REDUCED-SIZE PHOTOCOPIES of:

Newsletter # 1 6

COMMISSION on

VOLCANIC CAVES

COMMISSION ON VOLCANIC CAVES
International Union of Speleology

Newsletter #1 December 22, 1993

STATUS OF IUS WORKING GROUP ON VOLCANIC CAVES RAISED TO COMMISSION

The Working Group on Volcanic Caves of the International Union of Speleology has been elevated to full Commission status. By letter of 13 December 1993, new IUS President Paulo Forti confirmed that the IUS Bureau took the necessary action during the international congress of speleology in Beijing earlier this year.

The membership of the new commission is the same as the membership of the old working group, with one notable recent appointment, announced on this page. Names and addresses of the members are elsewhere in this issue.

Because of the change in name and status, this is Newsletter #1 of the new commission, rather than Newsletter #6. The next issue is expected to be in Spring, 1994. Items for publication in it should be sent to the chairman at his Hawaii address before March 1.

DR. YURII B. SLEZIN APPOINTED TO COMMISSION

Yurii B. Slezin has accepted sppointment to the commission. He has studied lava flows in tubes of the 1975-1976 Tolbachic eruption on Kamchatka and the structure of a similar old lava field nearby. In this lava field he mapped a cave which is a fragment of a great lava tube system. Other fragments of the system, including caves about 100-150 meters long, are present, and other tube systems in addition. This is the only known published map of a lava tube cave in Russia. Obviously there is much more vulcanospeleology to be accomplished in Kamchatka. His address:

Dr. Yurii Slezin
Institute of Volcanic Geology and Geochemistry
Piip blvd 9
Petropavlovsk Kamchatsky
683006 Russia.

E-mail: post@volgeo.kamchatka.su

Temporary FAX:

Dr. Yurii Slezin
c/o Sergei Zharinov
c/o Dr. Tom Miller
USGS Alaskan Volcano Observatory
FAX # 907-786-7450

DR. ROBERT K.T. KO APPOINTED TO COMMISSION

Dr. Robert Ko was appointed to the old working group in mid-1993 and thus also becomes a member of the new commission. Bobby Ko is familiar to most speleologists who have attended various international congresses of speleology. He is president of the Federation of Indonesian Speleological Activities (Himpunan Kegiatan Speleologi Indonesia). He writes that they are working closely with the Ministry of Forestry and Ministry of the Environment, and with the Directorate General of Tourism. Their organization is acknowledged by the Indonesian Science Institute. They have held 20 courses in speleology since 1982, with about 300 "alumni" including many governmental officials.

Indonesia has the highest number of volcanos, he adds, but at present they are producing only andesitic lavas. Lava tubes of Indonesia thus are "not impressive", although one in central Java (Gua Lawa) is open to the public and there are three extensions in the vicinity, explored with Belgians in 1983. Gua Lawa means Bat Cave, but it is without bats. He promises to send maps.

And at Gombong, in central Java, there is a huge chamber in limestone, with remains of andesitic lava activities, he reports. Does anyone know of a similar occurrence anywhere in the world?

VULCANOSPELEOLOGICAL ABSTRACT

Eszterhàs, Istvàn. 1990. Basalthöhlen in Ungarn. 4th Pseudokarst Symposium with International Participation Proceedings, p. 23-24, 26-27. Praha.

About 50 basalt caves are known in Hungary. Not all are lava tube caves. The longest is near Pula in Bakony. It is a labyrinth with a length of 151 m. The basalts are 2-5 million years old.

ABSTRACT FROM THE PROCEEDINGS OF THE XI IUS CONGRESS, BEIJING, 1993

Wang, Xiaoguang, Zhang, Yiaode, and Jiao, Yu. The lava caves of Wudalianchi, Heilongjiang Province (China). Proceedings of the XI Congress of Speleology, Beijing, p. 40.

Wudalianchi posesses 14 Quaternary volcanic cones with a gently sloping lava platform. Five effusive periods can be noted; the oldest is 800-1000 years B.P, the most recent 1719-1721 AD. Among the lava tube caves are Fairy Temple, Shuilian, and First and Second Ice Caves. Fairy Temple is longest, with 400 m of passage. It is bi-level and contains lava stalactites. It is in the 1719-1721 flows. First Ice Cave is 100 m long; Second Ice Cave has thick ice on the floor for 380 m. All these caves are open to tourists.

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MEMBERSHIP OF THE IUS COMMISSION ON VOLCANIC CAVES AS OF 1993

Dr. William R. Halliday, Chairman
6530 Cornwall Court
Nashville, TN USA 37205

Address for Hawaii field work, normally January-February and either June-July or July-August, depending on NSS Convention:
101 Aupuni Street, #911
Hilo, HI USA 96720.

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Anker köz 1.
HUNGARY

Dr. Dominique Decobecq
L'Assn. Volcanol. Europeene
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Paris 75018 FRANCE

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(1-3)

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Manuel de Aguiar Silva
Os Montanheiros
Rua da Rocha, 6 e 8
Angra do Heroismo, Terceira
Açores, PORTUGAL

Jim Simons
PO Box 47363
Nairobi, KENYA

Dr. Yurii B. Slezin
(address on page 1)

Dr. John Webb
Geology Department
La Trobe University
Bundoora, Victoria
AUSTRALIA 3083

List of other copies distributed:

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Dr. Paolo Forti
Istituto Italiano di Speleologia
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Bologna, Italy I-40127

National Speleological Society Library
Cave Avenue
Huntsville, AL USA 35810

U.S. Geological Survey Library, Serials Acquisitions
National Center, 12201 Sunrise Valley Road
Reston, VA USA 22092

U.S. Geological Survey Hawaiian Volcano Observatory Library
PO Box 51
Hawaii Volcanoes National Park, HI 96718-0051 USA.

Volcano Quarterly, Janet M. Tanaka, Editor
PO Box 405
Issaquah, WA 98027-0405.

Dr. Ron Greeley
Department of Geology - Planetary Geology
Arizona State University
Tempe, AZ 85287-1404.

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COMMISSION ON VOLCANIC CAVES
International Union of Speleology

Newsletter #2 January 2, 1994

FIRST CALL FOR ADVANCE REGISTRATION FOR 7TH SYMPOSIUM IN 1994

As stated in Commission Newsletter #1, Newsletter #2 was scheduled for publication in Spring 1994. But the announcement of advance registration forms (on page 2) arrived shortly after mailing of Newsletter #1. Please disseminate this information to everyone within your vulcanospeleological sphere.

CORRECTION

The date of Newsletter #1 was stated to be December 22, 1994. Please correct the date on your copy to read 1993.

LARGEST EUROPEAN BASALT CAVE FOUND AND DESTROYED BY QUARRYING

Dr. Hans-Joachim Schumacher (Hamburg) has abstracted an article in MITTEILUNGEN DES VERBANDES DER DEUTSCHEN HÖHLEN- UND KARST-FORSCHER, No. 3, 1993. In 1990 the cave was found in a quarry. It was named "Basalthohle Ortenberg. Cavers tried to preserve the cave through government action and in the summer of 1992 a volcanospeleologic collective from the Hungarian Speleological Association visited and investigated it. The scientific value of the cave was immense. But despite a protective governmental regulation, another government agency permitted its destruction, for economic reasons.

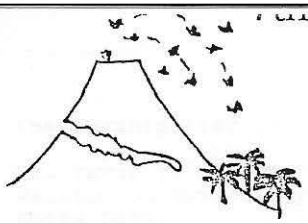
Hopefully, detailed scientific reports soon will be available on this lost treasure. If it had been brought to the attention of the International Union of Speleology, perhaps more could have been done to save it. More information is being sought.

Authors of the article are Sieglinde Quast-Stein and Gerhard Stein.

OS MONTANHEIROS CELEBRATE 30th ANNIVERSARY WITH SPECIAL PUBLICATION

Os Montanheiros is the Sociedade de Exploração Espeleologica da Ilha Terceira, Açores. The title of its Boletim Informativo is Pingo de Lava. (This was the host organization for the 1992 Atlantic regional symposium on vulcanospeleology.) Pingo de Lava No. 25 (Dec. 1993) is a special issue with color illustrations, celebrating the 30th Anniversary of the organization. Included is a report on Expedition Speleovimes 93 on the island of Pico, with color photos of the spectacular new Gruta dos Tomolos, including a wonderful sequence of "railroad tracks" and other lateral ridges.

(2-1)



7th INTERNATIONAL SYMPOSIUM
on VULCANOSPELEOLOGY

Canary Islands
4 - 11 November 1994

7th INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY

Canary Islands.

Members of the Federacion Canaria de Espeleologia, with the collaboration of the Federacion Nacional de Espeleologia will be organizing this symposium from 4th - 11th of November 1994.

The main symposium part will be held on the green island of La Palma, from the 4th till 8th of November 1994, including a few field excursions.
Participants will then transfer to Tenerife, one of the larger islands, for another cave visit and the last two days will be spend on the spectacular island of Lanzarote with several excursion possibilities. The final closure of the symposium will be celebrated there.

The scientific part of the symposium will be organized by Dr. Pedro Oromi from the University of La Laguna, Tenerife. The Speleological group 'Benisahare' will look after the field excursions to caves.

For more information and an advance registration form, please write to organizer:

Conny Spelbrink
Crta. Martin Luis 32, 38715 Puntallana, La Palma, Canary Islands, Spain.
Telephone and fax: (34-22) 430392

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COMMISSION ON VOLCANIC CAVES
International Union of Speleology

Neswletter #3 April 30, 1994

CHANGE IN 7TH SYMPOSIUM SCHEDULE

The field excursion previously scheduled to go to Lanzarote now is scheduled to go to El Hierro. I presume that persons wishing to visit Lanzarote caves can do so independently.

If you have not disseminated information about the symposium to speleological organizations in your sphere, please do it NOW. Dates for the main meeting are November 4-8 on La Palma, with excursions officially through November 11. See Newsletter #2 for additional details.

MEETING OF THE COMMISSION

During the symposium, the Commission will meet on La Palma. The time and place will be announced during the symposium.

One issue to be discussed is whether the Commission should ask the International Union to list depths of lava tube caves in a category separate from depths of limestone and other caves. This is because Kaz*mura Cave, Hawaii County, HI has been extended to a ~~preliminary~~ length of 31.*7 km and a vertical extent of about ~~615~~ 1,250 m. Like most lava tube caves, however, it follows the downhill slope of the surface which it underlies. Never is it more than about 20 m below the surface. This length of cave is not segmented but it has so many entrances that there is little challenge in this vertical extent of more than 31 km. All limestone caves with a vertical extent of 31 km present great challenge.

Some American cavers have asserted that this vertical extent makes Kaz*mura Cave the deepest cave in the United States. To me, increasing depth of a cave implies increasing challenge. In my opinion, it would be very misleading to list Kaz*mura Cave as deepest in the U.S.A. Some disagree, and the matter should be settled.

This is not a matter of speleological politics nor personal prejudice. The extension of Kaz*mura Cave was a Hawaii Speleological Survey project led by Kevin Allred. I am chairman of the H.S.S., and took part in the Kaz*mura project. Despite the added prestige inherent in mapping the deepest cave in the U.S.A., however, I will urge the Commission to adopt the opposite position.

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RECENT PROGRESS IN HAWAII

xtension of Kazumura Cave resulted by connection of
zumura" to caves uphill and downhill from it. First
red located a previously undocumented cave uphill
d Kazumura". He established visual contact, and
e connection with surprising ease. At the lower end
d co-workers first extended Upper Paradise Park Cave
the terminal breakdown choke of "Old Kazumura". He and
co-worker moved enormous amounts of unstable breakdown to
onnect these caves. Additional studies showed that it was
incorrect to list three separate Paradise Park caves; it was
all a single, unsegmented cave. The names of the Paradise
Park caves have been removed from the master list of the Hawaii
Speleological Survey. It is all Kazumura Cave now.

Also another previously unrecorded cave has been explored and partly mapped, between Olaa Cave and the new upper end of Kazumura Cave. The three caves are separated by plugs of intrusive pahoehoe lava.

Hawaii Speleological Survey teams also have begun studies of volcanic pits on Hualalai and Mauna Loa volcanos. Hapai Mamo Pit on the SW rift zone of Mauna Loa has an initial 60 m. drop. Here a H.S.S. team assisted U.S. Geological Survey staff members in getting down and back up after their volcanological observations. Pit 6083 on Hualalai's SE rift zone was much more formidable: 263 m. The first 130 m is a sotano-like pit crater. A 10 m orifice on a ledge opens out into a large bell-shaped room. Kevin Allred and Don Coons made the descent by moonlight. Because of excessive rubble and sharp ledges, they rigged a Tyrolean traverse line for the descent. This allowed descent directly through the inner pit without touching the walls.

Kevin Allred and I also discovered a vertical shaft of undetermined depth in the inner crater of Kaupulehu Crater. Because of the ultramafic xenolith nodule beds downhill from this crater, its descent will be of exceptional scientific interest, but permission has not yet been obtained. In further study of the caves associated with these beds (which are NOT lava tube caves), Ron Greeley discovered another xenolith locality behind the cave lining. In the course of exploring a jagged crawlway in rubble containing xenoliths, another lined cave chamber was discovered, containing several pasty lava stalagmites, one of which is about 3 m high. Greeley's thermal erosion studies also progressed well, in some of the Ainahou caves and the Earthquake caves of Hawaii Volcanoes National Park.

NEW LAVA TUBE AREA IN MEXICO

Writing in Activites Newsletter #20 of the Association for Mexican Cave Studies, Ramón Espinasa-Pereña describes notable lava tube caves in the state of Morelos, and mentions others.

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GROUPE DE TRAVAIL: GROTTES VOLCANIQUES
International Union of Speleology

Newsletter #4 April 30, 1993

PROCEEDINGS OF THE 6TH INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY

The published proceedings of the 1991 6th International Symposium on Vulcanospeleology now is available from the National Speleological Society Bookstore, Cave Avenue, Huntsville, Alabama, USA 35810. This volume was NOT included in the fees paid by registrants at that symposium and must be ordered separately. Cost of the 286-page volume is US$11.00 ($10.00 to N.S.S. members). Postage and handling fees are as follows:

U.S.A. Book Rate $2.50
Canada Book Rate $3.00
Book Rate to other countries $4.00

Surface First Class Rate Overseas $15.00
Airmail to Canada $6.50
Airmail to Mexico $7.50
Airmail to other countries $20.00 to $25.00; varies by country.

Late News: 7th INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY

The 7th International Symposium on Vulcanospeleology will be held in Spain's Canary Islands November 4 to 11, 1994. The major part will be held on La Palma, including the sessions and two field excursions. Additional excursions will be to Tenerife and another island, and local field assistance is available for extended additional field work.

Scientific Chairman is Pedro Oromí. President and organizer is:
C. Spelbrink
Carretera de Martin Luis 32
38715 Puntallana, Isla de La Palma, Islas Canarias, Spain.
Tel/fax (34-22) 430392.

Write to this address for information and registration materials.

BACKGROUND INFORMATION ON LAVA CAVES AND CAVING ON LA PALMA
(the following is supplied by C. Spelbrink)

La Palma is one of the smaller islands of the Canaries. It is an island of many volcanoes; the last eruption took place in 1971. The island is rather young (1.6 m.y. B.P.) and houses the largest erosion crater in the world, the Caldera de Taburiente (9 km).

There are a large number of volcanic caves, ranging from single lava tubes to vertical holes, to lava tube systems. The caves are not as large as some of the caves on Tenerife or Lanzarote but La Palma offers a natural beauty unmatched anywhere else, and is not yet overrun by mass tourism. Connections are by plane from Tenerife, Gran Canaria or Madrid and by ferry from Tenerife. Charter flights are available from several european countries. Participants should bring their own caving equipment but ropes are available.

The longest cave known to me is approx. 650 m. Some of those which may be visited are:

- Cueva Todoque, in Los Llanos. Length 500 m. Formed in the lava stream of the volcano of San Juan, 1949. Singular tube with 10 chimneys. Some large caverns and spectacular lava formations. Rounded ledges are notable.

- Cueva del Perdido, in Tazacorte. Length approx. 650 m. Many side branches. Smooth sides. Above the coastline.

- Cueva de los Murcielagos, in Los Sauces. Length 100 m. Elevation 1250 m. A singular volcanic tube going downward. Old cavity that houses bats (Plecotus teneriffae). Beautiful walk through woods and along a canal to reach this cave. Gated; permission needed from forestry authorities (Medio Ambiente) to enter.

- Cueva Honda de la Fajana de Don Pedro. In Garafia. Length 350 m. A splendid cave above the rugged north coast of the island. A long hike necessary. This singular tube is crossed by various dikes which create steep inclines. It ends in a large cavity.

- Cueva de las Lomadas, in Los Sauces. A very high cave, up to 10 m or more and about 200 m long. It ends at a little pool with no apparent exit, but neighbors say that it continues.

- Hoyo de la Sima. A vertical cave with a total depth of about 75 m. Maximum width about 10 m. In the pine forsts of El Paso. Vertical gear needed.

- Buccaro de San Martin. In Fuencaliente. Another sima with a first vertical drop of 30 m, with two upward leads. In the volcanic field of San Martin Volcano (1646). Nice hike and an interesting cave. Vertical gear necessary.

The above is only a selection of the numerous caves on the island.

PROCEEDINGS OF THE 3rd INTERNATIONAL SYMPOSIUM ON VULCANOSPELEOLOGY

The next issue of this newsletter will be published in mid-1993. It will include information on postage costs on the proceedings of the 3rd symposium, now being printed.

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COMMISSION ON VOLCANIC CAVES
International Union of Speleology

Newsletter #5 December 25, 1994

7th INTERNATIONAL SYMPOSIUM HIGHLY SUCCESSFUL

The multidisciplinary 7th International Symposium on Vulcanospeleology convened in Santa Cruz de La Palma, Islas Canarias, on November 4, 1994. Attendance was about 40 plus spouses. 19 members and friends of this Commission attended the Commission meeting on November 5. Numerous major earth science papers were presented, and also biospeleological and speleoarcheological papers. Field excursions were on La Palma, El Hierro, and Tenerife islands, with informal excursions elsewhere, including Lanzarote. Countries represented were Austria, England, France, Hungary, Italy, Japan, Netherlands, Norway, Portugal, Spain, Switzerland, Russia, and the United States. Scientific chairman was Pedro Oromi. Deadline for papers for publication in the Proceedings is February 28, 1995.

The Grupo de Espeleologia "Junonia" offers field assistance to volcanologists and vulcanospeleologists wishing to study the caves and volcanic pits of La Palma. The field excursions showed that there is much to be studied on this island. Address: c/o Conny Spelbrink, Carretera de Martin Luis 32, 38715 Puntallana, La Palma, Canary Islands, Spain.

ACTIONS AT THE COMMISSION MEETING

The principal business at the Commission meeting was discussion of the date and location of the next international symposium. A strong consensus emerged for it to be in Nairobi in February 1998. Jim Simons has proposed this location, but it is not yet known if this date is feasible. An update of Kenya vulcanospeleology appears in this Newsletter.

Paolo Borges expressed the possibility that the Açores could offer to host the 9th international symposium, in 2000 or later.

The resolution on studies of the lava tube caves of Cheju Island, Korea was reconsidered in view of the lack of response of the Korean Government. A unanimous vote urged the continuation of efforts by the IUS to open these caves to vulcanospeleological srudy.

Paolo Forti, president of the International Union of Speleology, announced plans for a new color edition of Cave Minerals of the World in four years. He urged that all references to minerals of volcanic caves be sent to him or to co-editor Carol Hill, U.S.A.

The next meeting of the Commission was not scheduled. A 2nd Meeting of the Vulcanospeleology of the Atlantic Islands may occur in 1996, and a Commission meeting may occur at that time.

ILL AND INACTIVE MEMBERS OF THE COMMISSION

Also at the Commission meeting, it was reported that some members of the Commission were known to be very ill, and that others had become inactive. Our prayers and hopes go to those who are ill.

Because nothing has been heard from several other members of the Commission, however, it is necessary for me to ask all its members (except those apppointed in 1994 -- see below) to write to me if they are willing and able to continue to serve on this important commission.

NEW MEMBERS OF THE COMMISSION

Ramón Espinasa-Pereña
Ingenieros #29
México, D.F. 11800
Mexico

Jan Paul van der Pas
Vauwerhofweg, 3
6333 CB Schimmert
Nederland

Mail addressed to Dr.Denes Balazs in Budapest at Anker kös has been returned. Does anyone have a current address for him?

SCOPE OF THE COMMISSION

During the 7th International Symposium, one of the papers included phenomena in volcanic rocks caused by solution of calcareous rock beneath. The consensus of discussion was that this was a karstic phenomenon, not pseudokarstic. However, former IUS president Hubert Trimmel suggested that the Commission include caves and related phenomena in volcanic rocks regardless of the process which produced them. If YOU have strong feelings on this subject, please write to me soon. Included in this issue is the map of a very unusual cavity in basalt: the cast of an American rhinoceros, published through the courtesy of Cato Höller, Jr. as another example of the potential breadth of scope of this Commission.

Also included in this issue is the current map of Kazumura Cave, Hawaii County, HI, USA, showing an unsegmented length of 47.2 km, with a vertical extent of 887.9 m, and the map of Na One Pit (Pit 6083), deepest pit known in the U.S.A. above water level. Dr. Bellou-Fern's Cave is a separate cave but it is possible to see from it into Kazumura Cave and vice-versa, and to push a pole from one cave to the other.

IMPORTANT RECENT PAPERS

Peterson, D.W. et al. Development of lava tubes in the light of observations at Mauna Ulu, Kilauea Volcano, Hawaii. Bull. Volcan. Vol. 56, p. 343. 1994.

(5-2)

Coombs, C.R. et al. 1990. Terrestrial analogs to Lunar sinuous rilles: Kauhako Crater and channel, Kalaupapa, Molokai, and other Hawaiian lava conduit systems. Proceedings of the 20th Lunar and Planetary Science Conference, Lunar and Planetary Institute, Houston, 1990, p. 195.

Realmuto, V.J. et al, 1990. Multispectral thermal infrared mapping of the 1 October 1955 Kupaianaha flow field, Kilauea volcano, Hawaii. Bull. Volcanol., vol. 55, p. 33.

Walker, George PL. 1991. Structure, and origin by injection of lava under surface crust, of tumuli, "lava rises", "lava rise pits,", and "lava-inflation clefts" in Hawaii. Bull. Volcanol. vol. 53, p. 546.

CAVE FOUND IN VOLCANIC CINDERS

H.-J. Schumacher reports finding a reference to a cave 35 m long in volcanic cinders near Bad Bertrich, Germany. The source is Communication no. 3 of the association of German cave and karst researchers. Some of our European members PLEASE contact for more information: Michael Laumanns, Hehner Str. 100, D-41069 Moenchengladbach. Fax: 02161-393628. About 25 years ago British Columbia SpeleoResearch reported a smaller example of such a cave but it was lost.

VOLCANIC PIT TASK GROUP NEEDED

More and more open vertical volcanic conduits are being recorded, and increasing depth. Needed is an individual or small group to maintain records of these phenomena and to work with the IUS Commission on Longest and Deepest Caves, in order to develop criteria that will segregate volcanic pits from volcanic craters. Please write me if you know someone who is interested in such tasks.

AN EARLY REFERENCE TO THERMAL EROSION

Daly, Reginald A. 1925. The geology of Ascension Island. Proc. Amer. Acad. of Arts and Sci., n.s. vol. 60, no. 1, p. 20-21, abstracted in Cascade Caver Vol. 21, no. 4-5, p. 25, 1962, by Rod Crawford:

"Contrasting with flows of this kind thus described (aa) are a number of others in Ascension, which show a prolongation of liquid flow after the chilled surface-shell had become laterally anchored. Lava tunnels of the familiar sort were thus formed, though not in great number or of large size. In most instances their roofs have collapsed, except for short distances. One of the roofed relics, about 20 m long, 3 m wide, and 1-2 m high, was found just below a small driblet cone at the western foot of the Dark Slope cone. This tunnel plunges downward at the unusually high angle of 30 degrees...Locally, the tunnel streams of hot, fluent lava have worn pronounced channels or gutters, reaching as much as a meter in depth, in the older rocks...

LEVIATHAN AND OTHER KENYA LAVA TUBES
PROGRESS UPDATE AND FUTURE PLANS

Jim W. Simons
Hon. Chairman, Cave Exploration Group of East Africa

It may be recalled that Leviathan was discovered in 1975 and in 1976 The Cave Exploration Group of East Africa ran a 10-day locally sponsored expedition into the newly discovered system. This resulted in a surveyed passage length of 11.125 km., with 12 known entrances, and depth (by vertical range) of 470m. At that time it became the longest and deepest known lava tube system, surpassing by about 1 km. the lengths claimed for Kazumura Cave, Hawaii and Cueva del Viento, Tenerife, Canary Islands. A British expedition to Hawaii in 1979, later surveyed Kazumura Cave to 11.7 km. with 17 entrances. Subsequently, both Kazumura and Leviathan were overtaken by Bilemot Gul in Korea, with a reported length of 12.4 km., from a single entrance !

In 1982, the CEGEA commenced a new, long-term, programme of re-exploration. This was to include survey of known upper level passages off two top-end entrances and of certain minor crawlways elsewhere in the cave, not done in 1976, and Maypoling into noted, but previously unenterable, upper levels and side tubes along the principal conduit.

10 years of trips later, the scaffold poles had been humped from the upstream end all the way down the 8 km. main-line length of the cave to conclude the exercise in 1991, exiting by maypole at a new upper level entrance deep in the forest upstream of the lower terminal choke. During the years of progression, we completed 200m in the previously un-included upper entrance levels, penetrated numerous new, but generally short, upper, side and ox-bow passages (not all by maypole), found one significant easily enterable 200m. side tube which had somehow been missed, and maypoled into two major, braided, high level sub-surface complexes with 440m and 610m of passages which had drained into the main cave. The latter series alone took us 9 trips spread over a 5 year period to explore and complete the survey !

It may also be of interest to record that during the course of this programme, in June, 1985, a surface support team of 7 CEGEA cavers enabled myself and another member to accomplish the first ever traverse in one day of the full 8km. main-line length of the cave. With surface walks to and from the cave, between newly established and closer road head camps, totalling 3.75 km., and an underground traverse distance between entrance and exit of 10.25 km., a 14 km. round trip was all completed within a 10½ hour period !

In 1991 we turned our attention back to the upper end of the system to re-assess the potential for extending the cave higher into the ash-cones from where we now believe the Leviathan flow has its real source. On a plateau within a cirque of cones we found evidence of collapse holes buried by later ash eruptions and in 1992 therefore commenced a somewhat hazardous dig underground at the upstream ash-choke. There is a potential here for at least another km. of passage and an addition of 70m to Leviathan's depth. Last year the dig yielded a short upper passage, entered with trepidation, but the way-on now seems down under this and there are expectations of a major breakthrough soon. All so long as the ash - which is an overburden derived from a nearby cone and flows into the cave through a buried roof breach like water - does not bury all hopes and us along with it ! After a hiatus of nearly a year and a half, we re-new our attack in mid-June.

Following completion of this dig, and naturally the survey of any extra passage gained, we then plan to continue exploration and mapping in nearby ABC Cave, which is an upper level, branched, tube system. This lies 40m. to the north side, parallel to and roughly half-way along the length of the main cave. ABC already has 1 km. of passage which is still going upstream, albeit extremely low and tight ! We suspect it is a major ox-bow in a channel overflow unit off the main cave, to which a link is to be sought. The 'end' of the downstream segment of ABC is low and currently choked by silt which may be dug. We believe the continuation of this segment is reflected in another very high level 'captured' passage downstream in the main cave. There is a gap of more than 100m between the two ends, but a direct connection seems unlikely without recourse to clearing the lava infill of the latter.

Also nearby, there is Pango Ya Moshi (Cave of Clouds or Smoke), which we discovered in May, 1985. In the course of 6 trips spread over a year, we explored some 3 km. of multi-branched, interlinking, passages in this very sporting system. The chances of a connection between it and Leviathan also has to be fully investigated, but this does not seem promising as PYM is some 80m. off to the south side and currently diverges away from the main cave suggesting it lies in an unrelated flow unit.

Eventually, we expect to go back down on the surface beyond the terminal choke to search for an entry into the continuation of the main cave, having already made one rather abortive trip overland in 1991 by exiting with the aid of the maypole from 'Maypole Finale', which is now the 14th. and last of the cave entrances. I am convinced that more downstream passage and entrances exist, but currently we lack the means to exactly position ourselves in the confusing forest - oh for a GPS ! If there should be any further passage beyond Leviathan's current 'end', then it is likely to be of significant length as there are many km. of lava yet ahead, but there would have to be a major clearance of the present blockage to make a direct connection, which may prove impossible in its present inaccessible situation and beyond our limited resources.

Several other small sub-surface tubes have also been found in the vicinity of Leviathan, none currently more than 150m. long, and these also represent segments of low braided passage systems in the flow either side of the main cave. The whole sub-surface area seems to be full of caves, but it is only by luck that one stumbles upon open entrances and it is difficult and time consuming plotting their positions by compass and tape survey through the forest.

We have now been engaged in Leviathan exploration, and of those nearby, more-or-less constantly for the past 12 years and it has been slow work and taken some 40 trips to unravel their secrets, determine relationships and find swifter routes through the forest to entrances. It should be noted that the CEGEA is composed of but a handful of dedicated Nairobi-based cavers - who have come and gone over the years - and run trips only when a work team of sufficient size can be conveniently mounted. All work has had to be self-financed. Also, due to the rough nature of the terrain, 4x4 vehicles are essential and base camps usually necessary. The cave is 200 km. from Nairobi, and involves foot treks through wildlife inhabited forest to reach the lowermost entrances, the routes having taken us years to find and perfect. We have usually only managed a few camping trips into the area per year, normally departing on a Friday afternoon and returning on the Sunday, effectively giving us little more than 1-1½ days to do any serious work. Underground bivouacs involving porterage, and slightly longer trips, have occasionally been resorted to, depending upon where in the cave work was progressing.

Leviathan is now protected within the Chyulu National Park with CEGEA granted authority to continue its work. It has now a corrected survey length of 12.5km. but its depth of 480m. is unchanged. Although this length now pales into insignificance with the recent extensions to Kazumura Cave, it still remains of international significance and is Kenya's longest and deepest cave by far !

To publish the official desription and survey of the system in a special CEGEA 'Speleophant' Bulletin is an ultimate goal, but greatly depends upon myself diverting time from self-employment activities.

For the record. Progress in completing a full survey of the Suswa lava tube complex has suffered greatly in recent years due to the very transient nature of our largely expatriate membership and too few real cavers, coupled with the focus of attention being on Leviathan. Some small additional tubes on the Oldoinyo Onyoke volcano within the Suswa caldera have been entered and the cave just below its summit has been slightly extended by digging, but otherwise little of note has been added. In the main cave area, there still remains some 60 collapse entrances giving onto 40 different individual caves or series of passages, with up to three levels, forming an estimated 12 km long braided complex of segmented tunnels.

Also, by way of distraction, there has been the mapping of several small tubes near Mt.Eburru and, more excitingly, the discovery of significant tunnel areas on Mt.Silali in the far north, where we have run 4 trips so far and entered a major tube with 3km.of surveyed twin passage to date. This tube, which has a maximum width in one place of 27m., is currently broken into two major segments by large breakdown at collapses, but is still going ! There is great length potential (perhaps more than Leviathan ?), but unfortunately, an 800 km.round trip and area insecurity limits our trips and progress ! We are also aware of other tubes elsewhere on the mountain and on other volcanoes in the region, (e.g. Murongogolot & Mt.Paka), and also in the vast lava fields around Mt.Marsabit, but again time, distance, cost and security factors prevent our examination.

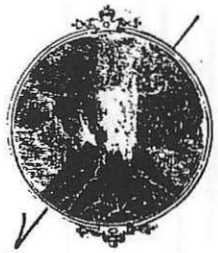
LIST OF KENYA'S LONGEST LAVA TUBE SYSTEMS (0.5km.+)

Leviathan Cave	Chyulu Hills.	12.5	km.	passages	(14 Entrances)
14/18 Series,	Mt.Suswa *	c. 3.5	km.	"	(8 ")
Rainbow's End Cave	Mt.Silali	3.0+	km.	"	(2 ")
Cloud Cave (PYM)	Chyulu Hills	c. 3.0	km.	"	(3 ")
Mathaioni Cave +	Chyulu Hills	1.9	km.	"	(3 ")
Kimakia/Ithundu Cave+	Chyulu Hills	1.4	km.	"	(3 ")
6-36-37 Series	Mt.Suswa *	c. 1.2	km.	"	(3 ")
23/24 Series	Mt.Suswa *	1.2	km.	"	(4 ")
ABC Cave	Chyulu Hills	1.0	km.	"	(1 ")
34/35 Series	Mt.Suswa *	c. 0.8	km.	"	(2 ")
19/20/21 Series	Mt.Suswa *	c. 0.7	km.	"	(3 ")
13 Series	Mt.Suswa *	0.6	km.	"	(4 ")
12 Series	Mt.Suswa *	0.6	km.	"	(2 ")

+ Distant segments of the same tube

* All in the Main Cave Area and considered as seperate sections of the greater 12 km.complex. Lengths (c.) are by combining partially surveyed passages and estimates of the remainder.

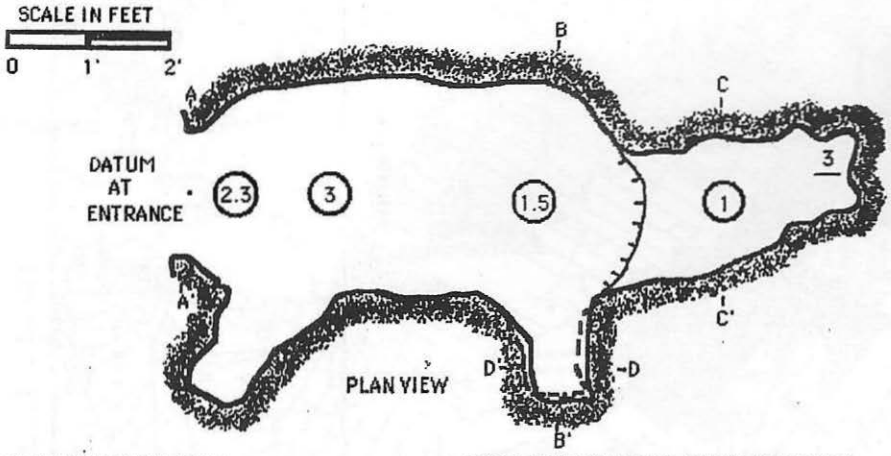
(5-6)



BLUE LAKE RHINO CAVE

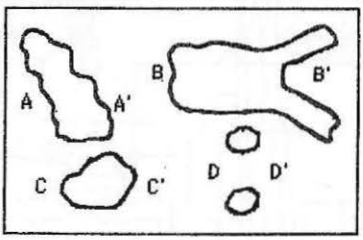
GRANT COUNTY, WASHINGTON

A LAVA MOLD OF A RHINOCERUS
(GENUS, *DICERATHERIUM*)

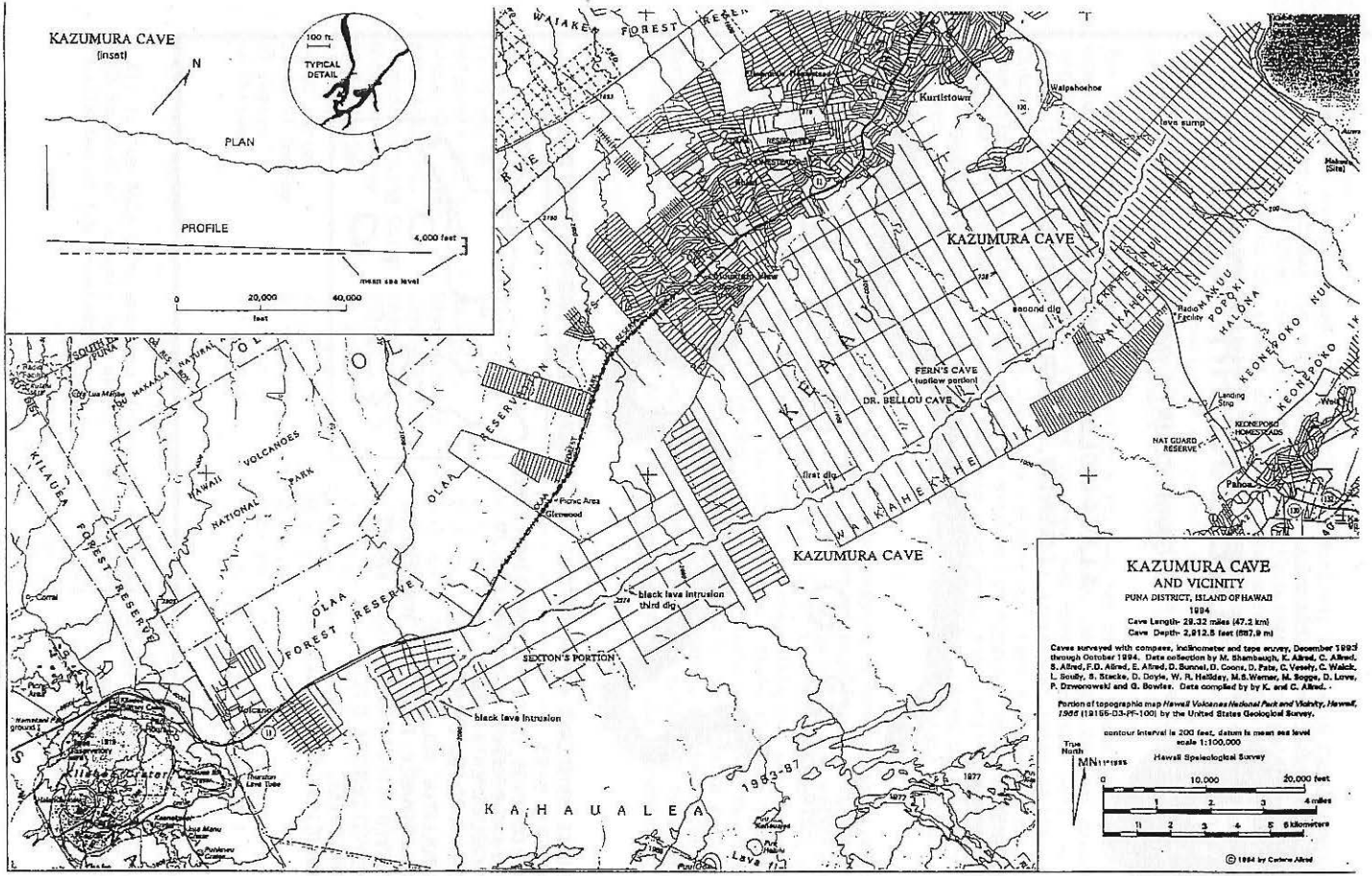


BLUE LAKE RHINO CAVE
SURVEYED 8-8-93
SUUNTO COMPASS, YARDSTICK, AND 6 INCH RULE
SURVEY AND DRAFTING BY CATO HOLLER, JR
ALL MEASUREMENTS IN FEET
NSS STANDARD MAP SYMBOLS
(NSS BULLETIN , VOL.41, NO. 2)
USGS QUADRANGLE : PARK LAKE, WASHINGTON
PRESERVED IN MIOCENE AGE PILLOW BASALT
SURVEYED LENGTH: 8 FEET
DEPTH: 3 FEET

CROSS SECTIONS (ONE-HALF MAP SCALE)



(5-7)


KAZUMURA CAVE
(inset)
N
100 ft.
TYPICAL DETAIL
PLAN
PROFILE
4,000 feet
mean sea level
0
20,000
40,000
feet
KAZUMURA CAVE
second dig
first dig
FERN'S CAVE
(upflow portion)
DR. BELLOU CAVE
KAZUMURA CAVE
black lava intrusion
third dig
SEXTON'S PORTION
Black lava intrusion
Kurtistown
Waiakea Forest Reserve
Lava sump
Radio Facility
Landing Strip
Keonepoko Homesteads
Nat Guard Reserve
Pahoa
Olaa Forest Reserve
Kilauea Forest Reserve
Hawaii Volcanoes National Park
Volcano
Kahauale'a
1983-87
Lava flow
KAZUMURA CAVE
AND VICINITY
PUNA DISTRICT, ISLAND OF HAWAII
1994
Cave Length- 29.32 miles (47.2 km)
Cave Depth- 2,912.5 feet (887.9 m)
Caves surveyed with compass, inclinometer and tape survey, December 1993 through October 1994. Data collection by M. Shambaugh, K. Allred, C. Allred, S. Allred, F.D. Allred, E. Allred, D. Bunnell, D. Coons, D. Fate, C. Vesely, C. Walck, L. Scully, S. Stacke, D. Doyle, W. R. Halliday, M.S. Werner, M. Seppe, D. Love, P. Dworonowski and G. Bowles. Data compiled by by K. and C. Allred.
Portion of topographic map Hawaii Volcanoes National Park and Vicinity, Hawaii, 1968 (12155-03-PF-100) by the United States Geological Survey.
contour interval is 200 feet, datum is mean sea level
scale 1:100,000
True North
MN 11°1955
Hawaii Speleological Survey
0
10,000
20,000 feet
1
2
3
4 miles
1
2
3
4
5 kilometers
© 1994 by Carlene Allred

8

5-8

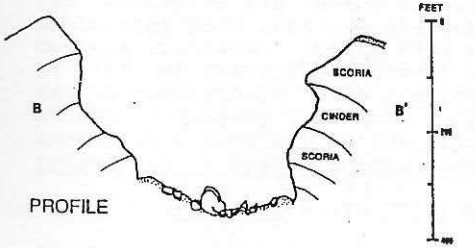
NA ONE

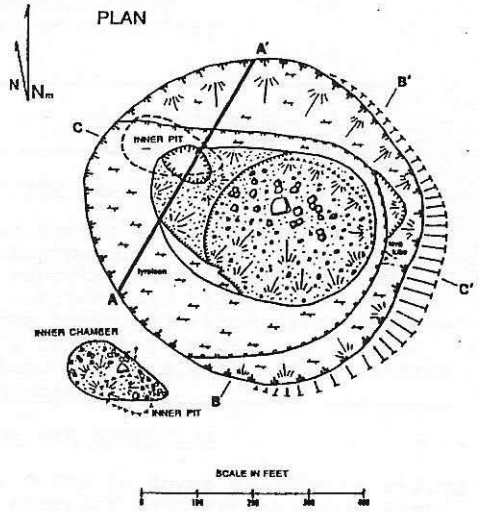
PIT -6082

Sounds and tape survey January, 1994 by :

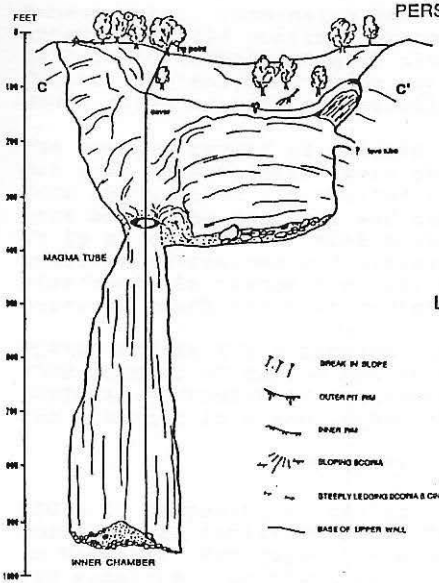
Kevin Allred	David Doyle
Dave Bunnell	William Halliday
Don Coons	Carol Vesely

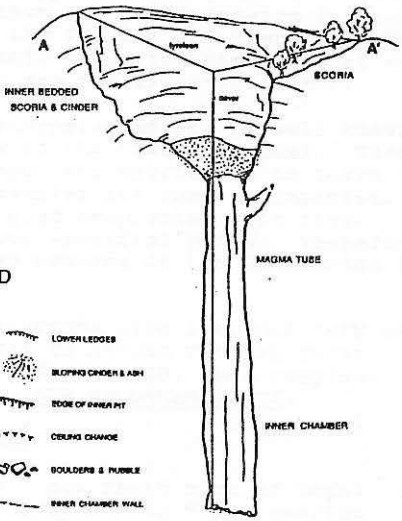
Hawaii Speleological Survey



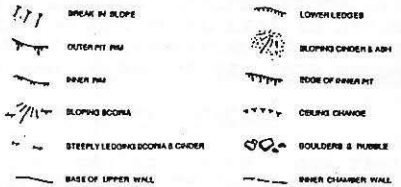


VERTICAL PERSPECTIVES





LEGEND



Cartography by D. Coons and C. A. VESely, 1994

(5-9)

COMMISSION ON VOLCANIC CAVES
International Union of Speleology

Newsletter #6 June 10, 1995

IN MEMORIAM: DR. DENES BALAZS

The Commission has lost a valued member and Hungarian and world speleology have lost a noble contributor. Dénes Balázs died October 19, 1994. Attila Kosa reports that his "dream-book, MY LIFE, MY TRAVELS" was almost complete and his wife is expected to complete it. His previous books described early explorations in Hungary and field work in Easter Island and in the Lesser Antilles, all in Hungarian. He is missed by the entire international speleological community.

ITALY AND KENYA BID FOR 8th SYMPOSIUM

At the Commission meeting in La Palma in November 1994, a strong preference was expressed for a February 1998 symposium in Kenya, to be hosted by the Cave Exploration Group of East Africa.

Subsequently, Commission member Giuseppe Licitra (who could not attend the 1994 meeting) proposed that the 8th Symposium instead be held in Catania, Italy, site of the 2nd and 4th Symposia. The Centro Speleologico Etnea of Catania supports this proposal and would serve as host organization -- see the attached letter.

The notable record of Catania vulcanospeleologists is well known but some uncertainties were obvious in the CEGEA proposal. Therefore in May 1995 I travelled to Kenya (and Mauritius) to learn more about the proposal and the potential for such a symposium. It is my conclusion that both are good proposals, with site-specific advantages and disadvantages specified below. Therefore "feedback" is needed from all active members of the Commission in order to reach the best decision.

PLEASE REVIEW THE FOLLOWING CONSIDERATIONS WITH SPELEOLOGISTS OF YOUR COUNTRY OR REGION WHO WOULD LIKE TO ATTEND THE 8th INTERNATIONAL SYMPOSIUM OF VULCANOSPELEOLOGY IN 1998, then complete the attached form and INFORM ME OF YOUR RECOMMENDATION.

THE KENYA PROPOSAL

CEGEA is proposing an optional 5 to 7 day field camp at Umani Spring, near Leviathan Cave; followed by a 4 to 5 day meeting in Nairobi. Two days of the meeting would consist of scientific sessions, together with a 1-day field excursion to caves of MOunt Suswa by 4-wheel drive vehicles, a ½ or 1-day touristic excursion to Nairobi National Park for animal viewing, a 1-day excursion to Giggling Cave (see below), likely with a goat roast

(6-1)

hosted by the coffee plantation, and possibly other 1-day options as desired by advance registrants.

LONGER EXCURSIONS

As desired, added to the Nairobi sessions could be a longer optional excursion to the marvelous Maasai Mara Game Reserve, via Mt.Suswa and possibly some of the non-tube caves in the Rift Valley near Lake Naivasha, SW of Mt. Kenya. These are virtually unknown outside Kenya and their speleogenesis is unclear.

Farther north, Kitum Cave (the famous elephant-excavated cave on Mt. Elgon) has been reopened to visitors. The trip requires a minimum of three days. Trips to caves in Tanzania and Rwanda are more difficult to arrange, but for those in Mauritius, Reunion, Comoro Islands, and perhaps northern Madagascar, time, money, and advance planning will make side trips from Nairobi comparatively easy. At present, considerable caving is occurring in northern Madagascar and conditions are said to be stable. Lava tube caves of Mauritius are comparatively short but some are very voluminous and further study is badly needed.

FIELD CAMP DETAILS

The field camp would be at a brand-new tent camp a few km downslope from Leviathan Cave, at the 2nd largest spring in Kenya. The site is about 4 hours from Nairobi. Even the shortest visit to Leviathan Cave requires three days. The campsite is about 10 km south of the 2-lane Nairobi-Mombasa highway via dirt roads. The highway is dismaying. While it is paved, huge chuckholes are repaired with gravel or mud, thinly covered with asphalt, and reopen with every major rain. I observed several sections choked with overloaded trucks trying to pass each other at 20 kph on minor grades, mostly belching vast clouds of dense black fumes, frustrating would-be faster drivers. For Kenya as a whole, traffic fatalities currently are about 50 persons per week.

The campsite, however, is delightful. It is not one of the major game areas of Kenya, but elephant and buffalo "sign" are everywhere, and the bird life is spectacular. Some monkeys, baboons and small herbivores also are evident. Presently there is no development at this spring but two leading CEGEA members recently received a permit to operate a tent camp in a beautiful clearing between jungle and the spring. Tent accomodations (with full board) will be available for a maximum of 16 persons. If demand is greater, the camp can be repeated.

From this camp, access to Leviathan and nearby caves would be by 4-wheel drive vehicles. Two are detached parts of the Leviathan System: Pango ya Moshi Cave (3 km) and ABC Cave (1 km). Farther north in the same range of hills are 2-km Mathioni Cave, Kimakia Cave, and others in a newly-designated national park. Access to these will depend on clearance of armed squatters.

(6-2)

Leviathan Cave is notable not only for its length (10.5 km plus an additional 2 km below a segmenting collapse) but for its astonishing variety of features and for extensive multi-level development in a unitary passage up to 25 or 30 m high. Because of logistic difficulties it is rarely visited. In May 1995 our 4-wheel drive vehicles had to make their way through stands of elephant grass up to 3 m high; the drive of about 15 km from the campsite required 2½ hours. This took us to a point one hour's hike from the uppermost entrance of the cave. Part of the brush was so dense that it separated me from a roll of exposed film. For the symposium, however, CEGEA is prepared to reopen two old jungle 4-wheel drive tracks that lead directly to lower entrances of the cave. Low cost local manpower is readily available for this.

OTHER KENYA CAVES

The braided cave system of Mt. Suswa is comparatively well known through published descriptions. Baboons still inhabit part of one cave here. Swirled, wind-deviated lava speleothems and secondary SiO_2 dripstone and microgours are especially notable features. At present, access is being limited by dissatisfied Maasai tribesmen, but CEGEA is confident of renewed cooperation by 1998. Access to a large open vertical volcanic conduit in a different part of Mt. Suswa, however, is very difficult physically and probably cannot be scheduled.

Giggling Cave or Caves is/are in a small gorge of the Ndaruga River an hour NE of Nairobi. It/them has/have the appearance of a three-dimensional phreatic solution maze but in mixed volcanics. It apparently formed when most of a tuff flow solidified amid fallen rocks along the gorge wall, while part of it flowed on through the rocks. Several hundred m of complex pasage are known. Kneepads are useful; much consists of crawlways.

The Cave of God west of Lake Naivasha is a linear cavern 196 m long, in elevated Pleistocene lake beds. Its speleogenesis is unclear. Another Cave of God in the suburbs of Nairobi, in the Nairobi volcanics, only recently came to the attention of CEGEA and has not been studied.

For calcareospeleologists, caves are known in elevated Pleistocene reef limestone along the Kenya coast. One contains a restaurant and bar, Ali Barbour's Cave Restaurant. Others are used by locals for "cave spirit" ceremonies. Like lava tube caves farther inland, some are known to contain bat colonies. A massive band of extensively eroded oolitic Jurassic limestone (the Kambe limestone) parallels the coast, 15 km inland. Karst pinnacles and blocks are prominent and it is only partly explored. Caves abound in several gorges. Mostly they consist of high joint-controlled networks. Skylights are numerous. Some are more than 20 m deep. Speleothems are conspicuous locally. Some small caves also are known in a single band of PreCambrian marble in Tsavo East National Park.

MEETING DETAILS

CEGEA is proposing that the exact dates in February (or March) 1998 be determined by the IUS, to coincide with vacation dates of various universities. It wants feedback on the type of accomodations and meeting places most desired in Nairobi; see the attached "Response Form." Costs inevitably will be high. Food tends to be expensive and undistinguished, as is wine. Local beer and rum, however, are cheap and good. Local transportation costs will be especially high and cannot be closely estimated at this time. The Kenyan shilling is high and rental of all vehicles is very expensive.

CEGEA is planning publication of a program with abstracts, a guidebook, and Proceedings. The official language would be English. The registration fee is expected to cover administrative expenses including the meeting room and at least the program, plus administrative costs and a 5% fee to be paid to the IUS for sponsorship. Currently it is estimated at US$75.

It is possible but not practical to drive to Nairobi from Europe and Asia. Air fares are considerable but could be minimized by use of "bucket shops" (known in the U.S.A. as consolidators), and sometimes by round-the-world flights. In May 1995 the U.S.A. cost of a ticket Nashville-Chicago-New York-London-Nairobi- Mauritius-Singapore-Kuala Lumpur-Hong Kong-Los Angeles-St. Louis-Nashville was US$2450. Round trip fare from New York to Nairobi and return currently is advertised as low as US$795 but may not be available on a desirable airline at that price, nor from the average travel agency.

THE ITALY PROPOSAL

Since Catania and Mt. Etna are so well known to members of this Commission, and also because many details of the Catania proposal are included in the attached letter from the Centro Speleologico Etneo, my report on the Italy proposal will be much shorter than the Kenya proposal.

C.S.E. is proposing a symposium which would be much more civilized than the Kenya proposal. Commission members who attended the 2nd and/or 4th Symposium have wonderful memories of hospitality and friendliness -- and of food and wine far superior and cheaper than anything ordinarily served in Kenya (I remember hotels as being more expensive than comparable hotels in Nairobi, however). For the information of those who did not attend the earlier symposia, Catania is a thriving industrial city with fine shopping and community facilities, literally at the foot of Mt. Etna. Etnean caves are short by Hawaiian or African standards, but are pleasant and interesting, especially because some of them underlie aa surfaces. At least one contains year-round ice. It was visited during the 4th Symposium. Open vertical volcanic conduits are present; their descent has not been discussed to date. The opportunity to visit a "brand-new" cave is important.

(6-4)

Presumably by hydrofoil from north Sicily, the proposed excursion to Vulcano and/or Stromboli would be a delightful trip, even if not very spelean.

Official languages presumably would be Italian and English. Proceedings of the 4th Symposium were published in Italian.

A much larger attendance would be expected in Catania than in Nairobi unless feedback indicates that potential participants are tired of the former. Expenses undoubtedly would be much lower. In addition to direct railroad and highway access, direct flights serve Catania from many parts of Europe and from New York City. Discount round-trip air fares from New York currently are advertised as low as US$420, but may not be available on desirable airlines at that price, nor from most travel agents.

SUMMARY OF COMPARISON

The Kenya proposal offers an exceptional opportunity for field studies to a small number of participants, at high cost. Publication of the Proceedings may be a problem for so small a sponsoring group. The Italy proposal offers a potentially larger audience a delightful meeting in familiar surroundings, at comparatively low cost but there is no guarantee that the Proceedings would be comprehensible by non-Italian participants.

Neither host organization can offer to repeat their proposal at a later date. The proposals are so different that "feedback" from all members of the Commission is needed at this time.

NEW PUBLICATION ON LAVA TUBE CAVES OF THE AÇORES

Amigos dos Açores has published a new book entitled PATRIMONIO ESPELEOLOGICO DA ILHA DE S. MIGUEL, describing the most important caves and open vertical volcanic conduits of the island of S. Miguel (Azores). Authors are J.P. Constância, J.C. Nunes, and T. Braga. The book is paperbound, and 108 pages in length. 60 photos (many in color) and 10 drawings are included. A theory of vulcanospeleogensis through inflation followed by partial evacuation of a lava tongue is well illustrated. The price to nonmembers is 3000$ (2500$ in Europe and 2000$ in Spain and Portugal). The book should be ordered from

Associaçao Amigos dos Açores
Apartado 29
9500 Ponta Delgada
Açores, Portugal

LENGTH OF KEALA CAVE, HAWAII

Stephan Kempe has reported that the length of Keala Cave now is 8.714 km (28,589 feet or 5.41 miles). The main passage measured 7.227 km and the side passages, 1.487 km. Total vertical extent is about 180 m (600 feet). Overall slope of the cave is 1.58 degrees.

(6-5)

NEW STUDIES OF TUNEL DE LA ATLANTIDA

In 1994 the Group Hydro-Speleologie published a 38-page report documenting the results of GHS Expedition 1994. Bibliographic citation is:

Jantschke, Herbert, Christine Nolan and Markus Schafheutle. n.d. (1994). Tunel de la Atlantida, Haria, Lanzarote, Canary Islands: The Hydrodynamic, the Chemistry and the Minerals of the Lava Tube (and) the Population Density of Munidopsis Polymorpha. Published by Group Hydro-Speleologie. Address: Schwedenstrasse78, D-65239 Hochheim, Germany. Price not stated.

In April 1994 GHS investigated the speleogenesis of the submarine section of the Cueva de Los Verdes System on Lanzarote, together with its water chemistry, secondary mineral deposits, and the population density and distribution of its most famous inhabitant. They observed that gypsum was replaced by aragonite, apparently through interaction of sea water and fresh water*. On the basis of chemical and mineralogical findings they concluded that the cave was formed subaerially and subsequently was submerged. Included was a photo of submarine slumped glaze stalactites which could have formed only in air. Not considered is the possibility that submergence of the cave may have resulted from crustal loading by the Monte Corona volcanics in which the cave system is located, nor the possibility of downcutting by thermal erosion. A return expedition is planned, and it is hoped that its findings and conclusions will be presented in a more available format. And a format utilizing the services of an English-language proofreader; the writers are fluent but not really accurate in their use of English.

* Stephan Kempe has noted that surface sea water is highly supersaturated with regard to calcite and aragonite (index of saturation ca. 0.4-0.6) but kinetic inhibition prevents normal spontaneous precipitation of these minerals except in biological circumstances involving enzymatic action.

SURTUR 1993 PUBLISHED

Attached to this newsletter is a 2-page English summary of articles appearing in Surtur 1993, the annual publication of the Icelandic Speleological Society. Exchanges are welcomed.

NEWS FROM AUSTRALIA

John Webb reports that not a great deal has been published on Australian lava caves since 1982, apart from field trip reports on caves in Western Victoria. A few new caves have been discovered, but all are relatively small. Probably all the descriptions have been published in Nargun.

AN IMPORTANT MEXICAN REFERENCE

Arzate, J.A., L. Flores, R.E. Chavez, L. Barba & L. Manzanilla, 1990. Magnetic prospecting for tunnels and caves in Teotihuacan, Mexico. In: Ward, Stanley, Ed. Geotechnical and environmental geophysics: Volume 3: Geotechnical. Soc. of Exploration Geophysicists, Investigations in Geophysics, No. 5, p. 155-162

COMMISSION ON VOLCANIC CAVES OF THE INTERNATIONAL UNION OF SPELEOLOGY

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