L

laboratory coefficient of permeability, standard coefficient of permeability. Permeability defined for controlled temperature conditions (60ºF) as gallons per day per square foot (gpd/ft^2) under a unit gradient[16]. See also Meinzer unit.

labyrinth. See network; maze cave.

lacustrine formation. A sedimentary formation of lacustrine origin.

ladder. In caving, a flexible, lightweight ladder of galvanized or stainless steel wires and aluminium alloy rungs[25].

lag time. A time lapse between the onset of a given event and the produced results[16].

lagoon. A body of relatively shallow water near a sea shore, with or without a direct connection to the sea[16].

lake. 1. As used in speleology, a body of standing water too deep to walk across[10]. 2. In caving, a body of standing water in a cave, but used for what would be called a pond or pool on the surface[25]. 3. A body of fresh inland water[16].

laminar flow. Flow in which the head loss is proportional to the first power of the velocity[22]. Water flowing in a laminar manner will have streamlines that remain distinct and the flow direction at every point remains unchanged with time. Synonymous with streamline flow, viscous flow.

lamination. The layering or very thin bedding of sedimentary rocks[16].

landfill. A general term indicating a disposal site for refuse, dirt from excavations, junk[6], and hazardous wastes.

land-form. A topographic feature of the earth's surface[16].

land pan. An evaporation pan used to measure evaporation from a land surface; pan is usually mounted at the land surface[16].

land subsidence. The subsidence of a surface due to a loss of support[16]. Often occurs as a result of over pumping underlying aquifers or as a result of mining activities. In karst terranes, subsidence can occur as a result of man-made changes to the natural hydrologic system (ground-water withdrawals or storm-water injection) or as a consequence of the natural dissolution process. Subsidences may be sudden or progress slowly over time.

land surface. That part of the lithosphere usually not covered by water[16].

land-use. A particular utilization of a land surface especially with respect to its influence on the hydrologic cycle[16].

landslide. The sliding down of earth and rock on a slope[16].

lapiés. (French; sometimes spelled lapies or lapiaz.) Term for a region with outcrops of small regular pillars, cones, or blocks of carbonate rock[20]. Synonyms: (French.) *lapies*; (German.) *Karren*; (Greek.) *lapiaz, lenar*; (Italian.) *lapia, solcato, carregiato*; (Russian.) *karri*;

(Spanish.) *lenar*; (Turkish.) *erime oluğu, lapya*; (Yugoslavian.) *škrapa, grižine, bridine, žlebici*. See karren, rock-rill, grikes.

larva (plural larvae). An active immature stage in an animal's life history when its form usually differs from the adult form, such as the grub stage in the development of a beetle or the tadpole stage in the life history of a frog[23]. See also *metamorphosis; pupa*.

lateral line system. A series of sensory organs, usually appearing in a line or series of lines on the sides and heads of fishes and larval amphibians. The system enables the animal to sense vibrations in the water[23]. See also *cupula; neuromast*.

lateral moraine. A glacial deposit at the flank of a glacier, often constituted by debris from valley walls[16].

laterite. A tropical ferruginous clay soil[16].

lateritic soil. A red colored soil with high iron oxide content[16].

lava bed. A lava flow of considerable areal extent and relatively small thickness[16].

lava cave, lava tube. 1. A cave that formed in a partly cooled, broadly basaltic or phonolitic lava, not by erosion but by molten material flowing away. In most cases, an initial active lava conduit is formed when a flowing surface lava stream has a roof grow over it by accretion of chilled solidified material. Insulated inside its conduit the lava can continue to flow and develop an airspace above it, which is preserved as an explorable cave when completely cooled. Most lava caves are just very long tubes, though branching and multiple levels may occur as dictated by flow patterns and re-invasions of older tubes. On Kilauea Volcano, Hawaii, the Kazumura Cave is 47km long and descends 888m, but its tubes, mostly 5m in diameter, lie less than 20m beneath the sloping surface of the lava[9]. 2. A cave in a lava flow, generally formed by gas blistering the surface or by lava flowing out from beneath a solidified crust, forming a tube or tunnel[10]. 3. An empty tubular supply channel from which liquid lava has drained[16]. See also lava karst; pseudokarst.

lava karst. A non-karst term. Subsurface openings formed in lava flows due to outflow of liquid lava from beneath a solidified crust or due to gas blisters. Tubes or tunnels are formed with such pseudokarst features as lava stalactites and also collapse structures and basins of closed drainage. Lava karst does not arise through solution of the rock by circulating water and thus is not a true karst[20]. Synonyms: (French.) *pseudo-karst*; (German.) *(Vulkanischer Karst), Lava-Karst, Pseudokarst*; (Greek.) *pseudokarst*; (Italian.) *pseudocarsismo vulcanico*; (Spanish.) *volcanokarst* (general), *tubo volcanico* (tube, tunnel), *jameo* (collapse structure), *malpaís* (topographic feature similar to lapiés); (Turkish.) *lav karst*ı, *a ldat*ıc*ı karst*. See also lava cave; pseudokarst.

lay. The way in which strands of a rope or cable are twisted[25].

layer. A sheetlike deposit of sediment[16]. Bed or stratum of rock[16].

leachate. 1. Materials removed by the process of leaching[22]. 2. A liquid that has percolated through soil rock or waste and has extracted dissolved or suspended materials[22].

leaching. 1. The removal of materials in solution from soil, rock, or waste[22]. 2. Separation or dissolving out of soluble constituents from a porous medium by percolation of water[22].

lead. A passage noticed but as yet unexplored[25].

lead-acid cell. A rechargeable acid battery for use with an electric cap lamp[25].

leader. In caving, the person directing the activities of a caving party, especially with regard to safety[25].

leak. An opening in an aquiclude that permits penetration of water from other formations into the main aquifer[16].

leakage. 1. The flow of water from one hydrogeologic unit to another. The leakage may be natural, as through semi-impervious confining layer, or man-made, as through an uncased well[22]. 2. The natural loss of water from artificial structures as a result of hydrostatic pressure[22].

leakage factor. The factor describing leakage flow into or out of a leaky aquifer[16].

leakance. 1. The ratio K'/b', in which K' and b' are the vertical hydraulic conductivity and the thickness, respectively, of the confining beds[22]. 2. The rate of flow across a unit (horizontal) area of a semipervious layer into (or out of) an aquifer under one unit of head difference across this layer. Synonymous with coefficient of leakage[22].

leaky aquifer. Aquifers, whether artesian or water-table, that lose or gain water through adjacent less permeable layers[22].

lecontite. A cave mineral — $(NH_4,K)Na(SO_4)\cdot 2H_2O$[11].

leg. A part of a survey traverse between two successive stations[25].

leucophor. One of a family of optical brightening agents that have been used with some degree of success in water-tracing experiments. It has no color, but is readily detected by its distinctive fluorescence under ultra-violent light[9].

levee. An artificial bank to prevent overbank flow of a river[16].

level. 1. Within a cave, a group of passages developed in the same horizontal plane[10]. 2. The altitudinal relation of a cave floor to an outside surface[10]. 3. The surface of water in a well or standing reservoir[16].

lift. The vertical pumping distance between the water level in a well to the land surface[16].

light hole. (Jamaican.) 1. A hole in the roof of a cave through which light enters; sometimes a nonfunctioning swallow hole[20]. 2. Fossil or abandoned swallow hole[10].

lime. Calcium oxide, CaO; used loosely and incorrectly in referring to limestone[10].

lime sink. See sinkhole.

limestone. Sedimentary rock containing at least 50% calcium carbonate by weight. The purer limestones consist almost entirely of calcite; less pure rocks may be referred to as, for example, muddy limestone. Some limestones are porous with diffuse permeability; these rarely become truly cavernous, though some fissure flow may occur. Where ground-water flow in less porous rocks is restricted to bedding related fissures and secondary fractures it can, even when moving very slowly, corrode the almost entirely soluble rock and lead to true cave development[9].

limestone pavement. 1. A level, or gently inclined, bare limestone surface scored and fretted by karren. The stripping of soil or cover rocks to expose the bare rock pavement is a glacial process, and the development of the karren — both the dissolutional enlargement of the joints and also the dissolutional carving of runnels — is largely post-glacial. Limestone pavements are characteristic features of glaciokarst and occur extensively in the north of England, in the Burren of County Clare in Ireland and on many high alpine limestones[9]. 2. A bare plane surface of limestone, parallel to the bedding, commonly divided into blocks (clints, Flachkarren) by solutionally widened joints (grikes, Kluftkarren), and pitted by solution pans[10]. 3. A glaciokarstic landform, produced on a glacially planed limestone surface which has subsequently become dissected into blocks (clints or dalles) by solution-enlargement of vertical joints[19]. 3. Horizontal or sloping platforms of bare limestone whose surface usually coincides with bedding-plane partings of the rock; often eroded into clint and grikes rock forms[20]. Synonyms: (French.) *plateforme calcaire*; (German.) *Kalk Plattform, Limestone Pavement*; (Greek.) *karstikon lithostroton*; (Spanish.) *lapiaz entrecruzado*; (Turkish.) *kireçtaşı döşemesi*. See also clints; grikes; Karrenfeld.

limestone sink. see sinkhole.

limnology. The study of lakes[16].

line of seepage. See seepage line.

lineation. The parallel orientation of structural features that are lines rather than planes. Some examples are parallel orientation of the long dimensions of minerals, long axes of pebbles, striae on slickensides, and cleavage-bedding plane intersections.

lintel line. A line on the ground at a cave entrance perpendicularly beneath the outer edge of the rock above; may or may not coincide with the dripline[25]. See also dripline.

liquid. An incompressible or nearly incompressible fluid.

liquid medium. Contains the aquatic cavernicoles[25].

lithologic factor. The factor influencing composition, texture, and sequence of rock types[16].

lithology. 1. The physical characteristic of a rock, including composition, grain size, texture, degree of cementation (or lithification) and structure, that determine the rock type[9]. 2. The physical properties and aspect of a rock[16].

lithosol. A rocky soil[16].

lithosphere. That part of the earth's crust containing solid rocks[16].

lithostratigraphy. A formal naming system that allows the description of rock successions in terms of recognizable defined units on a local scale. The units, which comprise supergroups, groups, formations, members and beds in decreasing order of size, are described on the basis of observable characteristics[9].

littoral zone. The coastal strip where rocks that are above sea-level are in contact with rocks that are generally below sea-level. Where suitable aquifer conditions occur across the littoral zone, notably around relatively young carbonate islands, fresh ground-water interfaces with saline ground-water at the halocline and dissolutional processes are enhanced by mixing water and, possibly, by microbial effects[9].

live cave. Cave in which there is river action or active deposition of speleothems. Compare active cave[10].

LNAPL. Abbreviation for *light nonaqueous phase liquid*. Liquids falling into this category have specific gravities that are less than water (the specific gravity for water is usually taken to be one), are relatively immiscible with water, and tend to migrate downwards through the vadose and to float on top of the water table. See also LNAPL; immiscible; NAPL.

loam. Calcareous clay[16].

localized circulation. Circulation in karst aquifers in which the water moves in certain preferred zones and does not occupy all or most of the openings below this level[10]. Synonyms: (French.) *circulation préfèrentielle*; (German.) *Örtlich begrenzte Karstwaßer-Zirkulation*; (Italian.) *circolazione carsica parziale*; (Spanish.) *circulación localizada*; (Turkish.) *yersel dolaşim*; (Yugoslavian.) *lokalizirana (lokalna) cirkulacija*. Compare diffuse circulation.

lodgement till. Glacial till deposited from slowly melting ice at the base of a glacier[16].

loess. Fine-grained and poorly consolidated windblown sediment, mainly of silt. Great thicknesses of loess are found in areas marginal to hot and cold deserts, where the prevailing wind deposits fine dust particles blown from the desert basins or out of glaciofluvial sediments. Loess is a common allogenic component of soils on limestones. Large numbers of artificial caves have been excavated in the hillsides of soft loess in central China[9].

longitudinal fault. A fault having the same direction of strike as the surrounding strata[16].

longitudinal section; long section. A section along the length of a cave passage or chamber or combination of these, or along a survey traverse in a cave[25].

loosest packing. The three-dimensional arrangement of particles with the highest possible void volume per unit cell[16].

losing stream. A stream or reach of a stream in which water flows from the stream bed into the ground[22]. In karst terranes, losing streams may slowly sink into fractures or completely disappear down a ponor. Synonym: influent stream. See also ponor; stream sink.

lost circulation. The result of drilling fluid escaping from a borehole into the formation by way of crevices within the formation[6]. It is a common occurrence in most karst aquifers due to the existence of large subsurface voids that are sometimes intersected during a drilling program.

lost river. 1. A surface river or stream flowing onto or over karst that then disappears completely underground through a swallow hole (ponor) and which may or may not rise again and flow as a resurgent surface river or stream[20]. 2. In a karst region, a surface stream that enters an underground course[10]. Synonyms: (French.) *perte de rivière*; (German.) *Flußversickerung, Flußchwinde*; (Greek.) *chanomenos potamos*; (Russian.) *iscezajuscaja reka*; (Spanish.) *rio sumente*; (Turkish.) *kayıp nehir*; (Yugoslavian.) *ponornica, ponikalnica*. See also ponornica; sinking stream. Compare intermittent river.

lower confining bed. An impermeable bed underlying an aquifer[16].

lower course. The part of a water course near a discharge point[16].

low flow. The lowest sustaining flow during base runoff conditions of a river[16].

***Lycopodium* spores**. 1. The spores of a club moss, with individual structures about 0.03mm in diameter. Easily transported by and almost indestructible in cave water, the spores can be dyed a variety of colors, and offer a valuable water-tracing technique. Preparation and collection of the spores is very tedious, and the method lacks the convenience of using simple dyes[9]. 2. Spores of *Lycopodium clavatum*, which can be used in natural or dyed color as a label in studying ground-water movement in karst areas[10].

lysimeter. A device for measuring percolation and leaching losses from a column of soil under controlled conditions[22].

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