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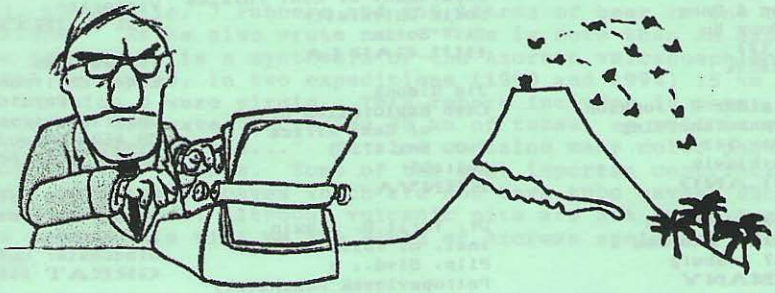
Newsletter # 18 ... # 21

COMMISSION on

VOLCANIC CAVES



INTERNATIONAL UNION OF SPELEOLOGY
UNION INTERNATIONALE DE SPÉLÉOLOGIE

Commission on Volcanic Caves

Newsletter nr. 18 January 1998

Editorial address: J.P. van der PAS, Vauwerhofweg 3,
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Here the new address-list of members of the U.I.S.-Commission on Volcanic Caves. Note also the new editorial address. An O.I. (official editorial) will be in next issue, after the Symposium in Kenya. In case of any correction needed please find enclosed an address-label.

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reported by vdP

Recent lavacave-related publications seen or received:

- Pengelly Newsletter, nr. 73, March '96, p.5, D. Jean - Touristic report about Lanzarote.
- NSS News, Vol 55, nr. 6, June '97, p. 161/7, H.A. Marinakis - Lava Tube Cave Systems of New Mexico.
- Journal of Cave & Karst Studies, Vol. 59, nr.2, Aug. '97, p. 67-80, K & C. Allred - Dev. and Morph. of Kazumura Cave.
- Pengelly Newsletter, nr. 73, March '96, p.9, J. Simons - News of Caving in Kenya.
- NSS News, Vol. 55, nr.6, June '97, p. 168, WR Halliday - Volunteers needed for Hawaii Project.
- Spelunca Mémoires, Nr. 23, Année 97 (special for 12th congress UIS), La spéléologie en milieus volcanique - by C. Moret et C. Thomas, p. 76-80.
- Spelunca Nr. 66, june '97, p. 23-36, Lavacaves of Isle Reunion.
- several references about lavacaves in: "Atlas des Cavités non Calcaires du Monde" (Atlas for non-calcite caves), by Claude Chabert and Paul Courbon. U.I.S., au pré de Madame Carle, 1997.
- just a note by WR Halliday: (letter of Nov. '97) 'Jack Lockwood found one great new (lava) cave on Samoa'.

RECENT PUBLICATION from the AZORES

reported by vdP

PINGO de LAVA (Drops of Lava) - Nr. 36, October 1997

Yearly publication by 'Os Montanheiros', Sociedade de Exploração Espeleológica, Ilha Terceira - Azores.

Again a welldone yearly review of speleology and mountaineering on the Azores. 72 pages, of which around 60 deal with lavacaves. Several color pictures. In portugese, one page english summaries. From it's contents:

- SpeleoPico 96 - an expedition to Pico Island to explore, measuring and do a photographic reportage in new lava tubes and pits (J.M. Botelho).
- Gruta dos Túmulos (Tomb Cave) - description and topographic map of this cave on Pico Island (A.T. Garcia).
- Gruta das Agulhas (Needles Cave) and it's patrimonial importance. Gruta das Agulhas and their fauna (P.A.V. Borges).
- The history of Furna d'Agua (Water Cavern), the history, the past, present and future of this cavern (J. António).
- "Last Drop - The unic cave entrance was closed". A notice about the locked gate of Gruta do Caldeira, Biscoitos, Terceira island.

Christian Thomas has prepared a 148 page report: Tubes de Lave des Acores, a notable achievement which (he writes) required "3 years of headaches and wrist pain, 3 bottles of ink (king-sized), 15 pencils, 7 rubbers and 856 litres of beer (+ one of champaigne." As he also wrote me: "This is more than an expedition report; it is a synthesis of the Azorean vulcanospeleology. In total we mapped, in two expeditions (1990 and 1994) 15 km of caves of which 5 were virgin. This report includes 58 maps, the inventory of 165 caves including 30 km of tubes, as well as some scientific observations..." It also contains many color photos and maps of the islands. Some of the most importan contributions are data on volcanic caves which are not lava tube caves, such as Furna do Enxofre. Although volcanic pits are not as well covered as are caves, this will be the Bible of Azorean speleology for years to come.

Production of this report obviously was expensive, and M. Thomas did not state whether ANY additional copies are available, at ANY price. Persons interested in obtaining a copy may write him at: 27 cours de Vincennes, 75020 Paris, FRANCE.

reported by WRH

A weekly feature provided by scientists at the Hawaiian Volcano Observatory

reported by WRH

Lava tubes cool slowly

If the flow of lava in a tube ceased, how long would it take for the tube to cool? Does the temperature in a newly emptied tube drop by an equal amount every day, or is the heat loss irregular? We have some answers from first-hand experience with the current eruption on Kilauea's east rift zone.

The tube system of episode 53 carried lava for 10 km (6 miles) from the vent to the sea. So efficient were the tubes in containing heat that lava cooled only 10 degrees Celsius (°C) across that distance. When it reached the ocean, the lava was still a sizzling 1140°C. For as long as lava flowed, the tubes glowed like yellow-hot ovens.

Episode 53 ended abruptly on January 30, 1997, leaving the tubes drained and empty within 24 hours. But the tubes remained so hot that, for several weeks after, they emanated an incandescent glow visible at night from the skylights located sporadically along the trace of each tube. Because of the glow, many residents and tourists thought lava was still coursing through the tubes.

By way of its color, incandescent rock gives a crude estimate of temperature. For example, orange-to-yellow colors are emitted when rocks (or melt) are hotter than about 900°C. Dark-to-bright cherry red is characteristic as material cools to 630°C. Faint red glow persists down to about 480°C. The tubes, which had been cooling at a fairly steady rate of 20-30°C per day, dropped to this temperature on February 17, nearly three weeks after they drained. The skylights no longer glowed at night.

Although they were cooling, the tubes were still as hot as ovens. For comparison, a pizza oven is operated at temperatures ranging from 260 to 315°C (500-600°F). By about March 1, the tubes had cooled through this range. (As a consequence, we quit carrying frozen pizza as part of our field gear.) The rate of cooling began to diminish as well, with temperature remaining nearly constant for several days in a row.

At the more moderate temperatures, rain was able to affect the rate of cooling. Periods of heavy rainfall led to abrupt cooling, as much as 50°C in a few hours. The downward-percolating rainwater washed heat from the tube into adjacent rocks or dissipated it as steam from cracks in the surrounding lava. On March 24, seven weeks after being drained of molten lava, the tube temperature finally fell below 100°C, the boiling point of water.

The tubes remain uncomfortably warm, about 60°C (140°F), even today. It will be months before cave-dwelling insects and spiders find a hospitable abode in our recently drained tubes.

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reported by vdP

LOOKING FOR THE PAST IN LAVA CAVES

- from a letter by Mrs. Conny Spelbrink (Canary Islands, La Palma) -

.... did only some research this year in caves for possible tsunami deposits, the result of enormous rockslides, which took place here on the Canaries in a far past.
The "giant landslide" theory is now generally accepted for the Canary Islands as an explanation of the huge steep walls, strange fracture planes and the glacier-like plains.
The valley above Los Llanos originated due to the sliding down of some 200 cubic km's material. Another slide is expected in the coming 1000 years on the south of La Palma island.

recently seen on the Azores: reported by vdP

On the island of Sao Miguel, in the town Ponta Delgada, in the Museum of Natural History: a large model of the island, with a set of push-buttons. A master button lights all locations of the lavacaves, and seperate buttons light each cave as requested.

recently visited on Madeira:

A recent lava-tourist-cave: **Grutas de São Vicente.** Opened end '96. This cave, with a tourist path of some 700 meters, is (of course) slightly adapted to tourists. The information given by the guide however is very professional (she is a volcanology student) and in several languages. Of course portugese, but even in dutch if wanted. Address of this cave: Sitio do Pé do Passo, 9240 São Vicente Madeira - Portugal

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VULCANOSPELEOLOGY CENTER, by Giuseppe M. Licitra

The **Centro Speleologico Etneo** - (address: Via Cagliari 15, 95127 Catania, ITALY) specializes in Vulcanospeleology and is now organizing an **International Center of Documentation on Vulcanospeleology.** The aim of the **Center** will be the collection of papers and audio-visual materials published on vulcanospeleological topics throughout the world, yearly publication of a national bibliography and copy services. The **Center** seeks submissions of materials from everybody who has published material.

The CSE was established in 1984, but has over 30 years experience, documentation and field work in Vulcanospeleology. Today the CSE has the largest documentation on Mount Etna caves (over 200 lava tubes and volcanic fractures surveyed), has already organized two Symposia on Vulcanospeleology (1975 and 1983), and is bound to organize the third one on Sept. 12-18, 1999 (IX International Symposium on Vulcanospeleology of the U.I.S.)

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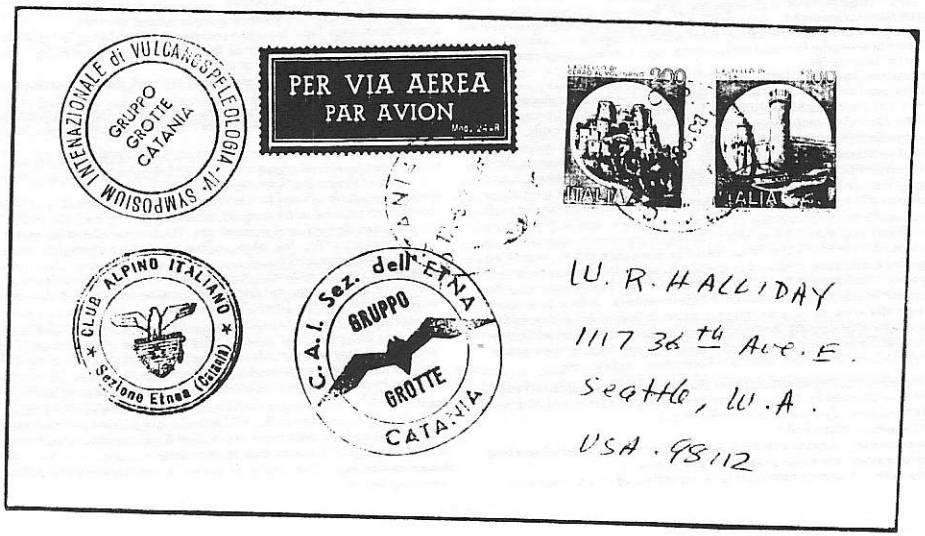


Some definitions in
Fourth Edition

GLOSSARY OF GEOLOGY

Julia A. Jackson, Editor
American Geological Institute
Alexandria, Virginia
1997

for consideration in development of standard nomenclature of vulcanospeleology

blister [volc] A surficial swelling of the crust of a lava flow formed by the puffing-up of gas or vapor beneath the flow. A blister is usually about one m. in diameter, and is hollow. Cf: *shelly pahoehoe; tumulus [volc].*

cave [speleo] (a) A natural underground open space, generally with a connection to the surface and large enough for a person to enter. The most common type of cave is formed in limestone by dissolution. Partial syn: *cavern.* (b) A similar feature that was formed artificially. (c) In informal use, any natural rock shelter, e.g. a cliff overhang.

cave formation A *mineral* formation in caves. An obsolete syn. for *speleothem.*

cave group A number of caves or cave systems, not interconnected but geographically associated in some relief feature or particular geological outcrop. See also: *cave series.*

cave series A group of caves of similar morphology in a particular district. See also: *cave group.*

cavern system *cave system.*

cave system (a) A group of caves that are connected or hydrologically related. (b) A complex cave. Syn: *cavern system.*

cavitation (cav-i-ta'-tion) The collapse of bubbles in a fluid, caused by the static pressure being less than the fluid vapor pressure.

cavity (cav'-i-ty) (a) A solutional hollow in a limestone cave. (b) A small hollow in cavernous lava.

driblet (drib'-let) *spatter [pyroclast].*

formation An obsolete term for *speleothem.*

formation [cart] (for-ma'-tion) A persistent body of igneous, sedimentary, or metamorphic rock, having easily recognizable boundaries that can be traced in the field without recourse to detailed paleontologic or petrologic analysis, and large enough to be represented on a geologic map as a practical or convenient unit for mapping and description; the basic *cartographic unit* in geologic mapping.

formation [geomorph] A naturally formed topographic feature, commonly differing conspicuously from adjacent objects or material, or being noteworthy for some other reason; esp. a striking erosional form on the land surface.

formation [speleo] *speleothem.*

formation [stratig] (a) A body of rock identified by lithic characteristics and stratigraphic position; it is prevailingly but not necessarily tabular, and is mappable at the Earth's surface or traceable in the subsurface (NACSN, 1983, Art. 24). The formation is the fundamental unit in *lithostratigraphic classification.* It may represent a long or short time interval, may be composed of materials from several sources, and may include breaks in deposition. A formation should possess some degree of internal lithic homogeneity or distinctive lithic features such as chemical or mineralogic composition, texture, fossils (viewed as rock-forming particles), or other organic content such as coal or oil shale. A formation must be amenable to being mapped at the scale of geologic mapping practiced in the region when the formation is proposed. Thickness is not a determining factor. Formations may be combined into groups or subdivided into members. A formation name normally consists of a geographic name followed by a descriptive geologic term (usually the dominant rock type) or by the word "formation" if the lithology is so variable that no single term is appropriate, e.g. Dakota Sandstone, Morrison Formation. Abbrev: fm

lava ball A globular mass of lava that is scoriaceous inside and compact on the outside; it is formed by the coating of a fragment of scoria by fluid lava. Syn: *pseudobomb; volcanic ball.*

lava blister *blister [volc].*

lava cascade A cascade of fluid, incandescent lava, formed when a lava river passes over a cliff or steep part of its course.

lava cave Any cave formed in lava, regardless of its speleogenesis.

lava column (a) The column of fluid or solidified lava in a volcanic conduit. (b) A formation of lava dripstone extending to the floor from a ledge in a lava tube. Syn: *magma column.*

lava field A more or less well-defined area that is covered by lava flows. Cf: *ash field; volcanic field.*

lava flow A lateral, surficial outpouring of molten lava from a vent or a fissure; also, the solidified body of rock that is so formed. Syn: *flow [volc]; nappe [volc].*

lava flow-unit A separate, distinct lobe of lava that issues from the main body of a lava flow (Nichols, 1936).

lava rise A more or less flat-topped portion of a pahoehoe lava flowfield that was bodily uplifted by injection of lava beneath the surface crust. Hollow rises are a form of subsidence cave (Walker, 1991). Syn: *pressure plateau.*

lava rise pit A negative topographic feature of pahoehoe lava flowfields, surrounded by lava rises and/or tumuli, the site of comparatively little or no subcrustal injection of lava (Walker, 1991). Syn: *sink [volc].*

lava trench (a) A lava channel that never had a roof. (b) A lava tube which has lost its roof through crustal sagging or collapse.

lava tube A roofed conduit of molten lava flowing from an eruptive vent or locus of subcrustal injection of lava to a depositional site, formed by one or more of the following processes: 1. growth of flat, rooted crusts across lava streams within confined channels; 2. overflow and accretion of spatter to levees, producing a roof arched across a lava stream; 3. coalescence of plates of solidified crust floating downstream, forming a roof over a lava stream; 4. extension of pahoehoe lobes through injection of lava beneath a solidified crust (Peterson et. al., 1994). See also: *lava trench; volcanic flow drain.* Syn: *lava cave; lava tunnel.*

lava tunnel *lava tube.*

pressure ridge [volc] An elongate uplift of the congealing crust of a lava flow, buckled upward by laterally directed pressure (Walker, 1991).

pseudokarst (pseu-do-karst') (a) Karstlike terrain produced by a process other the dissolving of rock, such as the rough surface above a lava field, where the ceilings of lava tubes have collapsed. Processes and forms involving *piping* and *thermokarst* are included (Otvos, 1976); some authors also include terrain characterized by lava tubes, sea caves, and blowouts. Pseudokarst has been applied to covered karst, and to karst produced by the dissolution of rocks that are relatively insoluble, such as quartzite and granite, but more general usage regards these as varieties of true karst. The term was first used by von Knebel in 1906.

rockshelter (rock-shel'-ter) A cave, commonly formed in nonsoluble rock, that extends only a short way underground, with a roof of overlying rock that usually extends beyond its sides. Syn: *shelter cave.* Partial syn: *sandstone cave.*

shelly pahoehoe A type of *pahoehoe* whose surface contains large open tubes and blisters; its crust is 1-30 cm thick.

shelter cave (shel'-ter) *rockshelter.*

spelean (spe'-le-an) Of, pertaining to, or related to caves.

speleochronology (spe'-le-o-chro-nol'-o-gy) The dating or chronology of a cave's formation, or of its mineral deposits or filling. The dating may be either relative or absolute.

speleofact A morphologic feature of a cave wall, including *speleogens, speleothems,* and petromorphs.

speleogen (spe'-le-o-gen') In a cave, any surface that is formed by solution, such as a scallop, pendant, or domepit. Etymol: Greek,, "cave born".

speleogenesis (spe'-le-o-gen'-e-sis) The process of cave formation.

speleologist (spe-le-ol'-o-gist) A scientist engaged in *speleology.* Non-recommended syn: *speologist.* See also: *caver.*

speleology (spe-le-ol'-o-gy) The exploration and scientific study of caves, both physical and biological, including geologic studies of their genesis, morphology, and mineralogy. The term was first published by Martel in 1896. See also: *caving [speleo]; speleologist.* Non-recommended syn: *speology.*

speleothem (spe'-le-o-them) Any secondary mineral deposit that is formed in a cave. Syn: *cave formation; formation [speleo].* See also: *cave onyx; dripstone.* Etymol: Greek, "cave deposit".

squeeze-up A small extrusion of viscous lava, or *toothpaste lava,* from a fracture or opening on the solidified surface of a flow, caused by pressure. It may take various forms, generally bulbous or linear, and may be from a few centimeters to almost a meter in height. It may be marked by vertical grooves. See also: *grooved lava.* Syn: *push [volc].*

tumulus [volc] A doming or small mound on the crust of a lava flow, caused by pressure due to the difference in rate of flow between the cooler crust and the more fluid lava below. Unlike a *blister [volc],* it is a solid structure. Pl: *tumuli.* Syn: *pressure dome.*

vulcanospeleology The study of caves in volcanic rocks. Also: *volcanospeleology.*

continue next page

caldera (cal-der'-a) A large, basin-shaped volcanic depression, more or less circular or cirquelike in form, the diameter of which is many times greater than that of the included vent or vents, no matter what the steepness of the walls or form of the floor (Williams, 1941). See also: *collapse caldera; erosion caldera; explosion caldera; cauldron [volc].*

crater [geophys] (cra'-ter) A typically bowl-shaped or saucer-shaped pit or depression, generally of considerable size and with steep inner slopes, formed on a surface or in the ground by the explosive release of gas, chemical, nuclear, or kinetic energy; e.g. an *impact crater* or an *explosion crater.*

crater [volc] A basinlike, rimmed structure that is usually at the summit of a volcanic cone. It may be formed by collapse, by an explosive eruption, or by the gradual accumulation of pyroclastic material into a surrounding rim. Cf: *caldera.*

crater depth (a) In an artificial crater, the maximum depth measured from the deepest point to the original ground surface (Flanders and Sauer, 1960, p. 5). (b) In a natural crater, in which the original ground level may be uncertain, the depth measured from the highest point on the rim crest to the deepest part of the observable depression.

chimney [ore dep] *pipe [ore dep].*

chimney [speleo] In a cave, a rounded vertical passage or opening. See also: *domepit; vertical shaft.*

chimney [volc] A conduit through which magma reaches the Earth's surface. Cf: *vent; pipe [volc].* Syn: *feeder [volc].*

collapse caldera A type of *caldera* produced by collapse of the roof of a magma chamber due to removal of magma by voluminous pyroclastic or lava eruptions or by subterranean withdrawal of magma. Most calderas are of this type. Cf: *erosion caldera; explosion caldera.*

collapse crater A large crater believed to have formed by roof subsidence of lava-filled cavities. The type is not well established, but is usually attributed to volcanism.

collapse depression An elliptical to elongate depression in the surface of a lava flow, resulting from partial or complete collapse of the roof of a long lava tunnel or of several short ones. Blocks from the roof may rest on a collapse-depression floor, and water and/or alluvium cover the blocks (Nichols, 1946, p. 1064). Not to be confused with a *kipuka.*

conduit (con'-duit) (a) A passage that is filled with water under hydrostatic pressure. See also: *siphon [speleo].* (b) *volcanic conduit.*

diatreme (di'-a-treme) A breccia-filled volcanic pipe that was formed by a gaseous explosion.

driblet cone *hornito.*

feeder [eco geol] (feed'-er) *channelway [ore dep].*

feeder [intrus rocks] The conduit through which magma passes from the magma chamber to some localized intrusion, e.g. a feeder dike.

feeder [streams] *tributary.*

feeder [volc] *chimney [volc].*

fumarole (fu'-ma-role) A vent, usually volcanic, from which gases and vapors are emitted; it is characteristic of a late stage of volcanic activity. It is sometimes described by the composition of its gases, e.g. chlorine fumarole. Fumaroles may occur along a fissure or in apparently chaotic clusters or fields. See also: *solfatara; fumarolic stage; fumarole field.* Also spelled: fumerole.

hornito (hor-ni'-to) A small mound of spatter built on the back of a lava flow (generally pahoehoe), formed by the gradual accumulation of clots of lava ejected through an opening in the roof of an underlying lava tube. Syn: *driblet cone.*

jameo A large collapse sink formed by structural failure of the roof of more than one level of a multi-level lava tube cave. The term originated in the Canary Islands and is commonly used in the Spanish literature.

lava trench (a) A lava channel that never had a roof. (b) A lava tube which has lost its roof through crustal sagging or collapse.

mineral (min'-er-al) (a) A naturally occurring inorganic element or compound having a periodically repeating arrangement of atoms and characteristic chemical composition, resulting in distinctive physical properties. (b) An element or chemical compound that is crystalline and that has formed as a result of geologic processes. Materials formed by geologic processes from artificial substances are no longer accepted (after 1995) as new minerals (Nickel, 1995). Mercury, a liquid, is a traditional exception to the crystallinity rule. Water is not a mineral (although ice is), and crystalline biologic and artificial materials are not minerals. Cf: *mineraloid.* properties. (c) Any naturally formed inorganic material, i.e. a member of the mineral kingdom as opposed to the plant and animal kingdoms.

mineraloid (min'-er-al-oid') A naturally occurring, usually inorganic substance that is not considered to be a *mineral* because it is amorphous and thus lacks a periodically repeating arrangement of atoms, e.g. opal. Syn: *gel mineral*

opal (o'-pal) A mineral or mineral gel: $SiO_2 \cdot nH_2O$. It has been shown by electron diffraction to consist of packed spheres of silica; some so-called opal gives weak X-ray patterns of cristobalite or tridymite. Opal has a varying proportion of water (as much as 20%, but usually 3 to 9%); it occurs in nearly all colors, is transparent to nearly opaque and typically exhibits a marked iridescent *play of color.* It differs from quartz in being isotropic, and has a lower refractive index than quartz and is softer and less dense. Opal usually occurs massive and frequently pseudomorphous after other minerals, and is deposited at low temperatures from silica-bearing water. It is found in cracks and cavities of igneous rocks, in flintlike nodules in limestones, in mineral veins, in deposits of thermal springs, in siliceous skeletons of various marine organisms (such as diatoms and sponges), in serpentinized rocks, in weathering products, and in most chalcedony and flint. The transparent colored varieties exhibiting opalescence are valued as gemstones. Syn: *opaline.*

pipe [volc] A vertical conduit through the Earth's crust below a volcano, through which magmatic materials have passed. It is usually filled with volcanic breccia and fragments of older rock. As a zone of high permeability, it is commonly mineralized. Cf: *plug [volc]; chimney [volc]; vent; diatreme.* Syn: *breccia pipe.*

pit [geol] (a) A small indentation or depression left on the surface of a rock or particle (esp. of a clastic particle) as a result of some eroding or corrosive process, such as etching, differential solution, or impact. (b) A shallow excavation, up to several meters depth, dug to expose a soil or geologic section of relative soft sediments.

pit [geomorph] A local minimum of elevation, as at the lowest point of a closed depression (Warntz, 1975, p. 210).

pit [speleo] A vertical shaft in a cave which may or may not be open to the surface.

pit crater A *sink [volc]* or a small *caldera.*

primary fumarole A *fumarole* formed over a volcanic fissure and fed directly from the main source of activity, thus giving a true index of internal conditions. Cf: *rootless fumarole.*

rift [geomorph] A narrow cleft, fissure, or other opening in rock (as in limestone), made by cracking or splitting.

rift [speleo] A narrow, high passage in a cave, the shape of which is controlled by a joint or by a bedding or fault plane.

rift [tect] (a) A long, narrow continental trough that is bounded by normal faults; a *graben* of regional extent. It marks a zone along which the entire thickness of the lithosphere has ruptured under extension. Cf: *paar.* (b) A belt of strike-slip faulting of regional extent.

rootless fumarole (root'-less) A *fumarole* that derives its gases from the lava flow or ash flow on which it occurs, rather than from some deep source. Syn: *secondary fumarole.*

rootless vent A source of lava that is not directly connected to a volcanic vent or magma source; it may be an accumulation of overflow or an outflow from an otherwise solidified lava flow.

sink [geog] A depression containing a central playa or saline lake with no outlet, as where a desert stream comes to an end or disappears by evaporation; e.g. Carson Sink in Nevada.

sink [glac geol] An obsolete term for a depression in a terminal moraine.

sink [karst] *sinkhole.*

sink [volc] A circular or ellipsoidal depression on the flank of or near to a volcano, formed by collapse. It has no lava flows or rim surrounding it. Cf: *collapse caldera.* Syn: *pit crater; volcanic sink; lava rise pit.*

sinkhole (sink'-hole) A depression in a karst area, commonly with a circular pattern. Its drainage is subterranean, its size is measured in meters or tens of meters, and it is commonly funnel-shaped. Syn: *doline; sink [karst]; shakehole.* Partial syn: *collapse sinkhole; solution sinkhole.* See also: *karst valley; sinking stream; cockpit.*

skylight (sky'-light) (a) The component of light that is scattered by the atmosphere and consists predominantly of shorter wavelengths. (b) A submariner's term for a *polynya* or *lead [ice]* during the winter; it is covered by relatively thin ice (usually less than 1 m thick) and has a normally flat undersurface. Cf: *lake [ice].*

sótano (so'-ta-no) In Mexico, a deep vertical shaft in a karst area that may or may not lead to a cave. Etymol: Spanish, "cellar". Syn: *vertical cave.*

vent The opening at the Earth's surface through which volcanic materials are extruded; also, the channel or conduit through which they pass. Cf: *neck [volc]; pipe [volc].* See also: *feeder [volc]; chimney [volc].*

volcanic conduit The channelway that brings volcanic material up from depth. Cf: *vent.*

INTERNATIONAL UNION OF SPELEOLOGY
UNION INTERNATIONALE DE SPÉLÉOLOGIE

Commission on Volcanic Caves

Newsletter nr. 19
March 1998

Honorary President Dr. William R. Halliday

The Commission which takes care about caves of this and other worlds

Editorial address Jan-Paul van der PAS
Vauwerhofweg 3
6333 CB Schimmert / NETHERLANDS
tel/fax (oo31) 45 40 41 600

A word from the new Chairman

As already announced during the UIS Congress in Switzerland Bill Halliday was going to stop as chairman of this UIS Commission. The change-over would be during the symposium in Kenya, and took place on 8 Feb. '98.
It will be very hard to replace 'a Bill Halliday' , but I will do my very best to continue this commission as good as possible.
Please realise I'm not a scientist - just a hobby speleologist with a wide interest in 'everything underground'.
I'm not keen on discussions as 'what is pseudo karst' or 'how to define depth/length between lava- , glacier- and limestone-caves'.
Somewhere I recently read:'Maps and surveys always carry more information than words can convey'.
As seen on the heading of this newsletter Bill will not be forgotten, we are grateful for all he did to get this commission in such a fantastic shape. A small ceremony on the roof of a Nairobi hotel with some nice liquids made him our Honorary Chairman - and I'm sure (as happened already...) that we will hear a lot from him.

Jan-Paul van der PAS

8th International Lava Cave Symposium a Success

This symposium, held in Kenya (Feb. '98) was very successful. During the symposium itself some 15 participants, from around 10 countries, attended.
I still regret not having participated in the pre-symposium field-trips, but the ones after the symposium made a smashing impression. Where do you see bats and flying foxes in a cave during the day - and elephants at night? After a period of poaching and shooting these elephants disappeared, but now they are back on Mount Elgon. Mount Suswa and it's many lava caves was another experience, certainly the access through Masaai territory, a mini-safari in itself. A more proficient writer than me will hopefully come with a complete description of this experience.
Jim Simons, his wife Francoise and the other members of CEGEA (the Cave Exploration Group of East Africa) are to be congratulated with their work to make this symposium such a success.

JPvdP

Please note the following new or corrected addresses:

Takanori Ogawa 5-52-4 Asumigaoka, Midori-ku
Chiba-city, Chiba
267-0066 JAPAN

John Webb - commission member of Australia, has appointed Ken Grimes as his successor in this commission. Thank you Mr. Webb for what you did for the commission. Welcome Mr. Grimes for joining the commission.

Ken Grimes Regolith Mapping
PO Box 362
Hamilton VIC 3300 AUSTRALIA
E-mail: ken-grimes@h140.aone.net.au

Mr. Grimes published about Australian lava caves:
- 'Lava caves and channels at Mount Eccles, Victoria' - Vulcon Precedings 1995, p. 15-22.
- The Volcanic Caves of Western Victoria - Australian Caver No. 136, 1994, p. 9-14.

WRH

LAVA CAVE TUBES in MADAGASCAR

Commission member Dominque Decobecq has provided an English-language translation of the best known reference to lava tube caves in Madagascar. The reference is:

Decary, R. & A. Kiener. Inventaire Schématique des Cavités de Madagascar. 1971. Annales de Spéléologie, tome 26, fasc. 1, p. 31.

Andavakoera and Andanakaomby (Andranaofanjava), District of San Diego, southwest of Montagne d'Ambre. Several galleries of volcanic origin are to be seen (see text), with several skylights and shafts shedding light here and there into subterranean passages that still are badly known. It is believed that one of these galleries passes under the Andranofanjava River.

A second series of similar galleries (Bobakilandy) is also located near the circular road of the Massif d'Ambre. Some of them are more than 100 meters long and seem to be independent, one from another. They sometimes conceal rivers (like Andranomiditra). Fady, formerly Sep. Antanakarana, but the remains have been transported to Mosy-Mitsio Island. All these caves are haunted, as is suggested by the name of one of them: "Andololo".

These volcanic caves have a fairly recent origin, associated with the latest eruptions of the Massif d'Ambre. This is proved by a fauna of molluscs that were covered by lava flows; some samples of this are still to be seen today. Reference: R.Decary, 1922-23. The last eruptions of the Massif d'Ambre. Bull, Acad. Malgache, tome VI, p. 67.

(Note by W.R.H.: maybe a line was omitted from the original French text, regarding "Fady" etc.)

Home address for D. Decobecq: 18, rue Lignier, 75020 Paris.
FRANCE

JAPANESE LAVA TREE MOLDS REPORTS

- William R. Halliday -

At the 8th International Symposium in Nairobi, Commission member Takanori Ogawa showed two notable recent reports on lava tree molds in Japan, both illustrated with color photocopies. One is:

Mount Fuji Lava Tree Molds Observation Report Magazine, 1997, by the Speleological Society of Japan Commission on Vulcanospeleology Lava Tree Mold Investigation Group. The other is:

山梨県 富士山北麓

柏原溶岩樹型群

観 察 報 告 書

Although in Japanese, the maps and photographs of these publications make their content quite clear. For information, contact Takanori Ogawa at his new address: 5-52-4 Asumigaoka, Midori-ku, Chiba City, Chiba, 267 JAPAN.

Coming symposia by 'non-limestone' commissions:

Commission for Pseudokarst -

1999: 7th International Pseudokarst Symposium, Moneasa (Romania).

Commission "Glacier Caves & Cryokarst...." -

end October 1998, 5th Symposium, Cuneo (Italy),

2000, 6th Symposium (under discussion), Iceland.

Commission on Volcanic Caves -

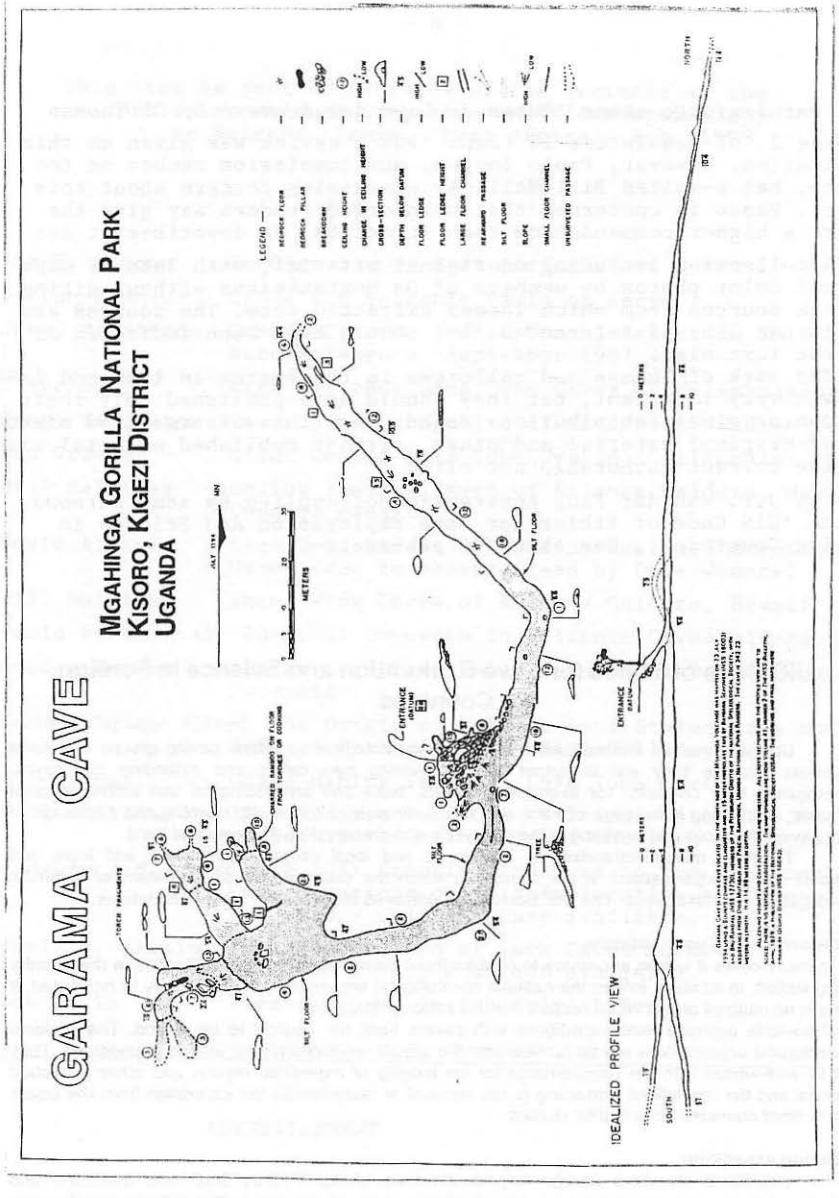
11-18 Sept. 1999, 9th International Symposium on Vulcanospeleology, Centro Speleologico Etneo, Catania (Italy),

2000, 10th Symposium (under discussion), Iceland.

You want to talk about lava caves? And their features?
You better own a copy of:

An Illustrated Glossary of Lava Tube Features,
by Charles V. Larson
Bulletin 87
Western Speleological Survey (Vancouver, WA)
1993. 56pp softbound, 121 b/w photos, 306 references cited.
Available from the NSS bookstore for US$ 9.
(NSS Bookstore 2813 Cave Avenue, Huntsville, AL 35810-4431
tel (205) 852-1300
fax (205) 851-9241 U.S.A.

My personal experience is: send US$ 10 in an envelope and this seems to cover all costs.



WRH

Received publications:

Commission "Glacier Caves and Karst in Polar Regions" - Circular Feb. 1998 - Activities Summary between 11th and 12th UIS-Congress, by the chairman - A. Eraso.

Commission "Pseudokarst" - Oct. '97 - report about this new installed commission, list of coming activities, officers - by the chairman I. Eszterhás.

I. Eszterhás - "Nemkarsztos Kifejezések Kislexikona" (Small lexicon of the Non-karstic Expressions). A-5 size, 80 pages, ring-bound, 60 pictures. 74 Pages of explanations (in Hungarian, but key words in english and german are included, 6 page glossary of terms in english, hungarian and german). Issued : Isztimér 1997.

Warning/note about 'Tubes de Lave des Acores' by C. Thomas

On page 2. of Newsletter 18 (Jan. '98) a review was given on this publication. However, Paolo Borges, our commission member on the Azores, has e-mailed Bill Halliday expressing concern about this report. Paolo is concerned that uninformed readers may give the report a higher commendation than it merits. He describes it as:

> "A collection including unoriginal material, with lots of maps and color photos by members of Os Montanheiros without citing the sources from which Thomas extracted them. The sources are in the list of references, but should have been indicated in the text also.
> The work of Thomas and colleages in the Azores in 1990 and 1994 was very important, but they should have published only their own original contributions rather than this disorganized mixture of original material and other, already published material with the correct authorship not cited."

Note by J.P. van der PAS: apparently not applied by some persons is the 'UIS Code of **Ethics for Cave Exploration** and Science in Foreign Countries'. See this UIS publication :

UIS Code of Ethics for Cave Exploration and Science in Foreign Countries

UIS supports the international activities of speleological societies, caving groups and karst scientists because they are important for; discovering new caves and extending old caves; investigating their contents, for example, minerals, biota and archaeological and anthropological remains; distributing knowledge of karst and caves throughout the world; enabling the exchange of safe caving practices and assisting in the protection and preservation of caves and karst.

To avoid misunderstanding by indigenous and local people, government and local and national caving organisations in the country in which the proposed cave exploration or scientific investigation is to take place. The UIS Bureau has prepared the following recommendations.

1. Before leaving your country

In many cases it will be necessary to obtain official permission from the authorities in the country being visited. In addition, inform the national speleological organisation of the country to be visited, if there is no national organisation contant the UIS national delegate.

If possible organise joint expeditions with cavers from the country to be visited. The national speleological organisations will be familiar with the official requirements for visiting expeditions. They will be well-versed with the requirements for the lodging of expedition reports and other published material and the regulations pertaining to the removal of materials by the expedition from the caves and to other countries for scientific studies.

2. During expedition

The expedition members should respect the laws of the country and local traditions and understand that some caves may be sacred sites and be of religion and/or cultural significance; exploration and research studies in these caves may be restricted.

The expedition members should not damage either the karst or its caves. They should were possible educate and advise local communities in the protection and preservation of their karst and caves.

3. After the expedition

Samples from the caves and karst collected by the expedition should only be taken out the cave and country if the correct export procedures are followed and their export is permitted.

Copies of all printed material produced by the expedition, together with the location and maps of the caves should be sent to the participating caving clubs and the national speleological organisation and/or the UIS national delegate. Assistance received from the organisations within the country visited should be acknowledged in all the expedition publications.

This list is just an overview of the lectures at the 8th International Symposium on Vulcanospeleology at Nairobi (Kenya, 'East Africa') Feb. 1998

Jim W. Simons	An Overview of East African Lava Caves
Declan Kennedy	CEGEA and Volcanic Caves of Kenya
Greg. Middleton	Grande Comore, Indian Ocean, Report on Initial Reconnaissence, September 1997
Clive Ward	High Altitude Lava Tube Caves of Kilimanjaro
Greg. Middleton	Caves of the Republic of Mauritius, Indian Ocean
Ron Greeley	Giant Crater Lava Tube System, California
Bill Halliday	Hollow Tumulus Caves of Kilauea Caldera, Hawaii County, Hawaii
Kevin Allred	Lava Tube Remelt by Radiant Heat and Burning Gases (due to absence read by Dave Womack)
Bill Halliday	Sheet Flow Caves of Kilauea Caldera, Hawaii
Paolo Forti et al	Chemical Deposits in Volcanic Caves of Argentina
Gordon Davies	'Hades' - A Remarkable Cave on Ol Doino Lengai, Tanzania
Kevin & Carlene Allred	The Origin of Tubular Lava Stalactites and Related Forms (read by Bill Halliday)
Jim Simons	Guano Mining in Kenya Lava Tube Caves
Bill Halliday	'Pit Craters' and Open Vertical Volcanic Conduits of Hawaii (redefinition of the term 'pit crater')
A. Leotta & M. Liuzzo	The 1981 Eruptive Fracture on the Mt. Etna: Considerations on it's Exploration and Genesis Not read - only abstract available.
Yurii B. Slezin	To the Mechanism of Lava Caves Formation Not read - only abstract available.
Bob Davis	Fissure caves in the Solai Rifts

INTERNATIONAL UNION OF SPELEOLOGY
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Commission on Volcanic Caves

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The Commission which takes care about caves of this and other worlds

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Newsletter nr. 20 July 1998

Contents:

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more about lavacaves (not UIS related) to be found on
< http://www.geocities.com/Yosemite/Trails/6405/vulcanospeleology.html >

This article is reproduced from the 'Nachrichtenbrief' Nr.1, May 1998. This is the newsletter of the UIS Commission for Pseudokarst. Original article in German, sorry for translation-errors.

by István Eszterhás - Hungary

Tubelike Caves originated by Fumaroles

In the volcanic rock of Hungary many caves-types are found. Some of these are vertical or horizontal tube-like caves, with often mineral-crusted walls. Minerals deposited due to hot solutions. By observation and comparisons with active fumaroles (e.g. Italy) we concluded these are old tubes for vapours and gases.

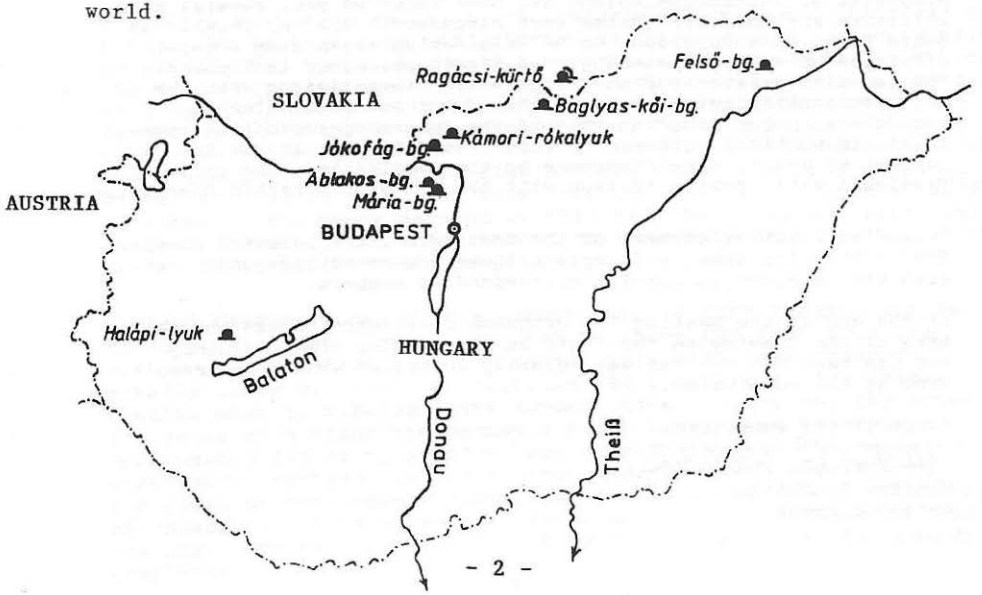
We know seven of these tube-caves in Hungary:

1.	Foxhole at Kámorhorn	11,5 meter	at Borsosberény
2.	Jókofág Cave	2	at Perőcsény
3.	Window Cave	6,5	at Dömös
4.	Maria Cave	4,7	at Dömös
5.	Upper Cave	4,4	at Sárospatak
6.	Basalt Hole at Baglyas-kő	2	at Salgótarjan
7.	Basalt Hole at Haláp	ca. 30 m	at Zalaháláp

Than we know two in Slovakia:

8.	'Kamin' in Ragatschhorn	6,2 meter	at Hajnácka
9.	'Schacht' in Ragatschhorn	3,8	at Hajnácka

Than we know about a few more of this kind of caves in Romania, Italy and Iceland. But many more of this caves should exist on this world.



Commission on Volcanic Caves

REPORT ON 1998 COMMISSION MEETING IN NAIROBI, KENYA

A regularly scheduled Commission meeting was held at the Panafric Hotel In Nairobi, Kenya on 8 February 1998, lasting two hours. Present were Commission members Jim Simons (Kenya), Takanori Ogawa (Japan), Greg Middleton (Australia), Jan Paul van der Pas (Nederland) and William R. Halliday (U.S.A. - outgoing President). Guests included Dr.s Ronald Greeley (U.S.A.) and Paolo Forti (Italy).

Special reports included initial contacts with a speleological group in La Réunion, Italo-Argentine liaison, two Japanese publications on basalt tree molds, and progress toward the 9th International Symposium on Vulcanospeleology in Italy in 1999. Further efforts to open caves of Chejudo (Korea) for vulcanospeleological research were discussed at length, with a consensus that input from academia was needed.

Nomenclature issues were discussed at length. Results of the August 1997 discussion on pseudokarst will be published soon in the final volume of the XII International Congress of Speleology. Charlie Larson is agreeable to expanding his illustrated glossary of lava tube features, and suggestions should be sent to him. It was agreed unanimously that the term lava speleothem was acceptible, and the new president of the Commission is to write Charlie accordingly, with copies to several interested parties. It also was agreed that the outgoing president should write the American Geological Institute about the current definition of lava tumulus; Paolo Forti stressed the occurrence of gypsum tumuli also.

Options for publication of the Proceedings of the 8th International Symposium on Vulcanospeleology also were discussed at length. Paolo Forti will investigate use of a special issue of International Journal of Speleology. Greg Middleton will explore publication by the Sydney Speleological Society (Australia) and the outgoing president will explored publication by the National Speleological Society (U.S.A.). The final decision is to be made jointly by the symposium chairman and new Commission president.

Among other items of business, no proposal for a 10th International Symposium of Vulcanospeleology has been received yet; several possibilities and potential dates were discussed: 2002 or later. Adolfo Eraso is understood to be considering organizing a joint symposium of vulcanospeleology and glaciospeleology in Iceland. The incoming president plans to maintain close liaison with the IUS glaciospeleological commission and the new Commission on Pseudokarst. Defining the role of the vulcanospeleological commission in vertical volcanic cavities was deferred, as was the concept of adding more structure to the Commission. The incoming President will provide liaison with the IUS Bibliographic Commission.

Regarding inactive members of the Commission, the incoming president will write them, and replace those who do not respond. He also will proceed to appoint corresponding members.

At the end of the meeting the outgoing president thanked the members of the Commission for their service during his presidency and Jan Paul van der Pas was formally installed as the new president of the commission.

Respectfully submitted,

William R. Halliday

William R. Halliday
Outgoing President

FIELD EXCURSIONS IN KENYA DURING THE 1998 INTERNATIONAL SYMPOSIUM

by William R. Halliday

In February 1998, participants in the 8th International Symposium of Vulcanospeleology had marvelous visits to some of the world's most intriguing caves. During the pre-Symposium week, things were a bit chancey: record rains had blocked the Nairobi-Mombasa highway between the excursion's base camp (Jim Simons' luxurious tented camp at Umani Springs) and the jeep road to giant Leviathan Cave -- just on the other side of the lava flow from which the springs emerge but on the other side of the flood. Four feet of running water even covered the start of the jeep road leading to the camp. But in typical Kenyan style, a jungle track quickly became a passable road to the camp, the highway was reopened despite two feet of running water, and an alternate track was found to Leviathan Cave. At the north end of the Chyulu Hills (scene of all this activity), Mathioni Cave and Kimakia Cave were visited easily. These caves were the site of former guano mining. At the south end of the range, we were able to visit Shetani (Shaitani) Cave before the highway again was blocked by a flood surge unrelated to the balmy weather which followed the rains.

In addition to historic residuals of the guano mining, 1.4 km Mathioni Cave has a wide-based lava stalagmite more than 12 feet high. It formed when a pasty little lava flow broke through the roof of the huge main corridor, through a hole about three feet in diameter. This borehole corridor is as much as 50 feet in height and width. A tricky complex of interconnected pits exists in the two-level entrance section. Several hundred feet beyond the last of these, three undisturbed, ancient-looking "burial" cairns pose a bit of a mystery about what they area, and how their builders got there. Guano-producing bats still are present in this cave and limit casual visitation. For those who don't mind sliding around on wet guano, the cave is notable for its impressive size and for lava speleothems including lava ribbons, flowstone, and various extruded forms. A bulky lava column several feet long is present along one wall of one of the entrance pits. Roots are sparse, except in one large clump.

The route we had to use to reach Leviathan Cave was long and tortuous. We left at 8 am and returned at dusk (6 pm), and this allowed us only two hours in the 10.5 km cave. To save time, we hiked to the Discovery Entrance, in its upper middle section. Here the cave is moderately steep, rather small in comparison with much of its length, and has two levels. Ron Greeley found a pocket where accreted wall lining had broken away, revealing scoriaceous material where the tube-forming lava flow had cut down below its original floor, just as in some lava tube caves in Hawaii and in the Pacific Northwest. The upper section of this cave has a much greater variety of features, including some I have seen in no other lava tube cave. But I heard nobody complain.

Shetani Cave in Tsavo West National Park is much smaller but is commonly visited; a park jeep road is about 100 feet from its entrances. Conditions in and around this cave have changed greatly since my previous visit, 24 years earlier. Its interpretive sign is missing, the wooden ladder is rotten, the bone-dry guano-rich floor has become a soppy mess with scurrying cockroaches and flat, striped bugs everywhere, and the once-dry grasslands overhead now are a green mass of low bushes. With the guano so wet, nobody wanted to try its lower level. However, microfacetted white secondary flowstone glitters in patches, and the upper end of the cave has a very nice cupola. Again, nobody complained.

Separately, a half-day trip out of Nairobi visited two of the Gigglers Caves in the Ndarugu River Gorge. These are elongated networks of small tubular and rift passages and small chambers. These caves look like they should be in limestone but are in complex volcanic tuff. They appear to have a mixture of tectonic and solutional features.

The 5-day post-symposium excursion began with the notable lava tube complex of Mt.Suswa and continued to lofty Mt. Elgon on the Uganda border. 24 years ago, this was almost an untouched wilderness. Now, Maasai tribesmen have occupied the slopes and caldera of the volcano. Along the road to the caves and caldera, a school and a tiny 7th Day Adventist chapel have appeared, along with numerous traditional mud-and-stick huts. Already, overgrazing is evident. The recent rains annihilated wide areas of thin topsoil and created great patches of gullies. Much of the jeep road either is deeply rutted or bare lava.

CEGEA members camped overnight in Suswa's Ballroom Cave, with a hopeful hyena "laughing" just outside its hyena-proof entrance. Those of us without camping equipment were ferried to and from a resort two hours farther north, seriously reducing our time underground here. I spent most of my time photographing "treacly" lava stalactites in just three of the many caves here. Next morning we all trekked to the edge of the wonderful inner moat of the volcano's caldera. Unexpectedly we met three adolescent, traditionally garbed Maasai boys with heavy traditional spears. They spoke excellent English and told us they were guarding their cattle from a lion not far away -- "right over there". A muscular CEGEA member challenged them to a spear-throwing contest, and lost handily.

Through our only day of bad weather, we continued uneventfully to Mt.Elgon Lodge. This largely forgotten "resort" is far off common tourist routes and was reopened especially for us. Some of us went for a stroll at twilight and saw three of a herd of 30 elephants that have survived fierce poaching in this border area.

We were not alone in this beautiful national park, however. Picking up two armed guards at park HQ next morning, we drove past numerous hikers on their way to Kitum Cave, supposedly the lair of the dread Ebola virus (at least according to the best-seller Hot Zone). According to romantic legend, this cave was excavated in salty tuff (or agglomerate) by generations of salt-seeking elephants. We photographed numerous tusk marks where they sought to gouge out pieces of cave wall. Lesser, cross-hatched marks of primitive mining with fire-hardened digging sticks also were evident. But the cave's large rounded chambers might have come straight out of Carlsbad Cavern and its origin appears to have been solutional. Extensive breakdown, however, obscures details of its farther end. Considerable petrified wood is exposed in its ceiling, and crystals line pockets in small tree molds. Bats are present, and I saw an eagle-sized feather, but the overwhelming fauna of the cave consists of the elephants which enter it at night. Fresh dung is present far back, past a small mountain of breakdown which subdivides the cave, and a well-pounded elephant track is present along one side of the wide entrance. Also present is the skeleton of a hapless baby elephant which fell between the cave wall and a large breakdown block, and couldn't rise. And nobody contracted Ebola, or any other dire disease.

If Kitum Cave looks like a side chamber in Carlsbad Cavern, Makningen Cave looks like a Big Room cave somewhere deep in the Guadalupes. With a 60-foot waterfall in part of its gaping entrance (which is some 200 feet wide), it is much roomier and more spectacular than Kitum: truly awesome. Daylight penetrates hundreds of feet; the first few hundred are almost breakdown-free, with much evidence of water action. A trail of stream-sorted cobbles is present along one wall. Nearby is a small stream gully in the sandy, dropping-littered floor. High overhead is a wide, shallow breakdown dome much like the famous example in Wyandotte Cave, decorated with a few bulky stalactites.

On theleft side of the vast entrance room is a high, rounded alcove a few dozen feet in diameter. My approach stirred a swirling cloud of beautiful big bats so I did not inspect it closely. But my photos show a small vertical lava flow along one wall, entering the main entrance room.

Various animals enter this cave. The floor of its entrance room is a dusty mat of trampled droppings. Buffalo and elephant tracks are prominent. The skeleton of a small antelope is present beyond the breakdown mountain at the far end of the entrance room. Tusk and pick marks are less common than in Kitum Cave, however. This is an excellent site for geological and speleogenetic studies of this perplexing type of cave and its bedrock. Anyone interested, however, should note that the published 1974 British map supposedly of this cave actually is of Kitum Cave.

Late in the afternoon we continued to three smaller caves farther north: the Chepnyalil or Chepyanili Caves (the spelling is not uniform even on official signs and maps). They have generally similar speleogenetic features and even more petrified wood exposed in ceilings and walls -- and maybe some animal remains also. These caves were inhabited until very recently, and there is much more evidence of primitive mining than in the other caves we visited.

At least two camping areas have been developed near park HQ, not far inside its Cholim Gate. The caves are only a few km away, strung out along a good dirt road. CEGEA has more caves than it can handle, and will welcome and assist expeditions to these and other Kenyan caves. A day's drive from Nairobi, and less than two hours from the Kitale airport, these caves of Mt. Elgon would be an excellent beginning for badly needed intensive speleogenetic studies of non-rheogenic caves in volcanic rocks in many parts of Kenya. Contact person is Jim Simons, POBox 47363, Nairobi, Kenya. Day phone/night fax: 254-2-520-883.

LAVA TUBE CAVES REPORTED IN SYRIA

by William R. Halliday

Through the courtesy of Fayez al Tabbaa, a well-reputed guide in Damascus, definite information has been received on lava tube caves in southernmost Syria; in Jabal Ad-Drouz Range in Assuwayda Province.

The following information is from page 39 of a Syrian report (in English):

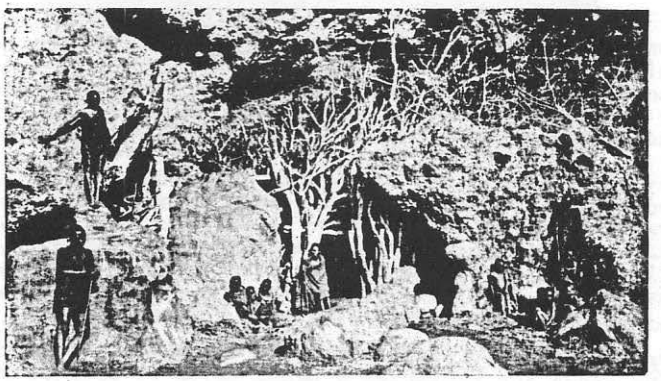
"The lava flow of theTell Shihan volcano...occupies the southern part of the Al-Laja Massif...(length) more than 45 km. ..localities with the surface covered with boulders..developed mainly at the beginning of the flow, and, in the north, frame the volcanic ridge of Majadel. They are accompanied by narrow pits, cones of subsidence and swell domes. ...observed here are caves and caverns often with collapsed roofs.

"The presence of traces of flows on the pit walls, representing a whole system of canals, and remnants of lava flows, which preserved evidence of currents in the forms of ropy lavas on the bottom of the canals ... the canals and pits of such kind can be observed in the central parts of the flow, but as to the area occupied they are small and shallow.

"In addition to the shallow caves and pits, along the northern edge of the flow from east to west, an almost continuous chain of deep pits from 5-6 m wide and 7-8 m deep (sometimes 10 m) is observed at a diestance of about 12 km in the direction of lava flow. The pits are often separated from each other by narrow crosspieces in the form of arches 3-5 m thick. In some cases the locality with an open pit grades into a; tunnel 1.5-2 km long. The thickness of the tunnel roof varies from 5-6 m to 1.5-2 m."

The caption of Fig. 13 on page 40 indicates that this volcano is Recent. Much more information is included than can be repeated here. The area is about 2 hours by car from Damascus, just north of the Jordanian border at the southernmost point of Syria, in Jabal Ad-Drouz.

Mr. Al Tabbaa has received excellent commendations in International Travel News and clearly has good connections in Syrian geological circles. I hope to use his services after the karst meeting in Marmaris, Turkey in September 2000 or earlier. Please contact me if interested in joining me. For those wishing to contact him independently, his address is Post Office Box 27127, Damascus,Syria. His current fee is US$100/day.



CAVE DWELLERS ON MOUNT ELGON.

8th INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY IN KENYA

by William R. Halliday

Despite aporadic intertribal warfare nearby (grossly distorted by the media), 16 vulcanospeleologists attended the highly successful 8th International Symposium on Vulcanospeleology in Nairobi, Kenya February 8-9, 1998. Included were participants from the United States, Great Britain, Italy, Norway, Japan, Australia, Netherlands and Kenya. Host organization was the venerable Cave Exploration Group of East Africa. The event was co-sponsored by the IUS Commission on Vulcanospeleology

Severe floods repeatedly closed the Mombasa highway, but the pre-symposium field excursion successfully reached Leviathan, Mathioni, Kimakia, and Shetani caves in various parts of the Chyulu Hills and Tsavo West national parks. A ½-day trip from Nairobi also visited two of the puzzling Gigglers Caves: intricate elongated networks of small passages in tuff in the Ndarugu River Gorge with what appear to be karstic patterns. The post-symposium excursion to Mt. Elgon National Park included "dread" Kitum Cave (supposedly the lair of Ebola virus), enormous Makningen Cave and three of the smaller Chepnyanili Caves, all in agglomerate, tuff, and/or lacustrine deposits. The entrance of Makningen Cave is 60 m wide and 20 m high; its entrance room is some 200 m long and contains numerous features characteristic of karstic caves. The published map labelled Makningen Cave (Sutcliffe, 1973) actually is of smaller Kitum Cave whose speleogenesis is partially obscured by more extensive breakdown. The caves have been enlarged by primitive mining of the salty bedrock and by their use by domestic and wild animals (including elephants) as natural salt licks, but most of their volume is the result of geologic processes. Interesting fossilized wood and possibly animal remains are exposed locally in the walls and ceilings of some of these caves. Small geodes exist where wood rotted instead of becoming fossilized. En route to Mt. Elgon, several caves in the intricate Mt. Suswa lava tube network also were visited. These contain extensive deposits of SiO_2 and other secondary minerals in addition to a magnificent display of enormous hollow pahoehoe ropes and other notable primary features.

In addition to a remarkable overview of vulcanospeleology by symposium chaiman Jim Simons, other notable papers in the East Africa session included a report on high-elevation lava tube caves of Kilimanjaro by Clive Wood, and reports on lava tube caves of Grand Comoro Island and of Mauritius by Greg Middleton, session chairman.

Ron Greeley of Arizona State University chaired a session on vulcanospeleogenesis, including his own paper on California's Giant Crater lava tube system (where there is definite evidence of erosion into pre-flow country rock). Kevin Allred's in absentia paper on supposed "Lava Tube Remelt by Radiant Heat and Burning Gases" was read by Dave Womack of CEGEA. I presented papers on hollow tumulus caves and sheet flow caves of Kilauea Volcano, Hawaii.

Past IUS President Paolo Forti chaired a session on speleothems of lava tube caves and presented a paper (with several co-authors) on "Chemical Deposits in Volcanic Caves of Argentina", contrasting findings in Cueva del Tigre (ions from weathering of lava) with phosphates in a nearby tectonic cave, resulting from interaction of bird guano and volcanic rock. Gordon Davies reported unique rope-like speleothems in a hollow half-cone in carbonatite in the caldera of Tanzania's Ol Doinyo Lengai. The latter was a short-lived hyperthermal cave with speleothems presumably of sodium carbonates and possibly NaCl also, primarily in the form of long, thin uniform stalactitic columns. Tourism is increasing here, but requires a 6000-foot ascent using crampons and ropes, to the caldera at 9300 feet. Ron Greeley commented that carbonatite lava is the only type where downcutting by flowing lava actually has been observed. Jim Simons reported on guano mining in Kenya lava tube caves, and Kevin and Carlene Allred (in absentia) on filter-pressed segregation as the cause of tubular lava stalactites and related forms.

Jan Paul van der Pas (President-elect of the IUS Commission on Volcanic Caves) chaired a session on miscellaneous topics. Included were an archaeological report on an important lava tube cave previously studied by CEGEA, a report by Bob Davis of Norway, on roofed tectonic caves in the Solai area of Kenya, and my paper on speleological aspects of pit craters and severa types of open vertical volcanic conduits in Hawaii, with particular reference to definitions in the 1997 4th Edition of Glossary of Geology.

A 37-page guidebook and abstracts are available from the symposium chairman, Jim Simons, at Box 47363, Nairobi, Kenya. The price of the former is around US$10 plus postage. A Proceedings volume wil appear in due course.

Reference: Sutcliffe, Anthony. 1973. Caves of the East African Rift Valley. Trans. Cave Res. Gp G.B., Vol. 15 no. 1, p. 41.

INSIDE VOLCANOES
IXth International Symposium on Vulcanospeleology

TENTATIVE PROGRAM

PRE-SYMPOSIUM

Saturday
11 SEP Arrivals and registrations; optional vulcanospeleological excursions. In the afternoon Round Table discussion on *«The Archaeological findings in the caves of Mt. Etna»* and inauguration of the relevant exhibition.

Sunday
12 SEP Arrivals and registrations; optional vulcanospeleological excursions. Late in afternoon, welcome refreshment, opening ceremony, speeches, inauguration of the photo exhibition and presentation of the volume «The Caves of Mt. Etna» (in Italian)

Monday
13 SEP Venue to be defined: IX INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY. Arrivals and registrations. Morning and afternoon scientific session with coffee breaks; (optional) lunch break. Lectures and discussions. Optional social dinner at a city restaurant or social entertainment (projection) in the Symposium venue.

Tuesday
14 SEP Venue to be defined: IX INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY. Arrivals and registrations. Morning and afternoon scientific session with coffee breaks; (optional) lunch break. Lectures and discussions. Evening social entertainment in the Symposium venue: presentation of the International Documentation Centre on Volcanic Caves.

Wednesday
15 SEP General excursion to the high region of Mt. Etna and guided visit to the Etna Volcanological Observatory of the NRC (back in Catania at about 20:00). Alternatively full day of leisure activities.

Thursday
16 SEP Venue to be defined: IX INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY. Morning plenary session of the International Commission on Volcanic Caves of the IUS; communications, speeches, motions, coffee break; (optional) lunch break.
Venue to be defined: ROUND TABLE DISCUSSION ON SPELEOLOGY IN THE ENVIRONMENT OF VOLCANIC PARKS.
Afternoon round Table Discussion on Speleology in the environment of volcanic parks. Invited speeches; debate, conclusions. Farewell banquet at a restaurant in Catania or on Mt. Etna.

During the days of the event some optional tourist excursions are expected to be arranged for the accompanying persons.

POST- SYMPOSIUM

Friday
17 SEP Optional excursions

Saturday
18 SEP Optional excursions

Sunday
19 SEP Optional excursions

All times are indicative and may be changed during the drawing-up of the final programme

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Round Table Secretary c/o:
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95030 Nicolosi CT
tel. ++39/095/914588 - fax 914738

CATANIA ITALY SEPTEMBER 11-19, 1999

The Symposium, which celebrates the XVth anniversary of the CENTRO SPELEOLOGICO ETNEO, will deal with all aspects of Speleology in volcanic environment, and will be split into 7 sessions: Vulcanospeleology of Mt. Etna and Sicily; International Vulcanospeleology; Theoretical Section on Genesis, Evolution and Classification of Volcanic Caves; Vulcanospeleological Archæology; Vulcanospeleological Biology; Miscellany. There will be a special session on «*Motion and Emplacement of Tube fed Lava Flows*» with lectures from invited speakers followed by open discussions. One of the major aims of the conference is to encourage speleologists and volcanologists to share their knowledge and experience of tube formation mechanisms. The Scientific Committee may accept papers on additional topics related to Vulcanospeleology or to Vulcanology sensu lato.

Papers for publication must be submitted in English with an abstract in English and, where appropriate, one official western language of the IUS (French, German, Italian, Spanish). All oral presentations will be given in Italian or English, with simultaneous earphone translation in either language. Each participant or non-attending member may submit up to three papers. Each paper must be original and may not be or have been presented elsewhere. The abstracts must be submitted to the Secretary by Apr. 30, 1999; the organizers cannot guarantee presentation and publication of late delivered papers. The second circular will specify all writing instructions as per Publisher's directions; the Proceedings will be distributed to subscribers in the year 2000. *In absentia* papers will be accepted for publication. Also poster-presentations will be accepted, to be entered in the Proceedings as "long" abstracts.

The scientific sessions will last two days, and there will be an additional day for the general session of the International Commission on Volcanic Caves of the IUS, the Round Table discussion on Archaeology and Volcanic Caves and the possible Round Table discussion on Volcanic Parks; the relevant detailed programs have still to be defined. In addition an Exhibition of many Archaeological unpublished findings in Etna Caves, the International Documentation Centre on Volcanic Caves and the volume on Mt. Etna Caves will be presented in this occasion. The scientific event is accompanied by pre and post-Symposium optional excursions, one general excursion and social events (welcome refreshment, optional evening events, farewell banquet); a leisure program for accompanying persons will be proposed. The average registration fee will probably be in the range of 100 to 180 USD (to be paid in Italian Lira or Euro), according to the various categories and to the choice of supplementary services. The second circular will detail all fees and payment terms.

All hotel accommodation will be managed by a travel agency; some emergency accommodations may be arranged on the spot, on a first come first served basis. All registrants will receive a third circular with maps of Catania, the Symposium venue, logistic information, buses, restaurants and self services, and general information on Catania and the surrounding area. Interested persons should fill in and mail or fax to the Secretary the attached form to ensure they receive the second circular.

Publications received:

- Draft of 'Kenya - 1998' by Greg Middleton. Article for Journal of the Sydney Speleological Society - 1998, 42:1-15.
- Nachrichtenbrief Nr. 1, May 1998. Newsletter of the Commission for Pseudokarst. 6 pages, in German.
- LAVE No. 69 & 72. Revue de L'Association Volcanologique Européenne. Each 32 pages, in French.

Notes from correspondence between Dr. W.R. Halliday and Mr. P. Roe:

'Some 20-30 caves, mostly on Fogo, are reported by Mr. P. Roe. Fogo is one of the Cape Verdes (Cabo Verde) Islands. Cabo Verde is located opposite of Senegal, Africa'.

Notes about coming symposia - just an update to data published in the previous newsletter:

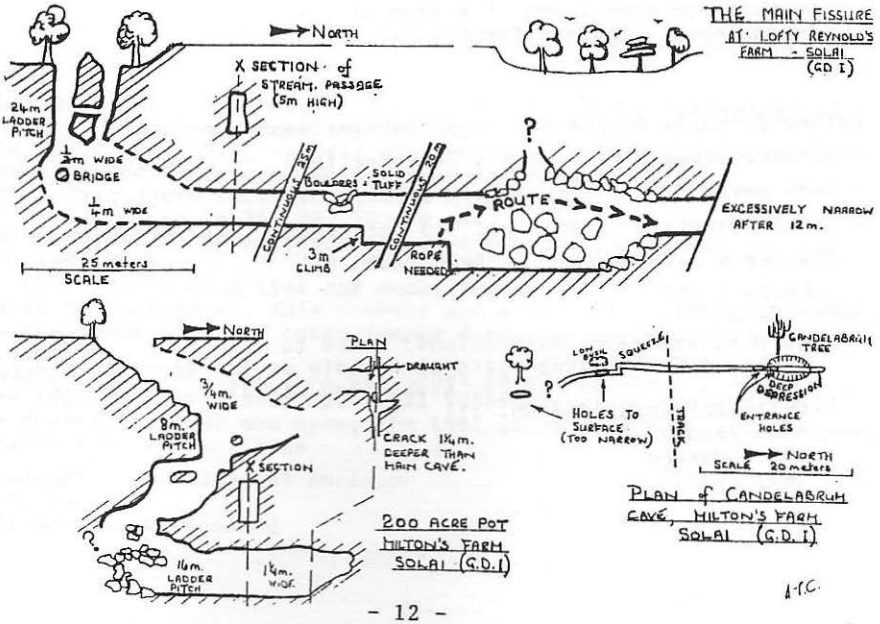
- the 7th Symposium of the Commission for Pseudokarst might be shifted to 2000. In case of 1999 it will be shifted from the Catania Vulcanological Symposium by two weeks. Information at Dr. T.N. Tulucan, Universitatea de Vest "Vasile Goldis", Bulevardul Revolutiei Nr. 81, RO-2900 Arad, Romania.
- Nothing heard yet fron the 'European Conference' in 2000. Probably to late already to be organized.

And a very sad note: to announce the death of the famous vulcanologist (and also caver) **Haroun Tazieff** on 2 Feb. 1998.

In LAVE 72 11 pages are dedicated to him. This includes three pages of references of his publications.

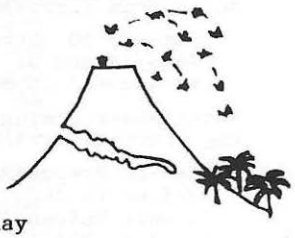
From a lecture by Bob Davis: Volcanic Fissures

(Kenya - 1998)



INTERNATIONAL UNION OF SPELEOLOGY
UNION INTERNATIONALE DE SPÉLÉOLOGIE

Commission on Volcanic Caves



Honorary President Dr. William R. Halliday

The Commission which takes care about caves of this and other worlds

Chairman &
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Jan Paul van der PAS
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6333 CB Schimmert
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NEWSLETTER Nr. 21 October 1998

Contents of this issue:

Future Symposia by the non-karst commissions:

- glacier caves	1 - 4 November 1998	(Italy)
- lava caves	11 Sept. - 19 Sept. 1999	(Italy)
- pseudo karst	30 Sept. - 3 Oct. 1999	(Romania)
- glacier & lava caves	Sept. 2000 (?)	(Iceland)

Address change:

- Yvo S.V. Weidmann (Switzerland) moved to
  Serbo, A.C. (Sociedad para al Estudio de los Resursos Bioticos de Oaxaca, Asociation Civil)
  Calle Porfirio Diaz No. 211
  Apdo. Postal 533
  68000 Oaxaca
  Oax, MEXICO

Publications received:

- LAVE nr. 73, June 1998.
  Misc. news about volcanoes. Three Internet sites are given for this publication HTTP://WWW.MYGALE.ORG/11/LAVE
  //opdafl.obspm.fr/~pascal/pblonde.html
  //perso.club-internet.fr/jmcourbe/
- Proceedings 4th International Symposium on Glacier Caves and Cryokarst in Polar and High Mountain Regions, Sept.1 - 7, 1996. A.o. Prof. Dr. Slupetzky, Institute für Geographie, Salzburg, Hellbrunner Str. 34, A-5020 Salzburg, Austria.
- SURTUR, yearly publication of the Icelandic Speleological Society. Years 1990 - 1995. More in this newsletter.

Articles seen:

- NSS News June 1998, Vol. 56, Nr. 6.
  Hawaii, Ka'eleku Caverns: Maui's Largest, by Chuck Thorne. A description of this cave by the owner. Page 166-168.
  The Survey of Ka'eleku Caverns, by Dave Bunnell. Page 169-173.
- In Proceedings 'Cave Management in Australasia XII', May 1997. Geopreservation of Lava Caves in Auckland, by L. Kermode.
- In 'Höhlenforschung in der Eifel', edited by M. Laumanns, Edition Archaea 1997. Page 80-83, Lava, Gas und Wasser - Vulkangesteinshöhlen in der Eifel.
- In 'Abstracts of Papers', ALCADI '98, Slovakia 25.-31.5.1998. Legends connected with volcanic caves of Hungary, by István ESZTERHAS (Hungary). An article which states: relatively more legends attached to volcanic caves than other natural phenomena.

SURTUR is the annual publication of the Icelandic Speleological Society, Hellarannsóknafélag Islands.
The first one, 1990, was distributed during the 6th International Symposium on Vulcanospeleology (Hawaii, August 1991).
Until now issues for 1990 to 1995 have appeared.
Amount of pages is 36, 70, 78, 56, 44, and 44 for 1995.
For 1991, '92, '93 english summaries are available. Not yet for '94 and '95.
In the 1994 issue a list and numbering system for the Icelandic caves is introduced. This numbers are also in a physical way attached in the caves to avoid confusion or double counting. 209 caves are listed.
In the 1995 issue the list has grown to 225 caves.
The 1996 and 1997 issue are still in preparation. The 1996 will be devoted to just one cave, the 1997 issue will be a picture one, the 1998 a regular issue.

Icelandic Speleological Society
P.O. Box 342
121 Reykjavik, Iceland

Listing of lava tubes in the **Lava Beds National Monument** (Siskiyou County, North California, U.S.A.) and of Cibola County, New Mexico, U.S.A.).
List made up by Mr. Bruce Rogers, and was supplied to the Newsletter by W.R. Halliday.

Labyrinth Cave System, Siskiyou Co.: ----------4776.52 m
I know that there is a lot of flack about this figure & I'm sure that there is a large segment that is actually near a km long. This summer, hopefully, I'll be able to figure out just what is connected to what and list just how long each cave is; I have the late Arron Water's and other's survey stuff from the 1960s-80s when we worked on Bull. 1673.

Gaping Holes Cave System, Siskiyou Co.: ---------- 2770.73 m
Gaping Holes is made of three caves:
Catwalk (Gaping Holes) Cave: ---------- 2117.73 m
Shovel (Arch Sink) Cave: ---------- 653.9 m
Mikes Sink Cave: ---------- 53.1 m

The Catacombs, Siskiyou Co.: ----------2278.96 m
(Neiland's list a shorter length of 2103 m, but I prefer the more accurate [hate to say it, but true - plane table vs. Brunton] Waters et. al. survey published in USGS Bull. 1673)

Mammoth Cave, Siskiyou Co.: ---------- 2490 m

Post Office Cave, Siskiyou Co.: ----------1671 m

Bobcat Cave, Siskiyou Co.: ----------1567 m

Hercules Leg-Juniper Cave, Siskiyou Co.: ----------1467 m

Balcony-Boulevard-Sharks Mouth Cave, Siskiyou Co.: ---------- 1306 m

Tichner-Berthas Cupboard Cave, Siskiyou Co.: ---------- 1260 m

Sentinel Cave, Siskiyou Co.: ----------1228.66 m

There are a whole passel of tubes between 999 and 700 m long in Medicine Lake volcano, but none quite make it to the magic 1 km length . . .

In New Mexico:

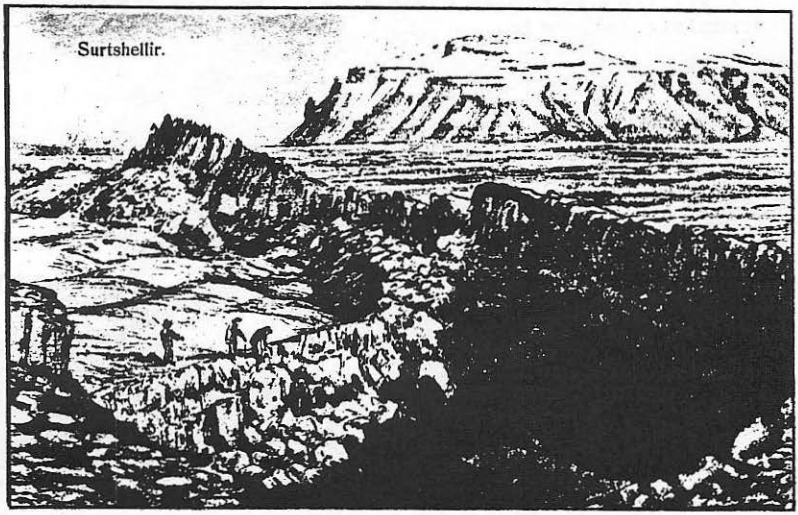
Trucketts (AKA El Calderon) Bat Cave,
Cibola Co.(? --El Malpais Nat. Mon.): ---------- 1233 m

Braided Cave System, Cibola Co.(? ditto): ---------- 1857.31+ m
This system is actually made of three caves - no matter how hard Cal Welborn & I tried, we really couldn't come up with a single cave!

continued next page

Braided Cave (approximate, but really close;
the survey's still not quite done) ---- 914.63 m
Haltun Cave (ditto) ---------- 792.68 m
Furniture Cave (very approximate - no
survey started to my knowledge) ---- 150 m

Again, there are many tubes in the 800 to 300 m lengths in the Monument, but many are not surveyed. Lava Drip(River?) and Candeleria Caves are probably over 1000 m long, but both are on private land & the owner is holding out for a bigger price before selling the land to the NPS.



Pedro Oromi	poromi (a) ull.es
Paolo Forti	forti (a) geomin.unibo.it
Ron Greeley	Greeley (a) asu.edu
Greg Middleton	gregmi (a) delm.tas.gov.au
Giuseppe Licitra	licitra (a) mail.asianet.it
Conny Spelbrink	conny (a) ing.iac.es
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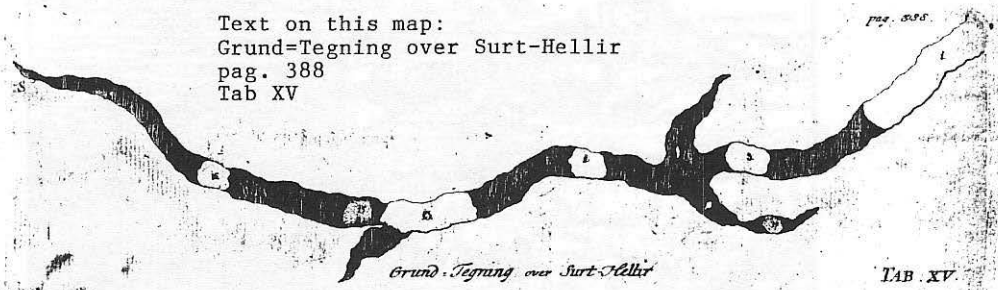
Ch. Larson	books (a) pacifier.com
K. Grimes	ken-grimes (a) h140.aone.net.au
F. Pereira	direct (a) dca.vac.pt
Jim Simons	asimons (a) wiznet.co.ke

J.P. van der PAS

IS THIS THE OLDEST MAP of a LAVA CAVE ?

This map, found on a page of the book 'Eggerts Olafssonar & Bjarna Pálssonar um ferdir á Islandi arin 1752 - 1757, issued probably in Denmark, is this the first one depicting a lava cave?
The page measures 31x25 cm, the highlighted part with the cave map 26x7,8 cm.
A facsimile of this book was issued in 1978, but ... this map is not in this one.
A discussion with Sigurdur Jónsson revealed there were different 'original' books - in German and in Danish. One of the two was better printed, but had worse pictures, and reversed.
So maybe the 'best' book did not have the map, but was used for the incomplete facsimile.

Text on this map:
Grund=Tegning over Surt-Hellir
pag. 388
Tab XV

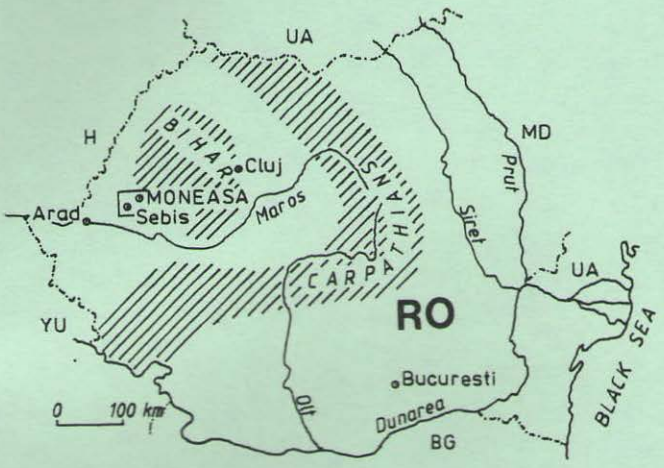


Surtshellir.

And is this maybe the oldest postcard depicting **Surts-hellir**? Issued before 1905.
Text on reverse:
1 Utg, Tlinsen & Johnson, 2236.

LAGEPLAN

zum 7. Internationalen Symposium über den Pseudokarst Moneasa (Rumänien) 1999



This is a first announcement for the 7th International Symposium for Pseudokarst. Date will be 30 Sept.- 2 Oct. 1999.
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fax: 00 40 57 280 810
E-mail: tnt @ uvgar.sorostm.ro