

INTERNATIONAL UNION OF SPELEOLOGY  
UNION INTERNATIONALE DE SPÉLÉOLOGIE

## Commission on Volcanic Caves



**Newsletter**  
**October 2002**

*XIth International Symposium  
on Vulcanospeleology in 2004  
at Pico (Azores)*

*XIIth International Symposium  
on Vulcanospeleology in 2006  
in Saudi Arabia (maybe.....)*

# 37

*This Newsletter is send free to all members of the Commission. It is not possible to subscribe - but will be send to all interested in lava tube caves. News and information always appreciated!*



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During the commission-meeting in Reykjavik (14 September '02) a new president/chairman for the commission was asked for. Some previous work had been done on this to find such a person, but no positive response. At the same time an editor for the newsletter was sought. An offer was (temporarily?) rejected due to time lack. So the positions of chairman and editor are open.

An idea was launched during the commission meeting: those preparing the next vulcanospeleological symposium should take these positions. A nice idea, but apparently those in the picture kept (on this) a low profile. I wonder if it works to 'order' someone to take these posts. Looking back in the history of our symposia I wonder if this would have worked (see page 4, # 22). An exception of course for the period Bill Halliday took care of the commission.....

So.... if anyone volunteers.....

In the mean time I will continue, but with a.i. behind my name (ad interim -Latin - which means something as 'until a better one is found'.

# X<sup>th</sup> International Symposium on Volcanospeleology

September 9-15, 2002 Reykjavik, Iceland

by William R. Halliday,  
National Speleological  
Society representative

The 10th International Symposium on Volcanospeleology was held in Reykjavik, Iceland, 9-15 September 2002. Approximately 30 participants attended. Australia, the Azores and Iceland (the hosts) had especially large contingents. Harry Marinakis and I were the only Americans. I presented the official greetings of the National Speleological Society. The weather was very satisfactory, with only one day of annoying rain.

After an excellent introductory lecture on the volcanic geology of Iceland by Dr. Kristjan Saemundsson (an outstanding authority), approximately 30 papers were presented, covering features in Iceland, the Azores, Australia, Hawaii, Samoa, Japan, Italy, Saudi Arabia, Korea and elsewhere. All were presented in English. Most were easily understood, and were of high quality. An abstract volume was provided, and a Proceedings volume is expected in 2003. For it, papers are due 1 January 2003.

Of special scientific note were papers on subcrustal drainage lava caves by Ken Grimes, and a convincing demonstration of the effectiveness of ground penetrating radar in pahoehoe lava by Chris Wood and co-workers who clearly demonstrated the presence of a huge undiscovered extension of Iceland's famous Surtshellir system. Chris also discussed shatter rings as tube-related volcanic phenomena. Jakob Gudbjartsson and Siggí Jonsson (symposium chairman) described a new type of small volcanic cave – "hyalocaves" – formed by melting of blocks of ice entrapped in the hyaloclastite ridges common in Iceland. Arni Stefansson discussed stream caves and different types of open vertical volcanic conduits in Iceland – including the world's deepest: Thrínukagigur. John Pint did the same for bone-dry lava tube caves in Saudi Arabia, and the Medvilles (in absentia), for caves on the north flank of Mauna Loa, in Hawaii. Tsotomu Honda discussed gas cavities associated with tree molds in Japan, and he, Takanori Ogawa and co-workers described an extraordinary tree mold labyrinth on Mt. Fuji. Ken Grimes described the world's third reported hollow dike, in Australia. I reported on crevice caves of the Great Crack of Kilauea volcano, and on the perplexing variety of volcanic structures which have been termed lava tubes.

Other major papers covered conservation, biospeleology, meteorology, systematics, history, and tourism topics. Chris Wood reported on the proposal to declare part of Korea's Cheju Island a world heritage site. This received wide acclamation. Adequate time was provided for unscheduled presentations: Greg Middleton showed slides of lava tube caves in Samoa, several of which are stream caves. Gerald Favre presented two of his world-class videos of expeditions in Hawaii and Iceland. The former included the descent into a large cave at the bottom of Mauna Ulu. The Iceland video was notable for the exploration of both upper and lower ends of a geothermal glacier cave; the former yielded a depth of 525 m. Its CO<sub>2</sub> was as high as 5.3%.

Field excursions provided participants an excellent overview of especially notable lava tube and crevice caves of Iceland, and provided a revealing traverse of the desolate glacial outwash plains of the central part of the island. The leaders sometimes set too fast a pace for senior participants, but warm soaks in the famous Blue Lagoon and in the 105 degree water of a deep crevice cave near Lake Myvatn refreshed us – and thawed participants benumbed by massive ice in several caves.

At the subsequent meeting of the IUS Commission on Volcanic Caves, it was agreed that the 11th symposium will be in the Azores in 2004. Probably the principal venue will be the island of Pico, with excursions to other islands, and probably it will be during the first two weeks of that month. Details will be provided on a forthcoming website. National Speleological Society member John Pint became a new member of that commission, representing Saudi Arabia which may host the 12th symposium. Jan Paul van der Pas announced his desire to retire as President of the commission, but there were no immediate volunteers for his job.

In September during the symposium on Vulcanospeleology in Reykjavik some cavers wanted to be member of the Commission (or at least showed a great interest and wanted future information...):

John J. PINT,  
Cave Exploration Unit of the  
Saudi Geological Survey.  
*John is well-known of reports about limestone caves in Saudi Arabia. In Reykjavik he also reported about lava tubes.*  
P.O. Box 54141  
Jeddah 21514  
Saudi Arabia

John@Saudicaves.Com  
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jcnunes@notes.uac.pt

Björn Hróarsson  
(writer of the famous book 'Hraunhellar á Islandi' - Lavacaves of Iceland)  
Lyngás 18  
210 Gardabær  
Iceland

bjorn@pjaxi.is

Gérald FAVRE  
Geologos SA  
(Gérald is well-known for a range of caving movies. He explored the glacier-cave in Kverkfjöll with a denivelation of more than 500m. Now he is preparing a new Iceland expedition).  
16, route de Crassier  
1277 BOREX  
Switzerland

fax (22) 367 22 61

An address change was received from Jim and Simone SIMONS:

new E-mail fajo@kenyaweb.com



# X<sup>th</sup> International Symposium on Vulcanospeleology

September 9 -15, 2002 Reykjavík, Iceland

Iceland - September 2002

J.P. van der Pas (NL)

A very well organized symposium. Two ladies taking care of the reception, two gentleman, one the president of the I.S.S., take care of the lectures and excursions.

The weather (for those unfamiliar with Iceland) was incredible good. The atmosphere, also due to the fact everyone spoke English, impeccable. I myself find me in a guesthouse with company of celebrities as Julia James, Chris Wood and Greg Middleton.

The lectures are very diverse, but all fascinating.

As now the fashion in any caving-club: making a database for caves. Two are introduced: one by Iceland, another by the Açores. The differences are staggering.

The cavers from the Açores have many presentations, and we all agree (on a later moment) the next symposium will be there.

Chris Wood presents his results of two expeditions on Iceland in 2000 and 2001. Again mind boggling. It clearly shows the way of future caving expeditions: expertise of local geology & geologists, combined with high-tech equipment. Miles of new caves, even caves without entrances. See availability of his reports in this newsletter. A must.

A young Icelandic caver (with cooperation of Siggí), Jakob Guðbjartsson, gives a fascinating lecture, in which bacteria are shown eating volcanic glass.

Also should be mentioned about Iceland - only first names count. This makes relations much more relaxed, but try to find Siggí in an Icelandic telephonebook!

John Pint shows us Saudi Arabia, and the lava tube cave possibilities. Of course he is asked for (also) a symposium possibility? Well, maybe 2006.....

During the symposium several caves ('hellir') are visited.

**Leidarendi**, some 500 meters long. Very well decorated, and not gated!

**Amahellir**, relative small but extremely nice decorated. On July 1, 2002, this cave was declared a National Monument. Our visit was well prepared with a generator (outside) and big lights (inside). Also well taped. This cave will now be permanently closed and only be opened for scientific purposes.

**Stefánshellir**, **Surtshellir** and **Vidgelmir**. Three of these caves in one

day..... The first two are big, impressive and time consuming. Vidgelmir is the same, but also full of lavastalagmites and -tites. I tried to visit this cave some years ago (as tourist). You pay (it is the most expensive tourist cave in the world) and only was shown the entrance part. So now finally the whole cave... free....! Indeed it is impressive. Some ice at the entrance-gate, but for the rest just walking a huge tunnel. Sometimes some heaps of downfall, but all easy to the end, some 1500 meters. All impressive and nice. In the beginning I looked at all the decoration(s). Indeed, lavastraws by the millions, all along the cave. Many broken, but as we were told this is due to natural causes. Huge amounts still in place, and many of the broken ones still there. But after some time one looks were you are walking. Virtually all the way the cave is lined with stalagmites, and in the beginning I was discussing this with Greg: see here, a broken one, there more broken ones. I started counting, but around 100 I stopped. And as it turned out vitually all were broken, and not there anymore.... So for me, an interesting cave, but too late gated. And here back to the lectures. Several were very interesting to me, since I had visited Iceland several times before and knew the areas and landscapes: the presentations by Arni Stefánsson. Arni showed decades of investigation on Iceland, and his extreme concern about their caves. His slide show "Above/below Iceland" was for me the absolute summit, since many of the pictures brought back memories of my own trips over Iceland.

Well, normally one can write a book about all concerning a symposium. This symposium would be good for two books. What shall I mention more? Very sad to see our good friend Takanori in such a bad health. Sorry to hear some participants who wanted to take the opportunity to do a one-day dash to Greenland did not make it. The normal Icelandic weather was just there..... And Julia James going through the roof when she learned a Big Mac costs some \$18 on Iceland.

Well, Sigg, Jakob, Anna and Raghilde: THANKS

ps: At the end of the symposium normally some words are spoken, and I mentioned all the work done by 'just' 4 persons. Than I was corrected by Björn who stated: 98% of the work was done by Sigg.....

During the symposium the expedition report edited by Chris Wood was introduced. This report is really a **must** for anyone interested in lavatube caves and/or Iceland. Also how high-tech equipment (and which....) brings more than you even expect.

**LAKI UNDERGROUND 2001**, The Bournemouth University and Shepton Mallet Caving Club Expedition to Iceland - May 2002

Copies of this report, together with the report of the Laki Underground 2000 expedition, are available at a cost of £14.00 (incl. p&p) from:

Dr. Chris Wood, School of Conservation Sciences, Bournemouth University, Talbot Campus, Poole BH12 5BB, UK

E-mail: [cwood@bournemouth.ac.uk](mailto:cwood@bournemouth.ac.uk)

ISBN 1-85899-148-3

An interesting booklet was available during the symposium:

**AZORES - volcanic caves,**

giving a comprehensive overview of the volcanic caves on the Azores. Text in English and Portuguese. 32 Pages full of the caves on the different islands, biology, protection and so on.

Issued august 2002, 32 pages (A-5 size), 5000 copies,

more: [www.sra.raa.pt/gespea](http://www.sra.raa.pt/gespea)

[gespea@hotmail.com](mailto:gespea@hotmail.com)

(a few copies available at the editor of this newsletter)

*from NSS News August 2002:*

#### **HAWAII CAVE LAW PASSED**

Hawai'i has a new cave protection act, passed on June 28, 2002. The full text can be found at: [www.capitol.hawaii.gov/sessioncurrent/bills/SB2898\\_cd1\\_.htm](http://www.capitol.hawaii.gov/sessioncurrent/bills/SB2898_cd1_.htm)  
Much thanks goes to Ric Elhard, Chuck Thorne, and Dr. Fred Stone, who spent countless hours representing the cavers' interest in this bill.

*Cindy Heazlit*

[Ed.: The new bill does not prohibit caving in Hawaii as had been proposed by some native groups but does stipulate that caving on private lands requires "written permission of the owner," and also makes it more difficult to conduct cave for pay operations. There are heavy fines for damaging or polluting caves. Hawaii is the 27th state to adopt a cave law, according to Tom Lera.]

Some notes on the Meeting of the Commission on Volcanic Caves  
Reykjavik - 14 September 2002

- 18 participants of 9 countries.
- discussion about 'headtax' on participants of symposia using UIS-  
logo. Unanimously it was agreed to ask UIS to stop asking this fee,  
since no support was given by UIS to several organizers, with only  
result a bad name for UIS. A letter has been sent (14 Oct. 2002) to  
the secretary general of UIS about this matter by the chairman of  
the commission.
- Dr. Chris Wood asks for support for World Heritage Site status of  
lava tube caves on Jeju Island, South Korea.
- about the proceedings of the previous symposium in Italy/Catania.  
Rumors: no money, paperwork lost....  
The Kenya (1998) proceedings were published as part of the  
International Journal of Speleology. Can this be done in the future  
for all commissions? Action will be taken by the chairman.
- without any restriction all favour the next symposium to be on the  
Açores. Later (thanks to Bill Halliday) even a suggestion/proposal  
is made for Saudi Arabia in 2006!
- some discussion about speleo-databases. Chairman of ISS, Siggí,  
will do/support this on their website.  
There is also a database on lavatube caves in USA. How about the  
updating of this? Bill Halliday remarks 'a student' is responsible for  
this, but if this done well?
- Bill Halliday (who gave a lecture 'What is a lava tube?') has the  
following proposal:  
*The President of the UIS Commission on Volcanic Caves shall  
appoint a committee that will seek standarization of the terms  
"lava tube" and "lava tube cave".*  
This is not easy. Chris Wood and Siggí will do some work on this.  
Bill is concerned about the definition of the word 'tube' and 'cave'  
in several publications. Action under way.

Note: the abstract of Bill's lecture to be found next page.



- A new chairman of the commission was asked for. If possible also  
an editor for the newsletter. No one really volunteered for these  
positions. A suggestion came to appoint the organizers of 'the next  
symposium', but if this really works? A most positive remark was  
heard about the newsletter. 'A printed publication stands out amid of  
all the E-mails.....', and some else remarked that he really read it  
completely.....



## What is a lava tube?

William R. Halliday

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Variances and imprecision in defining the term LAVA TUBE have led to its application to a wide range of features, some of them far removed from the ordinary meaning of the word TUBE: "a hollow body, usually cylindrical, and long in proportion to its diameter..." The current American Geological Institute definition helpfully limits the term to roofed conduits and requires that they be formed in one of four accepted mechanisms. However it provides little guidance on whether a variety of injection structures traditionally termed LAVA TUBES actually are undrained or refilled examples or are entirely different phenomena.

Ideally, lava tubes and lava tube caves should be defined as discrete structures with definable parameters which differentiate them from all other volcanic features, e.g., aa cores, lava tongues, tumuli, sills and related injection masses. The defining characteristics should be compatible with:

- 1) the common meanings of TUBE and CAVE;
- 2) the presence of solid, liquid, and/or gaseous matter within them;
- 3) observations of all phases of their complex speleogenesis, e.g., crustal and subcrustal accretion and erosion;
- 4) their tendency to form braided and distributory complexes, and multilevel structures of at least two types;
- 5) their propensity to combine with or produce other volcanic structures, e.g., lava trenches, rift crevices, tumuli, drained flow lobes, lava rises, dikes, etc.

The ideal may not be achievable at the present state of knowledge and technology. However, new concepts of flow field emplacement and drainage offer a notable opportunity to shape a clearer definition of this elusive term. I propose that the Commission on Volcanic Caves of the IUS develop such a definition, in collaboration with the AGI and other concerned agencies and organizations, for consideration at the 2005 International Congress of Speleology.

Definitions as given in the 'Illustrated Glossary of Lavatube Features'  
by Charles V. Larson (Bulletin # 87) 1993:

**LAVA TUBE.** A conduit formed of hardened lava, on or within a lava flow through which lava flows to an advancing flow front; also, a cavernous segment of the conduit remaining after flow ceases. Only two variants, surface tube and tube-in-tube are literally tubes. Cf: **cave; lava cave; lava tube cave; lava tube system.** See also: **branch tube; cut-off branch; distributary tube; effluent tube; filled lava tube; main tube; master tube; perched tube; re-entrant tube; surface tube; tributary tube; unitary tube.** Aka: *basalt cave, drain pipe of solid lava, large tube, lava cave, lava tublet [sic], lava tunnel, rheogenetic surface cave, true lava cave, tublet [sic], tunnel, volcanic flow drain.* A lava tube may be active (carrying fluid lava), abandoned (see primary), filled with solid lava (did not drain), reactivated (invaded by a subsequent eruption), or filled to some degree with deposits like sand or water.

**LAVA TUBE CAVE.** (Or simply "lava tube.") A specific lava tube, or segment of a lava tube that qualifies as a cave. (Distinction between individual lava tube caves is complicated by progressive collapse creating new openings to--or segmenting--known caves, and incremental discovery, but most of all by lack of consensus about the effect of segmenting features. For example, the usual type of opening, a collapse, often creates more than one opening and the question arises: is the sink a part of a single cave, or does it separate two caves? The International Union of Speleology has suggested a partial resolution: if the sink's largest dimension measured horizontally exceeds its depth, the tube is segmented, resulting in multiple caves. All parts of a segment which can be traversed by an individual, without passing through a segmenting sink, constitute an individual cave. (International Union of Speleology 1979.) Aka: *lava-tube cave, lava tube system, open lava tube, open tube.*