# Imperial College Caving Club

# Newsletter No.20

IMPERIAL COLLEGE CAVING CLUB
IMPERIAL COLLEGE UNION
PRINCE CONSORT ROAD
LONDON SW7 2BB

# Newsletter No. 20 Spring 1996

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Weekly meetings are held on Tuesday evenings at about 8:00 pm in Southside Upper Lounge. Messages can be left with the Students' Union (tel: 0171-589-5111).

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EDITOR:

Further copies of this Newsletter (and previous issues) can be obtained from:
Clive Orrock, 156 Larkspur Way, Epsom, Surrey KT19 9LU.
Articles, letters, photos etc. for publication can be sent to the same address.

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COVER:

The south face of Migovec, Julian Alps, Slovenia, from Tolminski Ravne.
Painting by Elizabeth Evans

# Editorial

Although it's on the first page, the editorial is more than likely to be the last thing read (if at all!), so with that in mind, may I take this opportunity of saying that I hope you enjoyed this issue. If, however, you are reading this prior to the rest, I can tell you that I think you've got a treat in store.

After years of struggling to get enough to publish, this time, the discovery of an unexplored 90 plus metre pitch seems to have prompted a general surge to tell everyone about it and get their name into lights (well, photocopy carbon). For once I've been innundated with articles - not that I'm complaining at all. A big thank-you, then, to all who have provided items - please keep at it for the next issue.

Indeed I've had so much stuff that I've actually been able to exert some editorial power and wield the red pencil. One article that sadly didn't make it (at least for this issue) was "Doctor Cock's Problem Page". Given the overall excellent content it seemed a pity to lower the tone, so I'm holding onto Dr Cock's column (f'nur, f'nurr!!) to see if I can slip it into this organ next time (oooer!!!). However if Confused-of-Clapham or Worried-of-Wandsworth are still concerned, I suggest they consult Dr Cock in person - just as soon as he is released from quarantine after his return from Nepal.

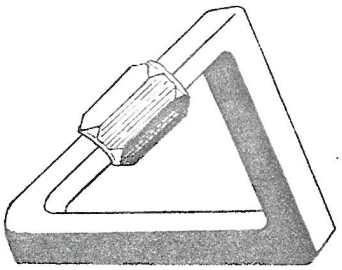
To match the quality of the content I've finally entered the 1990's, produced the whole thing on PC and upgraded the style and format. (Actually a 2-column newspaper format is more for my benefit as it makes it easier to fit pictures and surveys into the text). Also, as I proof-read through this issue I realise that it's not so much a Newsletter, more a 1995 Review or Journal, but as this is the 20th under the name of "Newsletter" I'm loath to change it.

ICCC has been in existence, now, for some 35 years (and this newsletter for 12). During this time the club has been continually active throughout the British Isles and nearer Europe, as well as mounting many pioneering expeditions to new or remote caving regions around the globe. And yet it has never, really, found itself a "home area". However with plans now well advanced for this summer's Slovenian expedition - the fifth to visit the Migiovec area in the last three years, I detect a change in the club's situation. And I think its a positive change as these days caving success usually seems to come sustained effort - rarely from luck. ICCC seems poised to establish itself firmly on the UK, and world caving scene - maybe not as a major player (we just ain't big enough) but at least with a serious "speaking part". Personally I have little desire to join another club : I'd far rather see ICCC go on to still greater things.

Happy Holes,

*Ed*

Eddy Tor



So, have *you* ever seen a caving birthday card ? All credit to Kathryn Atherton for finding this slightly bizarre card:

# Tony's Tit-Bits

Since the last newsletter the club has been very active, especially on the exploration front. This started with an Easter recce to Slovenia to look for blowing holes in the snow. Jim, Iain, Jos and Chard returned after ten days and reported that they had found and logged by GPS more than sixty holes..

A tour to Vercors was arranged and a very intensive week of caving took place which included two recent discoveries, L'Antre de Venus and Scialet du Pel Jonc (Cold Cock Cave), by Jos' caving club.

Jim spent five days underground exploring with the BEC. His knowledge gained here proved to be invaluable for the summer expedition when we had to bivvy underground to be time- and effort-efficient in exploring Torn T-Shirt.

The summer expedition made use of all the data from the recce and several finds were made from this information. The main find of 1994, Torn T-Shirt cave, was pushed and some impressive new passage and pitches were found which are yet to be fully explored. At the BCRA conference the expedition finds were well received and generated a lot of interest. A third expedition to Slovenia is already planned.

On return from the expedition we had exploration on our minds and it was decided to start a dig in Yorkshire. The Molehole was chosen as a very prospective site and it was immediately found that some heavy duty lifting gear would be required. Jim, who is more keen than most about digging, found and cycled several miles with a ten ton chain block in his rucksack. All the gear is about to be installed and the dig started in anger.

The new academic year got off to a fairly destructive start with the stag night held at the NPC for Andy Radcliff. This was put behind us for the two consecutive trips to the Mendips which were well attended by freshers. Unfortunately during our first trip to the Mendips a run-in with officials from Charterhouse Caving Company and Scuzza meant that we are not their favourite university club anymore - and we are banned from GB and Longwood based on a conversation that took place in Swildons!!! .The Fireworks trip to Yorkshire did not impress the NPC, and a letter was sent where several incidents were mentioned; fortunately we have not been banned and we have promised to behave ourselves from now on. After these events several freshers who initially seemed to be keen have not been seen since and matters were made worse when we stayed at the TSG on the weekend of their AGM where one of there members (the hut warden actually) practically destroyed the hut and kept everyone awake all night. A result of all these incidents we still need some more members and a second recruitment drive is about to start.

The Dinner Meet this year has been arranged well in advance in the hope the more "old lags" will be able to attend. Last years dinner had a very disapointing turn out in terms of "old lags" (i.e. one)'. It would be nice to see a few old faces and meet a few new ones.

Club offiicials 1995/6:

| | |
|---|---|
| President | Tony Hayden (Tonx) |
| Treasurer | Paul Wilcox (Bond) |
| Tours Officer | Sarah Wingrove (Scuzza) |
| Secretary | Kathryn Atherton |
| Explo Officer | Mark Evans (Mark) |
| Dig Officer | Jim Evans (Jizza) |
| Webmaster | Chris Roberts (Sausage) |

Mafia/RCC connections:

| | |
|---|---|
| Rob Lea | RCC Chairman (Blob) |
| Paul Wilcox | RCC Treasurer |
| Mark Evans | RCC Secretary |

Yours, to the terminal sump,

*Tonx*

# Dinner Meet '96

*Golden Lion Hotel, Settle*
*Sunday 5th May at 7:30pm*

Unfortunately we will not be allowed to "bivvy" at the hotel as is traditional at such events. However accommodation is available at the hotel and at various B&Bs within crawling distance. There is also a campsite 2 miles away. Greenclose will not be booked out to non-NPC members so we will probably be camping for the duration of the weekend.

Currently the dinner is booked for 30 people. To book the entire room for ourselves we require at least 45 so if you plan to come please let me know *ASAP*.

# Vercors
## Easter '95

Participants:

Northern Alliance-
- Antony Woods (Pants)
- Christian Roberts (Sos)

Southern Alliance-
- Sarah Wingrove (Snazza)
- Peter Eland (CV Pete)

Assorted others-
- Joselyn Visconti (Jos, Frog)
- Jim Evans,
- Paul Wilcox (Bond)
- Joel Gustavsen (Jack Shit Joel, JJ)
- Kathryn Atherton

The trip started the same as most trips: Jim was milling about stores, making them virtually unbearable for all others around him. The sly bastards, myself included, had got there the day before and nicked all the good kit so poor old Joel, later to become Jack Shit Joel, was left with, well, Jack Shit.

After the obligatory dossing around and the consumption of several pints at that fine drinking establishment the Union, we were on our way having said our sad farewells to Mark who had to work!!!!!. First stop was Snazza's house, somewhere in deepest Kent, where a veritable feast had been laid on by her indulging parents. Then it was off to the ferry where the trip across proved rather eventless, mainly cos we slept through most of it! The highlight was crashing next to the kids play area: Snazza decided to crash in it and was just dozing off when she was accosted by some Fat Bloke. "Excuse me, Miss, under fives only" he barked. Snazz was understandably confused, nobody had ever addressed her as "Miss" before. So our fun in the kids play world was cut short and the poss went back to sleep.

Into France, and 9 hours of driving was to ensue: flat, boring, "Enculez les Grenouilles!". Nothing exciting happend save we were all amazed by Paul's shoulder wallet and he quickly adopted the nickname "Bond" for his dashing 007 like antics.

Le Gite ou nous sommes restes etait vraiment magnifique. The caving club had never stayed in such luxury and had to set about turning it into a pigsty, much to the annoyance of the Old Bastard who owned it and kept looking in whilst we were out.

So on to caving.....
Trip One was Trou Qui Souffle, second entrance and all nine of us were to go down. 8 tackle bags were taken, somehow Joel managed to avoid carrying one all trip, hence the nickname Jack Shit was born cos he did just that! The trip was long, we took ages on the ropes, Sos tried to go down the wrong bit of rift, I had the usual problems with carbide - for such a shit hot chemist I seem to have problems with simple reactions! Kathryn ran out of steam and had to be rescued by Jim, the dashing hero. Got out at 3am bloody cold and tired.

Easy cave next day followed by buying equipment. The most powerful force in modern caving club history was born - The Northern Alliance of Sos and Pants. Sick of all this bloody suven rule, matters were taken into our own hands and we set about terrorising everybody else, particularly Snaz and CV Pete who just had to wear his outrageous buffalo gear all the time.

Day 3: Alliance + Frog + CV did Trou Qui Souffle entrance 1. A fun rigging trip for us which was cut short due to the lack of rope on a traverse. The rest did Pele (Scialet d Pel Jonc) - cold cock cave or something or other which basically means frozen wedding tackle. Apparently 'twas a tight, cold horrible cave and one we're glad we didn't do.

Had first contact with the locals. Three of Jos's friends came round and we got bladdered! Green Chartreuses, followed by beer, followed by errr well French home-distilled vodka. Paul passed out on the table, only to wake once and shout in absolute perfect German, "where's the bread!". Quite what was going on in his alcohol sodden brain we do not want to know!

The next day was fun. The constant retching of messrs Wilcox and Evans did little for moral. Jos, or Jojo as we discovered was his pet name, laid in bed all day. kathryn pissed off clad from head to toe in expensive North Face gear, borrowed form Kenni Maniac and sporting her new boots. The rest of us were bored, bored, bored. Went to go sledging clad in our super TSA sledge suits. The Alliance totally kicked Snazz and CV's arses at snow ball fights and were then obliged to take on some boisterous French louts who were begging for a good hard hiding. They were not

# SCIALET DU PELJONC

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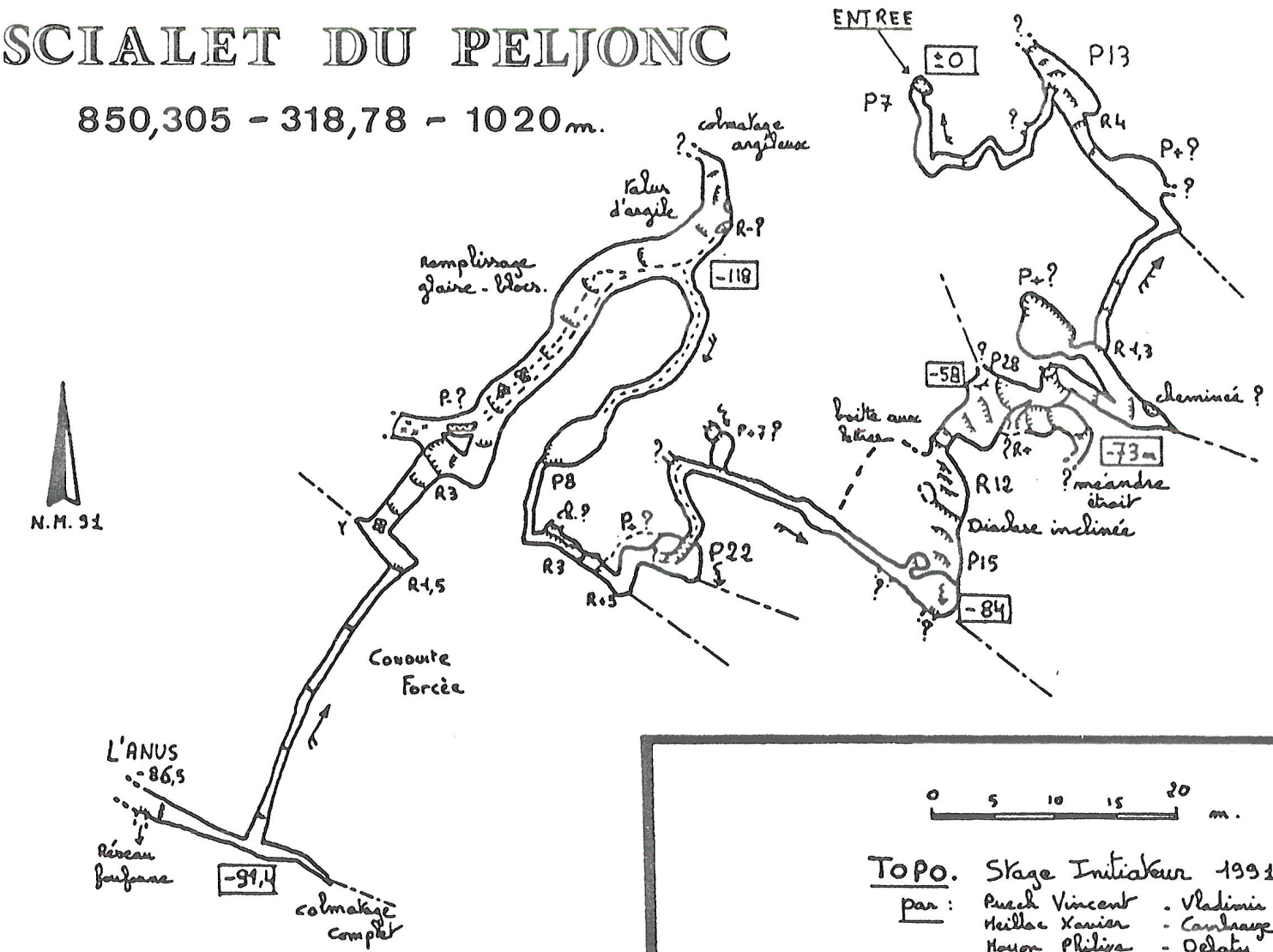



0 5 10 15 20 m.

**Topo.** Stage Initiateur 1991. I. 10.

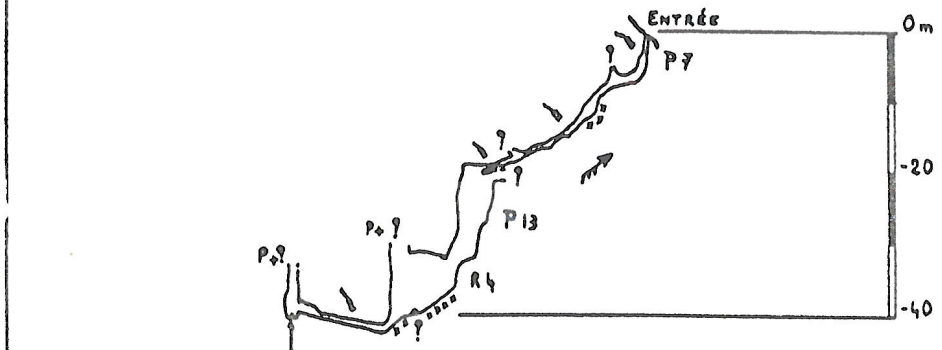
**par :** Puech Vincent - Vladimir Dudnic.
Meillac Xavier - Cambrouze Jean-Marc.
Hoyon Philippe - Odaty Nicolas.

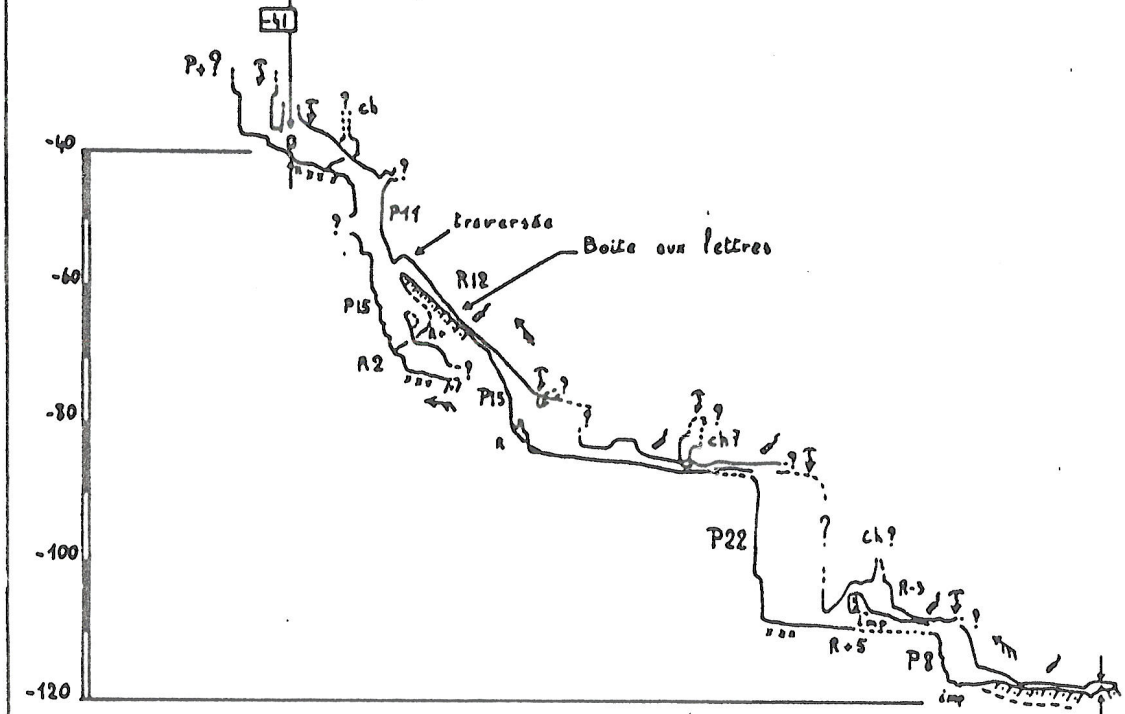
**Coordination :** Odaty Nicolas.

**Matériel :** Décamètre +
compas à ellipse Silva : -118 m
" à " Suunto : -86,5 m

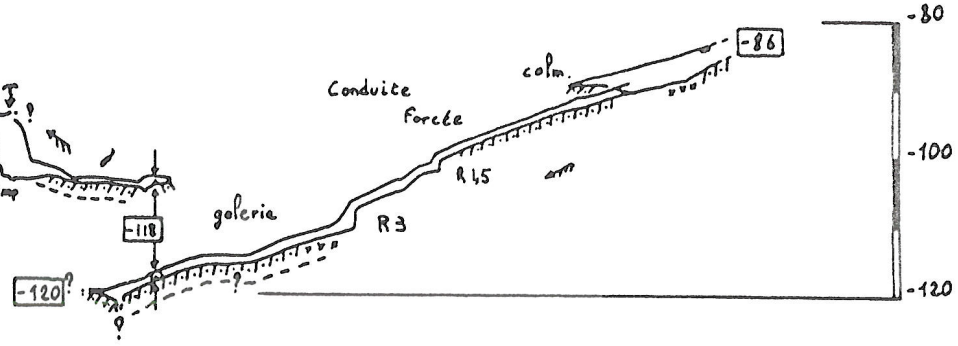
# SCIALET DU PELJONC

## ISERE-38




Vue en coupe


Topo le: 30-08-81 par: Stage initiateur: 1991. I. 10.

| | |
|---|---|
| Dudric V. | Meillac X. |
| Moyen P. | Puech V. |
| Cambraye J.M. | Defaty J.N. |

Dessin J.N.D.

to be disappointed. Sledging wasn't too good cos the snow was too deep. However sliding down in our frictionless oversuits was fun until the snow got in! 11 o'clock at night and Jim is still retching away. It's quite a hideous sound when all's said and done.

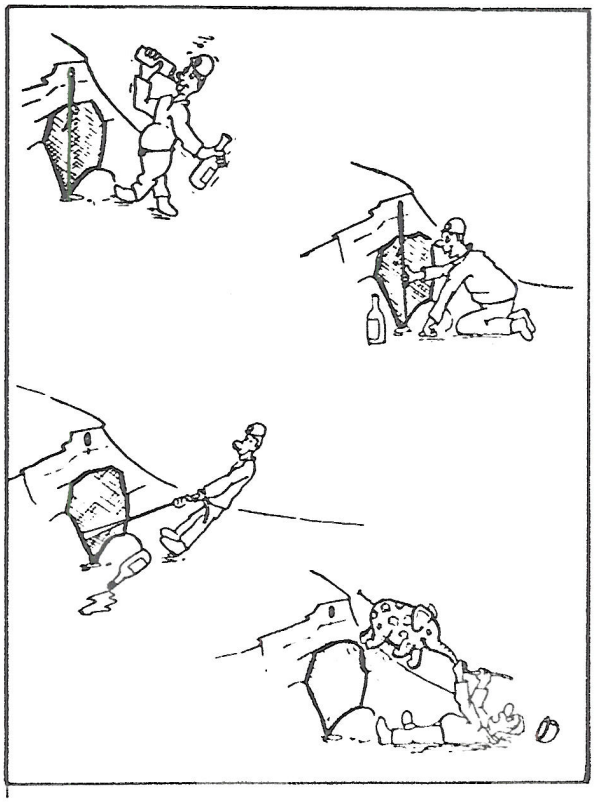
Woken up the next day by Snazz chundering and exclaiming "Oh dear, I've never done that before". So Snazz, & Kathryn were out of action claiming food poisoning. JJ went skiing and the rest did L'Antre de Venus a cave that Jos helped find. Slight problem: the door was frozen on. At one point we had a five times mechanical advantage Z rig going to pull it off. It failed. In the end the chemist won and opened the door by judicious placement of carbide around the edges, this promptly burst into flame as there was snow everywhere and thus the ice melted and the door open. "Fuck you, engineers!" was the cry of success.

Nice cave but lots of spiders, Sos hated them and fried several generations with his carbide!! Some very good formations, several in pristine condition. A big gold star to the cave! Coming out was fun, Jim and Jos decied to attack the Northern Alliance whilst still in the cave. Round one to them I must say. However we're not stupid and got out of the cave before them. Two in the cave, one de-rigging meant at least a 20 minute separation between them getting out. So we regrouped and did the obvious: bolted the damned door shut! A large stockpile of snow balls was made. Jim came first, we heard him scrambling around then beating the door desperately. Poor dear was in a right pickle. "hello..... help!" he cried out! Silence. This went on for 5 - 10 mins before we let him out. He immediately pounced but was met by a barrage of snow balls and ran yelping through the woods. Jos got much the same treatment although he was so frustrated he tried to dig out of the side!

Last cave we did was the Gournier. Sos was now ill with the food poisoning so sat in the van all day. Diplomats that we are, we made another friend, the owner of the Gournier. Two coach loads of tourists pulled up to be met by us, gear strewn accross the car park, changing. "C'est un bordel, ca" were the frog's irate cries as he came charging towards us, arms flailing in that quaint Gallic fashion. The cave was great fun, very wet, but fun. The biggest moments were when Jack Shit lost the boat and had to wade into the lake to recover it, and when the hard Brits went swimming in the lake. Our European counterparts didn't partake in the fun. No wonder they always do so badly in wars, they've got no balls!

So ended the caving. The trip back was non eventful, tea and cakes at Snazza's were most welcome, though.

Anthony Woods (Pants)
our cowboy correspondent



# Strange - But True !

Of all the creatures that are found in caves the biggest are, believe it or not, elephants!

The caves of Mount Elgon, on the border of Kenya and Ugand, are in consolidated volcanic ash and seem to have been formed like limestone caves by solution in water of the salts holding the ash together. Because of these salty deposits the caves are a great attraction to antelope, buffalo and even elephants, which go deep underground in search of salt. Elephants in the open do not normally like climbing over rocks, yet in the caves they are prepared to scramble over rough ground in total darkness to break salt crystals from the walls with their tusks. In doing so they are steadily digging the caves longer and deeper.

Their caving activities are however not without danger. In 1981 a roof collapse, caused by the elephants' digging, is thought to have entombed part of the herd.

# Slovenia '95:

# The Winter Recce

*A tour to Slovenia in February to log the positions of blowing holes on the Migovec plateau. Tour members: Jim Evans, Richard Anderson, Jos Visconti and Iain McKenna.*

Within a very short period of time three out of four of us had realised that all the effort that went into melting snow to make our water for the following day had been in vain. In the morning I soon became aware that I'd been the only one stupid enough to have allowed my waterbottle to remain in my sleeping bag, long after the others had decided that they would rather die of dehydration than die of cold. Within two hours of being tossed from their sleeping bags, the contents of each of the bottles had frozen solid.

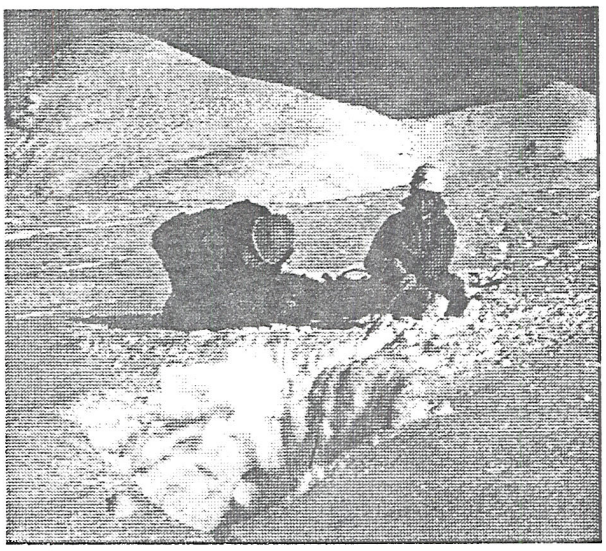
This was night number five of our free accommodation. Night number one was spent on the floor of Fratnik's shop in Tolmin. Andrej Fratnik, a local caver who owned a central heating business, had been more than welcoming and his hospitality was very generous... especially with his home made Slivovich. Night number two was spent in Slowko's barn, out of spite for the rough treatment we'd received over lodgings the previous summer. Three and four were spent in a snow hole at the shepherds' hut, whilst five and six were *in* the shepherds' hut. Seven was in the dusty recesses of the Tolmin caving club building and finally a very comfortable night was spent in the car park at Venice airport.

The alternative choice of accommodation at this time of year should have been simple: ten days in a chalet in one of the best ski areas in Europe. I'd been invited to go skiing in November and was looking forward to a relaxing week near Geneva. A complication arose, however, following a phone call from Jim one miserable January evening. His alternative suggestion was to return to the happy hunting ground of the previous summer's expedition to Slovenia "to look for blowing holes". Now before this call I was of the understanding that only certain water-based mammals possessed blowing holes, but no, apparently limestone regions when blanketed with snow have them too. The feeling of duty which makes this club great, and binds its members together like hairs in a plughole was overpowering, and I could do little other than agree to a week of abject misery.

Rob drove us south to Gatwick as the rest of the club were preparing to depart northwards to Yorkshire. We would, in fact, arrive at our destination in less time than they took to reach theirs, despite the problems the aircraft had in taking off due to one of the heaviest hand baggage payloads ever (leave your kitchen sink at home next time 'Chard). The Fiat we hired in Venice was remarkable in that it swallowed all our kit *and still did 170kph.*

After awaking in Fratnik's beautifully centrally heated shop, we did some shopping and had a trip into Tam Boca, the bottom entrance of a cave system that is still going (up!), and is the focus of attention for the Tolmin cavers at present. Unfortunately, during the trip my attention was unfocused and I can remember nothing about the vital statistics of this system.

For the most part, the rest of the week was spent above the snowline, in or around the shepherds' hut. Access to the plateau was via the steep south-west slope of Migovec, which was less avalanche prone than the normal traverse route we had used in the summer. An alternative hazard was soon encountered however, and Jos was the first to notice:
*"Feurking 'ell"* (the Frenchman's English was progressing nicely) *"we 'ave lost Chard down a feurking great eaule!".*



*Blowing hole on plateau, Kuk in the background.. Photo: Chard*

Chard was in fact not lost as he had the GPS (Satellite Global Positioning System), but he was down a sizeable hole. Getting him out employed

our rope for the first time. The site was marked using luminous spray paint, and a fix on the position was taken by triangulation and GPS. Between this and the one other day we spent on the plateau, we were to repeat this process 56 times. The day and a half twixt (I procured this word from the thesaurus) our two days on the mountain were spent in the hut during a great storm. The temperature plummeted to "absolutely chanking" - Jim; "jolly nippy" - Chard; and "feurking etc" - Jos. My brain was numb so I wasn't saying much, but we all joined in when the singing began and made a fire in the middle of the floor which soon filled the hut with dense smoke. Chard wore his ski goggles for the first time.

Our last day was spent enjoying ourselves. Jim, Chard and Jos went flying over the plateau in a Cessna and I went skiing,. The Cessna pilot wouldn't fly low enough to see any blowing holes, but enjoyed aerobatics. I wouldn't fly high enough on my skis for aerobatics, but saw some blowing holes. At night we took a slow canal boat through Venice before settling down at the airport. Early next morning we were met at Gatwick by Kathryn who had the dubious pleasure of driving us home. Considering none of us had washed for ten days, it was a brave thing to do.

And so ended our Winter Recce '95.

Iain McKenna

*Jim & Jos climbing the south side of Migovec. Photo: Chard*

# Using a GPS for Cave Locating

During the winter mountaineering recce a Global Positioning System (GPS) was used to log the positions of blowing holes on the Migovec plateau. Draughts are good clues to potential new caves and are easy to spot during the winter because they drive holes through the thick layers of snow. Since the winter landscape is completely different from the summer one, and blowing fissures are often small, it was very important to accurately locate and mark the holes to enable us to find them again in the summer. Usual methods for cave locating were impossible and so the use of a GPS sounded promising.

Trimble Navigation kindly lent us a GPS for a week during our winter mountaineering trip and for six weeks during the summer expedition. This allowed us to log and precisely locate over 60 draughting holes on the plateau, and to find them again in the summer.

**The Principle of GPS**

The GPS is based on a system of satellites developed by the US Department of Defense at a cost of over $10 Billion. When fully implemented, the system will consist of 24 satellites orbiting the earth twice a day at an altitude of 20 000km. Receivers on the ground use these satellites as precise reference points to triangulate their position. By measuring the travel time of a signal transmitted from at least 4 satellites, the receiver can calculate its position, altitude and velocity. The system works anywhere on earth, twenty-four hours a day, in any weather, and is proving to be the most reliable and most accurate navigation technology ever developed, providing positioning accuracies to a matter of metres.

**Accuracy & Jamming**

Since 1991, for strategic concerns, the US army has been jamming the signal transmitted by the satellites in order to bound the accuracy to a matter of metres instead of centimetres. This few metres inaccuracy, set by the US army, is to be distinguished from the inaccuracy due to the quality of the signal received by the GPS (noise) and the one due to the quality of the satellites'

geometric configuration (dilution of precision) reaching one hundred metres.

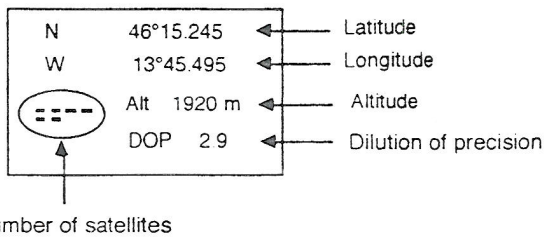
Roughly, the less numerous and spread in the sky the satellites are, the bigger the dilution of precision (DOP) will be. This DOP can be corrected by a differential beacons net. These beacons, situated at precise points, receive the signals transmitted from the satellites and collect some information about their position and the generated DOP. They then work out the DOP adjustment to be made for the satellites' current geometry and transmit it to the GPS. Unfortunately, this expensive system DOP adjustment system is not available everywhere.

The US army jamming is obviously not so easy to overcome, but it doesn't affect the kind of applications we are interested in, which require only a 10 metres accuracy. The jamming seems to introduce a bigger error in altitude (up to 100m) but this can easily be rectified with a map.

For cave location the error due to jamming is insignificant but the DOP can introduce a positioning error of over one hundred metres if there are not enough visible satellites or if their position is unfavourable. However in the particular conditions of use on Migovec it was possible to get rid of this error and obtain a 10 to 15 metres accuracy for all readings.

### The GPS Receiver

The GPS receiver is a small hand-held unit which displays the coordinates (latitude-longitude) and altitude of a point, the number of satellites involved in the reading and the dilution of precision (DOP). The display is represented below:




**GPS Display**

Latitude and longitude are given in a decimal minutes format (3 significant digits) with a potential reading accuracy of 1.3m in latitude and 1.8m in longitude.

The DOP is a good indicator of the current reading accuracy. It ranges between 0 and 20, but is bounded in practice between 2 and 6 depending on the number and positions of the satellites: the smaller it is, the better the accuracy is.

Each satellite caught by the receiver is represented by a dot on the screen. The receiver needs at least 4 satellites to work out a tri-dimensional position (with altitude) and can catch simultaneously 7 satellites in practice.

Another key point is the choice of the reference area in the world map database used by the receiver. It must be near the considered area and kept for all readings since the calibration depends on it. Rome was chosen for the readings in Slovenia.

### Coordinates conversion

Latitude and longitude coordinates given by the GPS need to be turned into Lambert coordinates, commonly used for cave locations. This conversion is the result of a simple plane rotation, and a pocket calculator programmed with the required trigonometric formulae is convenient.

### Receiver Calibration

In order to estimate the GPS accuracy we logged several peaks and map triangulation points in the prospected area. All readings were made with a small DOP (lower than 3 using 7 satellites). The estimated latitudes and longitudes for all points turned out to have a constant error of several hundred metres when compared to a map. This error, easily adjustable by calibration of the GPS, depends on the area selected in the receiver map database menu. Consequently, the same area must be kept after the receiver has been calibrated. Note that this constant error doesn't necessarily need to be worked out accurately. One can get rid of it by taking, as the reference point coordinates, the GAPS estimated coordinates. For instance several low DOP shots can be averaged.

It is therefore very important to calibrate the GPS with several points in the area under consideration, in order to remove this time and space constant error. This adjustment having been made, all reference points were located with an accuracy of 5 to 15 metres.

**Remarks on use**

A 1:10 000 map of the Migovec plateau was used for cave locations and comparisons with the map triangulation points. All six peaks surrounding the plateau were logged, averaging for each of them 3 readings with a DOP lower than 3. The deviation with respect to the map was always smaller than 20 metres (2mm on the map).

Roughly, the DOP decreases as the number of satellites caught increases. Nevertheless, the satellites' configuration also affects the DOP. The true accuracy criterion is not simply the number of satellites but the DOP. The locating error increases with the DOP. As long as the DOP is smaller than 3, the reading is accurate enough for a cave location (10 to 15 metres accuracy).

The altitude is however not accurate enough. The measured altitude fluctuates around the real altitude with 100 metres inaccuracy. These fluctuations are likely to come from the US army jamming, apparently more important in altitude to prevent low altitude flights.

If the area is hilly or vegetation is dense, the GPS reception angle is restricted so that the DOP cannot be made small enough. In these conditions, if for instance the DOP can't be lowered below 5, the readings' imprecision can reach 100m, which is too great. This prevents the use of a GPS to obtain the requires accuracy for a decent cave location in such terrain.

However the bare high altitude relief of the Migovec plateau made it possible to repeatedly get 6 to 7 satellites and a DOP lower than 3, leading to 10 to 15 metre accuracies, which is more than satisfactory.

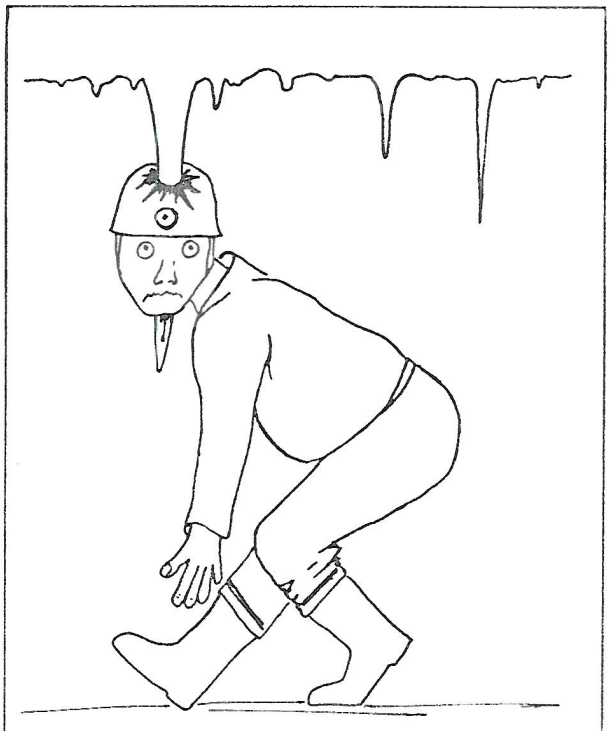
The commercial GPS receivers are mainly intended for navigation. Hence they provide many dynamic functions (speed, course, route's calculation etc) of little interest in static readings. Nevertheless it is crucial that the receiver works out the DOP. It is also vitally important to keep the same map database for all. readings since it affects the calibration. Moreover we had problems with the batteries: alkaline batteries are essential because the GPS needs a steady high energy level to work (no rechargeable cells). Furthermore the low temperatures during the winter expedition radically shortened their lives.

**Conclusions**

The main obstacle to the GPS accuracy is not the jamming imposed by the US army but the dilution of precision. In order to obtain the required 5 to 15 metres accuracy for cave location the DOP must either be small enough or be corrected by differential beacons (unfortunately not available far from the coasts). Further a small enough DOP cannot be obtained in hilly or forested terrain. However in the conditions of use on Migovec (wide visibility of the sky), it was possible to ensure a low enough DOP for all readings, so that the cave locations were accurate to 10 - 15 metres. The GPS was very useful in finding again those blowing holes which we'd logged in the winter. We can thoroughly recommend the use of a GPS for locating caves in such conditions.

Jos Visconti

The above is abridged from an article submitted to the magazine *Spelunca* (Fédération Française de Spéléologie, Paris).



*Blundering round without a light*
*Jim broke off a stalactite.*
*Impaled, the last words he did say,*
*"Cave vandalism doesn't pay!"*

## Slovenia '95:

# The Hole Story

After twenty-four hours of solid driving down to Slovenia you might say we were just about ready to stretch our legs a little by climbing up a mountain. It took several days of backbreaking carries to transport all our equipment and six weeks worth of food up to 1500m and then all the essential items onto the plateau at 1800m. Then the real work could begin.

Our camp (the same as previous year) was located on the Migovec plateau, a wilderness of broken limestone, shakeholes and dwarf pine. The area has, in theory, one of the best depth potentials in Europe, yet the local Tolmin caving club (JSPDT) had insufficient human resources to give it the attention it deserved. With the support of the JSPDT, Imperial College Cavers moved in, this year with a team of approximately 10 people and with a wide range of caving experience.

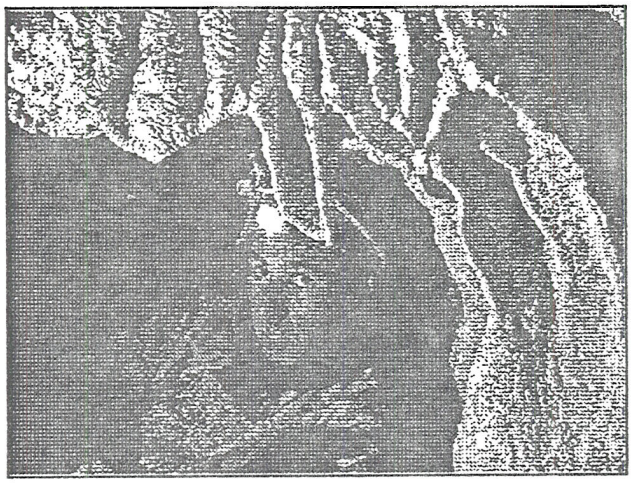
We started head-first and bottoms-up into every promising entrance we stumbled across and then marking the good ones for future exploration. There are literally hundreds of potential caves. The plateau, roughly 1 x ½ km in size, was heavily pitted with shakeholes, tunnels and shafts ranging from small to enormous. Even by working in small teams this task took severa days and a sacrifice of shredded T-shirts for the cause. We had some hints as to which entrances were likely to go. The previous winter four club members had visited the plateau when it was under several metres of snow. (See: The Winter Recce - Ed.) With a satellite global positioning system (GPS) they had fallen down, marked and recorded the coordinates of more than 50 snow chimneys through which the caves below were "breathing". However finding small splodges of paint in this limestone jungle was no easy task. Those breathing holes which were relocated turned out to be not much bigger than a fist and although we spent almost another week moving and splitting boulders by the rope-and-twat technique (RTT) or chipping away at the bedrock with hammers and chisels, the entrances kept choking with rubble. We seemed to be digging our own caves! To our great disappointment all our digging efforts on the surface came to nothing.

In the meantime though there had been some success. Four caves on the edge of the mountain had started to show real promise. *Gulliver's Kipper* had an obvious entrance visible high above the path to the plateau. Access was difficult, however, involving a scramble up a meltwater gully. The immediate pitch had been rigged and led into a chamber which had several possible digs leading from it.

Another cave *Jackie's Blower* (which she prefers to call B9) was perched on the edge of the plateau. The first walk-in chamber led to a pitch again with possible digs at its base. A rope traverse around the side of this pitch revealed a second pitch dropping into another chamber.

We stumbled across another cave, *Julie's Panties,* when we lost the mule path down to the village of Ravne. A strong chilly breeze draughting from its entrance had led us to believe that there must be a huge void beyond: the odds were 10-1 that it was at least 1000m deep!

*Venus Cave* had unusual origins. At first it was just an insignificant rabbit hole which was sucking in air so strongly that flies were getting trapped - hence the name. Half an hours work with a spade revealed a 15m rift like pitch. Although the obvious way on was choked a long muddy crawl led to a small chamber containing some curtain formations. These were the first formations ever discovered in the area.



*Pants in Venus Cave with the first calcite formations to be discovered in the Migovec area.*
*Photo: Mark Evans*

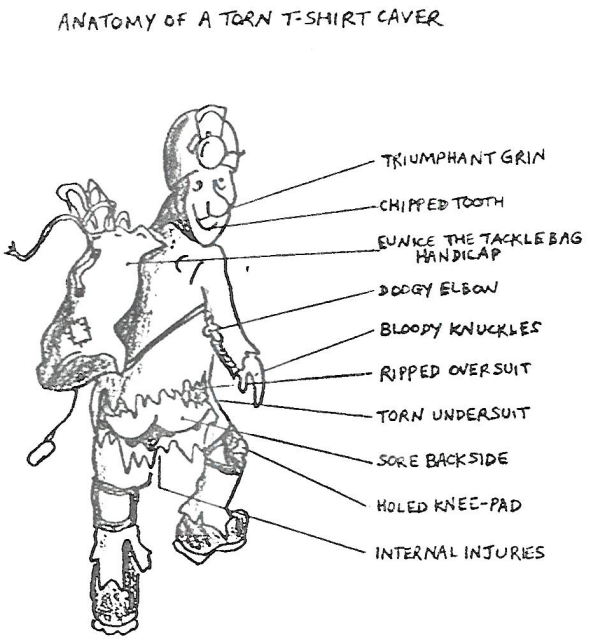
The aptly named Torn T-Shirt Cave had been discovered and surveyed to a depth of -80m during the Slovenia '94 expedition and was thought at the time to be too tight to continue deeper. A first pushing trip ended was cut short with everyone making a fast exit for a dump at the entrance: something to do with the prune-n-pea slopburgers for breakfast? The next trip however was more successful. Armed with a chisel and hammer we went to explore some extensions higher up in the cave and uncovered a vertical shaft parallel to one already known. A third jaunt through the awkward rift at the bottom found an impassably tight pitch head from which a thrown rock would excitingly bounce around for seconds before coming to rest.

Time was passing quickly. After three weeks of work on the mountain, three weeks on a diet of wholemeal chapattis and bean curry, and three weeks of loose stools, our caving clothing was in tatters. Unlike Yorkshire's caves which have been smoothed by centuries of water and decades of human bodies, these Slovenian caves are generally tight and sharp. Rips and tears were an inevitable consequence of this expedition's caving. Although our minds were strong and enthusiasm high, our bodies were weak. A trek was made down the mountain to the river for a much needed wash. We then headed off for a weekend in Trieste to visit the nearest caving equipment supplier and to find a whole load of babes on the beach... "check it out - loungin'!"

Back at camp (with fresh memories of pizza and Club Bugatti) Mark promptly burnt a brand new oversuit with petrol while the rest of us got down to stitching up our tattered clothing to the sounds of Kevin B Wilson on Club Mig. The weather was showing signs of turning for the worse. Heavy rain falling onto outstretched tarpaulins made water collection much faster and easier than getting Tonx to pump up a barrel-full from the ice cave (that is until Saz knocked the barrel over).

Soon more caves were showing their potential, particularly Sesame Snatch (later known as Death Trap), and PerFect Ten (PF10). Although heavily blocked with boulders it was draughting strongly and in theory (another one of Alva's damned superior theories!!) was in a prime location for depth. With a new lease of energy these latest caves were all explored to their limits through digging, rigging, climbing and squeezing and then surveyed, photographed (with Pants as this year's cover caver) and finally derigged. This now allowed us to concentrate on two particular caves: Torn T-Shirt and PF10. The race was on to reach the Soca!

Torn T is a difficult cave to push. It starts with an awkward entrance rift leading on to three pitches. A long tight rift follows with difficult navigation to find the widest route (unless you follow the trail of threads from Jim's oversuit). It involves tricky free climbs in places. Tackle bags of rope and tools often need to be passed forward, while clothing and dangling bits of gear frequently get caught on the rift walls. It takes a team of three roughly two hours to get this far.



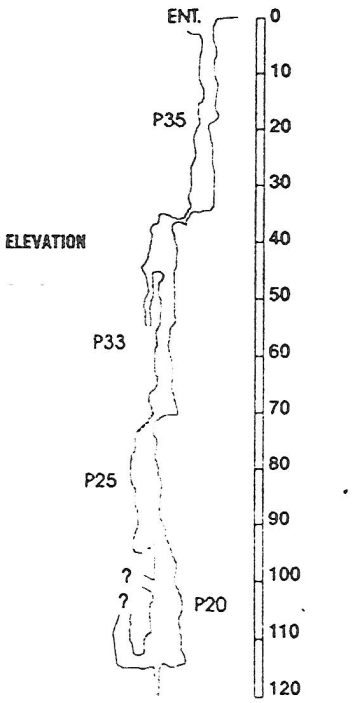

After several long trips and many hours rotating the work of chiselling and bolting at a pitch head, one of the thinner amongst us ("an Eliminator - pushing frontiers for caving kind") plopped through *Optimisqueeze* to continue the widening process from the other side. Beyond was a short climb and another pitch. The team returned with a rope and descended in an open rift about 35m down to a flat floor littered with a host of multicoloured pebbles. Although there was no feasible way on here, half-way down the rope a head-first wiggle to the side led to an easy climb down into a chamber, more pebbles, trickling water and (not again!) another tight rift. The cave was repeating itself.

The rift had to be the way on. Sure enough with several more 12 hour trips, a good deal more ruthless widening and multifarious cries of pain, we broke through at the end of the rift (*Nutcracker*) onto another pitch head. This one was a real goer and another 50m depth was quickly rigged, but to our grave disappointment once again ended in a blind floor. On the way out, just out of curiosity, we swung over onto a ledge and were delighted with the find. It was a large dry horizontal gallery, perhaps 100m long, which had a completely different character from the rest of the cave. The floor was covered with black boulders beneath which there was sand., and in places there was fresh running water. And there were scores of ways on to explore: side passages, great avens in the ceiling, obvious pitches in the floor. But we were running out of time!. This was an ideal place for an underground camp.

In the meantime fast progress had been made in *PF10.* The entrance had to be meticulously cleared of loose boulders to prevent them falling down the first pitch (particularly since Oliver might have been standing somewhere nearby!). Moving rubble and ice at the bottom led to another pitch and straightaway a squeeze onto another, and then yet another shaft. This cave was a godsend since, although cold and wet, it was almost entirely open and vertical, and a group of three could easily reach the bottom at -119m within an hour. Alva and Tonx regularly did, if the weather justified getting out of their sleeping bags, to avoid the condition diagnosed as Torn T-GBH.

# PF10 POT

**TOLMINSKI MIGOVEC, JULIAN ALPS**
**ALTITUDE 1710m DEPTH 119m**
**ICCC SURVEY TO BCRA GRADE V**



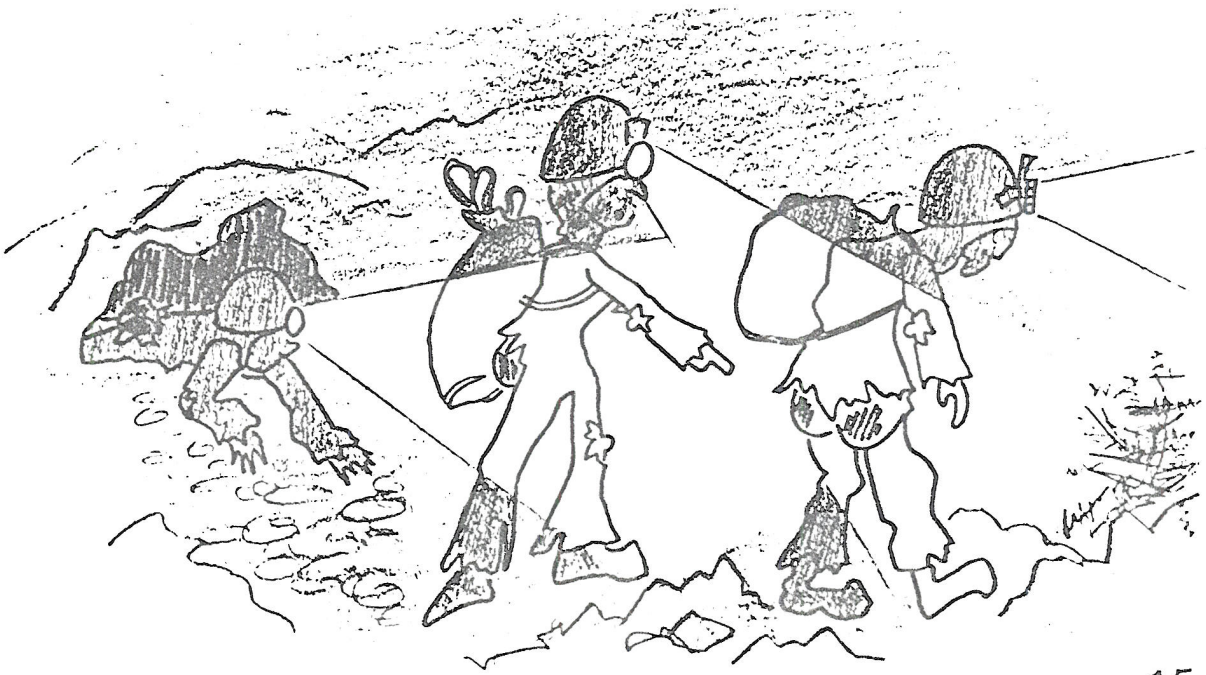
After an outing to Postonjna for a trip in the highly decorated tourist caves we organised the underground camp. Five of us (including a couple of donkeys) got all the equipment to the big gallery. Three of us then continued to explore and spent the night underground to resurface later the next day.

Our finds were fantastic. Traversing across the top of a deep pit in the floor of the horizontal passage revealed 100m more passage beyond and again rigging a second traverse gained a further 50m length until it became choked with boulders. A second group of three slept at the bivvy and then rigged several of the obvious pitches. Although some were blind the pitch at the last traverse led on to a second pitch dropping into a large chamber. This was the deepest point in the cave so far at about -180m. Whilst exploring several of the easier climbs in the ceiling they had stumbled across a huge void just beyond a tight squeeze. When the original bivvy group returned, prepared for a 48 hour underground stay, we compared notes and continued the exploration. It wasn't until the two groups had parted that we realised firstly just how much of our chocolate they had scoffed, and secondly that we could not find the Void.

Scouting around for it CV Pete came across a hidden hole in the floor. A stone dropped from the top took 4 seconds in free fall to hit the bottom, or so said Jim. Checking this a few times to estimate the exaggeration factor we found it to be true... we rejoiced! After putting in bolts within 10m of the top CV descended in freehang and came to the end of the rope. He ascended and we tired two more ropes to the end of the first and he descended again. He returned an hour later having again reached the end of the rope still dangling in free space! Believing the pitch floor to be about 15m further down, Jim derigged the rope from the first traverse and then Sazza went down (unable to understand at the time why CV and Jim weren't fighting to get to the bottom of our best find yet). Tying the additional 15m to the end of the other three lengths still wasn't enough. The end of the rope still bounced about 20m from the floor! Hanging on the end of 70m of rope with 4 knots and one small rub point above - it was a thought provoking experience! This was all our available rope and our last day of caving....

We'll back next year!

Scuzza



# Slovenia '95:

# Pushing the Limits

No real depth. That was the problem three weeks into the expedition. Surface prospecting had resulted in a few promising leads: Gulliver, Jackie's and Venus, but nothing to write home about. Time for a return to Torn T-Shirt Cave.

Trouble was, we'd all become rather used to wandering around on the surface in the sun, and only occasionally doing a bit of caving, but nothing you really needed an oversuit for, and nothing where you might end up cold and tired. Even those of us who hadn't experienced Torn T at first hand had heard enough about it from last year's expedition to know that "cold and tired" were exactly what to expect.

So, when the excuses had run out, the first Torn T trip of the expedition was a rather half-hearted affair. We went in, had a look round, and came back out. The only progress was to check a few leads off the first main chamber and to "set the ball rolling". First impressions were not good and we came back cold and tired, some sooner than others: Jim, Jos and Tonx rushed out dying for a shit, and claimed their territory just outside the entrance.

The next attempt was altogether more serious. The route through the rift had to be refound with only a few markings on the walls to help the memories of those who had been there before. This was critical: by finding the best route the time taken to get to the bottom of the rift fell from about two hours on the first attempt to under forty minutes. The other objective at this stage was to check the rigging which had mostly been left in place over the winter.

The third trip started the real work, first rerigging some abraded ropes, then pushing on to the limit of exploration at the bottom of the rift. A narrowing of the rift, and at the same time a tight corner and a descending ceiling combined to make it impossible to pass..... just. Hammers, chisels and "The Spike" were on hand to widen the passage, but there was only room for one person to use them, while the others played twister to pass the time. Perhaps a metre was gained but further progress was still barred by an obstinate lump in the floor. Increasing hunger forced a return to the surface for a curry. This trip introduced us to the shredding qualities of the rift: from a team of six, three oversuits were written off.

The next attempt carried on the hard labour of chipping away at solid rock. The first targets were the sharp spikes of rock which were responsible for the shredding of clothing and much cursing, but at least the little sods could be destroyed with a few satisfying blows of a hammer. The larger protrusions simply needed chipping away, but it was a task made much harder by the cramped conditions.

Eventually there was room for Sazza (the smallest of us) to wedge herself into a flat-out crawl, but the ceiling closed down again immediately. Meanwhile, CV Pete attempted a small opening in the floor. After failing head-first he turned around (this takes about ten minutes as you have to wriggle out backwards round a corner, then turn over, and wriggle back in backwards), he got his feet through. Feeling nothing below was not a problem as there seemed little chance of his torso slipping through. Continued wriggling to dislodge clothing from rocks gradually allowed him to descend deeper, and his feet soon hit bottom. Soon he was crouched in a small chamber, barely big enough to turn around (the first priority - it's nice to know you can get back out once you're in!).

A look around revealed the way on: a letterbox opening into darkness. As a stone was chucked in the team erupted in shouts as the echoes and rumbling persisted for several seconds. First wild estimates put the depth of the pitch beyond at about 50m,. After a little more widening we returned to the surface to tell the others the good news.

Ropes, drill and bolting kit were carried down the next day, as well as spare carbide and food for a long trip. From now on, we also had to carry SRT kits through the rift, and this added to the strenuousness of the Torn T experience. At the bottom further work widening "Optimisqueeze" enabled Jim to pass through to rig a safety line for the next pitch.

With the line in, attempts to get through the opening quickly showed that it also needed attention from hammer and spike. As Jim and Oliver got on with this, Pete and Sazza tried unsuccessfully to retrieve a dropped Snickers. Finally Oliver was through - a bit dodgey with no harness maybe, but there was a ledge below the opening. He found a 5m free-climb down to a chamber. The way on was a hole in the chamber floor. After everyone had had a look we went out with failing lights.

*Tony in Turtlehead squeeze.*
*Photo: Mark Evans*

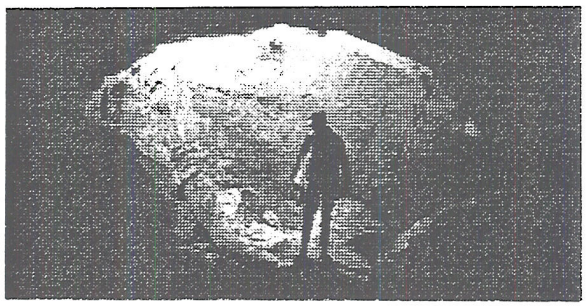
The next trip down rigged about 30m of pitch below "Turtlehead Squeeze", gradually opening into a thin, wet, flat-floored chamber. Haematite pearls in the drip pools were an unexpected bonus. A high window led off this chamber but required a free-climb. Further discoveries were a chamber half-way down the pitch, and a rift-like opening opposite.

Cold and wet described the next trip. Standing under the drips belaying the free-climb made this perhaps the most unpleasant yet. Mark very nearly managed to wedge himself fatally in the opening. The rift in the side of the pitch now seemed more promising as it led to another chamber with a pool of haematite pearls, and more rift. Surveying took the rest of the time.

We returned to tackle this second rift, soon naming it "Shreddie's Revenge". Jim left an easily followed trail of scraps from his spanking new oversuit. Several hours of hammering brought us a few metres further and Sazza eventually squeezed through far enough to see a possible pitch opening in the floor. We were amazed by the echoes of our voices in the void beyond. The rift-widening process was slow and it was many hours of hammering later before everyone could get to the pitch without liquifying themselves.

It took another trip to pass through. Wedged into the rift and unable to swing the hammer more than a few centimetres, or even to turn his head, Pete then spent over an hour putting in two bolts. Putting on his SRT kit while wedged precariously over the pitch, he eventually got down 14m of smooth-sided shaft which widened out into a large chamber, with another rift leading off. He waited in the cold until Saz came down to join him. Pete then used a boulder as a natural to send the rope down a hole in the floor. Pausing to refill his carbide at a drip, he came out over a pitch so deep there was no bottom in sight. A chamber opposite also stretched off into the darkness. Saz took a look, celebrated, then it was time to return.

The next trip had the group split. Most went on to rig down the new pitch, while Pete, Pants and Saz surveyed. When they caught up, the pitch had ended 50m down in yet another flat-floored wet chamber with haematite pearls in the puddles. Everyone climbed out, and Jim attempted to swing over into the chamber beyond the pitch. He had just time to see that this chamber was clearly both long and big.



*Torn T starts to get big: Pants in NCB Passage*
*Photo: Mark Evans*

Returning to the Gallery chamber, everyone was amazed to be walking around after so long squeezing through rifts, and pitches seemed to be everywhere.

Ten trips so far, but the discoveries were just beginning.....

Peter Eland

## Slovenia '95:

# The Discovery of Godzilla

***A Tale of Adventure, Daring and Discovery with a fair bit of Dodgeyness.***

*No.23 in the series "Classic Torn-T Trips - The Early Years"*

### Background

The Gallery of Torn T-Shirt Cave, deep below the remote Migovec mountain in Slovenia, is a cold place to spend the night. Yet Jim, Pete and Saz slept well under their space blankets. So far, their time has been spent surveying the discoveries made by Mark, Pants and Oliver in the Wet Pitch area, and in exploring the shaft below the First Traverse. It is now afternoon on their second day underground and after lunch they begin the search for The Void.

### Search

*"Mark said it was just round here, didn't he?"*
*"Up the aven near the water collection point. Persevere a bit and you can't miss it, he said"*
*"I've just been up there Jim, there's bugger all! Two rabbit holes going nowhere and a muddy crack in the floor about two inches wide. No way"*
*"I'll just have a look ....."*
*"Oh for heavens sake - I'm going to go down that other pitch".*

Saz goes off with some rope and a bolting kit and starts hammering. Jim goes up above the water pool, Pete following. Two minutes later....

*"Mmmmmmm, bugger all. Let's have a look a bit further along...."*
5 minutes later.....
*"Well it can't be the massive free-climb at the end cos it's a death-trap, so I guess it must be up here"*
*"Come off it Jim you'll never get up that!"*
*Sounds of falling rock.*
*"OK. Rock just split. I'll go off a natural instead"*

Everyone else finds something urgent to do so they don't have to go down too, and instead offer helpful comments....
*"It's your life"*
*"Rather you than me"*
*"No point in killing yourself....."*
Sazza disappears into the depths.
*"Come on, let's look around a bit. Maybe it's on the other side of the gallery...."*
*"Could be"*

A few minutes pass.
*"How about up this rift?.... Ah no, it does look a bit tight, obviously not going anywhere, probably joins the one we came in on. Anyway we're not really looking for a rift"*
*"Fair enough. Anyone been down here yet?"*
*"Could be....."*

Pete disappears behind a boulder.

### Discovery

*"Hey Jim, there's a way on here! Looks like it could be a freeclimb"*
*"Oh yeah! What can you see?"*
*"Well it goes on and down.....It's a bit slippery. D'you think I should put a rope on it?"*
*"Could do...."*
*"I'm getting out of here! It's muddy as hell....."*
*"I'll get a rope"*

In a few minutes a couple of naturals are rigged, unfortunately using up half the rope.....
*"I'm going in Jim..... slopes down, still slippery..... it's gone vertical .... Wow! .... It's massive! I'm stopping here..."*
*"Can you see the bottom?"*

*"Not sure - I think I can see something with my electric - I guess about twenty metres down. I've only got about five metres of rope left. I'm coming out"*
Pete emerges, smeared in mud but with a cheesy grin.
*"It's a goer!! We'd better bolt it though"*
Saz is back.
*"Splendid! Go for it. Me and Jim'll survey the shaft I just went down, won't we Jim?"*
*"Could do....."*

Some time later. Pete comes out to find Jim and Saz munching a Rocky and a Classic.....
*"Right it's done. There's about seven metres of rope below the last bolt so I guess you'll need another twenty to be safe... who wants to do it?"*
*".....All right....."*

## One More Rope

Jim ambles off with a rope. Pete munches a Classic. A few minutes later at the top of the rope.....
*"All right, Jim?"*
*"Yeah..... What sort of knot is this on the last bolt, Pete?"*
*"Butterfly, isn't it?"*
*"Mmmmmm..... I think I'll re-rig it anyway. Really it needs a figure-of-eight"*
*"Is that rope long enough?"*
*"No. I couldn't feel it hit bottom. Hang on.... I'll drop something..... Now!"*
Long silence:
.....;.....;.....;..... Boom!
*"Three or four seconds I guess"*
*"That means, err..... between forty-five and eighty metres or so! Mmmmm."*
*"I'll get the forty-five metre rope"*

## Rope Number Three

*"Oi Pete! Does it reach?"*
*"Hard to tell.... I couldn't feel a shock of it hitting bottom. I'm going down anyway for a look"*
*"OK. I'll stay here"*

Pete descends slowly, occasionally pausing to try his electric light.
*"I'm at the first knot..... It's opened out to maybe a fifteen to twenty metre diameter shaft. The rope hangs near the wall. Going down....."*
*"Cann-nnnyooocan-seeyooseethebot-otom?"*
*"What? err... no"*

Jim goes off to derig the first traverse with Sazza. Meanwhile down below....
*"Quite a bit of bounce here...I'll go to about five metres from the end. Ouch! Just descended into the wall.... bet it rubs on the way up...OK, quick look down.... at least another fifteen to twenty to that lip...is it the bottom? Can't tell....."*

After prusiking back up Pete staggers off the pitch head and goes to look for Jim and Saz. They are just finishing derigging the first traverse, and soon return. Once they know the news it's time for someone to put the last rope on the end and try to bottom it.....Saz is keen.

## Yet Another Rope

*"Do you want to do it Jim?"*
*"No, well it's getting late and I don't really fancy an eighty metre pitch right now, I'd rather not....."*
*"Pete?"*
*"I'm not going down that again, not straight away. I'm knackered"*
*"I can't believe it - we discover the biggest pitch ever and you two don't want to do it - on our last day as well. I'm going down"*
*"OK. We'll give you a shout in a bit if you're not out"*

While Sazza is gone, Pete tells Jim about some details he forgot to tell her: the flat bits on the rope where it had been hanging from Maillons, the creaking of the bolt as he finally reached it, the rub points at the bottom.....
*"Should we go and look?"*
*"No, give it a bit longer. It's a long way down....."*

Saz eventually appears, shaking:
*"That was the most terrifying experience of my life!!!"*
*"Did you bottom it?"*
*"No!"*
*"No?"*
*"No, still another fifteen or twenty metres.....*

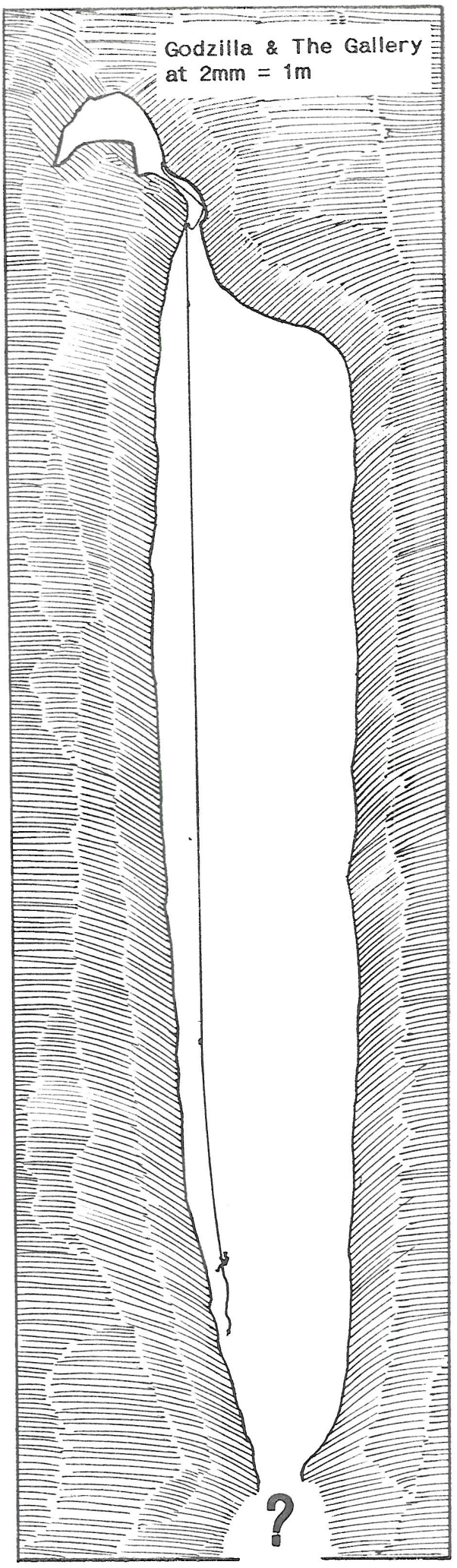
**So Long Godzilla**

Unfortunately there was no more rope. The thrill of discovery, and for Pete and Saz the exhilaration of sheer terror survived, kept the team talking late into the night, planning a return to Godzilla. The next morning, when Tony and Mark came down to help with the carry back to the surface, the ropes were pulled up and measured at 90m. Leaving some equipment at the site of the underground camp, they returned to the surface after over 52 hours underground.

The news made a fitting finale to the summer's caving. Everyone knew that the glory belonged to the whole team who had worked so hard over the previous weeks to extend Torn T, and to make the discovery of Godzilla possible.

*"So long, Godzilla, we'll be back".*

Buffalo Bill



## Slovenia '95:

# Dear Diary,

**A chronology of the '95 expedition compiled from the diaries of Sarah, Pants, CV Pete, Jim and Mark.**

Nickname Key:
Sarah Wingrove (Scuz, Saz),
Anthony Woods (Pants)
Pete Eland (CV)
Oliver Mann (ole, Jolly, Oli....ver)
Pete Hambly (Hambers)
Tony Hayden (Tonx)
Mark Evans (Mark)
Joselin Viscontti (Jos)
Jim Evans (Jim, Jiz)
Jackie Wiersma (Jackie)
Alva Gossan (Alva)
Paul Wilcox (Paul, Bond)
Pete Evans (Pete, Peter)

14/7 - We all met in stores and packed the van (took all day), set off for Dover stopping at Wandsworth (because of a broken alternator) and Kent, for dinner (Sarah's house). Got the ferry at 2am.

15/7 - Drove non stop through France, Belgium, Luxembourg, Germany, Kaiserland, Austria, Italy and into Slovenia, arriving in the early hours of Sunday morning, slept near Tolmin by the river Soca.

16/7 - Met Andrej and made arrangements to get the bulk of the gear up the hill (to the shepherds huts ) using a tractor. Went up the hill to Tol. Ravne stopping on the way at the hydro- electric power station for a wash. Uncomfortable nights sleep near the roadside.

After getting very little sleep and getting cow pats blown up your nose all night all hope of sleep was dashed when the cows herded round us at about 7am.

17/7 - Early start 8am. Started carrying gear up the hill - found that was not able to take gear yet. Jim and Alva found two blowing holes - blowing like I've never seen before.

Saza and CV reckon they're well hard and so do an early morning start to the bivvi.

18/7 - Tony and Pants got up at the crack of dawn to meet the tractor that Mark and Jackie sorted out. Rest of group came down to help the carry to the shepherds huts. Jos arrived, Alva Jim and Pete checked out the gully cave after the carry.

In Jos' perfect French accent: "Pants! Get yeur 'and out of my sleeping beurg!"

19/7 - Started to comb western side of Migovec looking for and marking blowing holes. Jackie found a large shaft with three entrances which looked promising and was blowing strongly (Jackies Blower).

Oliver is Migovec Man but the identity of the Yeti remains a mystery.

20/7 - Party explores Jackies (B9) while others go surface digging at other blow holes.

Spent 2 hours smashing the thing with a lump hammer and chisel - in the end it turned out to be a vendetta: man against nature!

Jos found some more blowing holes from the recce, but they were so small we just couldn't take them seriously.....worn out and feeling low our spirits were raised by a splendid curry from Mark.

Food is curry. "More" and "curry" are two words that evolved together.

21/7 - Too hot and sunny to go caving straight away (and why break a habit of a lifetime anyway).

Group went to do Jackie's (needs drill to bolt traverse), another group goes to do Julies (on the other side) via highly "dodgy traverse".

I heard a call "below" with an extreme urgency in the tone of voice and the next thing I saw was a sofa sized bolder bounce past. A near miss !!!!

At last success, a large cave waiting to be explored - upwards.....back to the shepherd huts for a feast in the Aladdin's cave of chocolate barrels.

22/7 - Down to the minibus at Tol. Ravne by 11am, relaxing day at the Soca and club Bugatti at night.

23/7 - Went back up the hill, Mark and Jackie stayed down the hill to sort van alternator, Jim and Alva stay at the shepherds' huts to charge batteries.

24/7 - Teams went to do B6 and B7. No particular success, returned to cooking disaster (Jim burnt Kidney beans) and stereo (Club Mig) up and running.

25/7 - One group went to push Jackies, found another pitch with a strong draught. Another group (Jos, Jim, Scuz and ole) look at B20 - a blow hole close to M16, hammer through a squeeze but ends in a choked chamber.

Spent an hour in great discomfort watching Jos try to get through and eventually giving up- and then another hour trying to get back through and having chisel my way out !

26/7 - First trip down Torn T, but didn't get to the end of the cave because certain members were "out of practice" in tight rift. Sarah and Ole pushed down a tight side rift at the foot of Godzuiki - didn't go. Sarah and Ole late back from cave to find a rescue party kitting up to look for them.

Surprisingly the trip out of the cave seemed relatively painless and we got out the f'cker at 2 am. For 'Evans sake we've got to widen that rift.

27/7 - Down hill to Tol Ravne, wash in river, then straight back up to bivvy that night, CV and Pants charged batteries in the shepherds huts.

28/7 - First Heavy rain for two weeks, new shit pit installed considerably further from bivvy.

Someone keeps missing the pit. We suspect this to be Jim.

Pushed the end in Jackies with the aid of a Bosch (Alva Pants and Scuz). Venus Cave pushed to end and stalagmites by Jima and Oli.....ver.

29/7 - Weather really cold and wet again. Bolted up into another chamber in Jackies. No obvious way on, must be near the surface.

The vitavodka and the vodka-soaked prunes went down a treat. The chinese meal came up a treat!

30/7 - Original plan to do Torn-T but sidelined into Rocky pot. Spent 3hrs hammering the bottom of Rocky just to make sure it didn't go.

The "surveying with Jim" class was postponed so eveyone went and did their own thing: Jim and Alva on chinkers, Tonx watching, Pants getting in a few chapters, Ole whittling a chess set, CV writing and Pete loafing.

Pete "no point killing yourself Evans" solved the mouse problem by making it into a kebab.

Also thought we had found a new cave but it turned out to be M6.

31/7 - Jim, Saz, CV and Hambers go down Torn-T while others survey Jackies. CV gets through squeeze (Optimisqueeze) at end and it breaks into a pitch!! but still one more squeeze to get through.

Found a corker of a pitch beyond an awkward wriggle and returned to the bivvi jubilant .....MORE CAVE! Got lost on the way back and did a 3/4 circuit of the plateau.

1/8 - Two trips today: Photographic/surveying trip in Venus and pushing trip in Torn-T.

Alva is kinda annoyed that he has been conned into being a tacklebag-donkey, he wanted to be a cover-caver.

The pushing trip eventually broke through "Turtle's Head Squeeze" after 3hrs hammering (oooer, ed) down a 5m climbable pitch to a broad ledge. Blackhole in floor, turned back here.

Queue for the shit-pit in the morning is becoming a permanent feature, even though the turnover was quite quick.

2/8 - Woken up by toilet urge as usual at exactly 8 am. Stayed in bed 'til 8:05 am. This was a mistake!

Rest day for yesterday's TT party - others have a bash. Mark, Pants and Oli.....ver push down the next 30m pitch. No easy way on at the bottom but at least one way off halfway down. Loads of hematite and polished rocks in the pools "Fratnik's Treasure".

3/8 - Whole team go to Trieste to stock up on oversuits (TT has been responsible for the demise of all but a few). CV and Saz stay behind at bivvy (ooer, ed).

Alva and Jim find the entrance to PF10 near the large shakehole on the path down the hill. Just a pile of boulders with a tantalising cold draught.

4/8 - Drive to Trieste via Nova Gorizia with a comprehensive shopping list, including ice-cream. Incredibly hot and sweaty (and that's just the Italian chicks). Saz and CV go hiking to Krn.

Had massive trouble getting back into Slovenia at N. Gorizia. We have no green card and were asked to pay 200 quid for one because we have a bus. Can't afford it so go to the next boarder crossing and try again, phew they fell for it.

5/8 - Hear news that Croatia had attacked the Bosnian town of Knin, no wonder they were so tight at the border and they didn't appreciate the expedition T-shirt. Simon (local caver) is in Tolmin waiting to get called up to fight at the front.

CV and Saz bivvy 10m from the summit of Krn.

6/8 - Tempers become slightly frayed with Alva and Oli....ver's continual "philosifications".

Problems with the water pump in M10. Some boulders removed from the entrance of PF10 but still not safe to enter.

7/8 - Double trip in TT. First trip went to Fratnik's Treasure to look at a really dodgy climb with loose boulders. Give up after a couple of hours. Second group push down the rift halfway down the pitch. This rift (Shreddies Revenge) becomes incredibly tight and sharp but there is an echo and an airy feel at the end. Possible pitch but needs to be widened.

8/8 - Big storm over night. PF10 deemed safe to enter and goes immediately to -30m with a snow-plugged chamber and more draught. Jim, Saz, CV and Mark look at the bottom of Gullivers but after much excavation it is pronounced a no-go. Miserable day with low visibility and constant showers.

9/8 - Cold, wet weather continues. Another 2 trips in TT planned. Team 1 push Shreddies Revenge, team 2 have one last look in Fratnik's but still no real progress (some extra dodgy belaying practices on display). Team 2 catch up and survey Shreddies Revenge whilst bolting sounds can be heard from the "glory boys". Another breakthrough! Fifteen meter pitch with an unbelievably tight take-off (nutcracker).

Very clear night. Italy clearly visible at night. Maybe we're in for a change of weather.

10/8 - Rest day. Weather slightly improved so we fetched some essential supplies from the shepherds' huts. Mark attempts to cremate himself and Tonx with a sig bottle of petrol. Fortunately a TSA oversuit was the only casualty.

11/8 - PF10 breaks into another 20m pitch. TT is pushed past nutcracker, a 30m pitch follows immediatly through a hole in the floor. Not enough rope. Things are really opening up and looking very prospective.

Chants of "See you at the Soca" are regularly heard as the PF10 Pos argue with the TT Tigers over which cave will go over the magic 1K first.

PF10 goes! We spent 2 hours belly down on an ice plug clearing rocks".

12/8 - TT group rest and sort out fuel and water situation. More progress in PF10 but things are getting tight (not to mention cold).

My cunning idea to do a bounce trip in PF10 had the fatal flaw that the others were colder than I was when I got to the present cave floor. It reminds me of Yorkshire caving ..... I can't understand why the Doss Poss are so keen on this hole.

Fatigue is setting in. Feel quite ill, cold and tired. need a break from the plateau.

Need sleep badly but woke early with an irrepressible urge to visit the pit, just made it!

13/8 - The 35m pitch in TT is bottomed and surveyed, yet another blind shaft. Swing a top of pitch lands in massive horizontal passage. Water is becoming a problem, barrel in M10 is not working properly.

14/8 - Down the hill for a rest day and to pick up Jackie returning from Holland.

Changed my socks for the first time in 18 days, I had grown rather attached to them.

Haven't washed for a fortnight now. Flies aren't too bad yet (and I don't smell at all!) Spent an hour trying to get my fingers through my hair.

15/8 - Drove to Postojna to look at show cave and unwind.

16/8 - Back up hill. The stormy weather is back with a vengeance, no caving today.

17/8 - First bivvy trip down TT (Saz, CV and Jim). Mark, Jackie and Oli....ver help carry all the gear down to the camp in the large chamber. Spend some time making a flat area and setting up.

Rest of team work in PF10 - It was very cold.

Kept ourselves busy by trying to shift a massive boulder "Big Boy II", develop new technique for handling this situation, the crow and chock method (C+C).

18/8 - Camp team traverse over one shaft to find 100m of stonking passage and more shafts. Surveyed the entire length of the horizontal passage (250m) and logged the avens/shafts. Lots of leads. Three hours out from the camp.

Day started with a small brown parcel in BDH.

PF10 is pushed down another 30m pitch.

19/8 - Mark, Oli....ver and Pants go for 2nd camp in TT. Eventful trip down, Pants falls and winds himself badly on one of the freeclimbs. Continue the survey from yesterday dropping a couple of shafts. Both seem to end abruptly, quite a lot of water around at the lowest level of the cave, we suspect that the weather has worsened again.

Find a tantalising void with booming echo and sounds of water, needs some attention with a chisel.

More trips in PF10.

20/8 Jim, Sazza and CV prepare for the final camp in TT. They plan to spend two nights underground. Record breaking time down to camp in time to hear stories of voids and rivers from last nights shift.

It's raining and motivation to put on caving kit is minimal, motivation to doss is maximal. Spend the morning eating regardless of the fact it's gonna end up in a finite BDH container.

Met other team down at the bivi. There was great concern that the dry cloyhing was still dry and that no-one was going to leave wearing some. Concern about the state of the BDH (and who had done which entry).

Had to get up for a pooh and this had the knock-on effect for CV and Jim. Stress caused by Jim's dropped trousers caused CV to miss the receptacle. He's not going to hear the last of this!

No.1's and no.2's are simultaneously possible into a BDH despite what you hear.

21/8 - Survey a number of the shafts in TT and then start looking for the void. Can't find it but in the process find a massive pitch (at least 80m by the rock technique). All the rope was mustered, involving derigging two traverses. Altogether 90m in three sections.

Went down to the first knot and in the midst of nothingness spent 10mins trying to remember how to pass it - Kinda Scary! Slowly down to second knot, the rope hanging closer to the wall. Top of rope well out of sight and no sign of the floor. Worried now. Down to end of rope, slowly, very slowly. Tied on the last rope and went down doing my best not to bounce around - there's a bit of a rub point higher up. Nowhere near floor at end of rope. Thought I could see two possible ways on at the bottom. Ascend slowly finding it a bit of an ordeal - my whole life hanging on four bits of stretched rope and a bolt put in by CV Pete!

Had a dump, had breakfast ( a mixture of Pasta-n-sauce, sosmix and soup) and then lay around in sleeping bags playing I-spy.....in the dark! until 4 pm when the carry-out crew arrived. Running low on carbide, no more food and no more rope to rig, we feel this is justified. Scoffed the last chocolate bar when we heard voices coming down the rift.

Alva and Pants kindly took out the BDH.

Put down 90m of rope and were still 10-15m short - looks like we will have to return to TT next year - LIFE'S A BITCH!

Left the cave rigged.

See you at the Soca, FU PF10.

22/8 - Many carries to the shepherds huts for everyone. Frantically trying to get everything down the hill in time for the tractor.

23/8 - Tractor arrived, perfect timing (90 quid very well spent).

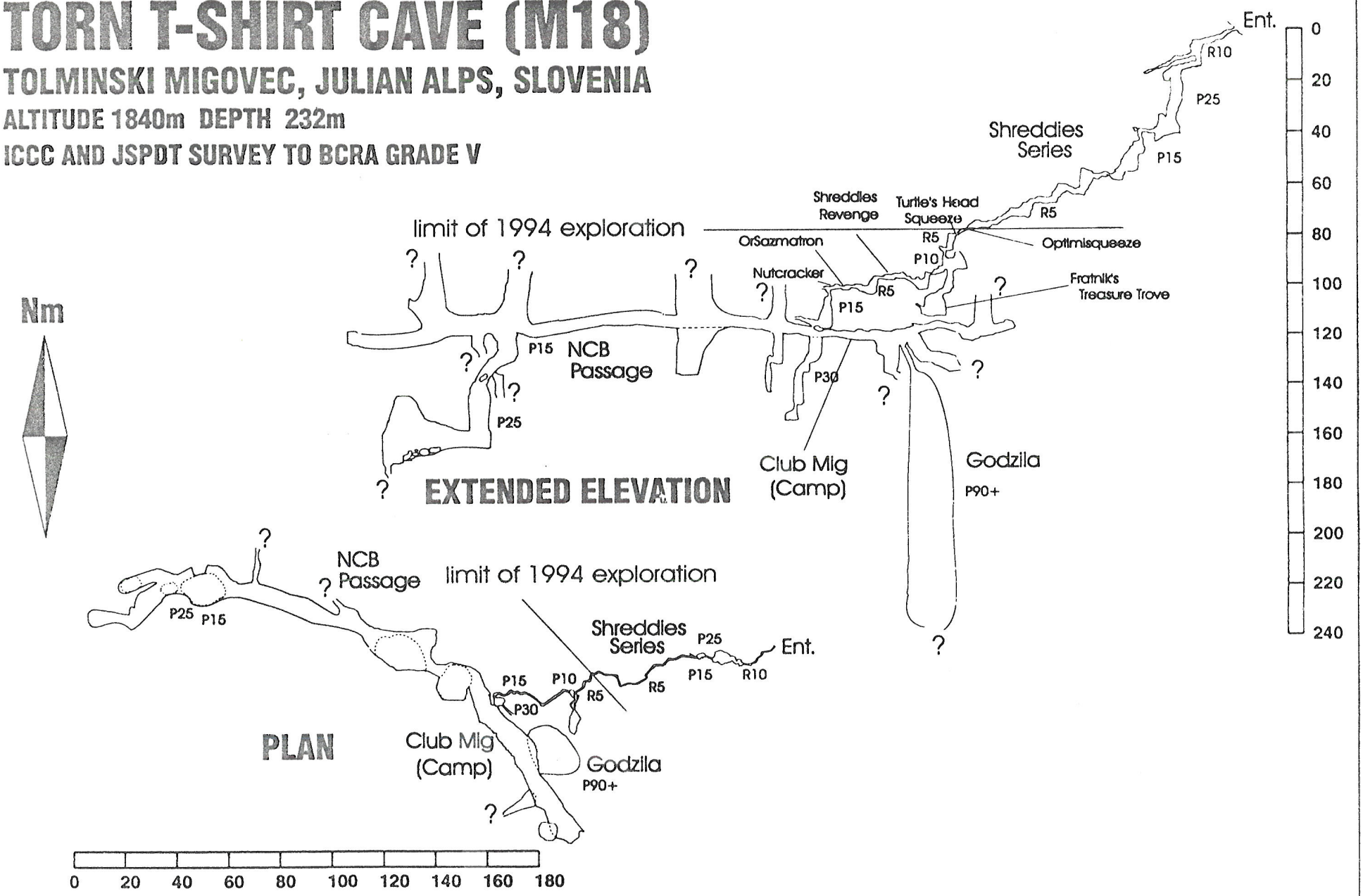
24/8 - Back in the van heading for London.

# TORN T-SHIRT CAVE (M18)

## TOLMINSKI MIGOVEC, JULIAN ALPS, SLOVENIA

**ALTITUDE 1840m DEPTH 232m**

**ICCC AND JSPDT SURVEY TO BCRA GRADE V**



# Much Ado About Nothing

The following exchange of letters may be of interest.....

CHARTERHOUSE CAVING COMPANY LTD.

Registered Office: 6, Fountain Court, Woodlands Lane, Almondsbury, Bristol, BS12 4LA

Bronwyn Ley
Imperial College Caving Club
Imperial College Students Union
London SW7 2BB

3 November 1995

Dear Secretary,

G.B. and Longwood Caves

I have received a report from one of our member clubs that your society has systematically and repeatedly used the above caves for the introduction of novices to caving, despite your trip leaders having been made aware of the specific regulations that forbid such activities.

This report arises from several conversations between members of your Society and that club on the weekend of 21st/22nd October when one of your members revealed this information and it was subsequently confirmed by others.

In view of the above and of the attitude of the original source of the information who appeared to show complete disdain for our regulations - it was particularly galling that this conversation took place in front of a representative of the Somerset Wildlife Trust, a body which also has an interest in the land on which these caves are situated and with which it has taken responsible cavers some time to establish a good working relationship - could you please explain if there is any reason why we should not bar your Society from the caves under our control.

Yours sincerly

Graham Mullen
Company Secretary

*Imperial College Caving Club*

Imperial College Union, Prince Consort Road, London SW7 2BB, Tel: (071) 589 5111

G Mullen
38 Devlin Road
Westbury on Trym
Bristol BS10 5EJ

7 November 1995

Dear Mr Mullan

I enclose a letter which was sent by me to English Nature on the 1st of Nov. In it I have attempted to explain our position. I am unsure where the information that we have "systematically and repeatedly" broken these rules came from. I was present at both of the conversations which you mentioned and this point was never brought up.

I can assure you that we have never treated any of the Charterhouse rules with disdain and on this isolated occasion it was due to a misunderstanding on the part of one of our members who had never personally led a trip in the Charterhouse caving area and was unaware of their regulations.

I apologise for this and give you my assurance that it will not happen in the future.

Sincerely,

Mark Evans

PS
Please note that our actions in recent times would suggest that we are a responsible club - we have assisted MRO and CRO cavers on a number of occasions, most recently on the evacuation of a "Jeans and T-shirt" caver (Jeni Galligan, 3/11/93) who slipped and broke her leg in GB, and in the evacuation of a very experienced caver (Paul Lyons, 1994) who was trgically killed in a rock fall in Lost Johns (N Yorks). Additionally in October we held a lecture on our expeditions in the Julian Alps, Slovenia in which all proceeds were donated to the MRO. I am not aware of any incident in which we have had to call the rescue out for ourselves.

*Imperial College Caving Club*

Imperial College Union, Prince Consort Road, London SW7 2BB, Tel: (071) 589 5111

English Nature
Chancellor's Farm
Priddy
Wells
Somerset

1 November 1995

Dear Kate,

I am writing to you on behalf of the Imperial College Caving Club concerning the incident at Swildons Hole on Saturday 21st. I would like to take this opportunity to apologise for taking inexperienced cavers into Longwood. We realise that this is contrary to the access rules for this cave. The information that there were also novices in GB cave was, in fact, incorrect. These cavers were only novices to the club but had at least a year's previous caving experience.

The two novices taken down Longwood were accompanied by three experienced cavers, they were briefed in cave conservation, properly equipped and trained in safe ladder and rope techniques. We decided that the cave was well within their capabilities and they were responsible. We were asked when signing the permits whether we had any novices in our groups and we said that we did not. We have always respected the access rules on party sizes but have regarded the term "novices" to refer to untrained, ill-equipped and inadequately supervised parties which can be regularly seen in other caves in the area. I apologise if we have misunderstood this point and can assure you that it will not happen in the future.

As a University club based in London we do not have a "home" caving area. We have been coming to Mendip for many years and cemented firm ties with the BEC. I hope that this incident will not affect the general rules for the Charterhouse Caves.

I was told by Mr Grass that you feel it necessary to restrict our access to Charterhouse Caves. I hope that in the light of the full facts, and our assurance that this will not happen again, a ban will not be necessary.

Sincerely

Mark Evans

CHARTERHOUSE CAVING COMPANY LTD.

Registered Office: 6, Fountain Court, Woodlands Lane, Almondsbury, Bristol, BS12 4LA

Mr Mark Evans
Imperial College Caving Club
Imperial College Union
Prince Consort Road
London SW7 2BB

4 December 1995

Dear Mr Evans

Further to my letter of 9 November, I am now able to inform you that our members have decided to forbid your Club from having access to all the caves under our control, that is the caves of Longwood Swallet, Rhino Rift, G.B. Cavern and Charterhouse Cave, and all minor sites in the adjoining areas.

This ban will run from the date of this letter until 31 December 1996. Please note that the ban will not under any circumstances be lifted before this date, but that when it is reviewed at the Company AGM next March there is a possibility that its duration may be extended.

Yours sincerely,

Graham Mullan

..... No Comment !?

# A Short Walk
## (and a long crawl)
# in Daren

*The experiences of a 5 day camp in Daren Cilau under the Llangattwg mountain, during Easter 95. Participants: Andy Cave, Angy C, Ivan G and Becca (BEC) & Jim E.(ICCC).*

I lay motionless in my bag in the darkness. I was becoming slightly on edge. Then suddenly I realised that the time had come: I sat up, put my caving helmet and shoes on, and started clambering down the boulders towards camp. I walked passed the others in camp and raised my hand in acknowledgement, but no chat at the moment. I was a man with a mission. I clambered and climbed down towards the head of the ladder, ripping my furry again in the rush, and carefully but speedily climbed down and lowered myself off the bottom (it was a metre too short). I then clambered and climbed over boulders in great haste and started to strip off. Soon I could hear the comforting sound of the streamway. A gasp of relief. My mission was over and I could relax again: another very close call ! ....this was a daily morning ritual during my 5 day trip down Daren.

It all started one day early in 1995 on a fairly standard mendips trip staying at the BEC (as usual). I can't remember exactly what cave I was doing but it was probably Eastwater as I was going through a stage at this time of only doing this cave whenever I went to Mendips. I was sitting in the Belfry chatting to AC and I remember the main topic of conversation was our plans for the Easter break. ICCC were spending a week in the Vercors and as Andy has lived there for a year he had a lot of advice and suggestions for good trips. After exhausting all the possible options for the Vercors, hearing tales of the Berger, comparing stories about Antre des Damnes and hearing of the new concept of being Des'd (in reference to the new book: 'Vercors Caves' by Des Marshal (apparently some of the rope lengths are a bit short!!) he told me what he was doing over the Easter break: "We're camping in Daren for five days because its such a cool place" he said. I don't think I asked too many questions about this because it seemed such an unusual concept although I remember thinking to myself "shit, I'd like to do that:. why am I going to the Vercors?" but I didn't say it at the time, although I did make a point of finding out when the dates were. They were a couple of weeks after Vercors so I could make it theoretically, but it would mean taking more time off (on top of expedition, recce etc.).

After an excellent Vercors trip (caving every day) and as the time drew closer I began to convince myself that this was a chance not to be missed and I simply had to go on the trip. My supervisor wouldn't even know I had gone and anyway I wouldn't have got any work done (thinking of where I could have been). There was only one option (the way I saw it). So I phoned up Andy Cave and although I think he might have been a little bit reluctant to start with, he must have heard the enthusiasm and keen-ness in my voice because he agreed that I could come.

We met up the afternoon before at Andy's cottage by the BEC and started sorting out equipment and food etc. There was supposed to be a sixth person on the trip (Jake from the BEC) but he unfortunately had had to drop out due to being ill. Everything we were going to take in had to fit in 2 'daren drums' per person (the white drums with red lids of which the club now has a wide selection). These two drums fit conveniently into a standard cylindrical Petzl tacklebag, (unfortunately I had brought the TSA oval tackle bags which are not so suitable for this). We had enough dried food to last five days, dried clothes for the camp and a large helicopter battery for the hammer drill (which was already hidden in the cave). The hammer drill was to be used to drill the shot holes to blow the end of the cave at 'Spaderunner', and this was to be the main purpose of the trip. All the gear was piled into the back of Ivan's transit van (which has a sofa fitted in the back for passengers) and we headed in the direction South Wales at a high rate of knots. There we met Arthur Millet in a local pub, obtained the keys for the CSS hut and headed off up to the winding road to White Walls.

We arose relatively early the next morning and spent quite a long time packing things into the daren drums. At this stage we inevitably found that we could not fit everything in and certain items had to be shed. As I had never been in Daren before I was quite keen to find out what the notorious entrance crawl was like, I noticed it was starting to play on the minds of the others a bit but I was not worried in the slightest (not having been there).

We walked the short way up to the entrance (remembering not to shut the neighbour's gate on the way) and then sat at the entrance and looked up at the clear blue sky while we had the chance - it did seem a bit of a shame to be going out of daylight for such a long time.

The 517m entrance crawl starts immediately with a puddle (just to make sure you're wet right from the start). I remember the whole crawl to be quite a struggle - nothing mega tight, but quite a few awkward bits (especially with a tackle bag). Ivan was a great help though, and on a couple of occasions I remember him taking my tackle bag (and his) and disappearing off into the distance. The crawl emerges in the old rift passage - a sizable area where we got our carbides going (there's no point in using carbide in the crawl). We met a couple of young guys from MCG here who were on a day trip and quite jealous to hear we were going to the camp.

From here we walked down Jigsaw Passage and The Wriggle and into Big Chamber Nowhere Near the Entrance (so called because of the Big Chamber Near The Entrance in OFD - the joke these days is that in fact it is close to the entrance relative to the size of the cave). Next we went into the 1985 extensions: into Eglwys Passage and down a small hole in its side leading to a choke with a 20m fixed ladder leading upwards to Higher Things and White Passage (named after Tony White who first climbed the aven). The fixed ladder was an interesting construction made of individual rungs which clipped together (a design which incidentally was approved for the NCA Equipment Committee by a metallurgist by the name of Dr C M Orrock - Ed). Unfortunately the people who installed the ladder managed to get it upside down which made climbing it slightly tricky. Walking, crawling and traversing over a pitch along white passage we eventually dropped, via a series of roped climbs (down), into the side of The Time Machine. This is an enormous passage with very large boulders on the floor which goes on for about 400m. It was actually very hot work negociating our way along this.

At this point a small inlet on the left, Christal Inlet, gives the first water that you come to in the cave which is safe to drink. Slightly further along the passage you meet Bonsai Streamway (you have to go there to find out why it has this name) and then you reach Hard Rock Cafe which is the original camp. Att this point, straight on (down the Kings Road) takes you to the two sumps: St. Davids Sump the short sump leading to the rest of the cave (first dived by Ian Rolland et al) and a longer sump which leads to the outside world and is the easy way into the system (if you happen to know how to cave dive!).

We turned right at HRC and headed down the Rock Steady Cruise, the dry by-pass to the system beyond St David's Sump. As Andy and Angy were very active in digging this part of the cave, and indeed were actually on the trip which broke through into the Micron, this was very interesting and you did get a feel from their stories of how the exploration went. I I remember this section to be a lot of sandy crawling and in particular I remember the odd things which had been left along the way to brighten things up: there was a bunch of plastic flowers, a small sign with 'why be normal' written on it and a fishing rod with a cup hanging on it (didn't quite understand the significance of this).

Once through all of this crawling (Brazil and Acupuncture Passage and The Micron) we dropped down to a streamway and started on a fairly tortuous passage known as Ankle Grinder Passage. This name is very appropriate so I won't say any more about this. The going then gets easier and into Prawn Cracker Passage you have to completely submerge yourself just before you negotiate a traverse which leads to a streamway and a 5m pitch up (Jacob's Ladder). This is 5 minutes away from the camp (The Restaurant at the end of the Universe). I think the trip on the way in took about 10 hours which isn't particularly fast but we weren't aiming to kill ourselves.

At this point we stripped off our wet gear (not to put them back on until we exited the cave 4 days later) and donned our dry clothes: the cave is bone dry and sandy from here on. As we were quite knackered at this point we only did the essentials - sorted out the stoves and tilly lamp (paraffin), found enough bedding for everyone (packed away in bin bags), cooked a simple meal and then crashed for a good night's sleep. As there is no sunlight to wake you up in the morning another natural occurrence tended to take its place (i.e. a shit). It was a good ten minute caving trip (including Jacob's ladder) until you got to the downstream end of the river and more often than not by the time I got there I was desperate. Going for a piss wasn't such a problem- there were a number of BDH's specifically for this purpose and one could be taken to bed at night as a bed pan.

Day 2 was spent sorting the camp out. As no one had been there for a couple of years, a lot of the food which had been left there in the daren drums had gone off and had to be thrown away. (most of the dried food was still OK even though it had long passed its sell by date). We then had an hour or so's tourist trip to see the Blue Greenies and some other stuff: very pretty formations

On day three our plan was to go to the end of the cave at Spaderunners and 'Bang' the end of the rift. I remember that I was nominated to take the detonators, which I wasn't too fussed about as they were very light and easy to carry. The target was approximately 2 hours of caving from the camp and took in a 10m pitch into Big Chamber Further From The Entrance Than You Would Care To Go (self explanatory) , the Inca Trail, Agua Colarada, and Matchu Pitchu bypass (all named after a Peruvian trip which didn't find much cave) then the Sand Swims, DADES (Do Aliens Dream of Electric Sheep) and Dweebland (all mostly crawling) - Angie had managed to find a packet of sweets called Dweebies which were left at the appropriate place. Once at Spaderunner the shot holes were drilled and a charge was let off after about an hour's work. The bang was not how I'd expected - it was more like a mini earthquake.

Day 4 was Easter Day and a small chocolate egg had been secretly brought in for each of us by Angie- a nice surprise. We then repeated the trip back to Spaderunner to see what effect the charge had had. Iit looked like there might be something further on so we let off another charge and then headed back to camp.

We were getting up progressively later each day and by the time it came to day 5 we didn't get up until around 2pm. It was then a case of packing everything up and putting our wet clothes back on to exit the cave which was, to use the old saying, very similar to the way in - but in reverse. It was also a lot more tiring, though, especially the crawl, and by the time I got out it was about midnight, so no blinding sunlight or anything like that. Actually it was wet and miserable and I didnt realise I was out of the cave at first. I got a little bit lost going back to whitewalls and turned up there about an hour after the others.

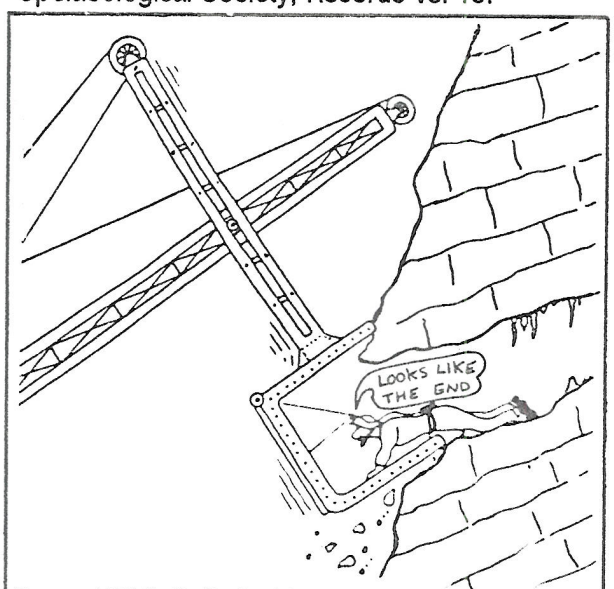
And so ended an excellent trip - a lot of the logistical things I learnt on this trip were used on the expedition and Spaderunner has now gone into another 20m with easy digging at the end (very good prospects for a connection with Aggy).

I hope it is not too long before I go on another camp down Daren.

Jim Evans

References:

Stevens, John (Ed) "An Exploration Journal of Llangattwg Mountain" published by the Chelsea Spelaeological Society, Records vol 19.




From: WSG Bulletin No.13 (1969)

# Bicycle Clips

*The following "clips" are drawn from letters (no.s 3, 4 & 5) sent by Dave and Bron as they cycle across Asia.*

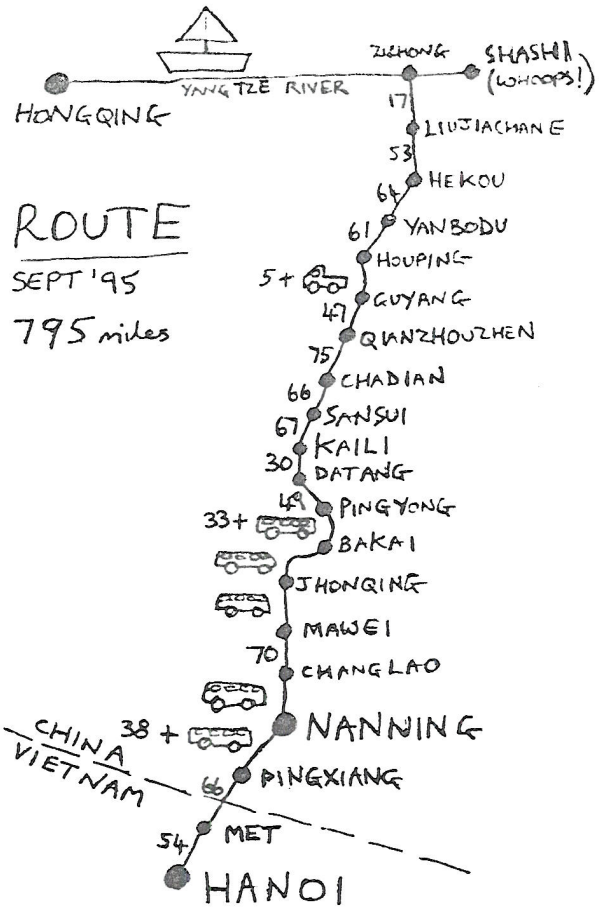
## Freeloaders

We have never asked for charity on this trip, but something about us brings out the best in people. There are of course those who see two westerners on an expensive bike as an opportunity to make a quick buck. China is a land of contrasts, though, and for every greedy money grabber, there is a warm and generous benefactor to match.

Three times now we have been flagged down by passing motorists insisting that we receive gifts of fruit, drinks, and in one case, a tin of congee (a strange mush of beans in syrup, with a very acquired taste) - thanks mate! Money is rarely accepted for bike spares such as nuts, bolts and oil, and meals have been provided free of charge, or courtesy of fellow diners in quite a few places.

Free accommodation has come our way from the Chinese government twice now. The first occasion was quite indirect, as we arrived at a rather plush looking hotel in Xichong, just as all the delegates from a government conference were leaving. The hotel owner had obviously made a packet from these people and kindly provided us with a beautiful room, plus a superb dinner and breakfast - all at no charge.

The second contribution was directly from the government office in a small town named Qianzhouzhen. On arriving here we had asked for directions to the local hotel, and been pointed towards a dark, dismal and over-priced room in the basement of a restaurant. Feeling that there must be something better than this we rode into town to make enquiries, and were directed to a large set of gates with a courtyard behind. We stumbled through the gates announcing that we were looking for somewhere to stay, and realised fairly quickly that this was not a hotel. Nevertheless we were sat down and tea was served. We became a little worried when an authorative looking man arrived to check our documents and the alarm bells started ringing




when the police arrived, and then left hurriedly - obviously to get a senior arresting officer we thought.

After 45 minutes on the edge of our seats we were seriously regretting having turned down the room at the restaurant. However we got to see the place again when our oriental document checker took us there for dinner, but only after we had been installed in our specially converted office-cum-bedroom, complete with hastily-made lampshade, pinned up curtains and vases of plastic flowers.
"You know we looked at the room here before coming to your place", we said over dinner.
"Of course I know, but this place is no good for foreign guests to stay in", he replied whilst paying the bill.

This generosity all pales into insignificance though, when compared to the doctor at the Swedish clinic in Hanoi, who waived his 90 dollar consultation fee and performed a free bottom inspection - even throwing in a complimentary tube of ointment as I left.

Thanks to this man I no longer have to "end the day the Betadine way!"

# Parting Thoughts

Continuing our aversion to cycling too much, we took a 3 day trip on the Yangtze River. This was a mistake. The ship was full of rats, the Chinese threw tons of rubbish over the side, and we missed our stop through oversleeping. Back on the bike we headed south through some fascinating Chinese minority communities, some Miou women sporting ridiculous hairstyles incorporating multi-coloured plastic combs, arrows, beads and flowers, whilst furiously hand-threshing rice. Following a top tip in Lonely Planet we headed off in search of wind and rain bridges near Kaili. This took us onto some 300km of dirt tracks in steep mountains and did we find one of these fantastic bridges? of course not! In one kind guesthouse the owner refused to let me do my own washing, although she was quite happy to let Bron carry on scrubbing: Bron wasn't quite so happy! A birthday treat for us both was to book into a posh hotel in Nanning, where we spent two days drinking wine from our own fridge, watching satellite TV, and eating chocolate fondue. Soon after this we crossed the Vietnamese border. Sharing something in common with their northern neighbours, the Vietnamese love a cycle race, but the roads so far are smooth and flat, and we beat them hands down - Ha, Ha!!

For the uneducated, Betadine is an antiseptic paint for use on open sores and wounds, and we have a lot less of it now than we did at the start of the trip.

# Culture Shock

The duration of my stay in China was probably the longest I have spent confined entirely in one country since I stopped believing in Father Christmas. But China, being so huge and multi-cultural, I expected that crossing the Vietnamese border would be a formality on our southern progression of change. How wrong I was!

Having left China at the traditional bureaucratic pace, it was no surprise to be greeted at the Vietnamese border by an order to wait for an hour whilst the customs officer ate his lunch. During this interval we prepared ourselves for an afternoon of fiscal negotiation and repaired yet another puncture. Therefore it was utterly unbelievable to find that the customs officer not only hurried back from his lunch to sit and chat with us for a while in excellent English, but that he issued us with two-month visas, told us how to exchange our excess RMBs on the local black market, and finally wished us on our way, saying what a lovely couple we were!!! (Misguided or what?).

With buoyed spirits, like newly released convicts, everything over the border seemed fascinating and different. Conical straw hats bobbed beside irrigation ditches, revealing novel methods of bailing water into the acres of lush green rice paddies. Vietnamese men on bikes and motorbikes seemed uniformly to favour wearing shallow green pith helmets. Cars are almost non-existent, just the occasional truck, landrover or bus. Houses are single storey or low rise in colonial-style architecture with pastel exterior colours, ornate balconies and louvred windows and doors. The population density is obviously much lower, allowing more spacious living. To find on top of this introduction to a peaceful and very, very friendly people, that overcharging foreigners is as uncommon as domestic cleanliness is common, was a joy.

Arriving in Hanoi and finding French-style boulangeries and patisseries on most street corners, excellent coffee and some of the best ice-cream in Asia at less than 70p per kilo (the only quantity I'm interested in buying!) more than offset the sight of the dead boiled dog, lying four paws up, slit from adams apple to parsons nose, on the stool not far enough away from me at the first night's noodle stall.

To then find mail waiting at the Poste-Restante, to be greeted and thanked for our custom, to find the cost of a fax listed clearly at page rate rather than a 3 minute minimum charge, and the Vietnamese looking cool and tastefully clad has left me confused about the rationale I had assumed to be behind the Chinese mentality. So to tell you that I'm writing this sat in the garden of the Hanoi School of French Cuisine, digesting a delicious and disgustingly cheap cordon bleu meal, drinking lemon tea and eyeing a particularly plump little mille feuille (custard slice to you!) will reassure you my adjustment is complete.

# Highway 15

The Vietnamese describe quality using a numerical system of excellence - they often shout "No. 1" to imply the best and "No. 10" for the worst. It was in complete ignorance of this system that we set off in pursuit of Highway 15.

Our failed first attempt to find Highway 15, the glaring incompatability between our cartographic version of Vietnam and the reality, an inability to buy a road map of Vietnam in Vietnam, and the parting comments of an enthusiastic English speaker: "Have you got supplies? It's very remote", all failed to deter us as we cycled along perfect, wide, flat tarmac away from the noise, pollution and heavy vehicles of Highway 1.
Even when we found our week-old back tyre had a sidewall split to match all our other tyres, we enthusiastically continued. The tarmac disappeared, a river appeared and we took our shoes and socks off.

There were no road signs, and Than Lang Xa, we were told in consecutive settlements was another "7 kms", "8 kms", "12 kms". Were we going in the wrong direction? The road climbed up and over a ridge, and the road surface changed to sharp cobbles. Once over the ridge, our destination was "2 kms" away. Darkness was falling and we stopped bothering to remove our shoes at river crossings in an effort to hasten our progress. The road turned to bog, the air pitch black, and the back tyre exploded. It was OK though, Than Lang Xa was only 2 kms away!

We dragged, pushed and lifted the tandem down a muddy track, endlessly losing our footing and nearly the bike. There was nothing that looked like a town, so we stopped and I had a pen, paper and dictionary discussion with the locals. We were in Than Lang Xa! A tiny settlement untouched by electricity, tarmac or a place to stay. Could we camp? Yes, 2 kms further on!

A huge crowd gathered (where from?) and pushed the tandem deeper in the mud, so we had double the struggle to move it forward. As we stumbled along the crowd swelled, squeezing us eventually through the gateway to the village hall. As the evening unfolded our curiosity as to our fate was gradually satisfied. No it wasn't camping or sleeping on a porch, but a couple of benches each to sleep on inside. The policeman's prompt arrival on the scene, and his labourious inspection and documentation of our passport details was not terminated with the expected fine (bribe) but with a beautifully executed "thank-you", the only English he knew, and his only smile.

The barred windows to left and right were a mosaic of wide-eyed, grinning faces, and the 360° around us was a jostling crowd of spectators. We drank tea and at 7:30 the shutters were closed, the crowd ushered out and we were left with a solitary guardian. It was bed time.

Up at 5am we fixed the bike and set off before sunrise but not before a huge crowd had gathered and our guardian, concealing himself from public view, had ushered us over having made a desperate attempt to communicate using the phrase-book, choosing the sentence, "Is service included in the bill?". Our appropriate response, by some gross error, had been omitted from the phrase-book in question!

We dragged ourselves back along the muddy road, following the vague directional wavings of the unsure Vietnamese, hopefully in the direction of Cha Noi - less than 50 kms away. We crossed more rivers. The road, although still cobbled to a width of 3 metres became more like an overgrown forest track with a narrow central line of wear. Our progress slowed and we descended to a 20m wide river crossing. Traversing the thigh-deep river we found that the inhabitants on the other side only knew where the road went in one direction - the way we'd come! Enough was enough. We decided to backtrack 12km to the railway to get a train to Bo Tracht - if we could. To hamper our return we not only had two punctures, but the heat caused our home-made repair patches to curl and peel off, and the glue refused to show any adhesive qualities.

A few bowls of noodles and the imminent arrival of a train when at last we got to the station brightened the day's prospects, as did a few hours sat with our legs dangling out of a good's wagon chugging past jungle, huge cave entrances and limestone pinnacles (you could do much worse than look into expedition prospects here). But Highway 15 wasn't finished with us yet. Ushered off the train, surrounded by drunks and assured that we had arrived in Bo Tracht, we followed directions to Highway 15.

Darkness fell and for three hours we followed a system of dykes and the usual vague directions. Each attempt to reach Highway 1 was terminated by someone directing us back the way we'd come. Eventually we established that we were stuck in the "V" of two rivers and that there were no bridges. A boat was the only option. We decided to sleep on it - on the river bank to be precise.

At last, a chance to justify those extra kilos of camping gear, stove, fuel, water filter and emergency food. A satisfying night in both cuisine and star gazing, but sadly not sleep as we learnt about Vietnamese nocturnal fishing habits, whereby the fish are motivated into a fixed net by patrolling the river whilst banging the side of the boat.

At 5am we joined a stream of Vietnamese heading off to market and jumped into the local ferry with them. However considering the boat man wouldn't take us for less than his day's salary, it was with some horror that we observed his determination to boost this as he filled the boat with more than twice the safe limit of passengers, not to mention their bikes, livestock and vegetables.

As we stepped off the boat we could take huge gulps of the delicious diesel fumes and hear the glorious thunder of trucks and buses. We were on Highway 1.


# Parting Thoughts

Hostess service is now available on the Tandem, Bron having mastered the art of sandwich making whilst pedalling. Hostess service of a different nature is on offer on numerous street corners, and is offered to me anytime that Bron isn't by my side, and often when she is. We had some fine boat trips this month. The first saw us propelled through the ancient capital of Hoa Lu amongst spectacular limestone scenery by a woman who gripped the oars in her toes as she rowed us along with her feet. In the Mekong delta we spent 24 hours watching from a hammock as the deck of our cargo boat filled with eggs, bananas, ugli fruit and a couple of prize fighting cocks. On a similar length train ride we were surprised to find that meal service was included in the ticket price, and equally surprised to find that the vegetarian option was a mound of boiled rice, a spoonful of sugar and half a dozen strawberry wafers - for breakfast, dinner and tea. What a relief, then, to arrive in Saigon to find such luxuries as Cheddar cheese, mayonaise, and that prince of foods - Marmite!

# English as a second language

"What is your name?", words we dread as we cycle along minding our own business. The trouble is that this enquiry always precedes a set of equally banal questions regarding our nationality, age, marital status and so on. To be fair it's only a huge desire on the part of the Vietnamese to speak English, and the general ability of people to do so has helped us out in many cases, as our Vietnamese seems to progress at a similar rate to the local buses.

We became involved in a bit of private tuition ourselves when an interesting character by the name of Vinh latched onto us in the town of Long Xuyen. After touring all the local hotels with us to ensure that we got a good deal, he invited us for dinner at his house that evening. The set of bathroom scales hung over one shoulder, the short wave radio blasting out the world service over the other, and the fact that he kept referring to Bron as Miss World, suggested that he was completely mad, and thus made this an offer too good to refuse.

When we arrived at his shack at the appointed time, it was to find a changed man (his shorts and baseball cap had been swapped for a shirt and trousers, although the Miss World references continued). To our surprise we also found an expectant class of English students waiting to meet the evening's guest tutors. "What is your name?", "Where are you from?", "How old are you?", followed for the next half hour - I think it's called working for your supper.

Jurg, a native of Switzerland who joined us between Hanoi and Dong Hoi, also polished up his English while travelling with us. The strict catholic owner of a restaurant we found ourselves staying at due to a lack of hotels, refused to allow Bron and I to share the double bed and insisted that Jurg should share with me - sodomy obviously being less of a crime in God's eyes than sex outside of marriage.

Jurg was also worried about my nocturnal habits, insisting that he was quite happy to share a bed "as long as you won't be snorkelling in the night"! I slept fitfully, feeling sorry for the poor restaurant owner whose house we had taken over, but Jurg felt no such remorse. After Vietnam he was going on a return trip to Indonesia where he assured us, "you get invaded into people's houses all the time".

When two German cyclists told us our seats were too slack, we assumed that their English was also of a questionable standard and that they were referring to our flabby backsides. The seats in question were actually our leather saddles, which we thought we had done a fine job in breaking in, but which in fact were in dire need of adjustment to regain the tension that makes them so allegedly comfortable.

## On The Buses

Every now and again the smell of burning rubber would engulf my nostrils whilst I simultaneously lurched forwards in response to the heavy handedness of "Ben Hur" our driver.

Once the alter had been laden with flowers and incense as an offering to the Buddhist equivalent of Saint Christopher, in the hope that he may have a greater hand in the safety of our journey than the bloke with his hands on the steering wheel - we again hurtled into the pitch black.

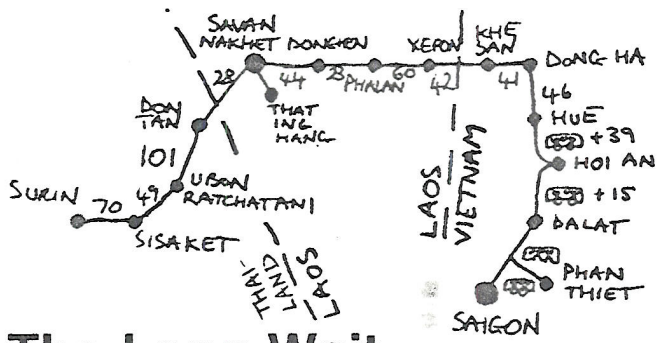
Luckily dawn had broken by the time we reached the switchbacks and we were able to gaze in awe at the drop beneath. For the only time during the 16 hour journey the engine hummed peacefully during our controlled descent. Once back on the flat however, the engine screamed as we veered around parties of school children, market traders and roaming dogs. When groups of these appeared together, unmoved by the continual blasting on the air horn, our conductors would lean out of both doors shouting and thumping the side of the bus. This also put them in the perfect location to drag on unsuspecting customers who were waiting for a safe and comfortable bus - not to be hauled on by their shirt collars, given 4cm$^2$ of rickety wooded bench and then asked for a fare calculated with only extortion in mind. Anyone refusing to pay was assisted unceremoniously off the bus. Apart from us that is!

At 3am we'd negotiated a reasonable fare with the Dalat-Danang cowboys, after being refused tickets for the regular public bus on the grounds that we were foreign. However, once installed on the bus we withheld payment, promising it once we'd arrived at our destination, rightfully doubting the ability of our bus and crew to make the 800kms.

In fact things went very smoothly for the first 14 hours. The bus hurtled on and a steady stream of passengers were plucked on and goaded off the moving bus. Some, in between the two, vomited into a succession of plastic bags or over themselves, and others lost their coats whilst gambling. All however, bar us, were transferred immediately to an alternative bus when the cowboy crew decided the rodeo was over.

Alone and in almost pitch black, on the outskirts of a town 100kms from our desired destination, we proffered what we thought was the appropriate amount of cash. Some pushing and shoving ensued as the bus crew registered their obvious disapproval. Fortunately for us though, the bus had stopped outside a police compound, and when a number of the occupants had a hold on our aggressors we made a quick dash for it. None the less it still took a further 6 hours to get to our final destination, what with hiding from the cowboys and trying to flag down some honest injuns to take us where we wanted to go.

ROUTE :- NOV '95, 579 miles.




## The Long Wait

The joy of a new set of tyres was soon succeeded by feelings of despair when our rear hub broke whilst riding in the Mekong delta. On discovering this we hot-footed back to Saigon to start the long process of getting a replacement.

A fax to Swallow - the original suppliers - yielded no response, so Roger, our spares man, was called in. He faxed Swallow for us and replied that they were on holiday for a few days and that we could relay the details of our situation to them after the weekend. On Monday Roger faxed us again to say that he had passed on our order and that we could expect a new hub in about one week.

With an ever expiring visa and no wish to wait in Saigon, we looked for ways to keep sane, and came up trumps with the idea of a few days at the beach. No knotted hankies or buckets and spades for us though - simply a couple of hammocks strung up outside a restaurant amongst the coconut palms, and days filled with strolling on the sand, watching the local fishing activity and sipping cold beers.

We eventually returned, reluctantly, to Saigon in the hope that our part had arrived. But this was not the case and we had to look for other ways of passing the time.

Less relaxing than the beach was the day we hired a couple of 50cc mopeds and rode a 250km circuit taking in some local tourist attractions. It was a great day's sightseeing but we got off the bikes feeling like we'd just ridden half a dozen Grand Nationals - and then flymo'ed the racecourse afterwards!

We ate tiramisu at Saigon's number one hotel courtesy of some friends we made at the beach and sampled many of Saigon's cheaper eateries with our own funds. But after ten days' wait we decided we were getting too fat. We faxed Bron's mum to see if she could shed some light on the delay and discovered to our dismay that the part had not been sent out from the manufacturer, let alone forwarded to us.

An urgent fax to Swallow finally yielded a reply and the promise of a new hub in about a week, so we faxed back altering the delivery address to Hue so we could get close enough to the border to escape before our visa expired. We arrived in Hue a week later to find that there was no DHL office there, contrary to our information, and that the address we had given was for the post office - where the parcel staff had gone home for the day, this being Saturday lunchtime, and they would not be available until Monday morning.

However, unlike a fax machine, you can shout and thump the counter in a post office and get a response from the person causing your delay. We got our parcel, built the wheel, and finally got off the buses.

# The Tapioca Trail

In Vietnam we discovered the delights of tapioca, only this time not as canteen ammunition. It was no grey lumpy sludge, but fluorescent pink or green tadpoles, ice, dried fruit and the essential condensed milk. The ranks of the Tapioca Appreciation Society were further swelled on the Vietnam-Lao border where we met two fellow brits also about to cycle across Laos.

In view of the advice from the British Embassy in Hanoi that Laos was unstable and we would be cycling through guerilla territory (two French had been shot) we thought cycling flanked by these two would be a safer proposition, and so suggested cycling together. Unfortunately they got up at 6:30 am and had usually finished cycling by midday, while we are (as is well known) of the arrival by torchlight brigade. So we consoled ourselves with the fact that the guerillas would've run out of bullets by the time we got there.

As we climbed away from the coast of Vietnam, houses became simple wooden boxes with sliding doors on 6 foot stilts. Gone were the conical hats, instead women wore sarongs and smoked briar pipes. Skins were much darker and the lips so dark that the stain of betel juice was only visible in the mahogany-toothed smile. Crossing the border, costume and housing continued in this style but the population density plummeted and the warmth of people increased. The landscape was evocative of Africa - goods carried on the head, an expanse of dried grass: the remains of the rice harvest, dry trees and white cattle. In every small town there was a simple guesthouse, tapioca and temples, and in one, a set of dinosaur footprints. So unsurprisingly we prolonged our stay for the maximum 7 days permitted.

We kept our eyes open for all signs of guerilla activity but beyond being served a fully gestated egg to dip my soldiers in and the piles of bomb and bullet casings (left from the Secret War) being collected as scrap, we saw nothing to suggest any violence.

So once we had crossed Laos and tapped into a fountain of local knowledge we demanded to know where the French had been shot. "One in the arse and the other in the elbow", over 1000kms north, 4 days journey by bus, in a well known guerilla area - the only one in Laos!

# Freeloader Update

Within 10 minutes of arriving from Laos we had been presented with our first gift - two bottles of coke and the offer of a free breakfast. Unfortunately we had already eaten far too much free food on the Laos side of the border to be able to accept.

The list since then reads : one night on the fat policeman's floor, a party with the bad women team, breakfast on the tab of Adams International Turkish Tobacco (no exotic cigarettes though!) and two nights full board, drinks included, with Rolf the retired German and his young wife.

Dave Mountain & Bron Ley

# A First Descent

*This is an account of a recent trip down Bar Pot written by my brother-in-law, Douglas. He, my Dad, and another novice had never been caving before, so I borrowed ropes, gear etc from IC[3] and gave them an introduction. Hopefully this article gives an insight into the experiences of a first time caver and may be of interest.*

*Iain McKenna*

The caving trip was amazing. I've been in several display caves but they are very clean and safe compared with the real thing. We went down a pothole in North Yorkshire called Bar Pot. This is a series of water-cut vertical shafts with a bit of scrambling in between. As you abseil down the shafts, you can't see where you're going or how far it is to the bottom, even with the head torch.

On the first pitch, I was last down, so I had to thread the rope through the descender with no-one to check it was OK. First time I've done anything like this of course, so I must have checked it three or four times, thinking "Just check it once more: its very important you get this right". Its not as if you have a neat start, instead you scramble between two boulders, the lamp battery gets caught, and as you wriggle around trying to free it, you can hear the descender, on which your continued existence depends, grating over one of the rocks, and you wonder what will happen if you press the release handle against the rock. Eventually you find a way between the rocks and you're in a verticle shaft and strangely you feel safer spinning in space than you did getting there.

The pots led down into a cave system called Gaping Gill. This has a great variety of caves and passages. Some have huge boulders you scramble over, some have streams running through them, some have stalactites and stalagmites, others have showers of water coming down from the ceiling. Depending on their height, the passages have to be traversed walking, stooping, doubled up, crawling on all fours, on hands and knees, or on your belly. Surprisingly, the ones with sharp stones were always the lowest. Iain, who organised this trip had told us that some people wear knee pads, but that you don't really need them. I failed to notice until it was too late that he had a pair.

To add interest to this collection of caves and passages, nature had arranged that they were covered by a layer of very slippery boulder clay which seemed to be slippiest when you were edging along a ledge or walking beside what looked like a bottomless pit. We walked from Bar Pot to another route in called Stream Passage where there were huge underground waterfalls. They looked fantastic.

On the way back I was getting a little tired. Even a simple passage involved scrambling over rocks, and getting through low passages was like doing squat thrusts. Then we reached the 100 foot pot which had taken only a minute or two to get down. We climbed it by using a foot loop attached to the rope by an ascender. Unfortunately my borrowed footloop was not the right length for me, as I discovered part way up. Instead of getting twelve inches up the rope each time I stood up in the loop, I was only moving six inches. If a psychiatrist had tried a word association test on me half way up it would have gone: cave - dark, rope - pain, free - fall. At the top I just lay there and tried to stop my legs going into cramp while Iain told me about a pitch he'd done in France which was over ten times as high. That made me feel better. Then we started on the next two pitches.

Actually they were much easier because I got the loop business sorted out. The trouble was that they were very cramped in places and the system we were using for getting up the rope was strictly one way: you couldn't go back down a foot and try again a little to the left. I tried very hard not to find out what happens if you climb too far and get jammed up against a rock.

I'm really pleased that I got the chance to go down a cave, but once I was tired it was hard work. In hill walking, most of the effort is getting up the hill, and getting down when you're tired is easier. Caving is the complete opposite, you need to put in the most effort when you're most tired, and it woud be easy to become exhausted. I know there were times when I decided this would be my first and last caving trip, but memory is a strange thing and I know that in a few weeks, when the cuts and bruises are gone, that what I'll remember will be those beautiful waterfalls, the ringing sound a curtain stalactite makes when you tap it, and the feeling of hanging suspended in Bar Pot. I might even agree to try it again.

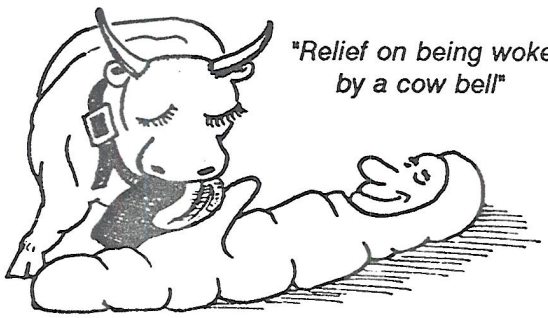
Douglas Wilson

# An Alpine Start

*The first climb of a first alpine season by ICCC members Kathryn Atherton and Iain Mckenna, September 1995.*

The alarm call which woke us at 4:30am came as a surprise for two reasons. Firstly, through having been woken up, it made me realise that about half an hour's sleep had been possible after all, and secondly because it was half an hour late.

The lack of sleep during the night I had put down to a number of factors, the most notable being the stifling heat in the hut coupled with the proximity of all the other bodies laid out in a line in the classic alpine bunk. The Swiss like their fresh air, whilst the French are unable to cope with the slightest of draughts. An all night window opening and closing battle had taken place accompanied by much cursing. The pain in my head subsided about 2:00 am, which was precisely the time that the fear and anticipation of the rapidly approaching day's climbing succeeded in dispelling any thought of reaching rapid eye movement that night. And so it was a relief to be woken by such courteous means as a cow bell.



*"Relief on being woken by a cow bell"*

The ensuing panic that accompanies most alpine starts was cleverly avoided, until the anticipation of the coming day's events became too much and I joined the queue for the toilet like everyone else. Leaving the Hornli hut in the misty gloom of a September morning was a strangely unmoving experience. No clues were given of the impending scale or majesty of the peak that lay before us, a hidden delight that was to remain well hidden for the rest of our short stay in Switzerland.

The previous night in the hut had provided confirmation of the tales I'd heard of the classic arrogance of the Swiss guides. "Where is your guide?" asked one in excellent English, seeing that we were not accompanied by one of his kind, unlike almost everyone else. I showed him a book titled '*The 4000m Peaks by the Classic Routes*', and explained that this was to serve as our day's guide. He curtly replied, "Then tomorrow you shall die".

The next time we saw our friendly guide was at our high point on the route. Okay, so now you know that we didn't reach the top, but don't stop reading just yet - at least we were still alive. He expressed his astonishment that we'd made it there to the Solway emergency bivouac hut, a smidgen over 4000m, in appalling conditions by saying, "Not a bad effort for a family outing!".

The decision to descend, for me was made easy. The weather was worsening with the snow flurries and gusts of wind appearing and disappearing more frequently. But the main reason was that the altitude was affecting me very badly and the feeling of immense pressure behind my eyes had returned along with bad nausea and shaking limbs. Looking back now, I'm still convinced that we made the right decision, but sometimes I wonder what would have happened if we'd carried on. After all it was only 1:30 pm, and Kathryn had none of the debilitating effects of altitude sickness, and could have led the final pitches easily (bitch!).

We had a brief look inside the hut, which was perched on a concrete pedestal, and a shimmy around the corner to have a glance at the fixed ropes that led to the summit 400m above us. The technicalities were harder and more sustained on this section, but the route finding (which had been the most difficult part of our ascent to this point in the poor visibility) was much easier, by keeping to the ridge.

Two days previously in the campsite near the centre of Zermatt, we had talked to a climber from Cambridge University. He had told us of two members of his club who had retreated from the upper section of the Hornli ridge after two other climbers had fallen past them to their deaths down the expansive flanks of the East face. A year later, on his own attempt, he had been appalled at the behaviour of the guides who would not let his party clip into the fixed ropes in any way as it impeded the steady flow of the guided parties as they barged past in ascent and descent.

We experienced much of this barging by guided parties to a lesser of greater extent on our descent, depending on whether or not we were using one of the many abseil hoops, or piles of tatty slings, that are evident all over the route.

On one occasion, the taut rope that I was suspended on was moved out of its groove without warning by a guide above, which resulted in a bit of a pendulum to the left. Exciting stuff. Unfortunately Kathryn's German wasn't polished enough to let rip at the offender, but I think he got the message (in English) when he and his client flashed past me a minute later. Soon the last guided party had disappeared into the gloom, racing to try and catch the last chairlift down from the Schwartzsee Hotel, a full 800m of descent from the Hornli Hut. We had the mountain to ourselves now and took our time with the final abseils and tricky bits until, at around 5:00 pm we were back at the hut.

Having used up all our money and a considerable portion of Kathryn's travellers' cheques to stay there the previous night (where a small can of beer is flown in by helicopter and costs you around six quid!), we pushed on, hoping to drop all the way down to Zermatt 1,800m below us. As we passed our bivvy spot that we had used on the way up (the porch of a tiny church built as a shrine to the 500 or so alpinists that have died on the mountain), the lights of Zermatt were just beginning to show. The land around us was changing too: we were no longer amongst the shattered quarry like moonscape, but in the rounder, more gentle foothills now lush with vegetation. Kathryn stopped frequently to pick the wild strawberries at the side of the path. And then raspberries and other fruits of the valley. Without her, I would have walked straight past unaware of the feast at arms reach that is free to those who care to look hard enough for it.

Free too had been our ascent and descent of the mountain. Free from the indignity of being dragged up and lowered off at breakneck speed by a guide, and from the charge of a month's pay it would have cost for the hire of one for a single day.

Next morning we lay on the grass. With the sun warming our skin, we ate cakes and drank tea. Even now the mountain would not show itself from under its veil of clouds. Although we hadn't reached the summit, we were pleased that we'd attempted the Matterhorn properly, and agreed that our experience had been all the richer for it. The anticipation of the rich delights that awaited us in the cake shops of Chamonix made leaving a little easier, but sometime in the future we'll return and complete some unfinished business.

Iain Mckenna


## Quote - Unquote

**"There's no real point in climbing.**
What you've got is a cliff, and what climbers are really doing is trying to find the hardest way they can up it. And once they've found out they can climb this particularly hard way they'll put in an even harder way to get up this piece of rock that they can actually walk around in about five minutes.

With cavers: we use ropes to make it as easy and safe as possible.

People are always making analogies between climbing and caving as though the two had something in common. In fact the only common thing they've got between 'em is that they both use rope. In the case of a rock-climber, you're looking at someone that's scratching his way up the rock face with his finger nails - the rope's there just in case he falls off. Caves are no place to be messing around, fiddling with fingerholds and things. Cavers rig the rope, and they slide down it, and they climb back up it."

Dave Elliot (blunt as ever)
"Fear of Falling" Equinox ITV Channel 4.
First broadcast 19 Sept 1993.

# Northern Exposure

Only one of ICCC's celtic brothers returned to the homeland this Christmas break. Next to venture North of the border was Katheryn, who is by now almost an adopted celtic sister, such is her appreciation of the homeland's contours. Finally we were four when Gavin and Sarah battled the elements to arrive in Aviemore on the coldest night of the year at minus 26 degrees centigrade.

.oOo.

With a knee wrenching graunch, the likes of which never heard before on Ben Ledi, I really thought that the winter tour was over before it had even begun. Although I am not an expert skier, I am not that bad either, bit whn it comes to skiing on heather alone I just can't keep up with my old man. Just as the novelty of prolonged heather skiing was wearing off, I straddled a boulder and let ourt a muffled grunt. The damage had been done. Had this not happened, our Boxing Day would have been memorable for the unparalleled views to all points of the compass, from Arran in the south to the mountains of Scotland's Highlands in the North. Now, for the most part, all I can recall is the pain.

Karthryn arrived in Glasgow at 6:30pm, over three hours late because of the big freeze. We took turns to drive the Passat up the A9, and even with the heater on full the interior of the old car was like an icebox. Instead of bivvying out next to a crag somewhere we'd decided to head straight for my sister Ruth's house, partly to ask for a doctor's opinion on my poor knee. When I saw her peering out of the window of her house she looked excited. When I peered at her inside she looked pregnant. I am going to be an uncle! A few tablets from her black bag after a quick examination and I was as high as a kite - no pain - articulation - nice one! Maybe we'd have some action after all.

Alpine starts in Scotland at this time of the year take a lot of commitment. Therefore we arose at 6am (not that we're not committed, but it *was* a late night) and made speed for the ski centre car park at Cairngorm. Climbing in the Northern Corries is so much easier (and correspondingly busier) than other winter paygrounds - you can stop for a cup of tea in the bar before trudging around the ridge to the relatively easily accessible corries. The Runnel, a direcst line up the centre of the Coire an t-Sneachda cliffs, beckoned, and although I've seen more ice in a Gin and Tonic, we had an excellent climb. From the bottom of the corrie, there looked to be only one other party in the gully. We climbed unroped and quickly and were shocked to see not one, but four parties at the bottleneck crux above us. Fortunately we were waved through and after roping up on a postage stamp stance, Kathryn led the final steep mixed section. Adrenaline must have been on her side as I found it quite exposed as a second, but then, when I second something, I always do.

Neither of us had ever really seen the Cairngorm plateau in Winter, and it is a beautiful place - but desolate and worthy of a lot of respect. It would come to light later in the tour how lucky Kathryn ans I had been to have been able to clearly see our route of descent - as always, time spent in recce is never wasted.

We had Gavin and Sarah's tent in the car and so we drove into Aviemore to meet them off the train. It finally arrived at 3am, and it was a relieved pair that found us asleep in the car outside the station. With Gavin having considered a Karrimat a non-essential item, it was decided that allowing him to freeze to death so early on in the trip was not a good idea. Back at Ruth's house we quietly laid our heads to rest in anticipation of raising them not long after (another opportunity for an alpine start long since lost).

Had I known what was about to happen, I would not have been concerned at all about Gavin leaving his crampons (on more than one occasion) on the bonnet of my lovely car the next morning. With a fine breakfast inside us and a beautiful blue sky above, we turned South onto the A9, Cairngorm bound. It was the last half mile the Passat would ever cover.

Onehundredandfortyseventhousandsixhundred andfortyonepointsixmiles - RIP Voiture Balai!

Two chaotic days followed covering the necessary tasks involved with laying an expired car to rest. My sister receives "dead bread" or "ash cash" for signing a death certificate. I got nothing for signing the registration document except a lump in my throat. By far the most important outcome of the accident, however, was that nobody was hurt - we could only consider ourselves very lucky.

The house was tenderly cared for during this time by Kathryn who remained in all the time, in case the frozen pipes sprung a leak. Heaters were borrowed from friends of my sister and the house was slowly nursed back to health, as the outside temperature remained below minus fifteen. At one point, it was necessary to keep the milk in the fridge to stop it freezing, as the kitchen was positively baltic.

My other sister and brother-in-law, who too lived locally, took pity on our lack of transport and lent us a car, and the tour was back on. The weather, unfortunately, was off. It was now stormy, and the prospects of climbing anywhere above an alititude of about 600 feet was slim. Hogmonay therefore was spent in Ruigh Aiteachain bothy, after a far longer than remembered walk in. Gavin was worried about the possibility of an enforced bivouac under a large Scots Pine. Just as we were beginning to wonder if we'd done the right thing by spending the remaining daylight next to the fire in the bar of the Cairngorm Hotel, the outline of the bothy materialised out of the stormy gloom.

Anyone who has ever had a long(ish) walk into a bothy in the depths of Winter, will appreciate the scene that was to greet us. Mr Bothy and his poor long suffering daughter had been staying there for a couple of days and had amassed a huge store of fuel for the fire. As we entered from the cold, a warm orange glow crept around the door and a mug of fresh coffee was pushed into our hands. It was as if he'd been working up to this moment all year and we were most grateful for it.

There were only two others, surprisingly, staying that Hogmonay, but stories were told and drink was consumed until 11:45 when the stress and tiredness of the previous days caught up and I flaked out. I missed New Year!

Grade IV in Glen Feshie. Used all of the ice screws for the first time. Kathryn's knees shook. Soon after, though, rather than being glad to be on firm ground again, we were both hungry for more.

Gavin had a definite lightness of step on the walk back from the bothy. His enthusiasm for life had returned since the realisation that this was the last bit of self propulsion he would have to endure before returning home. What he didn't realise was that we had all organised a final night's camping as a sting in the tail.

Our final day dawned still, and so with Gavin safely aboard the Inverness to Edinburgh, the rest of us climbed Spiral Gully on Sneachda. Kathryn led out and got shouted at by a local guide (no kind waving through here) and although we were climbing quicker, we had to wait. As a result we finally pulled over the cornice at dusk (3:30 local time!) and were met with the full force of a Cairngorm Plateau whiteout. Kathryn and I were very concerned about finding our wasy off in the blinding conditions - Sarah less so. The feeling of immense relief that I for one felt when we were sure that we'd dropped into Coire Cas and the lights of the ski centre could be seen below will never be forgotten.

I'll never forget any of the climbing adventures that I've had in the past two years. Every one is special. Climbing experiences are like that.

After I said goodbye to Kathryn at Central station in Glasgow, I went for a bacon roll in the Grosvenor Cafe and then set off home to hand over £350 for a new car the old man had found for me. Thanks dad.

Iain McKenna

# Surface contour visualisation for cave survey software

This article describes a number of methods which can be used to enter surface contour data in a form which can be used by the cave survey software SURVEX Cave Rotator and, with some modification, by others. The computer requirements range from a basic DOS machine, to a Computer Aided Design (CAD) system.

## Objectives

When exploring a cave system, it is often useful to know how the centre-line survey relates to the shape of the countryside beneath which the cave lies. Uses to which the information can be put are:

1. To determine the distance to the surface from points within the cave, possibly with a view to finding further entrances.
2. To determine the location of cave features with respect to surface features - perhaps an aven and a shakehole. See Figure 1 for an example.
3. To determine when a cave may be reaching an geological boundary or feature.
4. For report or public relations purposes.

Figure 1 : Torn T-shirt Cave, and two other caves on the Migovec Plateau, Slovenia. The western end of Torn T-shirt Cave is directly below the other two caves, which in turn lie directly below a large shakehole.

When considering the integration of surface contours with the computer model of the cave center line, the following points need to be born in mind:

- Of the possible uses; 1, 2, and 3 can be achieved by surface survey methods, and 2 and 3 by overlaying a plan of the cave with the relevant contour or geological map. A number of techniques are possible for 4.

- The computer method avoids the manpower, equipment and possible danger involved in surface surveys. It is possible even where surface surveys may be very difficult (e.g. over cliffs, on very loose slopes, or in winter conditions).

- The accuracy will depend on the availability of accurate, large-scale maps with close contour spacing. Accuracy will rarely, if ever, be comparable to a surface survey.

- For integration of contours with cave surveys, the surface locations of cave entrances must be known accurately. This could be by surface survey legs from defined points such as cairns, or by triangluation, or by use of a system such as the Global Positioning System (GPS).

- It will be considerably faster than surface surveying, especially if there are many points of interest.

- A three dimensional model provides a powerful visual image for presentations and reports, but the best effects may only be achieved by high-end computer equipment. The contour data can be equivalent to many thousands of survey legs, and this could make processing very slow on some computers.

- Colour improves clarity and enhances impact, but is more often available on-screen than on paper.

- It may be necessary to use a CAD package to determine distances between points, as this is not usually possible using cave survey software. CAD packages vary widely in sophistication and cost. Some shareware CAD software is available. Many "CAD" packages are really for 2D drafting, so be sure that your chosen software will handle 3D wireframe modelling, and allows entry of data via some form of text file.

## Method 1

Equipment: Ruler, preferably set square, text editor with cut and paste.

This method will produce a surface mesh of the form illustrated in Figure 3. This can be used in the SURVEX Cave Rotator. Proceed as follows:

1) Decide on a convenient origin point on the map. This should usually be a grid line intersection, trig point, or other fixed point relative to which cave entrances can be located.

2) Draw a grid on the map, with the lines going North-South and East-West. The spacing between the lines should be chosen to reflect the area to be covered, the accuracy required, and the time available. Number the grid lines. If you donÆt want to mark the map, draw the grid on tracing paper and lay it over the map.

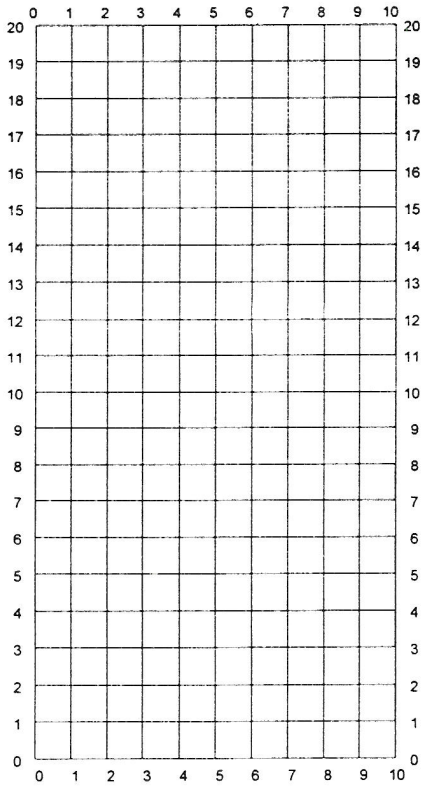



Figure 2 : Grid for 1km (E-W) by 2km (N-S) area of Migovec Plateau, Slovenia.

3) Using a text editor, create a file which mimics the format of the SURVEX .3d file. For example:

```
Survex 3D Image File
v0.01
plateau.svx
Sat,1995.09.23 18:17:21 EDT
name \mesh.0000      0.00      0.00   1880.00
name \mesh.0001      0.00    100.00   1950.00
name \mesh.0002      0.00    200.00   1990.00
name \mesh.0003      0.00    300.00   1940.00

...

move                 0.00      0.00   1880.00
draw                 0.00    100.00   1950.00
```

SURVEX requires that each point be named before it is used as the start (move) or endpoint (draw) of a line. It is convenient to "name" all of the grid points first, before doing the "move" and "draw" lines. To do this, read off the height of each point in turn. The point is given a name (here, "meshXXYY", with XX representing 100s of meters East, and YY representing 100s of meters North). The name and the three co-ordinates are then typed into the text editor, ensuring that the columns conform to the spacing shown. The co-ordinates are entered here going up, then across. When this is done, load the file into the SURVEX cave rotator to check that no errors have been made.

Note that it makes things easier if there are an even number of points both East-West and North-South.

4) To complete the SURVEX 3d file and to create lines linking the points, the "open movement" instructions must be entered. Those confident in macro programming will find ways to automate the process, but the manual method is shown here. It is convenient to keep a "working" copy with the sections (see later) of the file clearly separated and labelled, removing the labels when testing with Cave Rotator. This simplifies error-finding and editing.

a) Copy all of the "name" lines and paste them at the end of the file.
b) Starting with "move", replace the "name XXXXXXXX" with "move" and "draw" alternately. Remove the last line. The start and end of this section should now look like:

```
...
name \mesh.1019          0.00    200.00   1990.00
name \mesh.1020          0.00    300.00   1940.00
move                     0.00      0.00   1880.00
draw                     0.00    100.00   1950.00
move                     0.00    200.00   1990.00
draw                     0.00    300.00   1940.00

...

draw                  1000.00   1700.00   1840.00
move                  1000.00   1800.00   1970.00
draw                  1000.00   1900.00   1900.00
```

(c) Save the file and load it into Cave Rotator. You should now see N-S lines connecting alternate points. Check for "stray" lines where the E-W co-ordinate changes, and remove if necessary by removing the appropriate lines in the file. These are easily identified from the co-ordinates of the line endpoints.

(d) Now copy and paste the section you have just done onto the end of the file. Remove the first line of the section you have just pasted, replace the last line (refer to "names" section), and go through changing every "draw" to a "move", and vice versa.

(e) When finished, run the file through Cave Rotator again to check: all the N-S lines should be drawn. Again, check for "stray" lines, and for completeness. Make any necessary corrections.

(f) Now it gets really tedious! Paste the previous section in again, replace the first line, then delete all the lines except those with the desired N-S co-ordinate (initially, 0!). Remove the last line. Ensure that the "move" and "draw"s are alternating. Copy this section and paste; replace last line and remove first line. Swap "move" for "draw" and vice versa, and test new file in Cave Rotator. One row of E-W lines should be completed. Repeat for every E-W line!

This is not (quite) as lengthy as it sounds. Cut and paste is quite quick, and the replacement process can be fairly easily automated. More efficient entry methods are also fairly easy to devise.

## Method 2

Equipment: Scanner, bitmap editing software, bitmap tracing software or some programming. CAD package optional.

In this method, the map is scanned, the image cleaned up manually, and then a program is used to trace the contours and to convert the data to SURVEX format. This method has been used by Cambridge University Caving Club, and interested reades are referred to them.

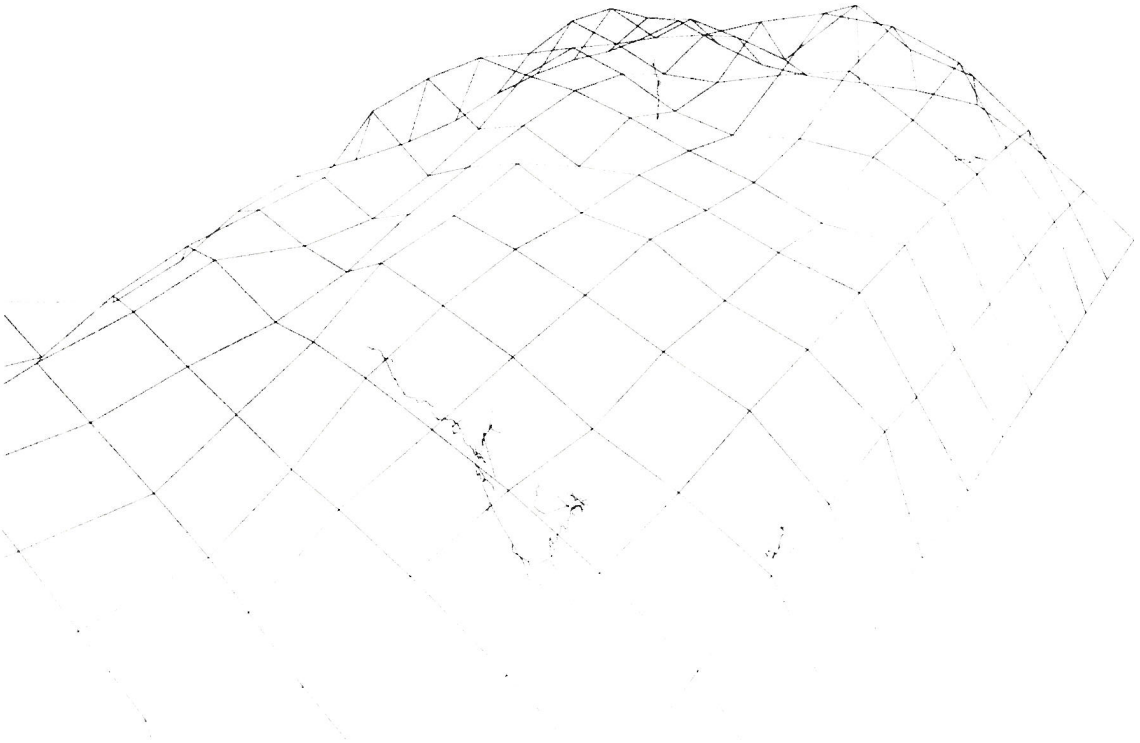
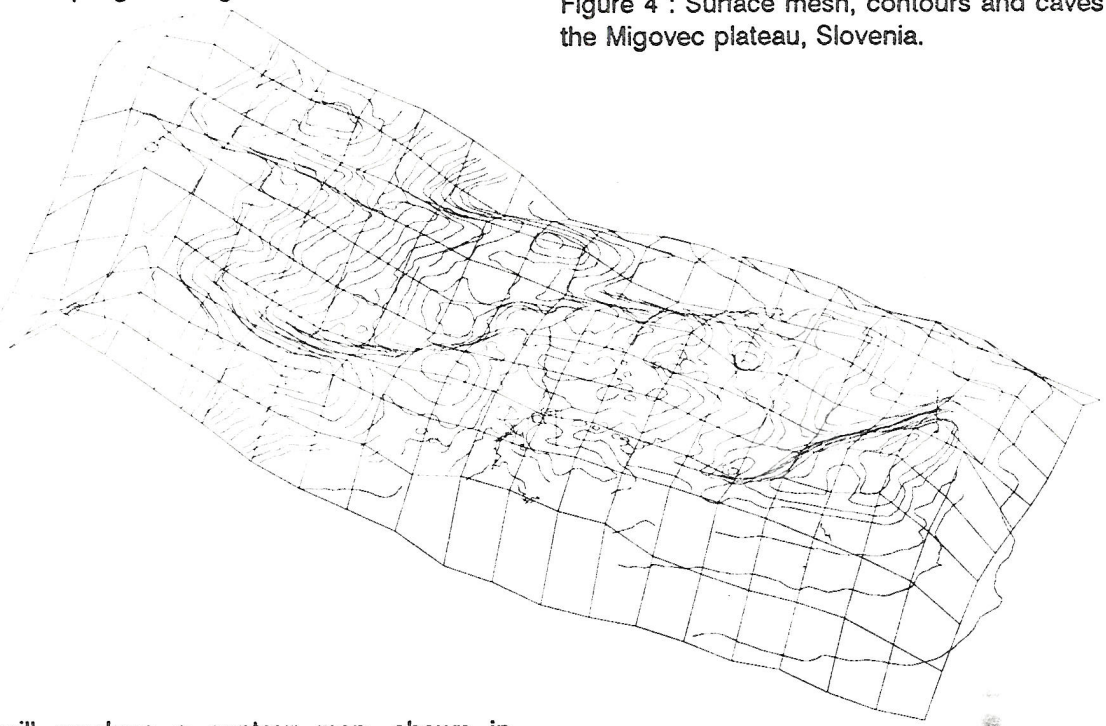


Figure 3 : Surface mesh and caves of Migovec plateau, Slovenia. The mesh uses 100m squares.

## Method 3

Equipment: Mouse with a linear motion arrangement, drawing package with "sketch" function, scaling and text-format output option (e.g. some CAD packages), text editor preferably with macro programming facilities.

Figure 4 : Surface mesh, contours and caves of the Migovec plateau, Slovenia.



This will produce a contour map, shown in Figure 4 combined with the surface mesh produced in Method 1. In this case, AutoCAD v. 10 (Autodesk Inc.) was used. Some shareware alternatives may also be suitable[1] . Depending on the output options of the software, it may be possible to load the contours into Cave Rotator.

Accuracy may not be as great as Method 2, as the method depends upon accurate movement of the mouse (controlled by a fallible human hand), the accuracy of the linear motion for the mouse, and the accuracy of the scaling of mouse movement to screen drawing.

(a) Draw the grid as for Method 1
(b) Reproduce the grid on the computer.
(c) Set up your mouse with a linear motion arrangement, ideally as shown in Figure 5. This could be achieved using a parallel motion drawing board. In any case, the idea is to maintain the orientation of the mouse, so that motions are recorded consistently. The mouse should be adjusted (rotated) until a vertical motion of the mouse results in vertical movement of the cursor on the screen. Note that a small pointer is attached to the side of the mouse; this is best made of transparent plastic.

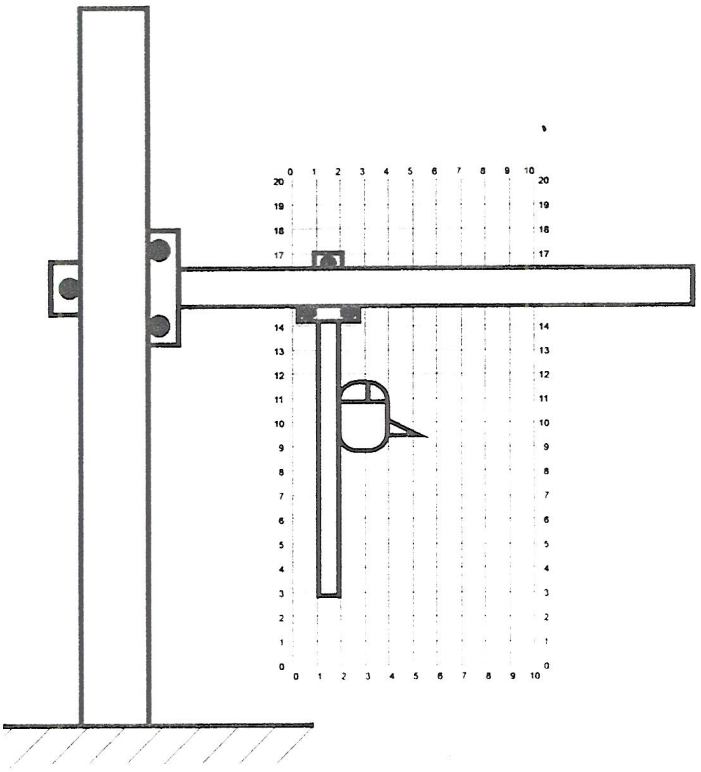


Figure 5 : Linear motion schematic.

If a full linear motion device is not available, a simple "pivot and slide" arrangement can be improvised, as shown in Figure 6. This method was used to create the contours shown in Figure 4. It will be seen that the further that the pivot is from the mouse, the smaller will be the errors caused by the rotation of the mouse.

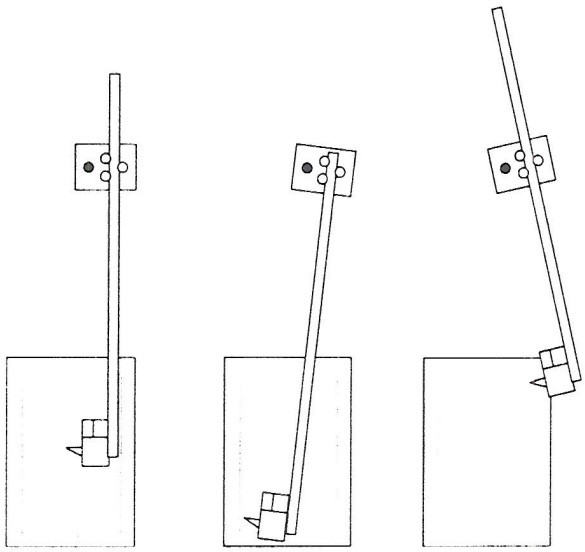


Figure 6 : "Pivot and slide" type motion.

(d) The next stage is to match the movement of the mouse over the paper to the movement of the cursor on the screen. Moving the mouse physically over the grid should result in the matching movement of the cursor. How this is achieved will depend on the system available, but common approaches are:

- Zoom the display to suit
- Adjust mouse resolution
- If the horizontal and vertical motions do not match, stretch or scale the display or the model until the motions correspond. If this is done the scaling must be removed at the end of the process.

(e) The contours can now be drawn, by moving the mouse so that the tip of the pointer follows the contours on the map. As each contour is drawn, the mouse must be frequently "zero-ed" at a grid intersection on both map and screen. The contours are drawn at the appropriate elevation, or are moved to that elevation when completed.

Most software will offer an option which allows the contours to be drawn as line segments of specified length: as soon as the mouse moves more than a certain distance from the last point, a new segment is drawn. If this is not available, it is possible to proceed by clicking the mouse to draw segments manually, although this makes tracing contours smoothly difficult.

Inaccuracies (slip of mouse, inaccurate calibration) will accumulate as long contour lines are drawn, so it may be helpful to draw the contour in sections bounded by grid lines, zeroing the mouse between each.

(f) The process is completed by adjusting screen colours, and if necessary by closing and loops or connections manually.

(g) If required, the line data can then be extracted to a text file, and formatted to be read into Cave Rotator.

Notes (1) Shareware CAD programs can be downloaded from ftp.doc.ic.ac.uk \pub\computing\systems\ibmpc\simtel\msdos\cad\ As at February 1996, the best were DANCAD, BCAD20, PROTOCAD.

Peter Eland


**Answers to Issue 19's,**

## Chasms, Caverns, Hollows & Holes

(1) Bilbo Baggins, "the Hobbit" by JRR Tolkein. Picture from a 1962 Swedish edition.
(2) Ayla, in "The Clan of the Cave Bear" by Jean M Auel.
(3) "Styx" by Christopher Hyde.
(4) "Jurassic Park" by Michael Crighton.
(5) Hercules. Greek myth.
(6) Prof. Lindenbrock, Axel and Hans the guide: "Journey to the Centre of the Earth" by Jules Verne. Picture from the frontspiece of the 1864 first edition.
(7) "The Burrow" by Franz Kafka.
(8) Jean Valjean carrying Marius in "Les Miserables" by Victor Hugo.
(9) "Winnie the Pooh" by A A Milne.
(10) "The Phantom of the Opera" by Gaston Leroux.
(11) "Mightnight's Lair" by Richard Laymon.
(12) "Rogue Male" by Geoffrey Household.
(13) "The Courtesy of Death" by Geoffrey Household.
(14) "Alibaba and the Forty Thieves" from the Tales of 1001 nights. Trad.

# To Boldly Cave Where No Man Has Caved Before

A recent "New Scientist" article mentioned plans to use lava caves to house permanent manned bases on the Moon. The rills (well known, immensely long winding surface depressions running across the lava fields) are thought to be collapsed caves, and where the rills suddenly end intact cave probably continues. And, because of the Moon's low gravity, these caves can be much larger than on the Earth. The article suggested these caves could be 50m, perhaps 100m in diameter, and run for many kilometres under the vast basaltic lunar plains, hence their suitability for Moon bases.

Mind you, even with such big passages, caving on the Moon wouldn't be easy. Imagine caving in a bulky spacesuit and the potential for disaster by even the smallest tear! However there would be advantages: you'd be much lighter so climbing a rope, perhaps even hand-over-hand without ascenders, should be easier.

This all got me thinking: there must be lots of spectacularly different caves throughout the solar system just waiting to be explored. But where? I consulted my Boy's Own Book of Space.....

Venus and Mars both have large volcanoes, both active and extinct, so they too must have lava caves. Mars in particular has some really massive shield volcanoes including the largest yet discovered in the solar system. Olympus Mons towers 25km above the surrounding plains, which are themselves made up of huge lava flows. Compare this to Earth's largest volcano, Hawaii, which at just 4200m high still has lava caves up to 12km long and 350m deep.

*Olympus Mons, Mars' largest volcano as photographed by the Voyager 1 orbiter 8,000 km away. The volcano covers an area about the size of France and is almost three times the height of Mount Everest. By comparison with Hawaii, Olympus Mons should contain lava caves at least 2000m deep.*

Lava caves are OK, but what about real karstic cave systems?

Classic, terrestrial karst occurs because limestone is slightly soluble in rainwater. Similarly we get karst features, including caves, in thick deposits of gypsum and rock salt. We also get pseudokarst in glaciers and ice sheets where solid water ice will melt (dissolve) into flowing liquid water at about the melting point ( or strictly the triple point). So we can get karstic features and caves where there is a solid rock which is slightly soluble in a precipitated liquid.

So where do we get these?

Mars: It is possible that Mars might actually have proper limestone caves. Limestone (also gypsum and salt etc) can be formed inorganically, but this still usually requires standing bodies of liquid water ie. lakes or seas. While there are numerous features on the Martian surface showing dried up river beds and extensive areas apparently eroded by floods, the ancient existence of seas is another matter. Further, the high $CO_2$ level of the atmosphere rather suggests that little carbon is tied up as surface carbonates in the rock. Still, you never know, although any limestone cave would have to be very old: there's been no liquid water on Mars for a very long time.

Moving further afield, the gas giants: Jupiter, Saturn and Neptune all have wholly liquid surfaces (as well as very high surface pressures) but some of their moons might be more caver-friendly.

Io, one of the moons of Jupiter, is the most volcanically active body in the solar system: Voyager 1 found 8 volcanic eruptions in progress. It seems likely that the volcanoes of Io are tapping an underground ocean of liquid sulphur. When solid sulphur is heated to 115°C it melts and changes colour. The higher the temperature, the deeper the colour. If this molten sulphur is then quickly cooled it retains the as-molten colouration. The pattern of colours on Io resembles closely what we would expect if rivers and torrents and sheets of molten sulphur were pouring out of the mouths of the volcanoes: black sulphur, the hottest, near the top of the volcanoes; red and orange rivers nearby; and great plains covered by yellow sulphur at still greater remove. Conditions seem perfect for thousands of long (and deep) lava caves.

The very thin atmosphere of Io is composed mainly of $S0_2$. At night the temperature drops so low that the $SO_2$ condenses out as a white frost. Then each morning the sulphurous rocks should become wet with a $SO_2$ dew before it evaporates. $SO_2$ is quite a good solvent and I can see the possibility of developing a true sulphur karst complete with pavements, closed depressions, deep eroded fissures and perhaps some true vadose passage. And hanging from the cave roof: clusters of sulpicles and crystal growths.

The caves of Io would be very useful to its explorers. Although thin, the $SO_2$ atmosphere is usually thick enough to protect the surface from the intensely charged particles from the Jupiter radiation belt in which Io is immersed. At night however when the $SO_2$ condenses out, the charged particles are able to flood the surface. It would then be very wise to spend the nights underground.

Titan, Saturn's largest moon is shrouded in a dense nitrogen-rich atmosphere, so thick and murky that the surface at noon gets only 1% of the light received by Earth. Although nitrogen rich the atmosphere also contains a significant proportion (perhaps as much as 10%) of methane and other organics. The surface pressure is 1.6 atm and the temperature -180°C so conditions are very close to the triple point of methane.

As a consequence in polar regions there are probably large glaciers and ice sheets of solid methane with rivers and lakes of methane existing at lower latitudes fed throughout by falls of methane rain and snow. The conditions are thus ripe for an extensive methane glacier karst. There may also be solid water ice on the surface which at this low temperature would occur as a rock with a hardness similar to, say, granite. Water ice should be slightly soluble in methane rain so there may also be some true karstic caves cut through solid water ice rock.

Finally at nearly a billion km from the Sun is Triton, the largest moon of Neptune. Its very cold, with a surface temperature of about -235°C (ie only 40° above absolute zero). The surface is believed to be essentially water-methane ice (perhaps with ammonia ice as well), the methane under cosmic radiation converting to a dark organic crud. The polar cap is frozen nitrogen. (Because of the steeply inclined orbit, there is only one "polar" cap at any one time which migrates from south to north and bach over 165 years - the time it takes Neptune, and hence

Triton, to orbit the Sun). As layers of solid nitrogen snow accumulate over the pole they build up a thick greenhouse ice layer with the dark organic muck underneath absorbing solar energy. Heat builds up and the nitrogen at the interface melts (or sublimes) and eventually bursts out to give visible surface vents. Why should there not also be extensive ice caves floored with dark methane gravel and with ceilings and walls eroded from the solid nitrogen linking huge nitrogen gas blister chambers and connected to the surface by vertical blow-hole shafts. And you need never get bored with these caves for every 165 years they form a-new!

Beyond our sun and its planets it is anybody's guess what karst wonders we will find. But you can bet that when Man boldly goes where no man has gone before, cavers will not be far behind!

Clive Orrock

*The Pleiades at night from the entrance shaft of an ice-cave on a hypothetical nearby planet. Painting by David Egge in Carl Sagan's "Cosmos".*

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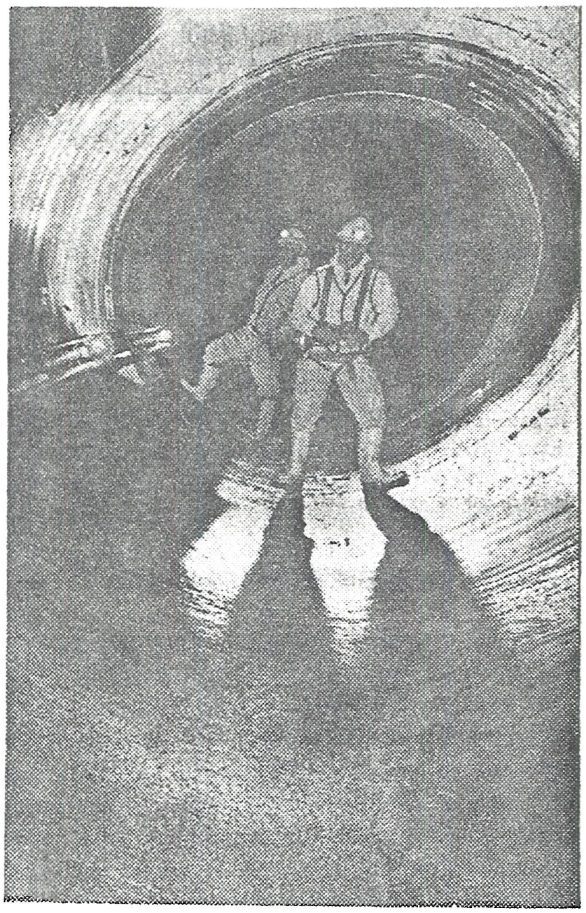


*A phreatic tunnel 50m under London: the recently completed 50 mile long water ring main.*

# London Under London

When you're walking along London's streets it's hard to imagine that there is another city beneath your feet. But under the familiar surface lies an unknown labyrinth of forgotten rivers, passages, pipes, tubes, cellars, vaults and bunkers. Layer upon layer up to at least 70m deep. What you normally see is only the tip of the iceberg.

London's inhabitants are blissfully unaware that they are perched on 12,000 miles of water mains, 10,000 miles of Victorian (and even earlier) working sewers, 20,000 miles of modern sewers, 100 miles of London Underground Tube tunnels and about 15 miles of BT cable tunnels. There are also 100 miles of river passage under London, fed by more than 100 springs and wells which once flowed and gurgled through meadows and valleys.

Most of them - Walbrook, Fleet, Tyburn, Westbourne, Counters' Creek, Stamford Brook, Neckinger, Effra and Falcon - are still there just flowing in tunnels underground. For instance that big cast iron pipe which crosses at an angle the platform and tracks at Sloane Square station is a rare glimpse of the River Westbourne flowing from the Serpentine and ultimately from Kilburn and Hampstead.

# Getting Level With Europe

For centuries the English stood on the shores of the Channel and looked down on the French. This has always been taken to be mere chauvinism, but now there is scientific proof that the English are, in fact, right!

In Britain, the heights of all mountains and hills. and the depths of the sea, are calculated with respect to a mean sea-level datum, which the Ordnance Survey chose to be that at Newlyn in Cornwall. Between 1916 and 1922 they measured the height of the sea and the average became the British Mean Sea Level. This was marked by a bolt driven into the side of the harbour at Newlyn. Every height or depth in Britain is in relation to this point. Other countries carried out similar surveys to establish their sea levels, the French choosing Marseilles.

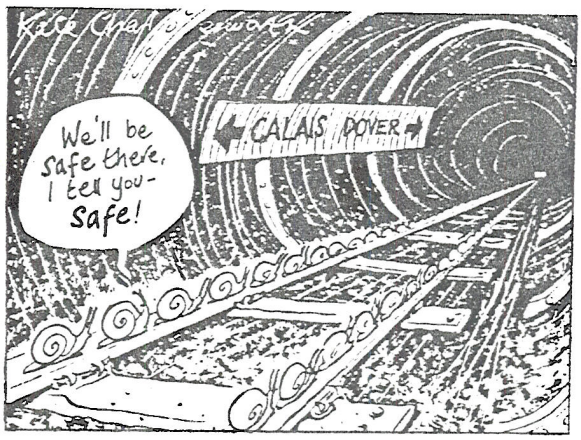
However, in the age of the Euro-sausage, EC geographers want to rationalise the surveys of the member states. Across continental Europe this is easy to achieve using an accurate land-based survey grid, but Britain, as an island, has proved impossible to link to this grid - until the Channel Tunnel.

Last year a team of surveyors from the Ordnance Survey conducted what must be one of the most accurate cave surveys ever. Starting at Dover they surveyed out along the Tunnel to its midpoint and then back. Then, from the French end they surveyed to the same midpoint, and then back to France. Each survey took 150m survey legs and used two independent laser theodolites, thus giving four closed loops.

Not trusting the British, a team from the Institute Geographic Nationale de Paris did exactly the same - and confirmed the measurements. The result: Britain is 388mm higher than France, ie the sea really does slope from England down towards France.

What causes this slope is still under investigation, although it is probably due to a difference in gravity or to an effect of water flow through the Channel causing it to bank up on the British side.

Whatever the reason, the difference is real. This however does not please the tidy minds of the European bureaucrats. The Unified European Levelling Network is now seeking to standardise sea level throughout Europe. So one day it might be decreed that the highest point in Britain, the summit of Ben Nevis, ceases to be 4,406 feet above British Sea Level, and becomes 4,407 feet above Euro Sea Level. But then they would probably like us to say 1343.25 metres.




## A Patron Saint for Cavers

### St Benedict (AD 480-547)

Shocked by all the naughty goings-on in Rome the young Benedict gave up his job and became a hermit living in a cave in the mountains of Subiaco. To quench the fleshly temptations to which he was victim, he adopted such extreme practices as whipping himself and rolling naked in thorns.

Impressed by this show of piety, a nearby monastery invited him to become their abbot: he reluctantly agreed. But when faced with his unswervingly strict rule the monks soon regretted their invite and eventually tried to poison him.

Benedict took the hint and went back to his cave.

Later, outraged by the sinful behaviour of a local priest he moved south to Monte Casino. Here he converted the local pagans, set up a monastery and founded the Benedictine Order. Unlike many saints he died, peacefully, in his bed.

St. Benedict is the patron saint of Europe, coppersmiths, schoolchildren and - presumably because of his fondness for caves and self-inflicted pain - speleologists.

# Speleo-Statistics

When the first edition of the Atlas des Grande Gouffres du Monde was published in 1973 there were just two caves deeper than the magical 1000m: today there are at least 50 caves over 1000m deep, as well as about 370 over 500m, and at least 730 which are over 5km in length.

## The World's Deepest Caves

| | | | | |
|---|---|---|---|---|
| 1. | Réseau Jean-Bernard | France | 1602 m | |
| 2. | Gouffre Mirolda-Lucien Bouclier | France | 1520 m | |
| 3. | Vjacheslav Panjukhina | Georgia | 1508 m | |
| 4. | Lamprechtstofen | Austria | 1483 m | |
| 5. | Sistema Huautla | Mexico | 1475 m | * |
| 6. | Sistema del Trave | Spain | 1444 m | * |
| 7. | Boj-Bulok | Uzbekistan | 1415 m | |
| 8. | BU56 (Ilaminko Ateeneko Leizea) | Spain | 1408 m | |
| 9. | Ceki 2 (La Vendetta) | Slovenia | 1393 m | |
| 10. | Lukina Jama | Croatia | 1392 m | |
| 11. | Sistema Cheve (Cuicateco) | Mexico | 1386 m | |
| 12. | Sniezhnaja-Mezhonnogo | Georgia | 1370 m | |
| 13. | Réseau de la Pierre Saint-Martin | France/Spain | 1342 m | |
| 14. | Siebenhengste-Höhlensystem | Switzerland | 1324 m | * |
| 15. | Gouffre Berger-Fromagère | France | 1278 m | |
| 16. | Cosa Nostra Loch | Austria | 1265 m | |
| 17. | Torca de los Rebecos | Spain | 1255 m | |
| 18. | Abisso Paolo Roversi | Italy | 1249 m | |
| 19. | Systeme Vladimir Iljukhina | Georgia | 1240 m | |
| 20. | Akemati | Mexico | 1226 m | |
| 21. | Schwersystem-Batman Höhle | Austria | 1219 m | |
| 22. | Abisso Olivifer | Italy | 1210 m | |
| 23. | Veliko Sbrego (Crnelsko Brezno) | Slovenia | 1198 m | |
| 24. | Çukurpinar Dudeni | Turkey | 1195 m | |
| 25. | Complesso Fighiera-Antro de Corchia | Italy | 1190 m | |
| 26. | Sistema Aranonera | Spain | 1180 m | |
| 27. | Dachstein-Mammuthöhle | Austria | 1180 m | |
| 28. | Jubilaumschacht | Austria | 1173 m | |
| 29. | Anou Ifflis | Algeria | 1170 m | |
| 30. | Sima 56 de Andara | Spain | 1169 m | |
| 31. | Reseau de Soudet (Gouffre BT6) | France | 1166 m | * |
| 32 | Kijaha Xontjoa | Mexico | 1160 m | |
| 33. | Abisso W le Donne | Italy | 1155 m | |
| 34. | B15 (Sistema Badalona) | Spain | 1150 m | |
| 35. | Sistema del Xitu | Spain | 1148 m | |
| 36. | Arabikskaja | Georgia | 1110 m | |
| 37. | Schneeloch | Austria | 1101 m | |
| 38. | Sima GESM | Spain | 1100 m | |
| 39. | Vandima | Slovenia | 1100 m | * |
| 40. | Jagerbrunntrog | Austria | 1078 m | |
| 41. | Abisso Saragato | Italy | 1075 m | # |
| 42. | Sotano Ocotempa | Mexico | 1070 m | |
| 43. | Muttseehöhle | Austria | 1060 m | |
| 44. | Pozzo della Neve | Italy | 1050 m | |
| 45. | Muruk | Papua New Guinea | 1050 m | # |
| 46. | Sotano de Olbastl (Akema Bis) | Mexico | 1040 m | |
| 47. | Meanderhöhle-Herbsthöhle | Austria | 1029 m | |
| 48. | Torca Urriello | Spain | 1022 m | |
| 49. | Coumo d'Hyouernedo | France | 1018 m | |
| 50. | Tanne des Pra d'Zeures | France | 1013 m | # |

* Changes since Issue 19.
\# New caves to listing. Muruk (No.45) is the first cave over 1000m deep in the southern hemisphere.

### The World's Deepest Caves - Not in limestone/chalk

| | | | | |
|---|---|---|---|---|
| 1. | Kverkfjoll | Basalt/Lava | Iceland | 525 m |
| 2. | Cueva del Viento | Baslat/Lava | Canary Islands | 478 m |
| 3. | Leviathan Cave | Basalt/Lava | Kenya | 465 m |
| 4. | Sima Auyantepuy Noroeste | Quartzite/Sandstone | Venezuela | 370 m |
| 5. | Sima Aonda | Quartzite/Sandstone | Venezuela | 360 m |
| 6. | Ainahou Ranch Cave | Basalt/Lava | Hawaii | 352 m |
| 7. | Tunel del Sumidors | Gypsum | Spain | 205 m |
| 8. | Abisso Lusa | Gypsum | Italy | 204 m |
| 9. | Bofia de Torremas | Conglomerate | Spain | 198 m |
| 10. | Tilkiler Düdeni | Conglomerate | Turkey | 159 m |

# The World's Longest Caves

| | | | | |
|---|---|---|---|---|
| 1. | Mammoth Cave System | USA | 560000 m | |
| 2. | Optimisticheskaja | Ukraine | 183000 m | |
| 3. | Hölloch | Switzerland | 156000 m | |
| 4. | Jewel Cave | USA | 157000 m | * |
| 5. | Siebenhengste-Hohlensystem | Switzerland | 126000 m | |
| 6. | Wind Cave | USA | 118000 m | * |
| 7. | Fisher Ridge Cave | USA | 113000 m | * |
| 8. | Ozermaja | Ukraine | 111000 m | * |
| 9. | Lechuguilla Cave | USA | 111000 m | |
| 10. | Gua Air Jernih (Clearwater Cave) | Malaysia | 101500 m | |
| 11. | Ojo Guareña | Spain | 97400 m | |
| 12. | Coume d'Hyouernedo | France | 94800 m | |
| 13. | Zolushka | Moldavia | 85500 m | |
| 14. | Sistema Purificacion | Mexico | 79100 m | |
| 15. | Ease Gill Cave System | Great Britain | 70500 m | |
| 16. | Raucherkarhöhle | Austria | 70000 m | |
| 17. | Hirlatzhöhle | Austria | 70000 m | |
| 18. | Friar's Hole | USA | 69360 m | * |
| 19. | Organ Cave | USA | 63570 m | * |
| 20. | Torca da Boa Vista | Brazil | 61000 m | * |
| 21. | Réseau de l'Alpe | France | 60200 m | |
| 22. | Red del Silencio | Spain | 60000 m | |
| 23. | Sistema Huautla | Mexico | 56700 m | * |
| 24. | Kap-Kutan-Promezhutochnaja | Turkistan | 55000 m | |
| 25. | Réseau de la Dent de Crolles | France | 55000 m | |
| 26. | Mam Kananda | Papua New Guinea | 54800 m | |
| 27. | Reseau de la Pierre Saint-Martin | France/Spain | 53800 m | * |
| 28. | Ogof Ffynnon Ddu | Great Britain | 50000 m | |
| 29. | Complesso Fighiera-Antro de Corchia | Italy | 49800 m | |
| 30. | Blue Spring Cave | USA | 48450 m | * |
| 31. | Crevice Cave | USA | 45390 m | |
| 32. | Gran Caverna Santo Tomas | Cuba | 44615 m | |
| 33. | Cumberland Caverns | USA | 44440 m | |
| 34. | Carlsbad Cavern | USA | 42780 m | * |
| 35. | Pestera Vintului | Romania | 42170 m | |
| 36. | Bolshaja Oreshnaja | Russia | 42000 m | |
| 37. | Eisreisenwelt | Austria | 42000 m | |
| 38. | Kolkblaser-Monsterhöhle | Austria | 41800 m | |
| 39. | Sistema de los Cuatro Valles | Spain | 40490 m | |
| 40. | Dachstein-Mammuthöhle | Austria | 40350 m | |
| 41. | Teng Long Dong | China | 40000 m | |
| 42. | Sima del Hayal de Ponata | Spain | 40000 m | |
| 43. | Sloans Valley Cave | USA | 39640 m | |
| 44. | Trou Qui Souffle | France | 39580 m | * |
| 45. | Xanadu Cave | USA | 38620 m | |
| 46. | The Hole | USA | 37020 m | * |
| 47. | Whipistle Cave | USA | 36210 m | |
| 48. | Bulmer Cavern | New Zealand | 35600 m | |
| 49. | Atea Kananda | Papua New Guinea | 34500 m | |
| 50. | Complesso di Piaggia Bella | Italy | 34000 m | |

* Major extensions since Issue 19.

### The World's Longest Caves - Not in limestone/chalk

| | | | | |
|---|---|---|---|---|
| 1. | Otimisticheskaja | Gypsum | Ukraine | 183000 m |
| 2. | Ozernaja | Gypsum | Ukraine | 111000 m |
| 3. | Boloshaya Oreshnaja | Conglomerate | Russia | 42000 m |
| 4. | Manjung-gul | Basalt/Lava | South Korea | 13400 m |
| 5. | Cueva del Viento | Basalt/Lava | Canary Islands | 12500 m |

"As much cave was discovered in the six years that followed the 1973 first edition of the Atlas des Grandes Gouffres du Monde, as was discovered since the beginning of speleology."

Paul Courbon, interviewed in Caving International #10 (1981)