing under rollers

mantle: the middle layer of planet Earth that lies under the crust and above the core

manway: a passageway for miners to travel from the shaft bottom or drift mouth to a working section (if vertical, may also be termed a ladderway)

marble: limestone that has crystallized under Earth's heat and pressure

Mars: in Roman mythology, the god of war

massive: a large amount of rock that is homogeneous in texture and structure concentrated in one place

Mercury: in Roman mythology, the wing-heeled god of cunning, theft, trade, and travel who also served as a messenger to the other gods

metal: the final form of solid material, typically hard, shiny, malleable, fusible, and ductile, with good electrical and thermal conductivity, such as iron, copper, and gold, derived from smelting ore

metallurgy: the science and technology of separating metal from its ore

metamorphic rock: rock changed in physical form, structure, or substance under great pressure and heat

meteoric iron: iron that fell to Earth in meteorites from the sky

mica: an often transparent mineral that separates easily into thin leaves

microdiamond: a diamond less than 0.5 mm in diameter, where the crystals are visible only under a microscope

microlite: a pale-yellow, reddish-brown, or black microscopic crystal that polarizes light and may be slightly radioactive.

miner's asthma: see silicosis

mineral: a natural inorganic solid made up of crystals

mucker: a labourer or machine for loading and moving mud and debris in a mine

nanometre: one billionth of a metre

neutron: a neutral particle, the same size as a proton, often found in the nucleus of atoms

niobium: a rare grey-blue element used in alloys for superconductors

Noah: in the Bible, the builder of an ark that saved his family and pairs of all living creatures from the great flood God sent to destroy an evil civilization

nuée ardente: a turbulent, rapidly flowing, glowing gaseous cloud containing debris from the collapsed dome of a volcano and its erupted ash

obsidian: a dark natural glass formed by the quick cooling of lava

consisting of small round grains cemented together in layers; 'eggstone'

opal: a transparent to nearly opaque whitish gemstone marked by an iridescent play of colours

open pit: a mine excavated entirely on the surface

ore: rock containing minerals that can be mined at a profit

Otto the Rich: 912–973, crowned Holy Roman Emperor Otto the Great after Saxony prospered from the 938 discovery of the bonanza Rammelsberg silver deposit (mined until 1988)

outcrop: the part of a rock formation visible at the ground's surface

Persephone: in Greek mythology, the daughter of grain goddess Demeter, abducted by Hades to be his queen in the underworld

petra: the Greek word for stone

Petra: an ancient Arabian city carved from a cliff face of pink stone

pewter: a dull-grey alloy of tin with lead, in the past used for household utensils

Phaethon: in Greek mythology, the youth who recklessly drove the Sun's chariot too low in the sky and scorched North Africa, turning the people black

phthisis: see silicosis

Physica: 1533, the medical encyclopaedia written by abbess Hildegard von Bingen that included descriptions of the basic qualities and healing values of plants, animals, trees, and stones

Physics: Aristotle's fourth-century B.C. Greek treatise that was the basis of natural philosophy until the work of Italian astronomer and physicist Galileo in the sixteenth century

piezoelectricity: voltage produced by certain asymmetrical crystals, such as quartz, when pressed or squeezed; conversely, voltage applied to such crystals that subtly alters their shape

pig iron: crude iron produced in a blast furnace and refined to make steel, wrought iron, or ingot iron

pipe: a vertical underground channel through which magma flows upwards to erupt out of a volcano, afterwards filled with rock fragments

placer: a deposit of sand and gravel containing valuable metals such as gold, tin, or diamonds

plagioclase: a form of the mineral feldspar

plate tectonics: the theory that the topmost layer of Earth's crust is made up of rigid floating plates that create earthquakes, mountains, volcanoes, and oceanic trenches where they collide

Plato: 427 B.C.–c. 347 B.C., the Greek philosopher and teacher of Aristotle, whose *Dialogues* with fellow philosopher Socrates laid the foundations of

Western thought; he maintained that physical objects were mere shadows of ideal and unchanging Forms

plumbum: the Latin word for lead, its symbol Pb

potter's rot: see silicosis

Precambrian: the earliest era of Earth, spanning 80% of geological history, from about 3.9 billion to 540 million years ago

pregnant pond: a pond where tailings have yet to be cleared out and the water emptied

proton: a subatomic particle with a positive electrical charge found in the nucleus of every atom, often along with neutrons

protoplanet: a whirling cloud of gas and dust from which a planet forms

pumice: a very light volcanic glass full of cavities formed by gas bubbles in the magma

pyrope: a fiery, deep-red garnet that may indicate diamonds are nearby

quantum mechanics: a theory of matter dealing with the motion and interaction of subatomic particles that behave also as waves

quark: the basic building block of matter that combines with gluons to form the protons and neutrons that make up every atom in the universe; found in six varieties: *up* and *down* (composing most everyday matter) and *top*, *bottom*, *strange*, and *charm* quarks (more exotic)

quartz: a common rock-forming mineral consisting of silicon and oxygen

quartzite: a compact granular rock metamorphosed from sandstone

raise/rise: a vertical or steeply inclined shaft excavated upward from below to join lower levels in a mine to upper ones (opposite of a winze)

reclamation: at a mined-out site, restoring the landscape to its original condition

recrystallize: to form new crystalline mineral grains within a rock

rock: any natural collection of minerals in solid form

rock hammer: a small hammer for chipping off mineral samples

rodingite: medium- to coarse-grained buff to pink rock rich in calcium and garnet

roughneck: a worker on a drilling operation

ruby: a red gemstone, the hardest mineral after diamond, and the only important native red ore of mercury

sandstone: a sedimentary rock consisting of cemented quartz sand

sanidine: a feldspar mineral with clear glassy crystals

sapphire: a very tough, transparent rich-blue gem

Satan: in the Bible, the angel cast out of the Garden of Eden as the enemy of God and mankind after tempting Adam and Eve, the first people, to eat the forbidden apple from the Tree of Knowledge of Good and Evil

Saturn: in Roman mythology, the god of agriculture and the father of Jupiter, king of the gods

Scaliger, Julius Caesar: 1484–1558, the Italian poet, humanist, and first European to write about mysterious platinum, a metal seemingly impossible to melt

scapolite: complex silicate minerals found in calcium-rich metamorphic rock, used as semiprecious stones

schiller: a metallic iridescent play of colour just below the surface of a crystal caused by minute inclusions

schist: a metamorphic rock with its fine grains in a roughly parallel arrangement

seam: a thin layer of rock different from that around it; a very narrow mineral vein or a bed of coal

sedimentary rock: rock formed by material worn away, then deposited elsewhere, by glaciers, water, or wind

shaft: a vertical passageway inside a mine for hoisting miners, equipment, and ore

shale: finely stratified rock formed of compacted clay, mud, or silt

silicosis: massive fibrosis of the lungs that makes breathing difficult, caused by prolonged periods of inhaling silica dust

silver nitrate: a black-turning compound used in medicine as an antiseptic and caustic

skarn: a metamorphic rock formed from pure limestone and dolomites containing intrusions of other minerals

slag: the waste material from a blast furnace used for smelting iron

slate: a dense fine-grained rock of compressed sediments, such as clay or shale, easily split into slabs

sluice box: in prospecting, a box with grooves for rinsing away loose material from heavy metals such as gold

smelt: to melt or fuse ore, and often to separate the metal

Soufrière: a volcano, such as Soufrière Hills on the island of Montserrat

sparry: a transparent or translucent light-coloured calcite mineral with large crystals that grows in the pores between the grains of buried sediments, such as limestone, and cements the particles together

spodumene: a white to green mineral that appears often as giant crystals, called logs, in granitic pegmatites

stannum: the Latin word for tin, its symbol Sn

star: a needle-like intrusion in a mineral, such as the streaking in a sapphire

stope: an excavation in the form of steps for mining ore from steeply inclined or vertical veins

sulphide: a mineral compound that contains metal and sulphur

sunspots: dark spots appearing on the sun's surface, visible through a telescope, which intensify every 11 years and create electrical interference on Earth

tailings: crushed stone and other waste from drilling, mining, or smelting ore

Third Eye: an invisible inner eye in the forehead believed in certain Eastern and Western spiritual traditions to be the centre of psychic or divine vision

thorium: a radioactive metallic element found in combination in rare earth minerals

thunder egg: a nodule of agate or opal formed in a gas pocket of decomposed lava

thunderstone: a stone, such as a meteorite, in folklore believed to be hurled down by the gods during storms

topaz: a yellow to brownish-yellow transparent mineral used as a gem

tourmaline: a mineral in a variety of colours depending on its composition that has long prismatic crystals

Tree of Diana: silver metal that branches up the inside of a flask when a droplet of mercury is added to a solution of silver nitrate

tricone bit: the head of a rotary drill shaft made up of three cone-shaped cutters for penetrating deep rock

tuff: rock composed of volcanic ash and fragments fused under heat

turquoise: a blue-green or greenish-grey mineral, valued as a gem when sky-blue

underworld: see Hades

vein: a fracture in rock filled with minerals from deep in the Earth

vent: a fissure, fracture, or circular opening in the Earth's crust through which molten rock and volcanic gases escape onto the ground or into the air

von Bingen, Hidegarde: 1098–1179, an abbess, composer, thinker, and saint whose encyclopaedic *Physica* described the basic qualities and healing values of plants, animals, trees, and stones

vug: a small cavity usually filled with crystals, such as quartz and calcite, that have a different composition from the surrounding rock

Werner, Abraham Gottlob: 1749–1817, German geologist known for his 1774 work *On the External Characters of Fossils, or of Minerals*, the first modern systematic identification and classification of minerals

winze: a vertical or steeply inclined shaft driven downward from a drift into the mine orebody below (opposite of a raise/rise)

wrought iron: a low-carbon, high-slag commercial form of iron that is tough, malleable, and relatively soft

yellow-boy: rust-coloured iron hydroxide released from the untreated acidic water draining out of old mines that settles into and kills local streams

yin and yang: in Chinese philosophy, the two continually moving, opposing energies that combine to make all there is and cause everything to happen: the cold, dark, wet, passive feminine, and the hot, light, dry, active masculine

Zeus: in Greek mythology, the king of the gods, and god of the sky and thunder

Notes