The YRC Guangxi Caves 2000 Expedition

Contents of the expedition report collated by Ged Campion:

The expedition to Guangxi was extremely successful having discovered and surveyed seventeen kilometres of cave in just three weeks. The caves were comprehensively photographed and a film was made by the Chinese for television. Our biologist discovered many new species of cave life and a wider chemistry project was completed on Shadong. In all the team undertook over 1,000 hours of work. Vital new contacts were made in China that will provide a platform for further expeditions. The next expedition planned for this area is scheduled for April 2002. The international caving world is interested in our work in China and we have been invited to speak at the Ninth International Congress of Speleology to be held in Brasilia.

Cone Karst on the Li River Photo: John Whalley

Why China?

The karst of China, over a million square kilometres, covers around an eighth of the country's landmass. Spectacular dolines, karst towers, and canyons dwarf similar features elsewhere in the world.

Chinese Universities and British cavers have worked jointly for nearly twenty years under the title 'China Cave Projects'.

Andy Eavis, doyen of Chinese cave exploration, has fostered strong links with various Chinese institutions, advancing the science of speleology both in and outside China. Andy was the principal guest at the YRC's annual dinner two years ago and he helped the club select a suitable area to explore, which would normally be off-limits to travellers in China. With his knowledge and contacts we were fortunate to secure the necessary permission from the authorities.

Guangxi province probably has the greatest potential for new cave development in South East Asia. Indeed much of the exploration in the region is still in its infancy.

Expedition Members

Ged Campion, Expedition Leader

John Riley, Deputy Leader

Alan Fletcher

Bruce Bensley, Photography

Graham Salmon, Survey

Arthur Salmon, Water Chemistry

Alister Renton, Electronics

John Whalley, Photography

Stewart Muir

Harvey Lomas

Shaun Penny

Tony Penny

Mike Pitt

Bill Hawkins

Pascale Bottazzi

Arthur Clarke, Cave Biology

Chinese Members

Professor Zhu Xue Wen

Mr Cai Wutian

Mr Han

Cheiry Echo-Savager (Xue Huaw)

Mr Chen Lixin

In Xanadu did Kubla Khan
A stately pleasure-dome decree:
Where Alph, the sacred river, ran
Through caverns measureless to man
  Down to a sunless sea.
So twice five miles of fertile ground
With walls and towers were girdled round:
And here were gardens bright with sinuous rills,
Where blossomed many an incense-bearing tree;
And here were forests ancient as the hills,
Enfolding sunny spots of greenery.

But Oh! That deep romantic chasm which slanted
Down the green hill athwart a cedarn cover!
A savage place!

Anyone, who has visited Guangxi in China and is familiar with the work of Samuel Taylor Coleridge, would find it difficult not to draw parallels with the rich imagery of Kubla Khan and the evocative scenery that abounds in this incredible province. Though Coleridge travelled extensively in his age, even to the glaciers of Mont Blanc, he never visited China, but if he had done, I have no doubt that he would have realised the dream of Kubla Khan.

During the dark days of Ian Crowther's presidency, it was felt, especially by the President, that the YRC should mark the Millennium Year with a suitably impressive expedition to an exotic far off place with promise of caverns measureless to man. Where better for that than southern China?

I had been in negotiation with Andy Eavis for almost twelve months and he had identified an area in Guangxi that would provide the basis for an expedition and an additional area further north where reconnaissance work for further China Cave Projects Expeditions could take place. Andy and Kevin Senior had visited Lingyun over a four-day period in 1999, and had identified a number of sites that required a more thorough approach. So it was that the YRC assembled its best cavers, some even returning from retirement and, ever mindful of the Club's strong patriarchal traditions accompanied by a slight lack of caving manpower, recruited a female French caver from the Savoie region.

When all the necessary formalities were near completion, including the all-important permission from the Ministry of Land and Resources in China, which only arrived in the nick of time, visas were collected from Manchester and flight arrangements were confirmed.

With a foothold in China, we left behind the smog and skyscrapers of Shanghai to be captivated by the beauty of the tall karst towers and gentle mists of the Guillin Low Lands. This much-eulogised scenery cannot fail to impress even the most seasoned traveller. Just a few kilometres outside the bustling city of Guillin, a trip down the Li River gives a wonderful opportunity to feast one's eyes on cone karst of an incredible scale and abundance.

Our centre of operations for the first few days was to be the Karst Institute in Guillin. The expedition quickly began to build up momentum. The China Caves Project store at the Institute provides a veritable Aladdin's cave of equipment, which we eagerly bagged and packed in preparation for our journey north. Our host, mentor and cuddly uncle, Professor Zhu, was finalising all the formalities needed for us to meet dignitaries and officials in the Lingyun and Leye Counties. Protocol and preparation in China are vital for any expedition to be successful. It was decided that we would travel via Nanning, the Provincial Capital on public bus and meet the Lingyun County Officials in the City and they would escort us north. It took approximately twelve hours to get to Lingyun with a few obligatory stops for food and water. We arrived on a rainy evening, not really what we had expected, since we were visiting the area in the dry season. Our accommodation was not the Government rest house as we had originally planned, but a hotel, which by our standard was luxurious; never before had we had such a comfortable base camp.

Glossary of Terms

Doline - Large crater in sedimentary rock with or without an outlet at bottom
Dong - cave
Fossil cave - an old, now inactive cave system
He - river
Hua - leaf
Japara – proofed raincoat jacket (Aus)
Karst - Limestone area
Lian - lotus
Lianhua - Lotus-plant
Liu - flow
Long - dragon
Niu - buffalo
Sha - sand
Shang - upper
Shen - deep
Shui - water
Suidao - tunnel
Tao - peach
Wan - that specific locality
Uvala – joined dolines
Xia - lower
Y hang - belay using bowline (or eight) on the bight knot
Yan - rock
Yuan - source

Exploration in Lingyun Area

Lingyun is a lovely promenade style town along the side of the Chengbi River, the water of which was to provide us with the source of our exploration for the next three weeks. About 2km north of the town the river is fed by a major tributory, the Shiyui River, which emerges in spectacular fashion from a show cave a short distance from the confluence, having sunk some 16 km further north. The objective of our work was to try and

locate the Shiyui River between the sink and the resurgence. From Lingyun the Chengbi River flows south and intermittently sinks and rises until it is finally harnessed by a hydro-electricity project in Xiagia.

At first we directed our attention to two main features, Xiashuidong and Shadong, which seemed to give some promise of locating the elusive river. Xiashuidong was explored over a two week period and a considerable amount of sizeable passage was found, but the active river could only be heard and not reached.

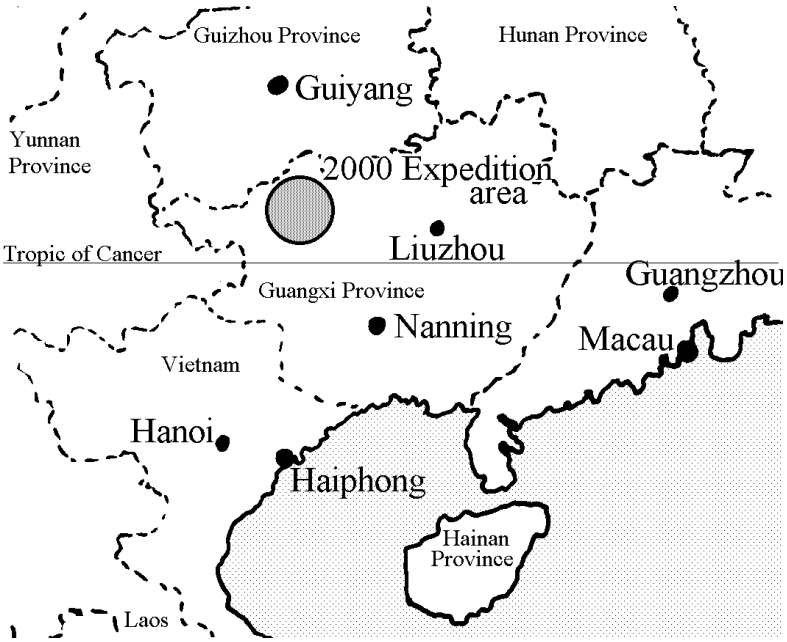
Xiashuidong Shaun Penny

This was my first visit to China, and wow what a place, on this short but memorable trip I've fallen head over heels in love with it. Caving in China is very much more than just the exploration of endless virgin passage; it's as much about its culture, the unbelievable scenery and the incredible warmth of its people, I'm hooked.

Ged had spent a great deal of time and effort assembling our little group together. We were for the most part known to each other, mainly as close friends. It was I think because of this special chemistry that we were able to accomplish a lot, and really just enjoy it as a holiday; it also helped in that there were no prima donnas. Anyone who would dare to poke their head above the parapet in such a way would have been setting themselves up to be ridiculed.

Our first day in the caving region was akin to a field trip; we were all piled into a bus and driven around the area to be shown the potential sites. It poured with rain all day. I made a mental note that the rivers were swollen, but that didn't seem to matter as there were loads of dry fossil cave possibilities to go at.

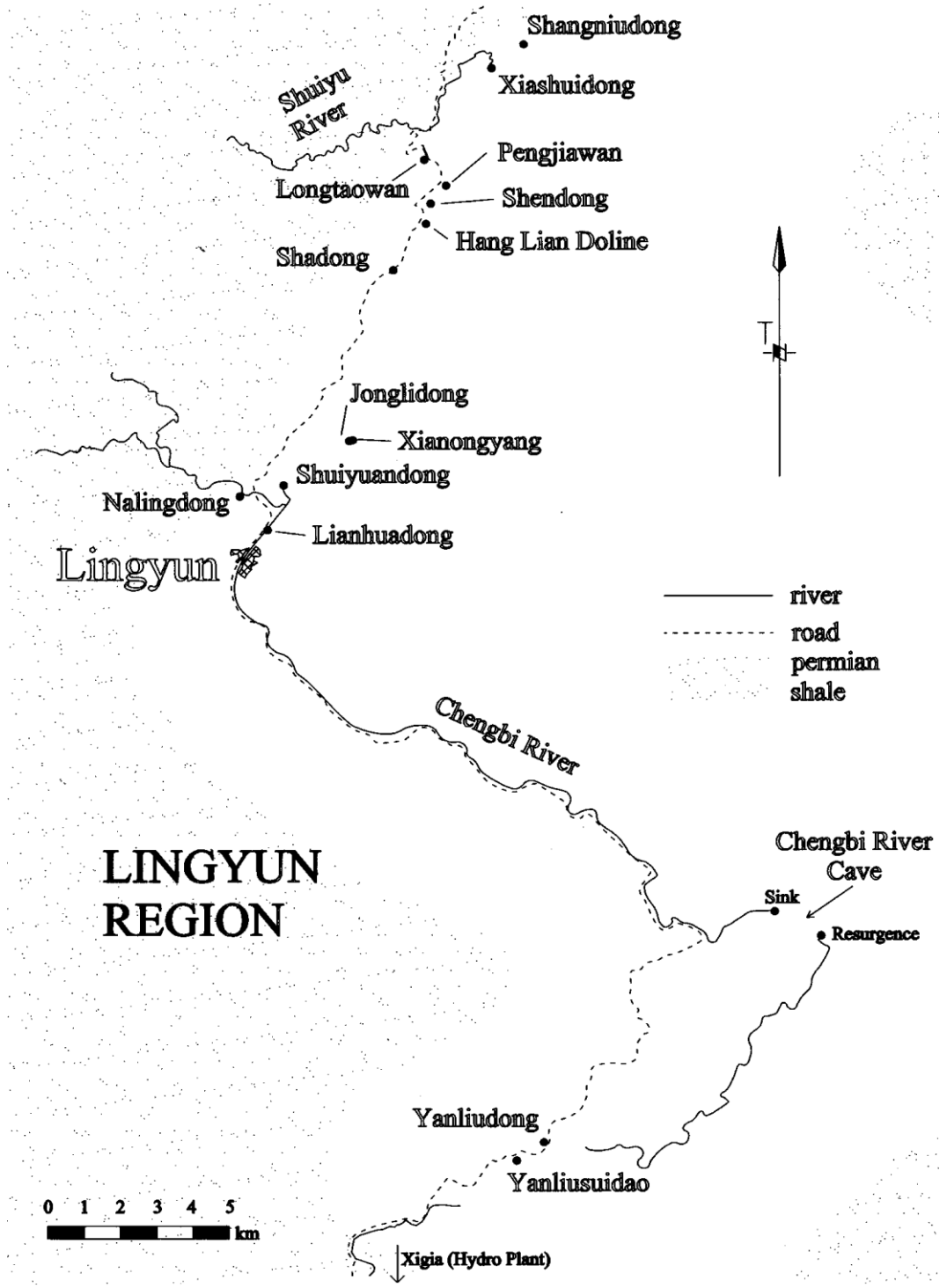
That same evening, Ged posted the teams on the wall, together with the areas we had to cover the next day. We, each in our separate groups, prepared noisily both our personal and group equipment. I thought privately, it was going to be a complete washout. Our selected area was the wettest site shown to us that day, with one of the biggest rivers in the district flowing, no rushing, into a limestone cliff, with surely no chance of us finding a way through. At my most optimistic, I couldn't conceive of anything other than death by drowning. None of the others seemed unduly worried so like a true martyr I kept it to myself, had a few beers and slept soundly that night.



Next morning the rain continued, not at all like the showers of yester-

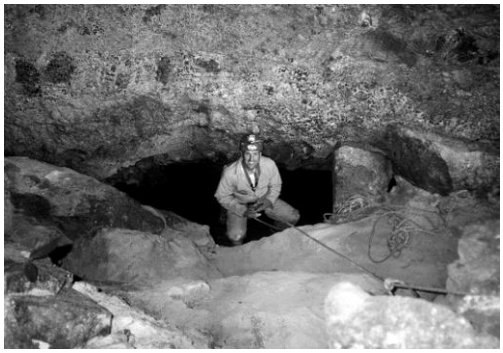
day, but literally bouncing off the roof of the minibus. We were forced to a halt; locals were working hard to clear a mud landslide that almost closed the road ahead. When we finally arrived at our drop off point, none of us was keen to venture out into the rain. We waited and waited. Eventually after an hour had passed, we decided it was now or never and started out along the muddy track that would become so familiar to us all.

Our little group of four, Stewart, Jon, Pascale and I, soon became the centre of attention. We had to pass through two small villages; this must have brought the whole population out, a good many of whom followed us down the track. I felt a little like the



pied piper; our little troop was now thirty or forty strong, all curious to know what we were doing and where on earth we were going? I've always been keen to keep a low profile when approaching caves; things often go wrong and no embarrassment can then be felt. No chance on this occasion, it was a circus and I found myself playing to the crowd. The whole atmosphere was surreal and exciting. Some, once they knew we were looking for caves, were eager to show us their entrances. No, that's not quite true, they were all keen to show us. We were directed to a place in the river where it was safe to cross. It was fully 4ft deep that first day and the current was strong. Once across, the crowd shot up the steep bank. We struggled to keep our footing, that didn't seem to matter to our new friends, we were almost revered by them and I was certainly grateful. The entrance they were showing us was well above the water, completely in the dry. It was better than that, it was a pitch; they had not been in there and couldn't follow down a rope.

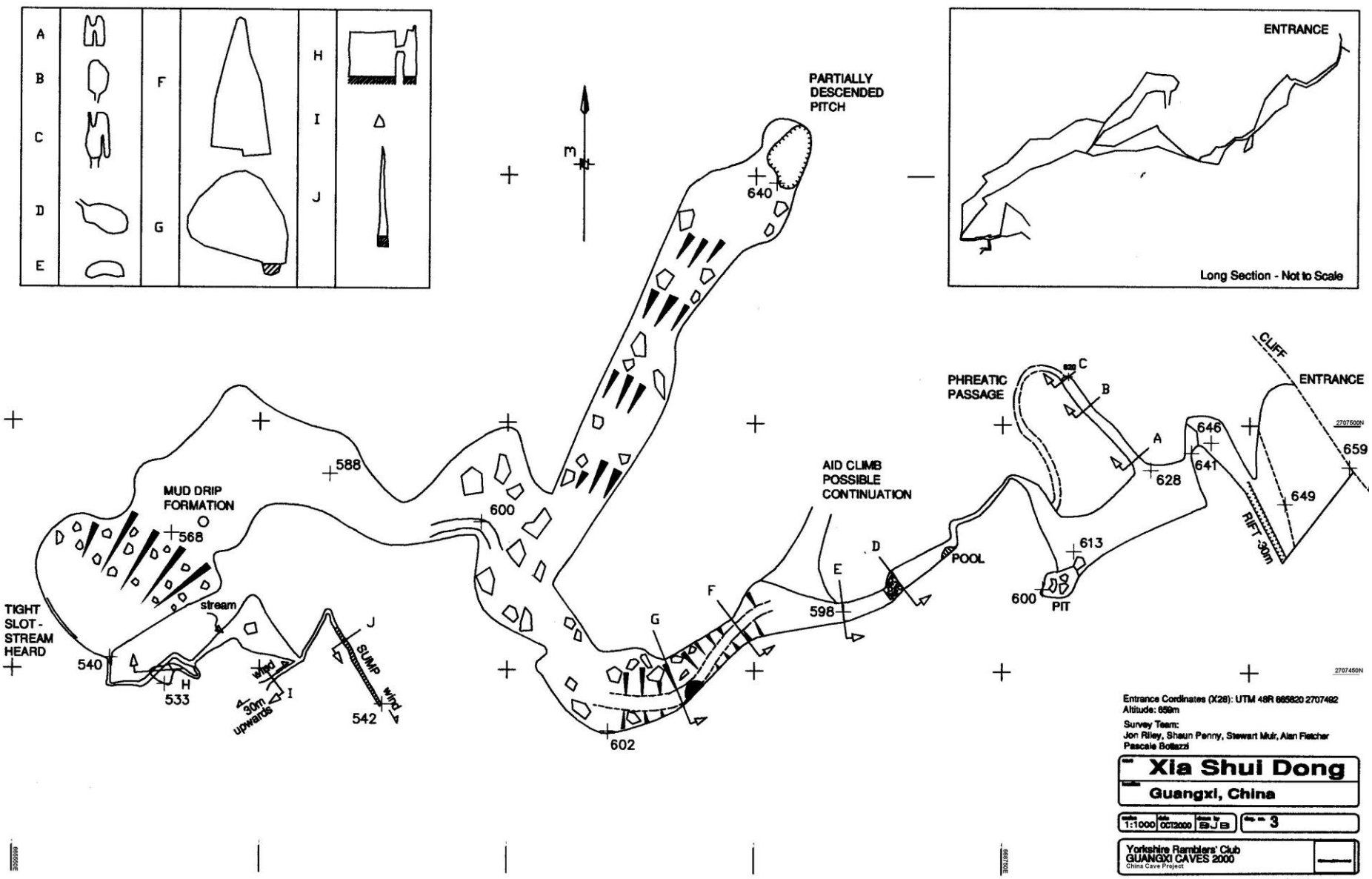
We changed in full view of the crowd; they weren't going to miss a thing. All giggles and chatter, children jumping from rock to rock, natural athletes all of them. They looked on in awe, amazed at our colourful equipment. Jon rigged the entrance pitch for me to descend. Seven metres down and the pitch became a sloping dusty mud bank. I followed it to a natural stalactite belay where we each dumped our rucksacks. This was the one and only time we took them into the caves as you could leave anything and it would still be there when you got back, unlike home. The others joined me; Stewart taking the lead now took off down the short slope, which once more became vertical. We were now in a smaller rifting section of passage, which we followed over the top of some quite considerable drops (not investigated), to the head of a 15m pitch. Once at the bottom, the cave then opened out once more and was, perhaps, 20m high by 20m wide with the virgin mud floor sloping away into the distance. Setting off down that muddy bank felt truly wonderful, our first Chinese cave, and we were the first ever in it.



Shaun starts Xiashuidong's entrance pitch only to be followed by the local children going hand over hand down the rope

It wasn't long before we were stopped again by another pitch. We contrived to rig this one on natural belays. Bad choice, I had only got down 4m when the walls, which resembled pebbledash, started to drop apart and crash down into the void below. Not to be fazed, a natural thread was found and Jon performed the most incredible acrobatics, worthy of a perfect ten and gold medal had it been marked in the Olympic games, to get to the bottom. Unfortunately, no way on was found so we decided to call it a day and surveyed out. At least we still had plenty of side passages to explore.

Next day saw us back again with our friendly local escorts leading us across the fields to the entrance once more. We quickly descended to the first of our chosen sites. Frustratingly, after a pitch and a winding crawl, this joined into the next side passage lower down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RIFT -30m
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POOL
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PIT
AID CLIMB POSSIBLE CONTINUATION
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MUD DRIP FORMATION
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TIGHT SLOT - STREAM HEARD
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SUMP
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Entrance Cordinates (X28): UTM 48R 665820 2707492
Altitude: 659m
Survey Team:
Jon Riley, Shaun Penny, Stewart Muir, Alan Fletcher
Pascale Bottazzi
Xia Shui Dong
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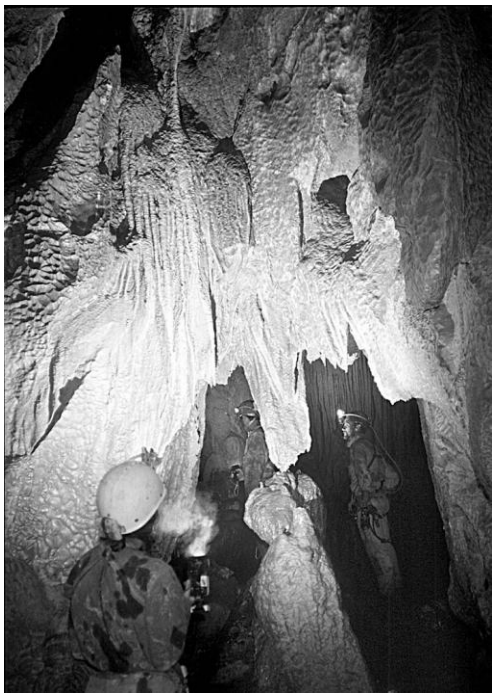
GUANGXI CAVES 2000
China Cave Project

the cave. Our attentions now focused on that next way that was to lead us to explore a further blind pot. Soon after, a traverse was found to the head of another pitch. This was to turn out to be the key to the way on.

Moving around the sump pool at the bottom and up through a squeeze took us into the big stuff; massive mud covered passages whose floors sloped away steeply. We were all caught up in the excitement of the moment. For the remainder of the day it was difficult to stay disciplined and actually set about taking the survey data. Now we really did have something to go at.



The amazement of finding a new passage

It doesn't take long to reach your furthest point in the cave when you get used to it. We could hear the roar of water that must be the main collector, but were unable to find a way down to it. We did, however, find a couple of siphons and short pitches, but never the source of that noise. In another direction we found a pitch that we estimate was close to 200m deep, but after about 80m it was too unstable for us to descend any further. So that too is still there waiting for someone foolhardy enough to tackle the pitch that requires a full armoured suit, and maybe some 600mm bolt anchors.

Our time was up on this cave. Maybe at some future time I'll get a chance to go back, but with so much to go at, and so little time, I think someone else will have to finish what we started.

Xiashuidong Work Pascale Bottazzi

Jeudi 5 octobre: départ 9h30, quatre équipes se répartissent le long du parcours. Le groupe dont je fais partie est composé de Jonathan, Stewart et Shaun. Nous traversons la rivière pour atteindre un porche en hauteur, repérable par ses très vieilles stalactites et des blocs de rochers. On équipe le long pan incliné d'entrée avec une main courante, puis un petit puits nous amène dans un volume incliné au sol de terre humide parsemé de rochers.

Nous arrivons sur une conduite forcée, le premiers puits à gauche est descendu sans succès, la suite, à droite, aux parois couvertes de belles cupules, nécessite plus de cordes. On peut soupçonner une étendue d'eau à sa base.

Deux passages ont été repérés, un criquet dépigmenté est remonté en surface. On lève la topo en sortant. On déséquipe la corde d'entrée, bien qu'il soit clair que les enfants ne s'en encombrent pas pour descendre.

Dehors, Jon a sympathisé avec la troupe d'enfants, ce sont eux qui ont ressorti nos sacs; et de grands éclats de rire accompagnent les remontées successives. En repartant, nous empruntons un gué et lavons notre équipement passablement boueux. Nous sommes restés 5h30 sous terre, nous reprenons le bus à 18h30.

Repas à 20h, chacun est content de sa journée. Quelques ennuis de santé: sinusite ou gastro, sans plus.

Vendredi 6 octobre: Lever à 6h. Après le déjeuner à 7h30, nous embarquons dans un plus grand bus. Shrerry nous accompagne, en vue de traductions; nous entrons dans la grotte à 10h30, quelques pétards annoncent la fête du village. Jon emprunte le 1er passage à droite et équipe un bout de corde… pour retomber rapidement sur la petite arrivée avant notre objectif; il s'agit d'un passage parallèle, visiblement connu des Chinois (traces). Dans la petite galerie de jonction coule un filet d'eau dont le débit a bien diminué. Le puits de la veille est descendu par Shaun, à sa base une petite laisse d'eau semble correspondre à un siphon suspendu ou temporaire. Néanmoins, la suite est juste à côté, dans une conduite forcée remontante, tapissée de galets de toutes sortes. Les cupules semblent attester que lorsque la laisse d'eau se met en charge, l'arrivée de la crue peut se fait violemment, bloquant le passage. Courbés, nous remontons ce boyau pour déboucher dans un espace plus large et plus haut, le sol est boueux mais peu glissant, jolie galerie parfois encombré de blocs. Nous arrivons ensuite à un toboggan nécessitant une corde, et un volume de belles dimensions. Stewart et moi levons la topo pendant que Jon et Shaun reconnaissent et équipent la suite…qui les amène sur un puits et un bruit de rivière! Je ramasse quelques échantillons de roches, on ressort à 16h15.Sherry nous attend devant l'entrée. Après un pointage au GPS, nous reprenons le sentier en évitant les bouquets de haricots lancés auparavant depuis le haut du plateau. Lavage du matos dans la rivière qui a bien baissé, arrivée au bus à 17h15.

Nous fêtons l'anniversaire de Mike dans la salle de danse, puis nous allons à la rencontre d'une délégation touristique officielle qui achève sa réunion. Installés en bord de rivière, dans une ruelle piétonne, nous dégustons toutes sortes de brochettes plus ou moins classiques: (serpents, oiseaux, pattes de volailles…)

Minuit à l'hôtel, pointages GPS et topos. L'équipe télé dont fait partie le mari de Sherry, est disposée à filmer la "grande salle".

Samedi 7 octobre: Le temps se stabilise au beau. Départ 9h30. Professeur Zhu, Jed et Stewart visitent la cavité en bordure de chemin, en rive ouest. De notre côté, nous descendons à trois, suivis de près par un jeune homme particulièrement motivé, (peut-être le fils du chef du village), jusqu'au tout début du 1er passage réellement technique… Il remonte seul, une sandale en moins et pratiquement sans lumière; sa prouesse est impressionnante. On emprunte un passage bas, on descend le puits et on enchaîne jusqu'à un terminus (provisoire?); un courant d'air s'infiltre dans sorte de diaclase étroite; arrêt sur niveau d'eau élevé, j'utilise le marteau afin de laisser un repère. La zone est propre, et le haut de la galerie garde une jolie forme d'œuf. On capture une grenouille et un insecte volant avant de remonter. On topographie, on lève les cordes et on se retrouve dans le grand volume certainement filmé peu avant, au pied

d'une longue pente argileuse. Un rapide casse-croûte, et on grimpe le pan incliné. Derrière, on débouche dans une très grande salle parsemée de gros blocs, des concrétions sont visibles en hauteur. Sur la droite s'ouvre un puits estimé à plus de 100m de profondeur… On laisse les cordes en se promettant de revenir. Sortie vers 17h, nettoyage du matos avec l'aide des enfants hilares, sous la directive amusée de Shaun. Ils se précipitent même pour porter nos charges le long des rizières à sec; on dirait des sacs à pattes… Les villageois sont réunis au cœur du village, et on s'échange des bonjour dans une ambiance très détendue.

Nouveau banquet, en présence d'un directeur touristique… Professeur Zhu reconnaît que l'un des objectifs que l'on attend de nous est bel et bien de trouver une grotte susceptible d'être aménagée. Quelques reports topo avec survex sur les portables.

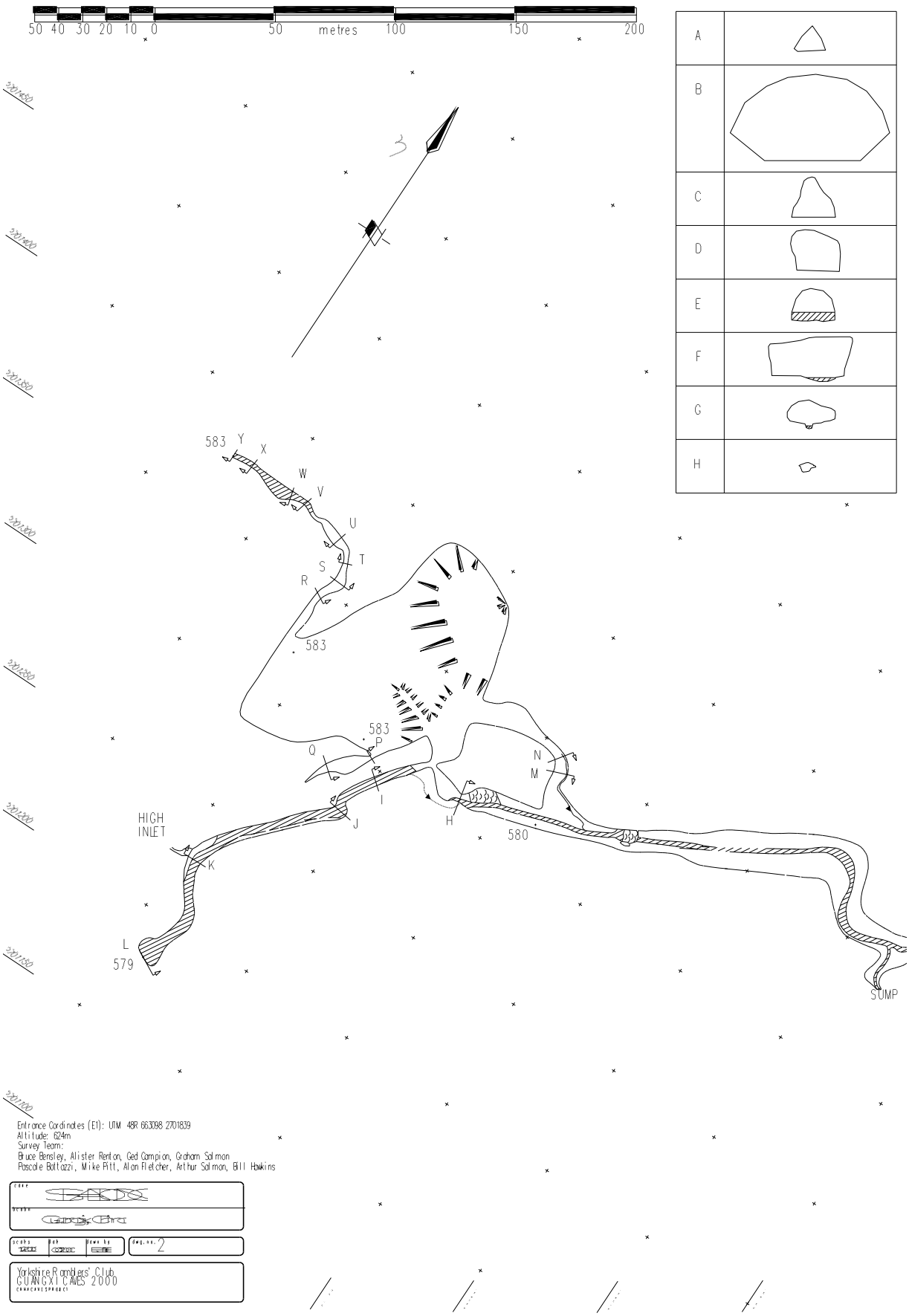
Dimanche 8 octobre: On a décliné l'offre d'un jour de repos et on se rend sur le terrain bien qu'il soit déjà 10h30. Les enfants nous interpellent depuis le porche. Un cameraman filme nos derniers préparatifs. Midi, on commence à descendre. Arrivés à la salle, on réalise que les visées sensées permettre le raccord sont restées dans le haut de mon sac à dos. Bon, pas grave, on grimpe la colline de boue sans trop glisser et on arrive dans la salle où l'on s'aperçoit que les feuilles topo se trouvent dans les kits laissés au début de la dune; zut !

Bon, Jon commence à installer les spits au perfo pendant que j'explore la partie gauche de la salle passant de blocs en coulées ; c'est raide et je suis près de 25m plus haut. Je scrute sans trouver d'ouverture. Par contre, j'observe de très vieilles stalagmites en place contre les parois, toutes les autres ont basculé avec les blocs et ont subi une nouvelle phase de calcification.

De son côté, Jon fait de son mieux pour trouver comment équiper sous et entre des blocs gros comme des camions… sa situation est acrobatique et plutôt limite côté sécurité, d'autant plus que les parois, en se resserrant, sont recouvertes par une couche de glaise de plus en plus importante. Il annonce qu'il estime le puits à près de 200m de profondeur…Il en a parcouru une bonne trentaine mais préfère renoncer: " mieux vaut une souris vivante qu'un lion mort " déclare -t- il avec philosophie… On revient en tirant la topo avec Shaun et on collecte même quelques échantillons de faune dans l'eau du " siphon " dont le niveau se trouve plus bas. On est dehors à 17h, on nettoie le matos, on est au bord de la route une heure après.

On fête à l'hôtel les 35 ans de Graham.

Jeudi 12 octobre: Dernière visite à Xiashuidong avec Jon et Allan. On prend un itinéraire plus discret en longeant la rivière. Nous allons directement à la salle du grand puits/faille pour fouiller le fond et le côté droit du volume. Il y a effectivement une galerie fossile (redonnant en lucarne à l'aplomb du début de la salle), et dont l'autre extrémité permet un regard sur ce qui est vraisemblablement le même puits. L'accès est boueux et quelques prises sont taillées dans la glaise à coup de descendeur, mais nous n'avons pas de quoi se faire une idée plus précise. On revient sur nos pas en déséquipant et en prenant quelques photos et bestioles. Surprise dans la dernière verticale avant la main courante: un serpent lové se trouve en mauvaise posture, on le laisse à son sort, et on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Entrance Cordinates (E1): UTM 48R 663098 2701839
Altitude: 624m
Survey Team:
Bruce Bensley, Alister Renton, Ged Campion, Graham Salmon
Pascale Battazzi, Mike Pitt, Alan Fletcher, Arthur Salmon, Bill Hawkins
Yorkshire Ramblers' Club
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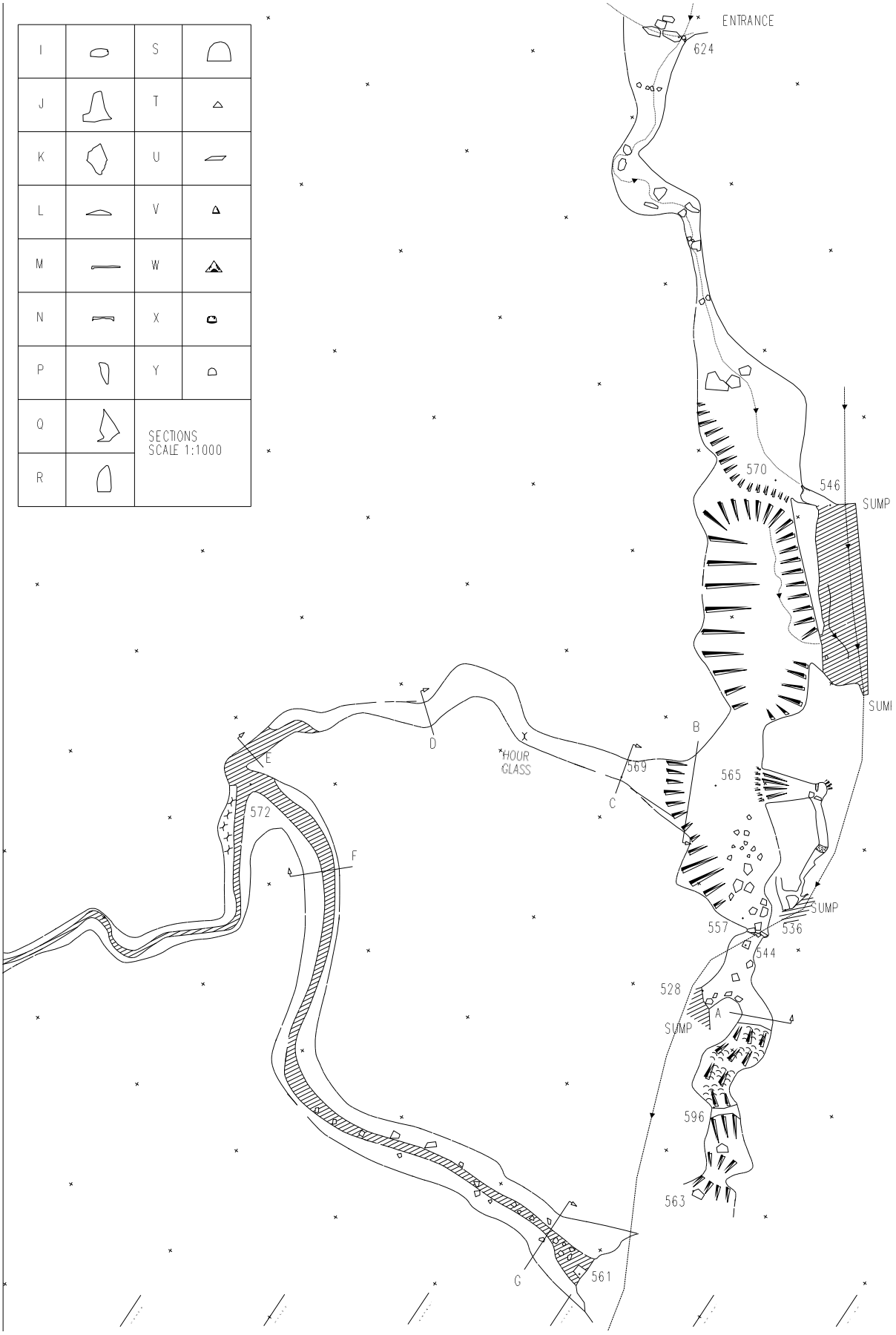
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parvient à signaler sa présence aux deux jeunes gens que l'on rencontre à l'extérieur. Dernier pointage GPS

Temps passé sous terre: trois heures.

Le vent a tourné et l'air devient plus frais alors qu'on lave le matos. Les paysans achèvent les brûlis des dernières parcelles.

Retour à l'hôtel à 18h, quelques envois email.

The second major feature to be explored simultaneously with Xiashuidong was Shadong, an impressive cave entrance cutting away massively beneath the road north of Lingyun.

Shadong Alan Fletcher

The system of Shadong (Sand Cave) is one of the most easily accessible of the caves undertaken during the expedition. The entrance, which lies at the head of a valley, is some 15-20 minutes walk from the road, firstly via a path then a dry streambed (the valley carries water at times of heavy rainfall).

The entrance is truly memorable, it being a large porch estimated to be some 25-30m in height and 20-25m in width. It certainly gives anyone descending for the first time an inkling of the sheer size of the cave beyond (Shadong was the most extensive system we found during our explorations).

The initial passage leads off and opens up into a sizeable chamber with huge mud banks to the right, stretching to the roof. Following the left-hand wall will eventually bring you to a pitch, over which any entrance stream would flow down to the cave's main river. This pitch can easily be bypassed by climbing over the right-hand mud banks and descending to the sloping floor of the chamber beyond.

Dropping down to the left here brings one to the main river, which over several visits was shown to rise and fall with great alacrity, with at one time the level rising some 10-15m overnight. The river can be followed up and down stream, for a short distance, but in both instances sumps are reached.

Heading away from the river and up the chamber's slopes will bring you to the "upper level main chamber" from which point there is a choice of three ways on, the least obvious route being to the left over the top of a small mud bank. Here a steeply descending passage leads down via a mud ramp to a rock-floored right-hand bend where can be found a narrowing solution-slot that drops down, possibly to stream level, and directly in the corner is a possible aven.

Continuing over some boulders and down the passage, one comes to a calcite flow that must be climbed with care. The main stream is then encountered again. However, it soon flows under a rock screen, which can be bypassed to the right by a passage containing some shingle-filled solution-holes. Beyond the bypass, the stream re-emerges very powerfully and then flows over a series of cascades before again forming a sump that prevents further exploration in this direction.

If, back in the upper level main chamber, one chooses to move directly ahead, a passage begins to descend and after progress is made down a boulder-strewn slope another sump is reached. Just before reaching this point, however, a way on to the left can be observed.

A rising passage can be followed by means of some very tricky clambering over mud, flowstone and loose debris. This eventually opens up, levels out and soon begins to descend sharply. Due to lack of time and rope (the slope being steep enough to justify the placing of bolts), we were only able to make limited progress downwards before turning back.

The third and final way on is to the right, in a westerly direction, and leads by way of a mud-set, cobble-floored passage and some gour pools into a much more aqueous section of cave.

A large inlet passage soon appears and this can be followed downstream for around 280m until a pitch is reached, from the top of which the sound of the main stream can be heard below. Attempts to descend this pitch were to prove fruitless, as the rock is of such a poor nature that the use of bolts merely shatters it. Around five or six placements were tried in various locations, without success, before the task was abandoned.

Following the inlet upstream is a very different story and yields more positive results. The way on is easy going walking, both in shallow water and on the muddy embankments, until a breakdown area is reached where the passage appears to be obstructed by fallen blocks with the stream issuing forth from their base.

With a little investigation, however, a way on over the top can be found to a point where there is a deep pool. A short traverse on the left-hand wall leads down to a large broken stalactite, which bridges the pool, and crossing this leads to a further blockage with a way on visible over the top. Although a little awkward to climb over due to its greasy nature, access is soon gained to a chamber with ways on to the left and right.

Moving to the left here, the chamber (which hereafter for want of a better name is referred to as "Junction Chamber") descends to the continuation of the inlet. This can be followed upstream for around 160m until progress is halted due to the appearance of a sump pool.

One point of interest is that, just prior to the sump, a dry section of passage on the right (not shown on the survey) can be followed for a few metres until a 5m high wall is reached with what looks promisingly like a further way on over the top. Once climbed (care must be taken as the rock, as in the downstream pitch, is of very poor quality and flakes away in the hand), however, the expected way on does not materialise and the passage comes to a disappointingly sudden end.

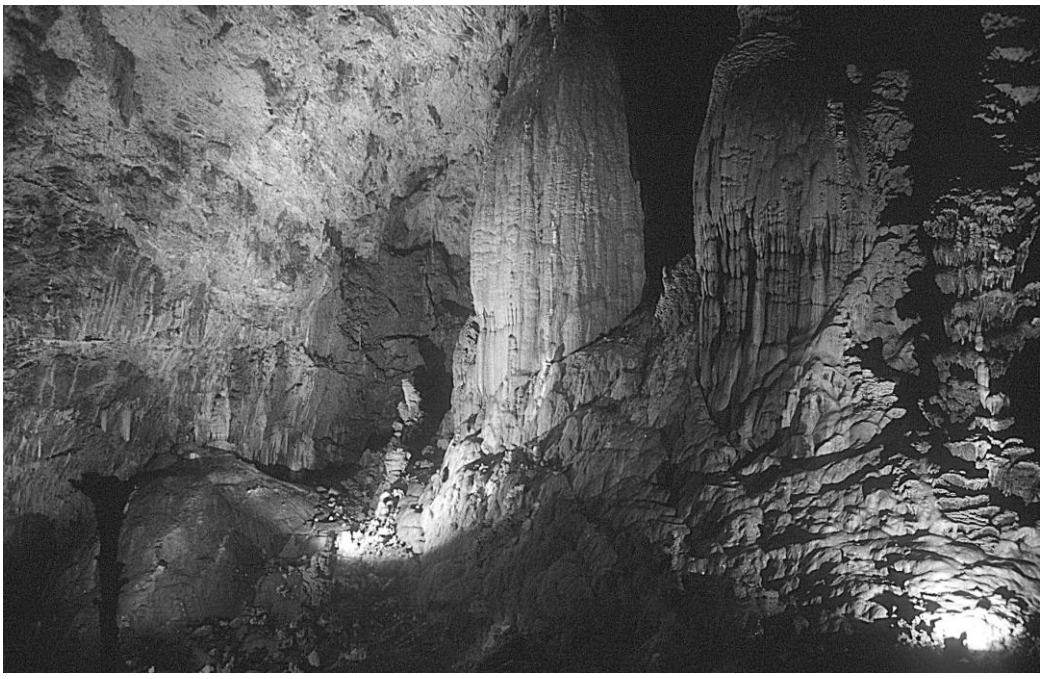
Back in Junction Chamber, if you move to the right, i.e. to the north, a small climb down is found which leads to a lower section of the chamber where one is again faced with the option of heading to the left or to the right. To the right a passage gradually swings around becoming increasingly lower in height until a horizontal slot ("Bill's Bypass") of around ½m in height is reached, through which the sound of flowing water can be heard. Crawling through here, through an initially unobserved slot, brings one back into the inlet, in the pre- breakdown area, and so provides an easier method of access to the areas beyond.

If instead one advances to the left you will find yourself climbing a mud slope at the top of which one looks out into the void of an enormous chamber. On entering, descent is made to the chamber's fine mud floor,

where several comments were passed regarding the fact that it appeared, to a large extent, to be perfectly flat. With this in mind and coupled with the perceived shape of the roof (estimated at 40m in height), the chamber was soon dubbed the *Millennium Dome* after London's centenary fiasco.

A perimeter survey was carried out and formations were found to be sparse. Those found were mainly lying hidden away in the chamber's recesses. Of more interest was the

Pengjiawan's massive formations dwarf the human figures in these scenes



discovery of two minor passages leading off, though these ultimately led nowhere. The longer of the two especially held some interest due to its floor initially having a very distinctive appearance resulting from a mesh of comparatively large cracks. Also discovered at this point were signs of previous visitation, by presumably some of the local populous, i.e. footprints both barefooted and sandled.

Although one of the most, some would say the most, impressive spectacle in Shadong, the Millennium Dome is certainly not the only sight worth seeing here. From the impressively large entrance passage onwards there are many sights, which captivate the attentions of the explorer.

On the whole, Shadong is certainly a must-see cave if one is in the area, especially as it contains areas still unexplored and remaining to be surveyed. A final word; It is a cave, I think, for lovers of mud and large rooms!

Shadong, with its very impressive network of passages, mud formations and array of cave life was also chosen as a subject of Arthur Salmon's water chemistry project, which is to be published later on this year. Although the river in Shadong was located quickly on the first day, it soon sumped in spectacular fashion. Its capacity to ebb, flow and rise was quite incredible and over one night the river rose by the sump almost ten metres! Although no further river passage was located in Shadong, a number of sumps were discovered and towards the end of the expedition, a lead was found, but time was not available to pursue it. Its promise was the noise of water in the distance...

A number of other caves were explored in the Lingyun area, very notable of which was Pengjiawan. Arthur Salmon described some of the work carried out there

Pengjiawan **Arthur Salmon**

UTM: 48 664567 2704236
Altitude: 708m Length: 1712m

The cave is situated east of the 'New Road' close to the village of Nongyin and ½km southwest of peak 1023.7 on the Chinese 1:50,000 series map (6-48-130-B). Exploration, surveying and photography of the system involved five trips and 140 man-hours.

A major surface feature consists of a steep-sided, cliff-walled collapsed doline which is roughly oval shaped, approximately 80m long, 35m wide and 35m deep, with the long axis running roughly N-S. The surface crater is situated in almost level cultivated fields. Descent is affected at the SW corner of the doline and involves a zigzag descent of the south wall through a bamboo thicket, followed by a descending traverse of the east wall to the floor, which is composed of large boulders. The northern wall of the crater has a high level fossil cave of limited extent. A lower level entrance, which was deliberately blocked by rubble in 1998, lies under the overhanging west wall.

The Local Government was anxious that the cave should be fully investigated and surveyed since it was thought to have potential as a show cave. The blocked entrance was cleared by local workers in an operation that took two days and on completion of this Tony Penny, Cai

Wutian and a local guide made a very hurried trip through the system and returned with news of a large passage, which was well endowed with cave formations, but with floors of very slippery mud. The major feature of interest was a huge chamber, which was a veritable Alladin's cave, so richly was it decorated with formations.

Thus, the serious work of exploring, surveying and photographing the lower series began. As mentioned above, this was certainly not a virgin cave and may have been entered many generations ago by the local villagers. There certainly was evidence of this and, indeed, some, fortunately not a great number, of the cave's unique formations had been damaged.

Entrance from the open crater was by a 3m pitch through the boulder choke and was facilitated by a hand-line from a hanger placed in the wall above the entrance. The pitch was followed by a steeply descending boulder slope for around 150m in a roughly westerly direction to a junction with an almost horizontal passage. This passage was a major feature of the system and varied in width from 15 to 30m. The floor was generally made up of mud banks, with no sign of any stream flow, but with occasional small pools. The roof of the passage is well adorned with stalactites and the mud floor has some stalagmite bosses. Although there was little water in the cave during the period of our exploration, it seemed that it must flood from the bottom up, from time to time, but it was impossible to estimate the frequency of this flooding.

From the junction, the cave extends about 160m to the south. The right-hand leg of the passage swings gently towards the west, then turns sharply north for 100m and then east-northeast to easterly for some 300m.

After a small ascent, followed by a descent, the character of the passage changes markedly, becoming a sizeable chamber. An acute turn to the north leads one up a steep slope at about 45° for about 80m to a larger chamber, which extends about 100 x 100m. Initially the slope is of mud, but then becomes a calcite flow which merges into a huge pillar. The decoration of the chamber is very varied, with large pillars and a slender ~15m column of pure white crystal, which was named 'The Wellington Boot' because of its unusual shape. The height of the chamber could only be guessed at and could be in excess of 50m. The survey indicates that the floor of the chamber is approximately at the same elevation as the fields surrounding the surface crater, suggesting that the chamber is very close to the surface. Further surveying of the surface topography is needed to clarify this.

The quality of the formations in the chamber do suggest that Pengjiawan could, indeed, be developed as a show cave, provided due attention was paid to environmental considerations. This may be facilitated if the chamber is, as looks probable, close to the surface thus permitting a gallery to be driven directly into it from the surface.

The cave of Shendong was explored over a period of one day and was the scene of Harvey's accident.

Shendong **Arthur Clarke**

October 5th 2000

After we had explored Shendong (Deep Cave), and reported its dimensions back to Mr Cai, he

thought we should probably re-name it, perhaps devising a name based on the two villages it was located between: Nongying or Nongyin (to the north) and Nongfeng (south).

Back tracking a bit. This was *Day One* in the field for us – a rainy day with our umbrellas and japaras. There were four of us searching for caves in Zone Three, north of Lingyun: Arthur Clarke, Alan Fletcher, Harvey Lomas and John Whalley with Cai Wutian acting as our guide. Being mindful that the previous day a villager had told Prof. Zhu and a few of us that there was a large cave near a bamboo grove "…over in that direction…" where 300 people visited on one day in 1998, we thought we were going to possibly have a good day. After a fruitless search amongst some roadside karst outcrops, only locating an ancient grave tomb with ornate figures and statues in sculptured limestone (now desecrated with faceless heads), we were looking more like "drowned rats" with nowhere to go. We could see the rooftops of Nongyin village houses in the distance beyond the mauve-topped maize flower heads, so Mr Cai suggested we look for a track leading to the village where we could seek some directions or a village guide to assist us.

In the village of Nongyin we secured the services of a young man and our cavalcade of umbrella wielding cavers headed off south along village paths through village gardens. Some ten minutes later our guide advised Mr Cai that we would soon have a steep descent; we descended a 50-60º sloping side of a doline (part of a uvala) finally coming to an overhanging cliff wall where we thought our cave was going to be. There was no cave here, just lots of bundles of maize stalks stacked up on shelves of rock to dry out – being dried for future use as fire-burning fuel. It was an interesting site for two other reasons: there was a quite good example of tufa deposits and phytokarst, plus a massive exposure of palaeokarst: the fossil evidence of an old cave chamber or cave passage that had been infilled with cave sediment and boulders during a previous cycle of karsification and since re-cemented to become part of the present day rock structure. (Present day caves sometimes form as complete or partial exhumations of these old palaeokarst deposits that are often highly calcified and more readily susceptible to dissolution.)

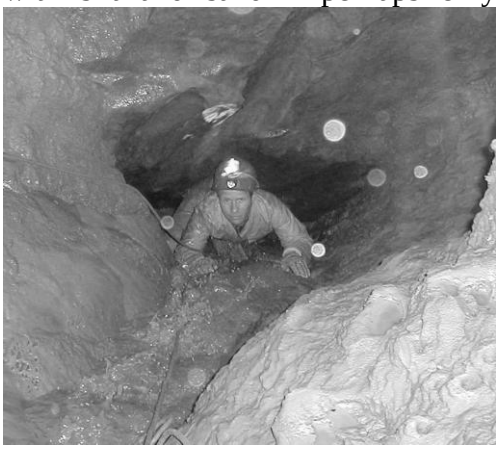
After a brief respite from the rain, we continued along the lushly vegetated "valley" bottom floor into another section of this uvala, stepping down the short limestone boulder walls separating the outlying village garden areas. Some "step-downs" were quite slippery or greasy; Harvey Lomas discovered this and injured his buttocks and shoulder in a fall. We continued on, descending further and near the base of this uvala complex, there was a circular flat-bottomed silty mud floor garden area where we were told that there were sometimes "up-welling" pondings of water. In 1993 (or 1983?) this whole lower

garden area had been flooded to a depth of 5-6m. Our cave was under a nearby cliff with dripping tufa near the entrance.

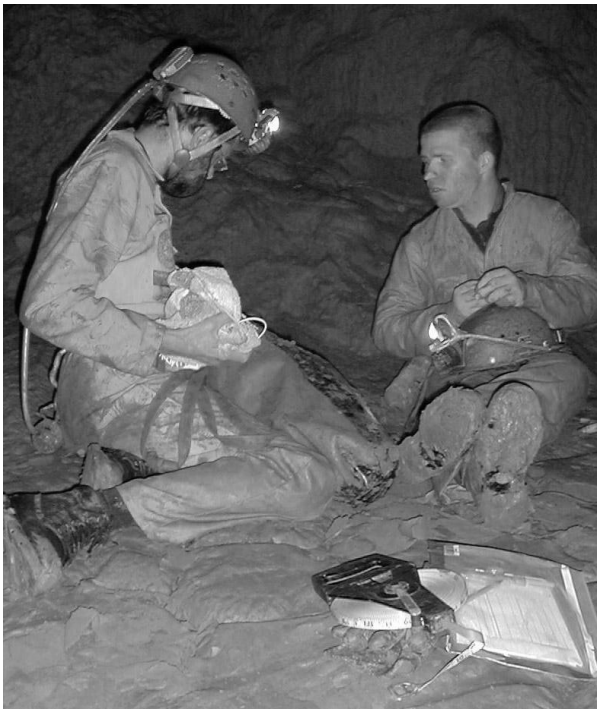
As we stood outside the entrance, sheltering from rain, the guide and his mother told Mr Cai that the cave was known as Shendong which at first sounded more like "shentang" to our western ears. It was named as such because it has a passage that sometimes takes (and issues??) water – a passage going into the hill for a short distance, and then descending down to depths unknown. The villagers assumed these unknown "depths" to be the source of waters that sometimes emerged and flooded the lower sections of the uvala. While Arthur tended to Harvey's injuries selecting a gauze bandage from the Tasmanian First Aid kit as an arm sling, Alan Fletcher donned his 3mm wetsuit and brand new orange "Stanley Brown" overalls and ventured in for a brief reconnaissance. Alan emerged about ten minutes later saying that "…it goes, it's a little bit crawly but it opens up…" John Whalley, clad in his new tight fitting "Stanley Brown" overalls, followed Alan into Shendong, with Arthur behind… and just to be different, Arthur was dressed in the more spaciously proportioned "Graham Salmon" grey-coloured overalls! It was indeed a quite "crawly" (I would have called it "grotty") passage that you entered after slithering over boulders and the dry dusty substrate that soon became a muddy-floored passage with a small trickling streamway. I was already starting to think that if this is what Chinese caves were all about, I should have stayed home in Tasmania!

The cave did in fact open up, enlarging from a chest-wetting belly slither to a more respectable crawlway with only your hands and knees in the muddy water, so Arthur started looking for cave invertebrates. About 10-15m further on, Alan reported seeing a cave beetle in a small "stand-up" chamber (a small aven) and John also mentioned seeing a "spider". While edging my way to this aven site, Alan reported that they had located the "drop" further on – where the trickling stream goes down a greasy mud slope of unknown depth leading to the sound of more rushing water below. Alan returned to the surface to fetch a 25m length of 11mm rope and subsequently with John's assistance rigged the "pitch" from a convenient jug hold in the small aven. Arthur looked for bugs, locating a small tan-brown carabid cave beetle, some small flies and a cave cricket that John had thought was a spider.

The handline pitch was actually just a 7-8m long greasy mud slope with mud-covered flowstone banks which connected to a small 0.6m wide 0.2-0.3m deep streamway which funnelled down a 60-70º slope waterfall channel into a narrow 1.8m wide x 1.2m "hole" of darkness. Being the most suitably attired, Alan drew the short straw and descended reporting that the stream disappeared into a low roofed deep sump pool with silt and sand – perhaps only



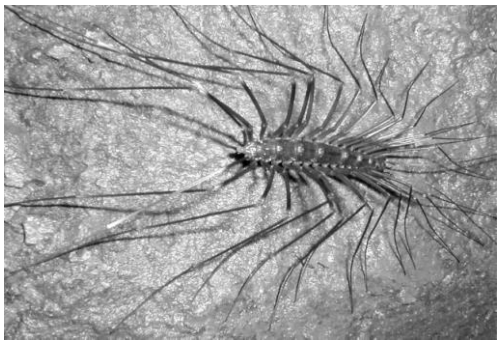
worth exploring further if there was no rushing water or threat of more rain.



We opted to follow the main passage upstream – it meandered through a few small chambers with decoration and then into a very large chamber with guano piles and numerous guanophiles: the myriad of small cave invertebrates that devour bat (or bird) guano. On one of these guano banks we saw our first "Hairy-Mary" (scuterigid centipede) with a body length of about 6-7cm. Following the stream passage – now with a 1-1½m wide x 20cm deep stream in a 2½-3m high flat-roofed passage, we found dozens of roosting bats. These bats were quite large, clinging tenuously to the fossil rich bedding plane ceiling of the stream passage. The cave passage continued upstream through sections of cave decoration with mud-cracked floor or mud banks.

We continued exploration upstream to a point where the cave narrowed and became blocked with speleothem formation around a small pool of bluish tinged water. We decided to survey out and retreated to a small side chamber for a snack break.

John took some photographs while Alan and Arthur took some water samples and measured water temperature (19½ºC) and took two pH readings at two separate sites (7.76 and 7.83). When we caught up to John, he was still smiling with camera in hand and we continued to survey out. The cave was quite short (see survey) and relatively pleasant apart from the entrance passage series of crawlways. Near the junction with the entrance passage – on the headwall above where Alan had descended the short waterfall – we found our next surprise: our second "Hairy-Mary" (scuterigid centipede), by far the largest specimen I had ever seen with a body length of about 11-12cm.



Apart from its 15 pairs of menacing long slender legs, it had tremendously long (20cm plus) antennae. Time to make an exit!

The exit was a bit painful (without knee pads) – along with the frustration of short survey legs in dampness and mud; mud that eventually plastered both the plastic survey book folder and tackle bag by the time Arthur emerged at dusk. We were happy to be out after our first day's caving in China and even managed to crack something of a smile for Harvey Lomas when we were photographed beside a very clean and respectable looking Mr Cai.

Even Harvey, bandaged arm in sling, cracked a smile. With fading light we ascended the steep sided doline via what seemed like a goat track from the cave to the road – and were actually overtaken by a herd of horned mountain goats en route.

Jonglidong Bill Hawkins

The cave is in the valley bottom close to the village of Xia Nongyang, north of Lingyun.

The entrance is three to four metres up a cliff face in a small rock amphitheatre. It is best approached from the left.

A simple climb leads to a short entrance passage, which ends in a tight, steeply descending rift. Large cavers may have to traverse awkwardly up into the rift in order to get through. A handline may be useful here.

The rift leads into a small clean chamber with interesting gour formations. The walls are completely encrusted with stalagmite deposits. The chamber ends in a short crawl behind a stalagmite, which leads to the small final chamber. This slopes upwards and ends in a small hole. It is impossible to see if this hole leads anywhere without seriously damaging the formations. It seems unlikely that it does.

Like the first chamber, the final chamber is well decorated and completely covered in deposits.

Total length about twenty metres first explored 5th October 2000 by Tony Penny, Arthur Salmon, Mike Pitt and Bill Hawkins.

Jonglidong means "Presidents Cave" named in honour of the then YRC President, Ian Crowther.

Nearby was an interesting cave called Xianongyang…

Xianongyang

Bill Hawkins

Two small boys pointed out this cave to Tony Penny on the day we visited Jonglidong. The entrance lies some sixty metres up a steep wooded hillside and is well hidden by vegetation. On first examination Tony thought the small entrance passage led to a pitch, but without the luxury of a light at the time it was difficult to tell!

Several days later Tony and I returned with the necessary equipment to explore and survey the cave. The small entrance passage actually led to a steep slope of debris into a small chamber with an eyehole at the bottom. Slipping through this we found ourselves in a dry well decorated chamber of some size, being roughly circular and about twenty metres in diameter. The floor consisted mainly of fallen boulders covered in stalagmite deposits, but lacking in any lustre or brightness. A short pitch was noted close to the entrance and left until later.

On the far side of the chamber, opposite the way in, we found a rift going upward, but also accessible at floor level. Tony took the low route and I tried the one above, uniting after a few metres. The way on lay through another small hole. Surprisingly this led to a much larger and impressive chamber, again well decorated.

At the far end of this second chamber, high up in the roof, was a small window to the outside world. This was at the top of a massive stalagmite covered wall, and after a few abortive efforts we gave up trying to climb up it. The whole impression of the place with the daylight creeping in from above reminded us of Gaping Gill Main Chamber, without the water. There was no further way on.

After looking in some short side passages and surveying the cave, we dropped a rope down the small shaft near the entrance to the first chamber. This lead only to the true floor of the chamber, again with no way on.

The Chinese had obviously known the cave for generations. Everywhere were the remains of burnt rushes and the rock was polished by the passage of many bodies. We wondered what the cave had been used for, but there was no archaeological evidence to answer our queries. We did not even find a magic lamp.

Because this had turned out to be a short day in the field, we decided to try to hitch hike back to the hotel, after leaving a message with the minibus that we would not need transport back. After having our photographs taken at the local school we found ourselves back on the roadside, thumbs at the ready. A police car spotted us, pulled up and gestured for us to get in the back. On the back seat were two prisoners, one handcuffed to the side of the vehicle and one slumped unconscious across the seat. The latter was unceremoniously jammed upright against his colleague and Tony thrust

in beside him to keep him vertical. I was squeezed in between Tony and the door and the journey to Lingyun resumed. We wondered exactly where we were being taken (we didn't even know if hitch-hiking was legal in China) but we were driven directly to the hotel where we made a grateful escape. An interesting end to a pleasant day's caving.

The remaining caves explored in Lingyun area can be found in the summary of cave discoveries later in this report.

During the final week of exploration in Lingyun the expedition moved South to a limestone area where huge dolines and solution pits abounded. One of particular interest was the Yanliudong Doline, a huge crater 100m by 200m across at its base. Descent into this was by a 150m free-hanging abseil.

Yanliudong **Jon Riley**

At the beginning of the trip we had been driven to the rim of the Yanliudong doline. I had the distinct feeling that it was being used as a carrot for all the keen SRT practitioners and it certainly was incredibly impressive. We had scientifically studied the depth by throwing rocks over the edge and counting until they went bang. We estimated that the hole might be approaching 200m deep. At the bottom of the shaft was a raging, brown river and a carpet of lush green vegetation. Professor Zhu seemed certain that it had not been descended and so, standing on the lip of the rim ten days later, there was a feeling of excitement and trepidation amongst the group.

First off, we walked the entire rim of the doline. Bruce was trying to find the best camera angles and Graham and I were looking for the best hang. Initially we were tempted by the black slightly angled rock on the south side of the rim, but in the end we decided to be audacious and go for the clean rock and completely free hang from the lip of the main overhang on the north side.

We hacked our way down through the spiky bushes and bamboo and proceeded to put all our kit on. Funny how a large drop like this means that everyone suddenly wants their buckles checking, that is except for Pascale, who in typical French-style, just smiled, shrugged and pulled on her home made French style lightweight harness…no buckles just knots! We checked the big rope very thoroughly and packed it carefully. There were no more stalling tactics that I could think of, so we made a start.

Two very large bolts were placed in some exposed limestone pavement and a Y hang rigged. I then started down the slope pulling weeds out and throwing them all down the hole.

After about twenty minutes we had completely cleared the start slope and so the time had come for me to gently lower myself over the edge. The rock was solid, but as is usual with a new area of limestone, it was incredibly sharp with occasional loose flakes of rock. After applying a bit of persuasion, I pulled some of the larger pieces off and threw them down the pitch. Just after launch there was about seven seconds of surreal silence followed by an ominous, low, thumping explosion noise as the boulders touched down below me. Very sobering indeed!

Several Y hangs later and following a slightly diagonal line, I found myself perched on the lip of the overhang where it was marked by two enormous hanging formations. By this point, I had been hanging in my harness for about 45 minutes and was beginning to get pins and needles in my feet and calves. I placed the final bolts and dropped down into thin air, the tackle bag spinning below me and the rope creaking as it fed slowly through the stop. Looking up at the two small bolts and down at the green vegetation that didn't seem to be getting any bigger and with the heat of the rope burning through my gloves, I prayed… But eventually, several minutes later … touch down. The world stopped spinning and the blood rushed back to my feet. I let out a big cheer and was replied to by a group of locals and the TV crew that had turned up to video the occasion. I shouted the loudest "rope free" that I could summon and saw Graham start his descent. Whilst he was coming down I took the opportunity to look around.

The base of the doline is about 300 metres square. Where there is daylight, there is a thick layer of fern and lush green vegetation. Under the overhang, the mouth of the cave, there is a thick layer of very sticky mud and a stream about 15 metres across that shows signs of flooding the base of the cave in the wet season up to the level of the vegetation. I started to walk down the mud slope towards the river and spotted a familiar sight, small Chinese footprints! Whilst abseiling, I had seen a makeshift ladder arrangement, that came down a ramp on one wall of the doline, but I could not see any way that the locals could have come down to the bottom from the ledge that it rested on a third of the way down the height of the pitch. As I walked further on I began to see many more footprints, positively a path! Then on the west wall I spotted a square passage leading off into the distance.

Once Graham had touched down we set off down the passage. About 100 metres in we came across an 8-inch pipe that seemed to be carrying water under pressure. The floor of the passage was natural, but the walls and roof were too uniform to be the originals, so we concluded that the passage had been enlarged using explosives. Later we spied telltale shot holes in the walls, which confirmed our conclusion. We walked through pools and along ledges following this pipe for about a kilometre and then eventually saw daylight. We emerged in between two limestone cones in the middle of some paddy fields! Completely confused and disoriented we walked back to join the others and give them the interesting news!

By the time we got back, Alan and Pascale had touched down and Bruce

was just in sight. We spent around an hour taking photographs and looking around the base of the cave. Another passage was found on the southern wall of the chamber. Graham and Pascale quickly checked it out and could see daylight, but did not follow it out. We did not have time to cross the river and to do so we would have needed the dingy. The water flows out from under the rock on the south wall of the chamber then sinks under the north-eastern wall. The opposite bank of the river rises steeply into the darkness and could be worth checking out if you had time.

Graham and Alan volunteered to walk out of the cave rather than go back up the pitch and between them they kindly carried all our heavy kit out. As they set off we hoped to see them later as we had no idea where they were actually going to come out! Pascale set off up the rope first, followed by Bruce, each of them taking about half an hour to climb the pitch. Before setting off I checked the amount of rope left in the bag. There was about 20 metres, which puts the length of the pitch at about 170 metres. The climb back up the pitch was long hard work and we all commented on the tortured noises that the core of the rope seemed to be making and how it was best just to try to ignore it! Eventually, just before dark, I dragged myself and the end of the rope back over the rim. We stuffed the rope in the bag, climbed the loose slope of the doline and collapsed in the back of the van for the journey back to Lingyun and the prospect of another large banquet!

We had found that the little Motorola radios had been incredibly useful on a pitch of this size and would definitely recommend them in the future. Smilarly, the Hilti proved invaluable and drilled into the rock as if it were pine! All the expansion bolts were left on the pitch, so to repeat the descent you would simply need about 12 hangers and 200 metres of rope, or alternatively just walk in at the bottom! Later we found that the tunnel had been blasted in preparation for a hydro scheme and that the pipe in the passage at the moment is used as irrigation water in the fields and by the small village in the next valley. It was in this tunnel that Arthur Clarke and Arthur Salmon spotted the cavefish. Arthur Clarke was particularly impressed with the flora and fauna in this short section of passage.

Some Conclusions from the Lingyun Area Exploration

It is interesting to note that the limestone area that was explored around Lingyun was bordered by Permian shales and, because of extensive drainage from these shales, it is likely that considerable silting has taken place in the caves. Evidence of this is particularly seen in Xiashuidong and Shadong, where, despite finding several kilometres of large passage, only truncated sections of the River could be accessed.

Between Lingyun and Xiagia, where the very large dolines were found, the now much larger River was only located momentarily before disappearing again. Shale infill and ponding back from the hydro-electricity scheme was much in evidence and sections of a very large cave passage in the area are now totally inaccessible.
The other caves explored were entirely of a fossil nature, often well decorated, notably Pengjiawan, which the Chinese now feel has considerable commercial potential as a show cave.
One of the most promising leads in this area is possibly the passage in Shadong where the River could be heard again. A lot more work needs to be done in the doline area south of Lingyun where geological maps have revealed a number of very interesting features.

Exploration in Leye County
Ged Campion

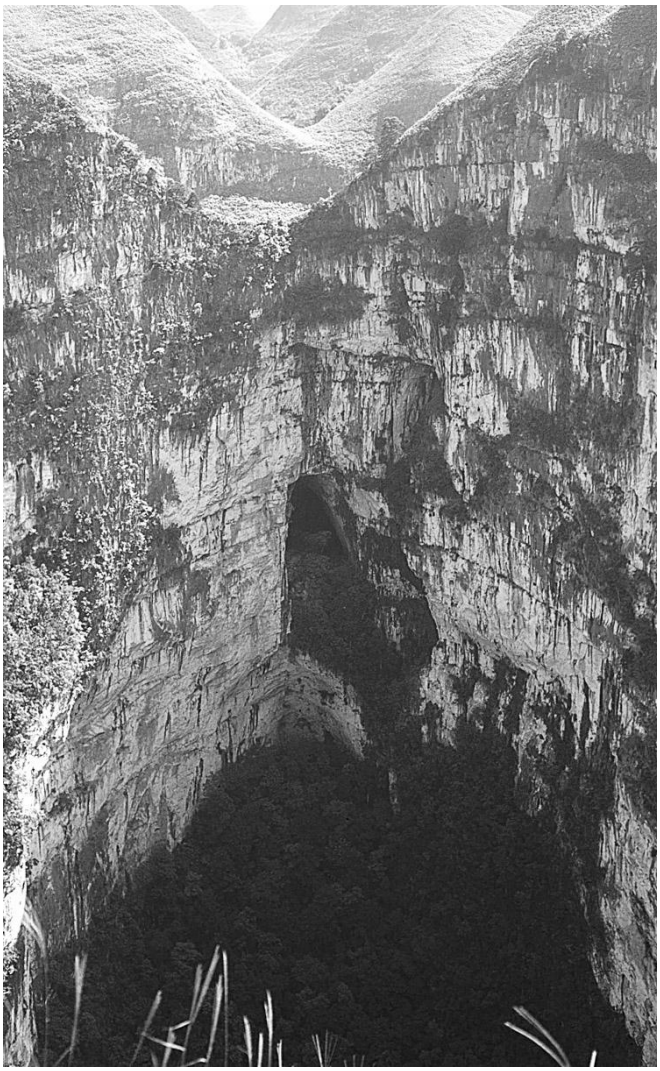
Halfway through the expedition, a team was dispatched to an area forty miles North of Lingyun, called Leye County. Westerners had never prospected this area and a team of six from the expedition were invited to make a reconnaissance there. Leye County boasts a massive area of limestone, considerably larger than Lingyun. Arrangements had been made between Professor Zhu and the local government officials in Leye for our visit to take place. As in Lingyun we were particularly impressed by the level of hospitality that was afforded to us, including the use of the Mayoral four-wheel drive and the entourage of officials, which reminded us of how important our visit was to this region of China.

A suitable, and indeed the only, hotel in Leye, was to be our base for operations over a period of one-and-a-half weeks. After the usual meetings with dignitaries, and a number of banquets, followed by a thorough inspection of geological and topographical maps, we visited a number of features that Professor Zhu had selected on a previous visit to Leye some months earlier.

One of the most significant and celebrated limestone features of Leye is the great doline of Dashiwei. This spectacular doline is said to be the second deepest in the world, the deepest, of course, being the Xin Long doline in Sichuan Province, the focus of a number of China Cave Projects visits during the last few years. By no means did Dashiwei disappoint us. As we stood high on its perimeter, rays of sun light vanished into its awesome depths. The doline supports its own primeval forest and eco-system virtually undisturbed by humans. We had planned a three-day stay in the doline to give us an opportunity to explore the cave hidden in its lowest recesses. The Doline itself has an intricate entrance, a large cave with a small hole at the bottom providing a slot onto a ledge system and terrace on the

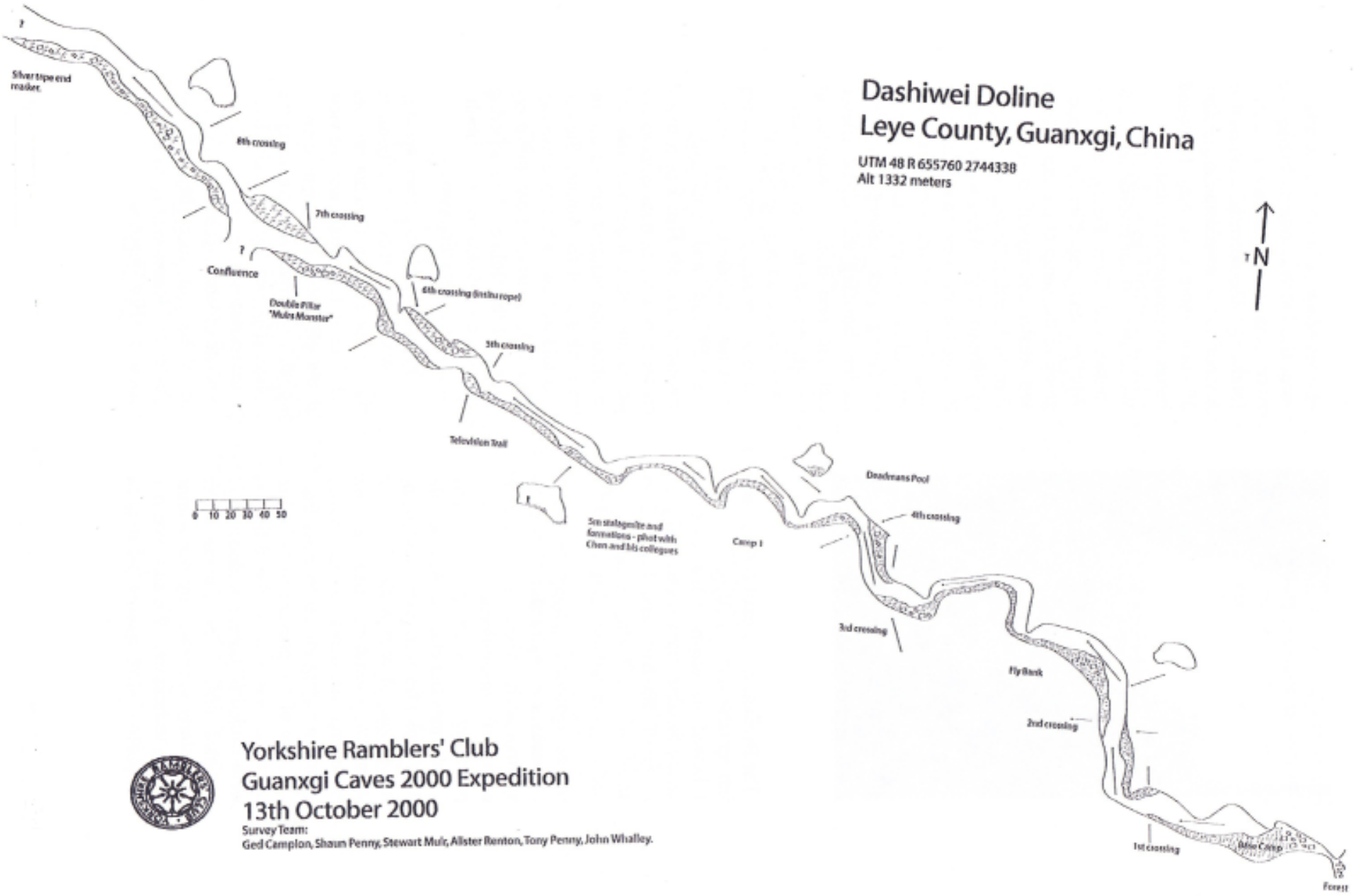
walls of the Doline. From a cliff face position, an abseil down for 50 metres allows access to the huge Bivouac Cave before a 70 metre free hanging descent to the bottom.

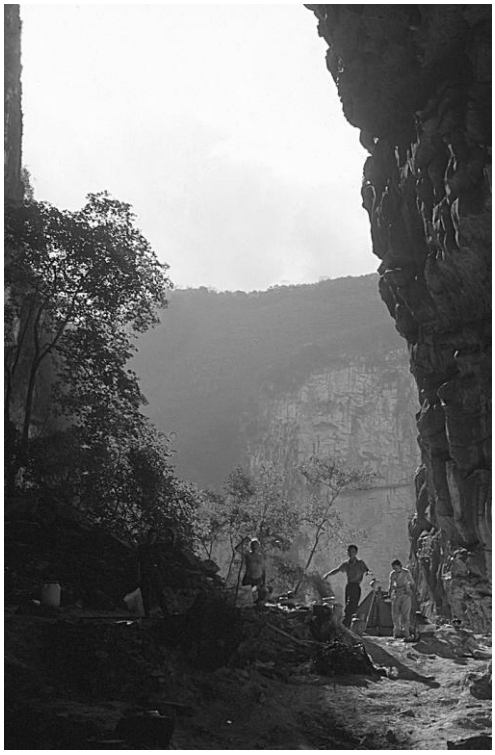
Looking up the walls of the Doline gives the impression of four or five Malham Coves stacked on top of each other. There were truly clouds, 'Will o' the Wisp' like, in the crater above the bamboo glades. Poor logistical organisation meant that Stewart Muir, Alistair Renton, Shaun Penny and I arrived at the bottom in the late evening. Radio communication and the work of our Chinese interpreters complicated matters even further. Mr Chen, a Chinese caver, so quite a rare breed, had visited us from Nanning and had previously descended the Doline. He could speak no English whatsoever, but managed to help us find a way through the dense forest in the dark to the mouth of the cave. We tumbled, slipped and clawed our way through the darkness until at last we could hear the noise of running water, the cave entrance. The sweet smell of incense bearing trees and a visual display of fireflies made the magic of the Doline even more vivid.



The cliffs and primeval forest of Dashiwei doline. The tunnel in the centre of John Whalley's photo was the location of a stage camp.

Mr Chen had visited the cave the previous year and had joined a Chinese Army Expedition to chart its depths. Unfortunately, however, the expedition resulted in the loss of one of the soldiers who had been washed away after only penetrating the cave for half a kilometre. This trip, therefore, held great dread and awe for our Chinese colleagues, who were reluctant to enter it again given the high water levels we found in October. Mr Chen, working for Nanning TV wanted to make a film of our exploration in Dashiwei. Communication proved extremely difficult, especially when setting up the action shots! Rather amusingly, when we arrived at the bivouac site at the entrance to the cave, Mr Chen radioed back to the interpreter at the camp far above and the message came back that the water levels were rising. What it really meant was that the water was considerably higher on this occasion than it had been when Mr Chen first visited the cave last year.


Dashiwei Doline
Leye County, Guanxgi, China
UTM 48 R 655760 2744338
Alt 1332 meters
N
Silver tape end marker
8th crossing
7th crossing
Confluence
Double Pillar "Mules Monster"
6th crossing (knotted rope)
5th crossing
Television Stall
5m stalagmite and formations - photo with Chen and his colleagues
Camp 1
Deadmans Pool
4th crossing
3rd crossing
Fly Rock
2nd crossing
1st crossing
Base Camp
Forest
0 10 20 30 40 50
Yorkshire Ramblers' Club
Guanxgi Caves 2000 Expedition
13th October 2000
Survey Team:
Ged Campion, Shaun Penny, Stewart Muir, Alister Renton, Tony Penny, John Whalley.



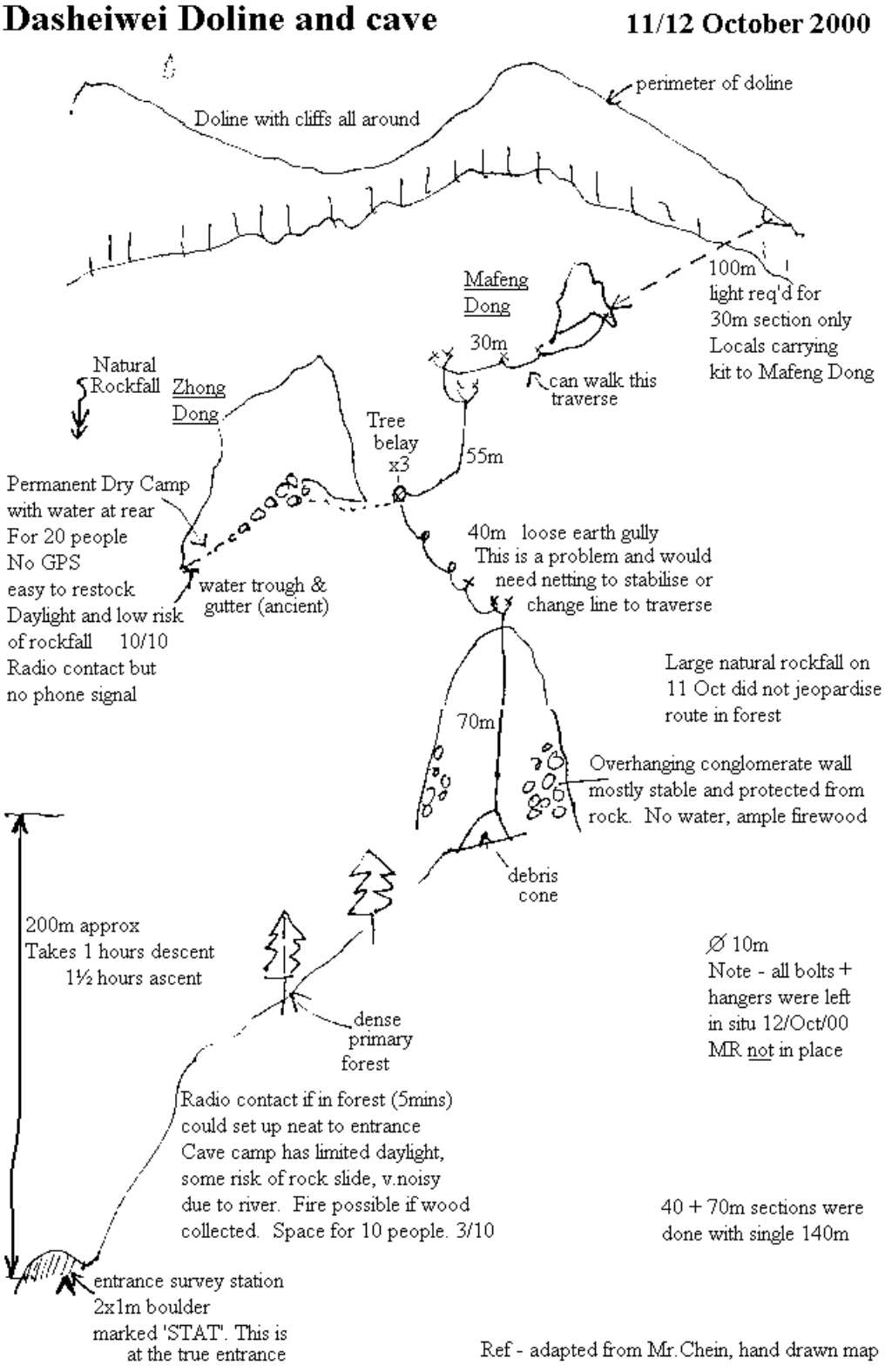
The Bivouac in the cave entrance was inhospitable and our supplies had not followed us down. We spent an uncomfortable night deafened by the noise of the river and harassed by small insects taking great joy in mobbing our carbide lights.

In the morning, entirely on empty stomachs we explored the cave for approximately 1½km. It was a river cave of magnificent proportions providing sporting swims, Tyroliennes and climbs. At times, the river crossings were very challenging indeed and Stewart Muir, voted our strongest swimmer, had a few harrowing moments as he battled against a raging torrent to cross from one side of the passage to the other. Once he was across, the followers were hauled in unceremoniously like drowned rats. The Chinese were particularly impressed by our Alpine caving techniques. We surveyed one kilometre of cave passage and stopped at a very large tributary that appeared from the left and was as big as the river that we were originally following. The potential for this river to continue is considerable; possibly 30-40km more cave may be found before its resurgence at Bailong.

We returned to our bivouac and made contact with Tony Penny, and John Whalley and the Chinese support group in the camp at the top. Shaun and Alister and myself ascended the 70m pitch first, followed, we thought, by Stewart Muir. When we arrived at the top, tea was brewing and, after the long climb, we relaxed and drank our tea. All of a sudden, a mighty thunder of falling rock echoed round the Doline, breaking the surreal silence that had prevailed. It sounded as though the whole pitch had peeled away, taking all and sundry with it. Anxious shouting and frenzied movement followed. Radio contact was difficult and muddled. It transpired that Mr Han was actually on the rope and, as pure coincidence would have it, a huge rock fall had occurred one hundred metres out on the north side of the Doline. Stewart later told us how he had seen two car-sized blocks detach from the dizzy heights of the Doline. This sobering experience reminded us of our frailty and nature's prevailing power.

A very comfortable night was spent in the caving camp above the fifty-metre pitch, with a warm fire, hot noodles and Chinese folk music, and the view of the glistening firmament through the tall cave window overlooking the Doline. The next day we headed back to the surface to be greeted by the spectacle of local dignitaries, villagers and a host of four-wheeled drive vehicles and lorries waiting to take us back to our Headquarters.

The next two days were spent exploring an interesting fossil system, the Xionajiadong Caves (East and West Caves). The actual cave is separated by a huge doline caused by the collapse of part of the cavern. This discovery provided us with over three kilometres of huge and beautifully decorated cave.



A Visit to West Cave and Smoking Cave John Whalley

The 15th October was damp and drizzly. After picking up our packed lunches we boarded the assorted jeeps and headed out past the Gold Mine. We were soon off the good roads and driving on rough tracks. Professor Zhu at one point indicated a column of rising and spiralling vapour issuing from the ground just to the left. This was the Smoking Cave, or "Madqidong". Stones were dropped and there was silence for over eight seconds, indicating a depth in the order of 600 metres. This was not a shaft but rather a collapse feature into a massive cave passage that could be entered from a nearby doline and

which apparently descended steeply and contained a large underground river. Clearly, this was a must for any future expedition. However, our objective for the day was to investigate West Cave, or "Xionajiadong", one of two caves comprising the fossil cave system of East and West Caves.

After perhaps an hour of driving on rough roads, the four-wheel drive vehicles stopped at a place where we could look down through the trees on to a farmstead. Our Chinese colleagues lost no time in scrambling down a stony track to enlist porters to carry our tackle bags to West Cave. A very pretty, young teenage girl wedged my heavy photographic case with a melon into a large wicker basket, which she carried "rucksack style". She and her friend were referred to as The Spice Girls and were obviously brightening up the day for our "hunters".

Leaving the road, we followed steep, rocky footpaths through shrubby vegetation, which included many species more familiar to us as garden plants, such as Cotoneaster. It was a colourful procession: the porters sporting open umbrellas. Our objective lay at the base of a limestone scar. Not a large entrance, but a vegetated boulder slope led immediately into a massive cavern, dwarfing the advance party on the floor below. We set off through the cave, climbing across the massive calcite deposits, which in places almost filled the enormous passage, reducing the cross section to squeezes between knobbly stalagmites. This made it all the more spectacular when we broke out into the large halls comprising the clear sections of the cave. Another feature of the cave was the ascending traverses across flow-stone inclines, impressive gour floors and huge sentinel stalagmites.

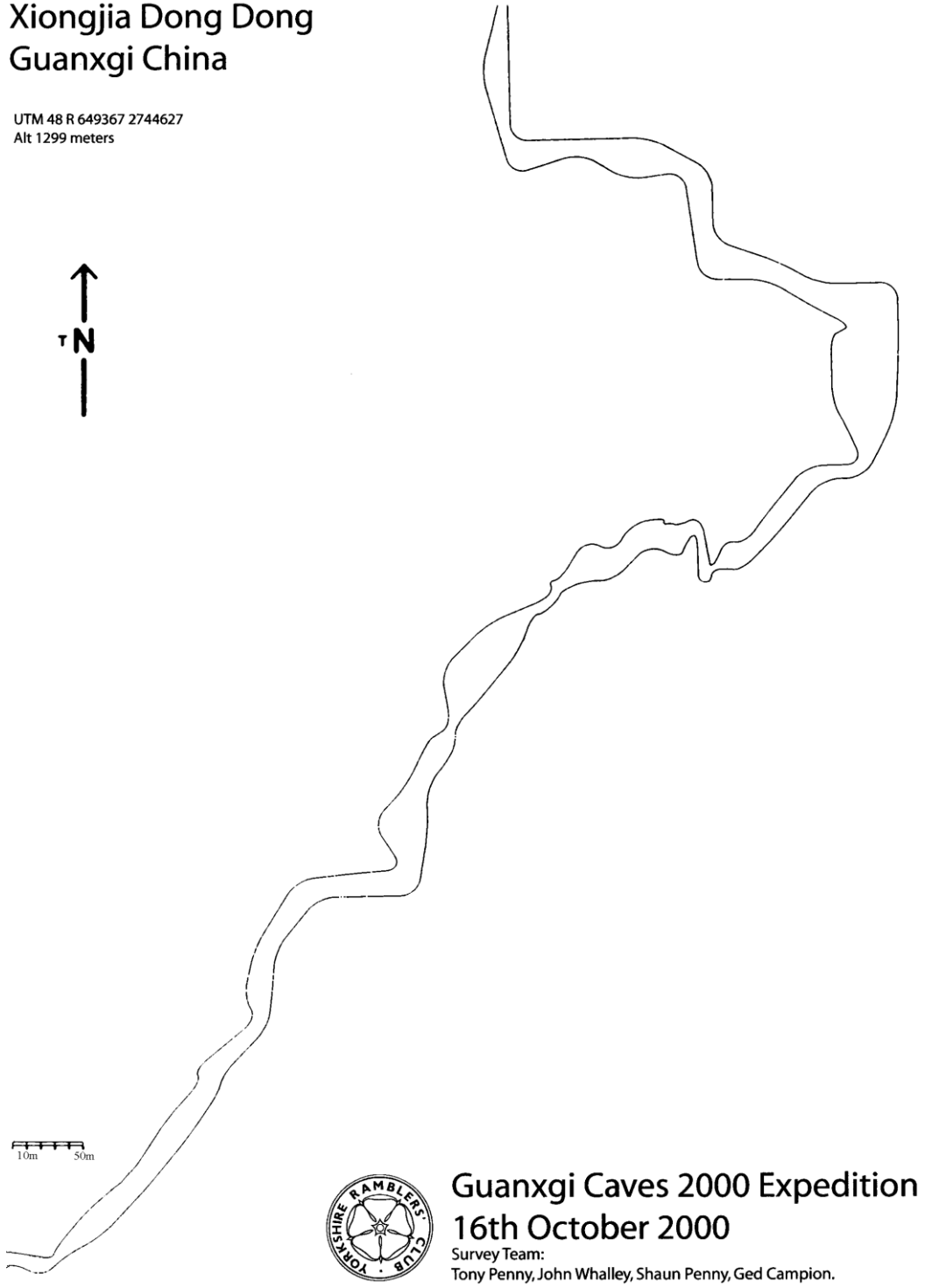
It was to be a once only visit, with the surveying team setting the pace and the photographic team attempting to keep up. It is doubtful whether many of the locals, including the porters and the Mayor and other dignitaries, had ever been through a "wild" cave before, but they took it in their stride with excellent humour and an initiative, resourcefulness and attentiveness that seems characteristic of the Chinese.

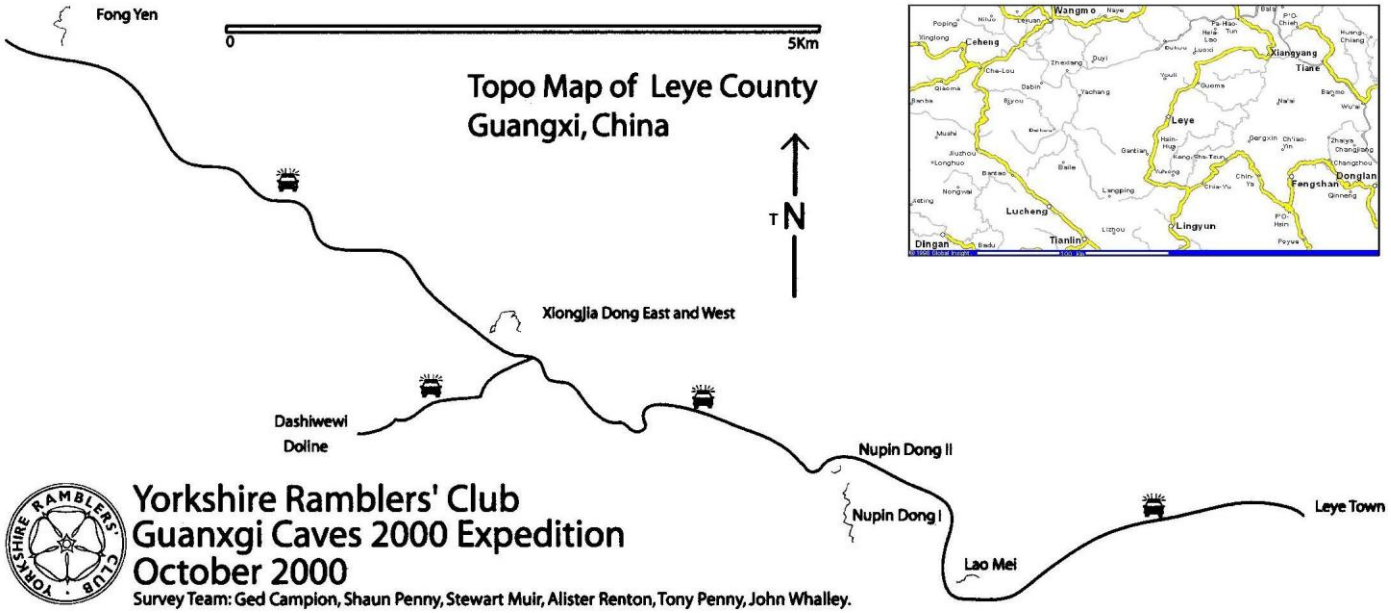
Roughly halfway through the cave, we came across a huge stalagmite with steps cut into the sides. At the top was a timber spout carrying the clear water of an inlet into a small trough. The whole was encrusted in calcite and obviously of considerable age. As to the purpose of these artefacts, be it ceremonial or practical, we could only guess. Certainly it was a long way underground.

We emerged from the "through trip" after a surveyed distance of about two kilometres. Some distance away we could make out one of the entrances to East Cave, which was to be the next day's objective. After fixing the entrance on GPS, we proceeded to a local farmhouse. These were hill

farmers: so-called minority people who are shorter in stature than the Han Chinese and whose agriculture is self-sufficient. We were sat round a fire to warm ourselves. The hearth was in the middle of the floor with a huge wok sat on top and the smoke escaping through a hole in the roof. On the veranda outside we ate a meal of country chicken, beans, pumpkin noodles etc., with lashings of boiled water, tea and rice wine and finishing up with pieces of fresh honeycomb: ample fortification for the rugged trek back to the road.

I am sure none of us will ever forget the hospitality and heartfelt welcome of these simple people.





Xionajiadong, East Cave
Leye County **Tony Penny**

Down in the Dong Dong

Rain fell heavily on our mixed party as we trudged up a narrow three-kilometre track to search the top of the doline containing East Cave.

We had spent three weeks following up leads, gleaning information from locals, rigging pitches, surveying new finds across two counties and I was beginning to flag from sleepless nights, an abundance of banquets, and an excess of "cambehing." or "Cambeh" [1]

We had driven up to the start of the trail in a four-wheel-drive off-roader, which nearly lived up to its name shedding a track rod end and swerving towards a one hundred metre drop. The quick reflexes of the Chinese driver saved the day and with a length of string and several kicks to the affected wheels, we pushed the truck out of the way and crowded into the second vehicle.

The usual recruitment of porters at the nearest farm to our destination produced two fourteen-year-old giggling girls dressed in their best finery. They promptly seized on John Whalley's camera boxes and jammed them in their baskets between enormous melons.

It was in vain that I offered them my rucksack, which was beginning to feel as heavy as my spirits. Everyone else in the party looked like extras from Madam Butterfly with their gaily-coloured umbrellas, which nevertheless kept them very dry, whilst I, in traditional cagoule and headgear, was soaked to the skin.

We waded through cotoneaster type bushes, were ripped by thorns and occasionally tripped up by hidden roots on the path, but eventually sighted our objective from the rim of the shakehole.

[1] Cambeh, pronounced Cambay; horizontal display of an emptied glass (as in bottoms up). A challenge from one drinker to others normally followed by immediate refilling of glasses and leisurely consumption continued until the next person shouts "Cambeh!" Can cause headaches and a loss of focus on the next day's objectives and consequently is much frowned upon by expedition leaders.

A delightful classic opening, not unlike the exit from Calf Holes, was visible to view. It was called "Dong Dong" by our Chinese guides, being a through trip leading to an adjoining doline.

Pushing aside the tall ferns as we descended, we began to survey towards the mouth of the cave, checking the GPS for our position. We made up an incongruous party, six of us in bright orange oversuits and carbide lights, and as many again of our Chinese hosts with mainly hand torches, dressed in ex-army battle fatigues, not forgetting our two small helpers giggling and swaying under the weight of their panniers.

The first hundred metres inside the entrance sloped steeply, and in bending over to secure a footing, the contents of the porters baskets shot out over their heads - melons, camera boxes, spare water, batteries - all echoing down the incline in front of us.

Fortunately, no damage was sustained and, order being restored, we proceeded with the business of surveying. A bewitching series of large dry chambers followed, with glistening stalagmite pillars throughout the one-and-a-half kilometre length of the system. Now and then small mud banks led up and over to reveal sparkling delights that would be the envy of any show cave back in England.

The purpose of visiting this previously known cave was to measure and assess its potential for future tourism in the region. The rural economy with its self-sustaining farms scattered about, nevertheless needs an injection of visitors' dollars to fund schools, hospitals, and good roads to access them.

It is the dilemma of all small communities. No-one wants a Shanghai in every valley, but kids need education and families want modern comforts like electricity, affordable health schemes, and transport for their produce to markets.

There is presently no danger of tourists making much impact in the area of East Cave because of its remoteness and lack of supporting infra-structure (airfields, bus depots, hotels, shops, etc. being far into the future).

We photographed as we proceeded through the cavern. The exit, when we reached it, partially sealed up with dry stone walling to prevent the ingress of water buffalo, and through it we made our way to the nearest smallholding. We were invited inside from the incessant rain, and plied with green tea and questions from at least four generations of the family within. There followed a sumptuous meal of soup, chicken, rice, potatoes, bamboo etc. washed down with a nip of rice-wine, served from an old style petrol can!

The interior of the farmhouse was lit only by the flames of a centrally-placed fire, which had no chimney. The smoke drifted upwards through the loose fitting floorboards which formed the ceiling, and served to dry large sacks of rice, corn-on-the-cob etc. stored overhead. The constant wood-fire kept a stock pot simmering and very low stools were arranged around it, on which perched small grinning kids, great grandmothers, toothless old granddads, and a core of active sons and daughters.

On the blackened walls could be made out faded posters of Bruce Lee type characters, and under our feet scuttled numerous dogs, cats and

chickens all squawking in turn at each other and at us. A very warm and cosy womb for temporary visitors, but obviously no Shangri-La for year round occupation.

Eventually we forced ourselves back out into the rain and dripping vegetation to complete a circular route-march to our waiting truck. Making sense of our maps and measurements was all that separated us from more "cambehing" back at the hotel base.

Whilst John Whalley and Tony Penny concentrated on the Xionajiadong, the rest of the reconnaissance group were guided to the Fong Yen cave, an entirely vertical system, almost Alum Pot like, in a forest south of Dashiwei. Stewart Muir describes the exploration of this cave, which took place over a three-day period.

Fong Yen - the first 100 metres!
Stewart J Muir

13-15 October 2000

I am left with memories of a mysterious place, which has, after thousands of years of formation, only now started to give up its secrets. The attraction is to the unknown, to something that extends us beyond our normal self-imposed bounds. This exploration takes us as close to the experience of visiting another planet as any of us will ever achieve!

With our brief encounter, I can hardly claim to be that knowledgeable of this cave. But then again who else is there to say anything, other than members of the team in October 2000? This makes me feel excited; to be the person who is tasked to record the first exploration of this foreboding place.

Yes, it is true that we only explored 100m into Fong Yen, and we took three days and almost 500m of rope to do that. So what sort of place is this? This question should be answered in the following account.

It was Professor Zhu who instructed the Leye team to first push the Dashiwei Doline, and it was also the Professor who took us to Fong Yen. This was a very different atmosphere. Dashiwei was a starkly exposed doline that was clear to see and photograph and had a record of a previous descent. Fong Yen[1] was just a name to us and a finger on the map. Even the Professor, who up to now was the possessor of all knowledge, didn't really give us much warning of what to expect. We knew that it was forested and probably not as deep as Dashiwei. The knowledge of the fact, that there were so few facts, excited me, as we hurriedly prepared for the unknown trip. Three large bags of rope, the Hilti drill, thirty bolts and all the slings we could find. This would have to do. I made sure we had a knife to cut the longer ropes if necessary and two radios that Mr Chen provided.

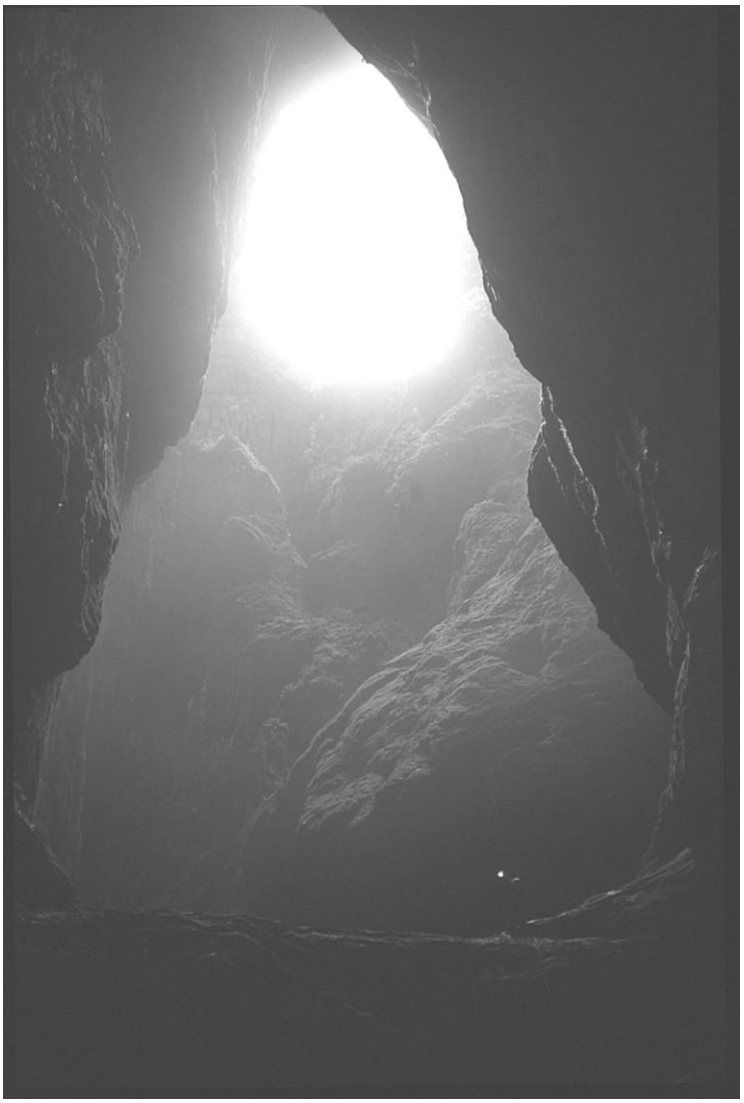
Ged was keen to push the unknown and he chose Shaun and myself with Mr Chen to provide a professional filming service. After the 40-minute journey out of Leye Town, we stopped on the off-road highway and met our porters, who were to carry for us. After the GPS reading was taken by Professor Zhu on the road, we were led by the locals across a level

[1] One of the hunters told us the name Fong Yen means windy way. This is unconfirmed.

scrub area and into mixed woodland. This gradually descended into dense woodland, still on a worn path for a further 10 minutes. There was some discussion amongst our guides, before breaking right into thicket, which was penetrated with a machete. Even so, as the team descended slowly, I took a special regard of the inch long thorns, any one ready to give a nasty infection.

At this point, I couldn't really believe that we were being led to a doline. Professor Zhu had remained on the road, and it was probably all a scam by the locals to earn some cash by taking us to a Mendip-type cave in a wooded depression. How wrong could I be! The professor had stayed back because it was awkward terrain, with greasy limestone chutes and ledge systems poised above 70-degree jungle. The entire caravan came to a decided halt on a ledge and everybody stared into the jungle. Through the tree canopy, on the opposite side of an abyss, I could make out a rock wall capped by a complex roof system. The large jutting roofs were higher than our viewpoint. So they blotted out the territory beyond them. But one could just guess we were on one side of a canyon, rather than a doline depression. We really could not get a fix on the depth of what was below us, as it was a convex slope as well as being entirely vegetated. Because of this, it was debatable from where the depth would be measured. Also we had no idea in which direction to look for a cave entrance. Fong Yen's secrets were held for a good while yet!

A succession of rope hangs and deviations from trees were used to reach a shaded col at -25m. The col was created by a prow of shattered rock that seemed to block the way forward and down into the canyon. I decided to go to the right of it, for no particular reason, other than there seemed to be better trees to abseil from. I fought my way down layers of sodden fern banks, working the rope between saplings and bushes. At -40m



I found myself perched on the lip of an overhang. I attempted to drill a bolt for a re-hang, only to find that it wasn't rock but rotten calcite instead. I prussiked up 5m and avoided this overhang by traversing to reach a tree, which allowed a direct drop to -50m (120m length of rope required to reach this point). Here I managed a Y hang and descended a short groove, to reach the bed of a 5m wide gully.

I thought this is not the best place to be running an SRT rope, but I was being guided by where I could reach good rock for drilling bolts. The gully had collected debris such as fallen trees, rotten vegetation and jammed boulders, but I rigged across to the far side. From there I followed that side of the gully down over jammed boulders to land on a comfortable ledge, 4m wide and 8m long. I really needed a break from this scrappy terrain, and now at -87m things started to look better. We were on the edge of the canyon now, with the roofs, which we had spotted earlier, almost directly overhead. We could see a tortuous deep cut river passage coming in from the south. It was impossible to see the way directly down from the ledge; so I threw a rock over the edge...it fell unchecked for 2 or 3 seconds, before smashing on a solid floor. Excellent!

Satisfactory rock could be found at the outside edge of the ledge to secure a Y hang, which dropped 7m to clean rock under a bulge. Three re-hangs followed to avoid abrasion. This final free drop reached the base of the canyon at -140m.

On my own for a few minutes, I was glad to get the circulation back into my legs by unloading my harness and walking about. Looking around, the grandeur of this water-washed environment, took my breath away. There were vertical walls both sides. Immediately upstream from where I had landed, was a house-size chock stone. Downstream, green mossy walls rose up for more than 100m. Most of the sky was blocked by the overhangs above, however, the filtered light painted an eerie scene, similar to the depths of Alum Pot.

Ged, Shaun and Chen regrouped at the base of a chute into a pool. We all shared the concern that this passage is not the place to be caught in a storm, even though at present there was only a trickle flow. We pressed on and after a short pitch in the base of the canyon, we completed our rope at -181m at the head of a 6m pitch. There was no question, we would be coming back the next day. A slow exit, due to a communications mess up and poor teamwork, meant we didn't get to Leye town until 10pm.

Next day, Ged had responsibilities to go with another part of the team to East/West Cave. Alister took his place and joined Shaun, Chen and myself for our second day in Fong Yen. We quickly reached our furthest point. The passage light changed as we passed through a roofed section and then back out into a 150m deep rift. It definitely had cathedral qualities. Very tall, drawn out features, with a religious calmness, broken only by our footsteps and gasps of awe and the occasional bird cry, way above us.

From the foot of the previous short pitch, that was notable by its jet-black shattered rock, we could easily walk and scramble down the watercourse. It led to a bowl on a tight right-hand bend. This had been fashioned by the water, which in times of flood would carry rocks that had pummelled the limestone. Close to this, in a small pool, we found a live snake that must have been washed in. Immediately

beyond this bend the passage narrowed to 4m width where chock stones had jammed tightly. Perched on these we all looked down into a further dimly lit rift, the bottom of which could not be made out. It surprised us and frustrated us, as we had all assumed that most of the depth had been gained and we had not carried any long lengths of rope. From our estimates it seemed there was at least a 60m drop, and if we tied all our rope together, it would only get us down the initial slabby section. All we could do was survey out from -202m. I drilled a single bolt ready for the next trip, and this proved to be more significant than expected.

On the third day the same team arrived fresh at the head of the pitch. That is all except Shaun, who had shot down the pitches and got himself trussed up at the last free hang into the canyon, and was complaining of feeling knackered. Light rainfall had made no difference to the trickle in the riverbed. The big setback came when I prepared to rig the pitch. We had a 100m rope and plenty of bolts to really make a big push and a few short lengths of thin rope. But the battery was completely dead. We discussed our options, and I was prepared to abseil as far as possible, to see if I could find a route down that would give least abrasion. After 10 minutes, having descended a fluted wall, I landed on a water-washed slab. Half way down a slippery water shoot, I reached the end of the rope above a pool. I tied a sling around a conveniently jammed length of wood, and radioed up that someone must come down with a rope. Then I let the end of the rope whip through my Stop. If necessary, I thought we could tie on an extra length to reach the pool. It is in this situation, that you think "that was stupid!" ... but I was drawn by this exploration. We hadn't even entered into the cave passage proper, as there was still distant daylight way overhead.

Shaun and Chen came carefully down, trying to reduce the rope rub and the team grouped together on the far side of the chest-deep pool. I reminded Shaun of all the snakes that would be washed into this pool, just as he immersed himself. He let out great yelps and screams, as you would expect from Shaun, as he splashed his way across. Alister and one of the hunters had volunteered to man the radio at the head of the pitch, just in case of flood. The lack of bolts had meant the rope was directly down the watercourse, and it would be desperate to get back up even with the slightest water flow.

The pool marked the true start of the cave passage, and at -264m we needed to use our lights. Chen filmed the two of us making our way between boulders and the blackness beyond. With a height of 20m and width of 5-10m this was the type of passage that would lead into an active river system. The boulders had a damp mud layer and debris was trapped everywhere. Was this the result of a recent flood coming down into Fong Yen? Or was it from water rising from a river further down the passage? The latter seemed unlikely, as there was absolutely no sound of running water.[2] Neither was there any safe refuge in case of a flood, such as side passages or lateral banks...it would be wall to wall water, boiling up between piles of boulders.

Only 60m further down the passage, a short drop blocked our way. With no

[2] Bear in mind the 30m rise in water levels that had shocked the expedition in Shadong, in Lingyun County.

drill, I fixed a rope for Shaun by acting as the anchor myself, backed up by a pebble chock stone. I held as Shaun abseiled on our two last ropes tied together! This was somewhat limiting to our exploration, because I now had to stay where I was. For some reason Chen decided not to go down the pitch, so we just waited for news from Shaun. He returned and reported that he reached another short pitch of about 20/24m but the passage continued as a similar rift passage.

We would have to leave this exploration for another time, having only been 100m into the passage. We had already decided that we would de-rig the complete cave that day, so we surveyed out from -289m. We found Alister was still within radio contact, so we told the hunter to start moving out. The task of de-rigging was greatly aided by the hunters, but it was made worse by the rain that started in earnest that evening. The vegetated banks turned to mud and darkness fell. I can't forget the camaraderie that welcomed me on the final ledge that night. A fire had been kept alight all-day and smoky beef on a stick tasted just wonderful.

Heavily loaded with bags of rope, it took a full hour to reach the road, and still our spirits were high with our success. However, I could not help thinking that we have just had a glimpse of Fong Yen's full glory.

Some additional exploration of the river caves just outside Leye Town itself was undertaken, revealing an interesting river passage and large truncated sections of cave, seemingly hydrologically quite separate from the Doline systems explored earlier.

Further Potential for Caving in Leye County

The Leye County block of limestone has considerable further potential for exploration. It covers almost 520 square kilometres of limestone with many cone karst features. The river system between Dashiwei Doline and the resurgence at Beilong is estimated to be somewhere between thirty and fifty kilometres long, with a flow rate of 3 - 121 m^3/sec. Important features, upon which information was gained, provide material for a further expedition. These are as follows:

A large Doline group east of Dashiwei itself.

1) Baidong, just east of Dashiwei, which is said to be a river cave with a sky-light. There is a good draught and steam rising from the orifice. It has been explored by Mr Chen to a limited extent. It is approximately 300m deep.

2) Yanzhi Doline. Estimated to be approximately 180 metres deep with a small cave at the bottom. It may have been explored by local people and it was filmed by Mr Chen last year.

3) Shenmu Doline is close to the former and has a sloping bottom. It is believed that SRT is not required. It may have been explored by local people.

4) Huangjing Doline to the far west of Dashiwei. It is believed to be 100 metre deep and has been descended by local people using ladders. There may be a small cave at the bottom.

5) Chuandong and Jiameng Dolines. These are deep Dolines approximately 100 metres in depth.

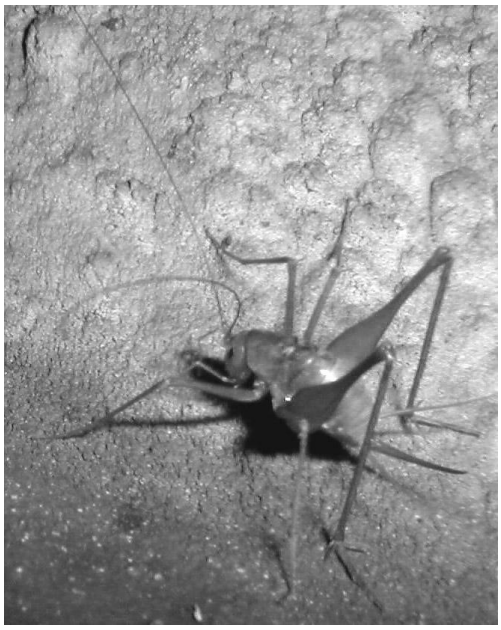
6) Luojia and Shujia Dolines. These are only 200 metres away from Dashiwei and Shujia has not been descended as far as we know.

7) Datuo and Dengjua Dolines. The first of these is 150 metres deep and the second 80 metres deep. They may not require SRT for a descent. It is believed that there are caves at the bottom.

8) Dachao Doline. Thought not to have been descended and will require SRT. It is approximately 50 metres deep. There is said to be a dry cave at the bottom.

9) Luohuasheng Doline. This is west of Dashiwei and has collapsed on three sides. It is believed to have a cave at the bottom.

Considerable work will be needed at the Beilong Resurgence to the north of the limestone block. This is a major feature that eventually joins the Hangshui River. A link up between Dashiwei Cave and Beilong Resurgence would provide the longest caving trip in China.



Cave Fauna **Arthur Clarke**

The material collected was listed in a preliminary draft of field notes pending further study. It would be tedious reading to include that here, however, observed (but not necessarily collected) species included the following.

Spiders, Mites, Moths, Ants, Harvestman, Termites, Springtails Beetles, Frogs and Bats

Rhaphidophorid or Cave cricket.

Small carabid beetle

Millipedes including white (cave limited?) and pigmented species

Scuterigid centipedes - 6-7cm long and 11-12cm long

Various flies including Yellow-backed flies, Diptera and Guano flies

Grey coloured, soft-bodied, scaled isopod-like species with cerci and wings (hemipteran? or lice?)

White moths like starfish on walls

Depigmented carabid beetle 2cm long

Mosquito larvae or similar

Staphylinid (?)

Unknown dark coloured aquatic species with claw-tip legs, possibly insect larva (?)

Non-glowing mycetophilid (fungus gnat or glow-worm type) larvae

Mycetophilid larvae

Decapod shrimps

Mycetophilid larvae

Slug 3½-4cm long

Hemipteran (or possibly a pseudoscorpion)

Unusual elongated land snail.

Staphylinid beetle

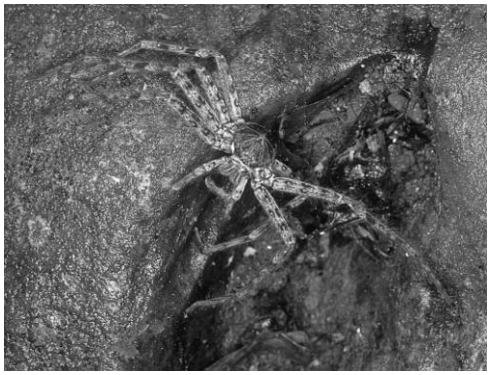
Tapeworm length flatworm

Uropygida (whip scorpions)

Dermaptera (earwigs)

Arthur suffered an enforced rest day in a Lingyun Hospital bed possibly as a result of sucking up too much guano dung or dust when using his cave fauna aspirator to collect small specimens.

A full report has been prepared on the cave fauna but is too specialist for this publication.



Analysis of Daytime Person-Hours in the Field Bill Hawkins

This is a day-by-day analysis of the man-hours spent in the field, or other caving related activities, for the daylight hours from Thursday, 5th October to Monday, 16th October 2000. It does not take into account a day involving the whole team spent on reconnaissance in the Lingyun area, or the many hours in the evenings when some expedition members spent time entering survey data into computers, downloading photographs onto PCs, preparing and cleaning equipment, or organising activities and duties for the following day.

Thursday October 5th

1. Tony Penny, Mike Pitt, Arthur Salmon, Bill Hawkins. Exploring valley for swallow holes. Exploring Jonglidong. (Reconnaissance trip) - 6 hours

2. Ged Campion, Bruce Bensley, Alistair Renton, Graham Salmon. Shadong. Exploration and surveying. - 8 hours

3. Alan Fletcher, Arthur Clarke, John Whalley. Shendong. Exploration. - 5 hours

4. Shaun Penny, Stewart Muir, Jon Riley, Pascale Bottazzi. Xiashuidong. Exploration. - 7 hours

Friday October 6th.

1. Graham Salmon, Arthur Salmon, Bruce Bensley, Bill Hawkins Shadong; surveying. - 6 hours

2. Shaun Penny, Stewart Muir, Jon Riley, Pascale Bottazzi. Xiashuidong. Exploration and surveying. - 7 hours

3. Arthur Clarke, Alistair Renton, John Whalley, Alan Fletcher. Pengjiawan Doline and fossil cave: exploration & surveying – 4 hours. Longtaowan. Exploration and surveying. - 4 hours

4. Ged Campion, Tony Penny, Mike Pitt. Exploration of large doline (No way on found) - 8 hours.

Saturday October 7th.

1. Tony Penny, Bill Hawkins Xianongyangdong. Exploration and surveying. - 5 hours

2. Arthur Clarke, Alan Fletcher, Alistair Renton, Graham Salmon, John Whalley Longtaowan. Exploration and surveying. - 8 hours

3. Shaun Penny, Stewart Muir, Jon Riley, Pascale Bottazzi Xiashuidong. Exploration and surveying - 7 hours

4. Arthur Salmon, Mike Pitt, Bruce Bensley Surface exploration to find stream sink. - 7 hours

5. Ged Campion. Dealing with the Chinese media and film crews.- 7 hours

Sunday October 8th

1. Arthur Clarke, Arthur Salmon, John Whalley, Alan Fletcher, Mike Pitt, Bill Hawkins. Shadong. Exploration, photography, and surveying.- 8 hours

2. Tony Penny (with Cia Wutian) Pengjiawan (the potential show cave) Exploration.- 5 hours

3. Shaun Penny, Jon Riley, Pascale Bottazzi Xiashuidong. Exploration/survey.- 7 hours

4. Graham Salmon, Stewart Muir. Upper Buffalo. Exploration and surveying.- 6 hours

5. Alistair Renton, Bruce Bensley. Drawing Surveys.- 5 hours

Ged Campion. Preparation for Leye County Expedition. - 5 hours

Monday October 9th

1. Arthur Clarke, Bill Hawkins, Bruce Bensley, Pascalle Bottazzi, Alan Fletcher, Jon Riley. Pengjiawan; exploration and surveying.- 7 hours

2. Ged Campion, Shaun Penny, Alistair Renton, Stewart Muir, Tony Penny, John Whalley. Travel to Leye County.

3. Graham Salmon. Checking survey details. - 5 hours

(Arthur Salmon, Mike Pitt, Harvey Lomas. Non-caving day)

Tuesday October 10th

Lingyun team

1. Arthur Salmon, Graham Salmon, Jon Riley, Pascalle Bottazzi, Alan Fletcher, Bruce Bensley, Harvey Lomas, Mike Pitt, Bill Hawkins. Pengjiawan. Survey, photography and exploration. - 7 hours

2. Arthur Clarke. Sorting and classifying fauna specimens.- 4 hours; Shuiyuandong 2-3 hours.

Leye County Team

1. Stewart Muir, Alistair Renton, Shaun Penny, Ged Campion, Tony Penny, John Whalley . Descent into Dashiwei doline. Tony and John to base camp part way down, others to camp by river at bottom.- 10 hours

Wednesday October 11th

Lingyun Team

1. Harvey Lomas, Pascale Bottazzi, Mike Pitt, Graham Salmon, Alan Fletcher, Bill Hawkins, Jon Riley Shadong. Exploration and surveying. - 8 Hours

Arthur Clarke (solo) Shadong. Fauna specimen collecting. - 5 hours

2. Arthur Salmon. Surface reconnaissance to find sink for Shadong inlet. - 7 hours

(Bruce Bensley unwell -virus)

Leye County Team

1. Stewart Muir, Ged Campion, Shaun Penny, Alistair Renton. Exploration of Dashiwei doline river for one kilometre underground. Climb out to base camp. Surveying. - 12 hours

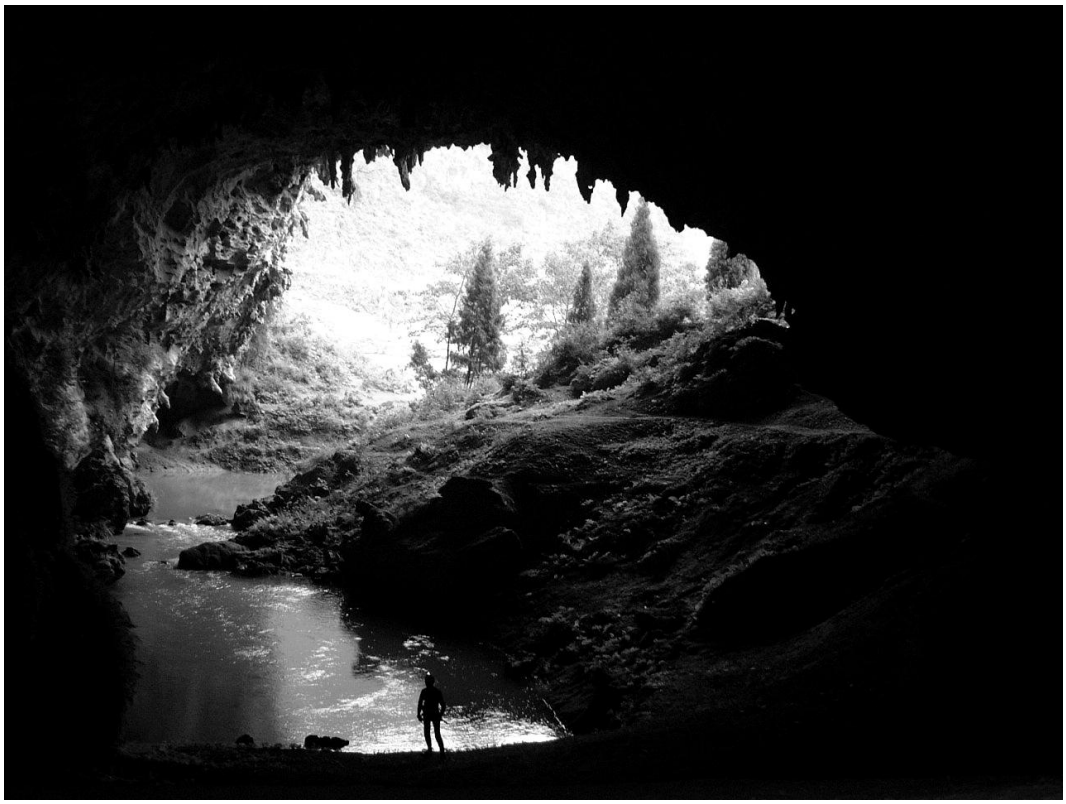
2. John Whalley, Tony Penny Archaeological work in base camp cave (Zong Dong) Photography.- 6 hours

Thursday October 12th

Lingyun Team

1. Jon Riley, Pascale Bottazzi, Alan Fletcher. Derigging trip.- 5 hours

2. Bruce Bensley, Arthur Salmon, Arthur Clarke, Graham Salmon, Harvey Lomas.



Nupindong, Buffalo cave 1 Photo: Alister Renton

Pengjiawan. Photography.- 8 hours

(Bill Hawkins and Mike Pitt - non-caving day)

Leye County Team

1. Ged Campion, Alistair Renton, John Whalley, Tony Penny, Shaun Penny, Stewart Muir. Climb out of Dashiwei doline. Survey and measure. - 10 hours

Friday October 13th

Lingyun Team

1. Bruce Bensley, Mike Pitt, Jon Riley, Graham Salmon, Pascale Bottazzi, Alan Fletcher, Bill Hawkins Shadong. Surveying and photography.- 9 hours

(Arthur Salmon, Arthur Clarke, Harvey Lomas; non caving day). Arthur Clarke spending 5-6 hours sorting fauna and lebelling specimen vials

Leye County Team

1. Shaun Penny, Stewart Muir, Ged Campion Fong Yen; to big dry river bed.- 9 hours

2. John Whalley, Tony Penny, Alistair Renton Buffalo Caves 1 and Nupindong 1.- 8 hours

Saturday October 14th

Lingyun Team

1. Mike Pitt, Bill Hawkins. Chengbi River cave; reconnaissance.- 3 hours

2. Arthur Clarke, Arthur Salmon, Harvey Lomas. Lotus Cave with Deputy Mayor of Lingyun.- 3 hours

3. Pascale Bottazzi, Alan Fletcher, Jon Riley, Graham Salmon, Bruce Bensley. Abseiling 180 m. deep doline to north of Lingyun. - 8 hours

Leye County Team

1. Stewart Muir, Shaun Penny, Alistair Renton. Fong Yen to top of big pitch. - 8 hours

2. Ged Campion, John Whalley, Tony Penny. Buffalo cave 2. Exploration/ survey. - 8 hours

Sunday October 15th

Lingyung Team

1. Arthur Salmon, Mike Pitt, Bill Hawkins Re-checking GPS for Jonlidong; exploring adjacent shaft. - 4 hours

2. Bruce Bensley, Pascale Bottazzi, Alan Fletcher. Shadong; exploration of mud slope and passages. Survey - 8 hours

3. Graham Salmon, Jon Riley. Shangnuidong exploration/survey - 8 hours

(Arthur Clarke unwell) Cave fauna sort 2-3 hours.

Leye County Team

1. Stewart Muir, Shaun Penny, Alistair Renton Fong Yen entered to 500m plus. Survey - 10 hours

2. John Whalley, Tony Penny, Ged Campion. Xionajiadong (West cave) exploration. - 6 hrs

Monday October 16th

Lingyun Team

1. Mike Pitt, Pascalle Bottazzi, Bruce Bensley Chengbi River Cave through trip. - 8 hours

2. Graham Salmon, Alan Fletcher, Bill Hawkins. Exploring and surveying small un-named cave near Chengbi River. - 3 hours

3. Arthur Clarke & Arthur Salmon: Exploration and fauna collection in Yanliusuidao, plus exploration of side passage & fauna collection in Yanliudong

(Support for team 1) Jon Riley; tackle sorting. - 4 hours

Leye County Team

1. Ged Campion, Tony Penny, Shaun Penny, John Whalley Xionajiadong (East Cave) Exploration, photography . - 6 hours

2. Stewart Muir, Alistair Renton. Preparation for return to Lingyun. - 6 hours

Count of hours contributed in the field by individual members

Shaun Penny	93
Stewart Muir	92
Ged Campion	89
Alistair Renton	89
Pascale Bottazzi	88
Graham Salmon	84
Jon Riley	84
Bruce Bensley	81
Alan Fletcher	80
John Whalley	79
Tony Penny	78
Mike Pitt	68
Bill Hawkins	66
Arthur Salmon	56
Arthur Clarke	52
Harvey Lomas	26*

*Injured arm on the first day in Lingyun

Count of Activity Days

	Caving days	Non-caving activity days
Alan Fletcher	13	
Pascale Bottazzi	13	
Graham Salmon	12	1
Stewart Muir	12	
Tony Penny	12	
Shaun Penny	12	
Bill Hawkins	12	
John Whalley	12	
Ged Campion	11	1
Alistair Renton	11	1
Jon Riley	11	1
Bruce Bensley	11	1
Mike Pitt	11	
Arthur Salmon	10	
Arthur Clarke	9	1
Harvey Lomas	5	

The final days: Monday October 16th was the last day of field activity. Tuesday the teams reunited at Lingyun and made preparations for the transport of tackle back to the Karst Institute store in Guilin. A meeting with the Chinese Authorities discussed the expedition's achievements and we officially took our leave of Lingyun.

On the Wednesday we returned to Guilin where some expedition members spent several hours checking the tackle inventory, washing ropes, and returning equipment to the tackle store. Their names and times were not recorded. On Thursday we flew back to Shanghai for an overnight stop before returning to the UK on Friday October 20th.

The information in this report is taken from my own diary of events, Arthur Clarke's journal, and the records of Ged Campion and Stewart Muir. These have been crossed checked, and the report should give a fairly accurate picture of the hours and effort put into the expedition whilst actually in China. If there are any inaccuracies then it will be because some non-caving activities may not have been recorded at the time. For example, I have no record of time spent on the analysis of water samples, or work on equipment by anyone injured. For any such omissions I apologise.

Outline Report of the Survey of the caves in the Lingyun and Leye Areas

Graham Salmon, Alister Renton, Stewart Muir and Ged Campion

1. Introduction

This report details only locations, length, depth and general nature of the caves, which were explored by members of the expedition between 4-17 October 2000. All the caves were surveyed to BCRA Grade 5 standard (i.e. Bearings to within one degree and measurements within 10cm of the survey stations) using Sunto Compasses and Clinometers and Fibron tape, except for a few exceptions. No completed surveys are published in this report as they are currently being finalised, the cave lengths and depths are taken from the centre-line surveys which were produced during the course of the expedition. For Lingyun, the majority of our time was spent in the northern region and only two days were given to the Southern area. For Leye, a smaller team spent a week carrying out preliminary research, descending two of the major dolines.

Initial cave surveys can be found at www.yrc.org.uk/china_caves.zip. These are in PDF format and read using Adobe Acrobat® which can be downloaded free of charge from www.adobe.com/acrobat

None of this would have been possible without the support of Lingyun and Leye County governments, and the co-ordination of Professor Zhu Xue Wen from the Guilin Karst Institute. Also the financial support of the UK private and public sector, especially the Yorkshire Ramblers' Club, is gratefully acknowledged.

2. Northern Area of Lingyun

2.1 Jonglidong

UTM: 48 661872 2697074

Altitude: 596.5m

Total plan length = 87.04m

Vertical range = 14.55m

This cave is situated a few hundred meters ESE of the village of Nongyang some 2½m up an overhanging limestone crag. This is a small fossil cave, which showed no evidence of having been previously explored. From the entrance, the cave descends a little and takes on a rift character and is well decorated with formations. Access to the far reaches of the cave involves a tight squeeze between formations.

2.2 Xianongyang

UTM: 48 661969 2697097

Altitude: 598m

Total plan length of survey shots = 60.34m

Vertical range = 12.65m

Small cave with two connected chambers.

2.3 Longtaowan

UTM: 48 663959 2704955

Altitude: 729m

Total plan length of survey shots = 58.08m

Vertical range = 57.77m

This cave appears to follow a fault, which has an average angle of about 45º. The rift is 4m across. However, this becomes increasing narrow towards the limit of exploration, where one must descend through a precarious boulder choke. The cave contains no formations and possesses only a very small stream. It is possible that this shaft continues but it was not pushed.

2.4 Lianhuadong (Lotus cave)

UTM: 48 659607 2694574

Altitude: 461m

Total plan length of survey shots = 466.47m

Vertical range = 10.55m

The entrance to this cave is situated close to the E. bank of the Chengbi River near the northern limits of Lingyun. A dirt road passes immediately past the entrance and probably its construction was instrumental in breaking into the cave. This is by no means a virgin cave and there is much evidence of all parts having been explored, and to some extent damaged, by local people.

A short rubble slope from the entrance leads to a considerable, more or less horizontal, fossil cave system with passages of a substantial size which are well decorated with formations.

The local government asked us to consider its potential as a show cave. Although it is well decorated, it does not compare either in scale or quality with the existing show cave just to the NW of Lingyun and therefore would probably not be worth developing. It could, however, be valuable as a very accessible "adventure" style cave.

2.5 Pengjiawan (potential show cave)

UTM: 48 664567 2704236

Altitude: 708m

Total plan length of survey shots = 1712.54m

Vertical range = 104.64m

Pengjiawan is a major cave, which has obviously been known to the locals for some time. The entrance is situated beneath a rock face in a large vegetated depression (40m x 70m) and had to be excavated to gain access. The cave was re-sealed following the exploration, hopefully to preserve the features of this cave.

From the entrance a boulder slope descends about 70m to a large passage, which reaches up to 30m wide and 10m high. This passage is mud floored with occasional formations. It would appear that occasionally the water wells up from below, however, no lower passages were discovered. This passage ends in another boulder slope at the top of which is an impressive chamber 100m x 100m and 40m high. Two large stalagmite bosses that reach the ceiling dominate this chamber. However, the whole of the chamber is adorned with formations and gour pools. We suspect that this chamber is near to the surface, but this could only be proven with a surface survey.

2.6 Shadong

UTM: 48 663149 2701965

Altitude: 649m

Total plan length of survey shots = 2855.13m

Vertical range = 120.75m

This is the most extensive cave that we found during our explorations. It was obvious that the local people have visited this cave though to what extent they have gone beyond the main river chamber is unknown.

The entrance is a large porch 25m wide and reaching over 25m in height, which is situated at the head of a valley, which at times of heavy rain carries a stream. A boulder stream passage leads off and eventually reaches a pitch down to a river. This pitch can be bypassed by climbing over mud banks and then descending to the river. This chamber with its roosting bats is vast, the roof being 20m high, the river itself is about 10m wide and can be followed upstream to a sump; downstream also leads to a sump. The whole of this chamber must at times fill up with water (explaining the silt backs) during our explorations the level of the water in this chamber rose 10m! Following on from the chamber is a high level passage which leads, after a few gour pools, to a more aqueous section and an inlet passage. The high level passage must at times act as an overflow for the inlet. The inlet is on average 10m wide and 8m in height and was followed down stream to a pitch where the river could be

heard. Due to the nature of the rock, this pitch was not descended. Continuing upstream a sump is eventually reached. A short distance before the sump is another passage, which leads to an unexpected dome shaped chamber. This chamber reaches 40m in height and is about 100m x 100m. The floor is of fine cracked mud, but there are few formations. A couple of minor passages lead off this chamber.

2.7 Shendong

UTM: 48 664138 2703729

Altitude: 670

Total plan length of survey shots = 173.59m

Vertical range = 19.16m

Entrance in large doline at the base of cliff on east edge. The passages in this cave average 3m high and 4m wide, except for one chamber which reaches 15m in height. The banks of the river are predominately mud, though there are occasional formations and gour pools. The passage ends in a choked pool.

2.8 Shangniudong

UTM 48 666654 2708277

Altitude: 700m

Total plan length of survey shots = 750.43m

Vertical range = 75.03m

The entrance to this cave is situated in the side of a valley and is a porch (7m x 7m). The entrance passage which draughts strongly leads to a pitch, 20m, down which a sizeable passage (15m x 10m) leads off. Beyond another pitch is a series of confusing passages, which are fairly well decorated. More development needed. There were numerous other entrances along the same cliff face that we briefly investigated, all of which ended abruptly. The lowest one, just above a sink, was descended to a depth of approximately 15m, where the way on was completely blocked by flood debris.

2.9 Xiashuidong

UTM: 48 665831 2707527

Altitude: 681m

Total plan length of survey shots = 668.25m

Vertical range = 154.34m

This is a predominately vertical cave with numerous sumps, blind pits and a muddy nature. This was explored over a 4-day period and numerous leads were pursued. There is one large chamber into which it was not possible to descend due to loose rock. This is estimated to be 80m deep. Another lead is a small climb that would give access to more large passage. A tenacious cave that gave up its secrets slowly. Although the entrance was not far above where the river sinks, we were surprised that this cave did not break into a river.

2.10 Hang Lian Doline (doline near Shadong)

UTM: 48 664008 2703161

Altitude: 843m

Vertical range = 300m

Hang Lian Dong is a large vegetated doline 300m deep. This doline was descended via two vertical descents, the longest of which was 70m. Although there was evidence of massive cavern collapse, no cave passage was discovered despite an extensive search.

3. Southern Area of Lingyun

3.1 Yanliudong/Yanliusuidao

UTM: 48 667275

Altitude: 432m

Yanliudong is a massive cliff-walled collapse doline 100m x 200m at the bottom of which the main river is encountered. This entrance was descended by a 150m free-hanging abseil. Yanliudong is part of the hydroelectric scheme and an artificially enlarged passage leads off for over 1½km to Yanliusuidao, where an irrigation pipe follows a branch passage leading out into a muddy-bottom doline that is actively farmed in the dry season.

3.2 Chengbihedong (river cave)

Resurgence

UTM: 48 674960 2683193

Altitude: 363m

Sink

UTM: 48 673674 2683874

Altitude: 367m

This is a meandering river cave with mud banks whose upper slopes are of boulders and mud set cobbles. This cave was entered at a resurgence dam and after about 400m there is a large boulder chamber where the river flowed through some minor rapids. Following this is a section with more rapids and meanders before the river breaks out into daylight and a large doline. After a further 200m the sink is met. Throughout the cave there are possible side passages leading off. Due to time constraints no detailed survey was produced of the cave. However, a BCRA grade 1 sketch was made. Local fishermen make use of the cave.

4. Area of Leye

4.1 Lao Mei (show cave)

Zone 48 - 656540 2740915 Alt 970m

Survey contains 18 survey stations, joined by 17 shots.

There are 0 loops.

Total length of survey shots = 456.00m (456.00m adjusted)

Total plan length of survey shots = 451.84m

Total vertical length of survey shots = 19.80m

Vertical range = 17.13m (from \lao_mei.m17 at 970.37m to \lao_mei.m2 at 953.24m)

North-South range = 125.68m (from \lao_mei.m13 at 2740951.70m to \lao_mei.m1 at 2740826.02m)

East-West range = 350.99m (from \lao_mei.gps at 656540.00m to \lao_mei.m1 at 656189.01m)

1-nodes (qty 2)

2-nodes (qty 16)

The entrance is above where the main river disappears into the hillside. It overlooks the town of Leye. It is almost horizontal and is gated at the far end before it joins the main river. The entrance is also gated and does not seem to have had much traffic. The characteristic feature of this cave is the lotus formations, like islands in the large shallow pools. There are no large chambers, but the cave is consistently beautiful. Separate to the show cave, the main river seemed feasible, but was not explored

4.2 Nupindong (Buffalo cave 1)

Zone 48 - 654602 2742303 Alt 944m

Survey contains 41 survey stations, joined by 40 shots.

There are 0 loops.

Total length of survey shots = 1244.20m (1244.20m adjusted)

Total plan length of survey shots = 1234.60m

Total vertical length of survey shots = 51.75m

Vertical range = 23.76m (from \nupin_dong.c6 at 958.71m to \nupin_dong.c10 at 934.95m)

North-South range = 871.63m (from \nupin_dong.c11 at 2742305.58m to \nupin_dong.a2 at 2741433.94m)

East-West range = 166.82m (from \nupin_dong.a1 at 654678.11m to \nupin_dong.a29 at 654511.29m)

1-nodes (qty 2)

2-nodes (qty 39)

A river through cave.

4.3 Nupindong 2 (Buffalo cave 2)

Zone 48 - 654496 2742561 Alt 940m

Survey contains 11 survey stations, joined by 10 shots.

There are 0 loops.

Total length of survey shots = 243.20m (243.20m adjusted)

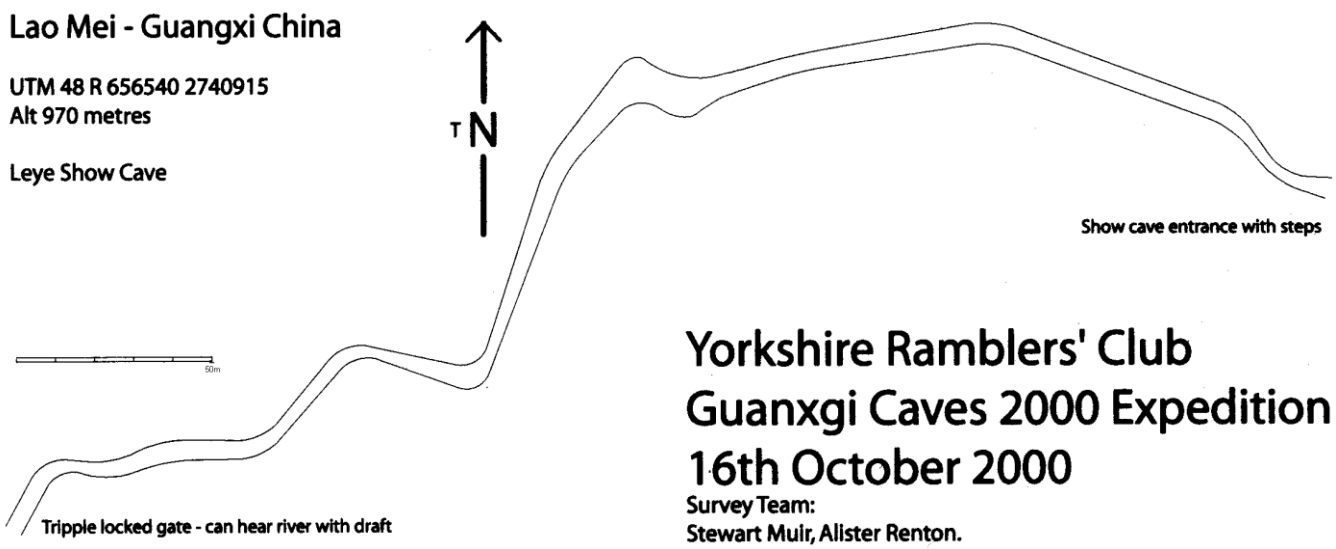
Total plan length of survey shots = 241.29m

Total vertical length of survey shots = 17.04m

Vertical range = 8.74m (from \nupin_dong_2.c6 at 948.74m to \nupin_dong_2.gps at 940.00m)

North-South range = 105.24m (from \nupin_dong_2.c10 at 2742561.97m to \nupin_dong_2.c3 at 2742456.73m)

East-West range = 164.96m (from \nupin_dong_2.gps at 654496.00m to \nupin_dong_2.c1 at 654331.04m)



1-nodes (qty 2)

2-nodes (qty 9)

A river cave that needs a boat to continue.

4.4 Fong Yen

Zone 48 - 642946 2748748 Alt 1114m

Survey contains 46 survey stations, joined by 45 shots.

There are 0 loops.

Total length of survey shots = 1120.80m (1120.80m adjusted)

Total plan length of survey shots = 967.51m

Total vertical length of survey shots = 410.60m

Vertical range = 407.67m (from \fong_yen.gps at 1114.00m to \fong_yen.r1 at 706.33m)

North-South range = 592.86m (from \fong_yen.r1 at 2749340.86m to \fong_yen.gps at 2748748.00m)

East-West range = 239.60m (from \fong_yen.r2 at 643054.73m to \fong_yen.p22 at 642815.14m)

1-nodes (qty 2)

2-nodes (qty 44)

This is essentially a 400m deep canyon that could be a tributary of a large river system. It starts by descending heavily vegetated slopes and walls before joining the huge canyon, which is shadowed by jutting roofs. There was very little water present other than pools, but this is clearly an active system judging by the clean water-washed walls. No obvious camp or safe area found so far, that would provide a refuge in flood conditions. It was explored over a 3-day period, to a point where daylight was lost and we ran out of rope. 500m of rope is required to this point. The way on is open apart from a small pitch, but given the hostile nature of the passage, future exploration will be very committing. There was no evidence of previous exploration.

4.5 Dashiwei Doline

Zone 48 - 645760 2744338 Alt 1332m

Survey contains 71 survey stations, joined by 70 shots.

There are 0 loops.

Total length of survey shots = 1189.45m (1189.45m adjusted)

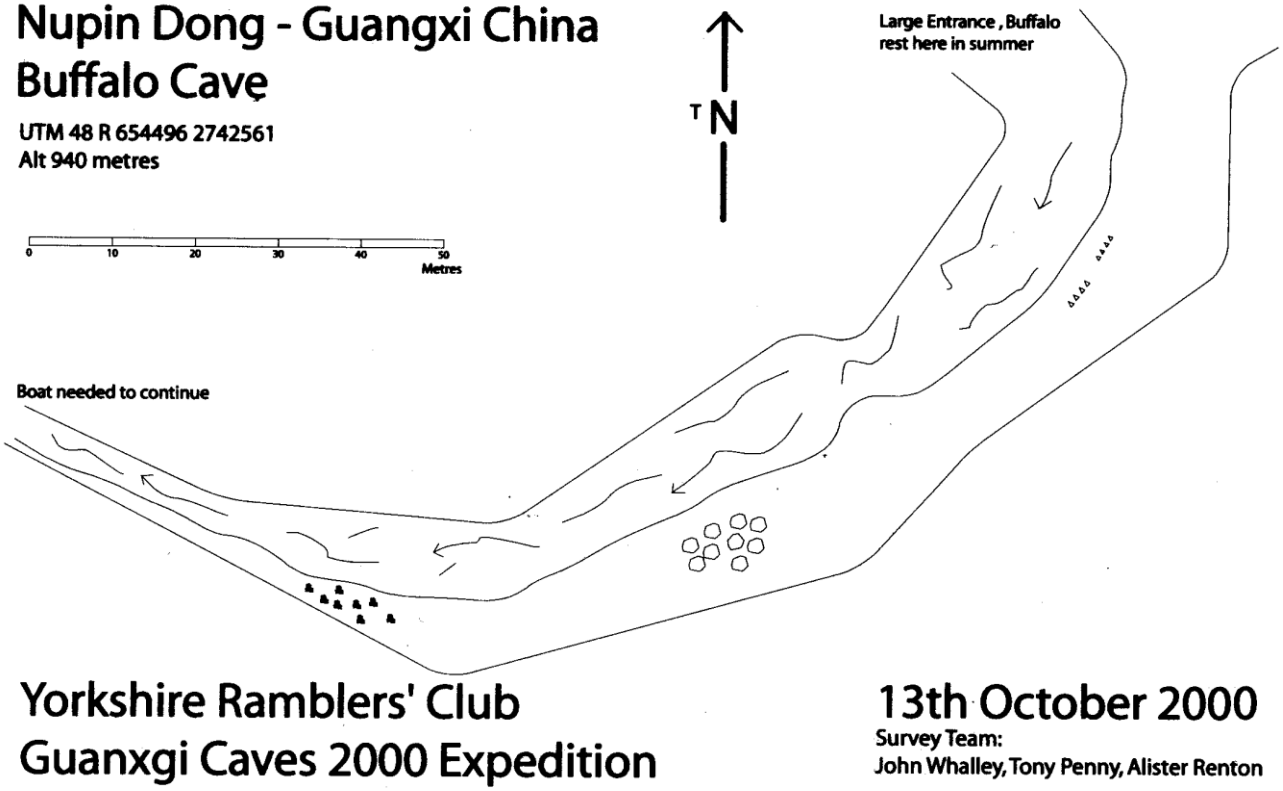
Total plan length of survey shots = 1142.44m

Total vertical length of survey shots = 210.21m

Vertical range = 50.57m (from \dashiwei_doline.70 at 38.88m to \dashiwei_doline.25 at -11.69m)

North-South range = 426.66m (from \dashiwei_doline.1 at 8.98m to \dashiwei_doline.67 at -417.68m)

East-West range = 822.11m (from \dashiwei_doline.70 at 805.75m to



\dashiwei_doline.1 at -16.36m)

1-nodes (qty 3)

2-nodes (qty 67)

3-node (qty 1)

A spectacular feature believed to be the 2nd biggest doline (by depth) in the world. This was descended over a 3-day period to a large river cave. It was followed for 1.1km downstream to just beyond the confluence of an equally large river. Progress was made out of the water most of the time, but was only possible by many river crossings. Explored previously by Chinese cavers in July 2000, when there were lower water conditions, but no survey data were taken. Even in those conditions, it is possible for cavers to be swept away.

The water is believed to resurge 30km away at Beilong, so there are significant development possibilities. A daylight camp was made in Zhong Dong, half way down the wall of the doline, and another camp just beyond the cave entrance where it meets the river. It must be noted that the forest area deep within this doline has an isolated and special existence and is very vulnerable. All exploration to this cave needs to take measures to minimise its damage.

4.6 Xionajiadong East (East cave)

Survey contains 59 survey stations, joined by 58 shots.

There are 0 loops.

Total length of survey shots = 1773.10m (1773.10m adjusted)

Total plan length of survey shots = 1630.67m

Total vertical length of survey shots = 481.90m

Vertical range = 94.31m (from \dong_dong.20 at 80.35m to \dong_dong.56 at -13.96m)

North-South range = 931.39m (from \dong_dong.59 at 920.80m to \dong_dong.3 at -10.59m)

East-West range = 641.31m (from \dong_dong.47 at 629.10m to \dong_dong.1 at -12.21m)

1-nodes (qty 2)

2-nodes (qty 57)

Large fossil cave with considerable formations and volume. Takes the same line as West cave, separated by a doline. There was evidence of previous exploration by local people. Consider potential as a show cave, although inaccessible.

4.7 Xionajiadong West (West cave)

Zone 48 - 649367 2744627 Alt 1299m

Survey contains 50 survey stations, joined by 49 shots.

There are 0 loops.

Total length of survey shots = 1358.70m (1358.70m adjusted)

Total plan length of survey shots = 1282.02m

Total vertical length of survey shots = 360.98m

Vertical range = 158.27m (from \xiongjia_dong.s2 at 1299.00m to \xiongjia_dong.s35 at 1140.73m)

North-South range = 324.74m (from \xiongjia_dong.s36 at 2744843.62m to \xiongjia_dong.s6 at 2744518.88m)

East-West range = 458.21m (from \xiongjia_dong.s55 at 649742.34m to \xiongjia_dong.s6 at 649284.13m)

1-nodes (qty 2)

2-nodes (qty 48)

Large fossil cave with considerable formations and volume. Takes the same line as East cave, but is separated by a doline. There was evidence of previous exploration by local people. Considerable potential as a show cave, although inaccessible.

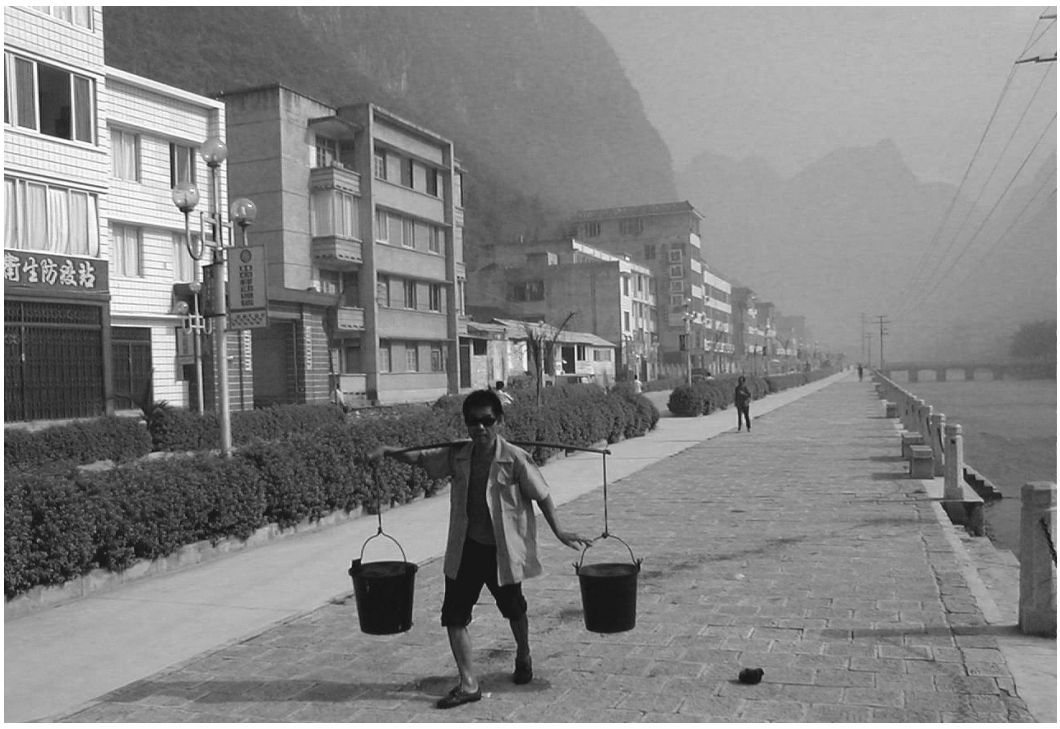
Impact of Chinese culture (with a very small c) on the Expedition
Arthur Salmon

Everyone knows that the Chinese have a rich culture that extends back to when we Europeans were in the Stone Age, but here I will only comment on a few aspects of the Chinese way of life and its impact on the Expedition.

An expectation, which, perhaps, each of us held before our trip, was that Chinese officialdom would exhibit the overpowering bureaucracy that was so reminiscent of that which existed in Eastern Europe in the days before The Wall came down. Any such fears were quickly dispelled on our first meeting with officialdom in the form of the security guards at the main domestic airport in Shanghai. There we were queuing up with large rucksacks and almost impossible to lift hand baggage and a large degree of apprehension as to what they'd make of the contents –ropes, SRT gear, drills, batteries, boxes of flash bulbs, carbide lamps and all the paraphernalia of caving, plus several lap-top computers. Much to our relief, after a cursory examination and with a broad grin on her face our officer waved us through and we were now really in China. The grin was probably inspired by our Guangxi Caves T-shirts. These had our logo on, but also had a brief description in Chinese characters, which had been prepared by the local Chinese take-away in Wolverhampton, of the objects of the expedition. For all we had known, it might have described us as "western imperialist spies"![1]

This cheerful, friendly and helpful approach was typical of all our meetings with officialdom, and there were plenty of them, meetings I mean, during our stay. Nowhere did we meet any of the arrogance that many Chinese are supposed to have and which is epitomised by the view that non-Chinese are inferior barbarians. Well, if this view exists in China, then it was certainly hidden from us. Everywhere we went we were always met by real friendliness.

Returning to officialdom, one of the biggest surprises to me was the degree



of importance with which the Expedition and its members were treated by the Local Governments of Lingyun and Leye Counties. In fact, for a group of lowly potholers, it was rather staggering, not to say, embarrassing. Several meetings were held with senior officials of both districts and we were also entertained to lavish banquets by the authorities and also by individual senior officials. On the day before our departure from Lingyun, the Minister for Land and Resources of the Provincial Government of Guangxi travelled the 450 km from Nanning, the Provincial capital, to Lingyun to meet us for a briefing session and again to treat us to yet another banquet.

The meetings generally involved all the Expedition members sitting round a large conference room table together with the senior local officials and Professor Zhu and Mr Cai of the Karst Institute. Early in the meeting tea would be served Chinese style in large pot-like china cups and could be sipped quietly throughout the meeting. Speeches were made on both sides and, depending on the timing, the Chinese were briefed either on what we intended to do or what we'd already done. Clearly, the Chinese believe that Expeditions such as ours are able to contribute to the economy of these poor regions by assisting in opening up some of the caves as show caves or by providing information needed to develop hydroelectric power schemes.

Returning to banquets, what about Chinese food and seating arrangements? Dining tables are usually round with a rotating stand in the middle on which the multitude of dishes are placed and replaced by the attendant waitresses when emptied. Western cutlery was not available and one simply had to become adept at quickly picking up the tastiest morsels from the gyrating dishes with one's chopsticks as the dishes were rapidly whisked away.

I'm sure the local people didn't enjoy either the quantity or variety of food we were provided with. Staples were rice, which was more glutinous and sticky than how it's usually served at home, deep fried chicken wings, duck, sweet and sour spare ribs, often rather lacking in meat, and generally excellent vegetables. Delicacies included deep fried wasps and wasp larvae, roast leg of dog and whole baked carp. All was washed down with copious quantities of China tea or the local beer that we all consumed in large quantities. By British standards the beer was essentially non- alcoholic, so drunkenness wasn't a problem.

During the receptions numerous toasts were drunk preceded by a phrase which sounds like "cambay", and which can be loosely interpreted as "down in one". It was said that the Chinese like to see Westeners make fools of themselves by getting drunk. However, considering that the toasts are drunk from thimble sized porcelain goblets, they would have needed to work hard to have succeeded with our bunch of typical potholers.

One evening the group was invited by the local Chief of Tourism to a barbecue held on the promenade on the banks of the Chengbi River in the centre of Lingyun. This was a superb setting; the evening temperature was like Greece in summer, the full moon rose behind the tall limestone towers and cone karst that surrounds the town and a short distance upstream was an interesting arched bridge illuminated by green floodlights.

Again we were treated to huge quantities of food that included such Chinese delicacies as grilled snake, barbecued starlings and barbecued pigs' penises or, as the team members preferred to call it, "barbecued pigs' dick".

One aspect of Chinese culture I must mention is their fondness for karaoke. After many of our evening meals, our hosts would find an excuse to have a party in which karaoke featured prominently. This was generally led by our hosts, but usually wound up with team members being pressed into action, much to the individuals' embarrassment and the delight of the Chinese. Two of our team had birthdays during our stay and again parties were thrown by our hosts with birthday cakes, much karaoke, and ballroom dancing with the waitresses on hand to partner us.

To conclude, I should put the record straight; although receptions and parties featured prominently in our schedule, on most days caving and travelling to caves took up about eleven hours and a further two or three were involved in planning the next day's activities, inputting survey data into computers, receiving and sending e-mail and writing reports and diaries. Some of these tasks often extended into the early hours, especially if your name was Arthur Clarke.

Photography Report Bruce Bensley

Producing quality photographs in the cave environment is not usually the simplest of tasks. First attempts with a standard compact camera will probably produce very poor results. This is how we started, and it wasn't surprising when 5 acceptable shots would result from a 36-exposure film. It wasn't long before we were experimenting with additional flashguns using simple slave units that slotted onto their hotshoes. These crude units, probably designed for studio use, weren't very sensitive. Due to their limited working range they proved to be unreliable triggers resulting in many wasted shots.

A far more reliable slave was soon found, namely the Firefly 2.

Firefly2

This is a very sensitive unit that can be triggered instantaneously by a camera's flash over a distance of up to 500 metres! Although a direct line of sight would be required to achieve this range, the units can be used around cave corners over shorter distances. Photographic range could now be extended along cave passages by a series of Firefly slaves attached by hotshoe connection to standard flashguns.

The unit shown was treated with a waterproofing circuit board spray to

give extra protection from damp cave environments. Care must be taken to avoid coating the battery contacts. Silicon sealant can also be used or electrical insulation tape to seal the seams and oversized grommet. The thin wire to the hotshoe is vulnerable to snagging if stuffed down a caving suit and we have chosen to re-route the wire and bolt the hotshoe onto the casing with an M8 flat-headed screw.

If picking up second hand flashguns, it's a good idea to take a Firefly, flashgun and batteries to test with. Fireflys tend not to work with dedicated flashguns which have multiple pin layouts. Despite these points, this small unit is invaluable and functions reliably.

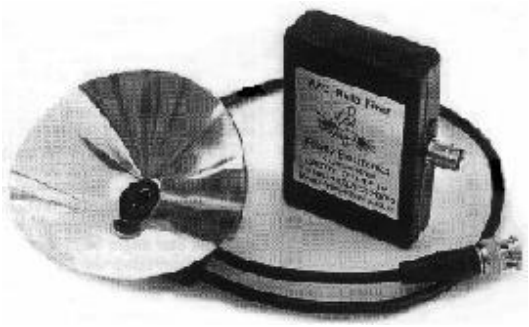
Fireflys are ideal for use with compact cameras in cave passage and on pitches. A length of cord can usually be threaded into the battery compartment through a drill hole providing a leash. A section of car inner tube makes a durable rubber band that can be tied to the other end. The Firefly should be secure if clamped by the flashgun's locking nut.

The Need for Bulbs

In preparation for our trip, we realised that we would need more effective lighting for the huge passage and chambers typical of Chinese caves. Bulbs were the obvious solution but two months before departure we knew nothing about their usage, availability and method of firing. Although most bulbs will fire when connected to a 9V battery, the discharge from a capacitor based circuit seemed to be the recommended means of triggering bulbs.

Simple Bulb Firer

The first line of enquiry was the internet and the BCRA website from which several contact names and links to other web sites were obtained. From the BCRA Events Diary page, I discovered that the formation of a BCRA Photography Group was being considered. For a number of years, field meets have been held between members of the Underground Photographer magazine and the Cave Radio Group and as a result a series of articles had appeared in the CREG (Cave Radio and Electronics Group) Journals. After browsing this site I decided to contact Richard Rushton who pointed out the existence of a ready-made bulb-firing unit from Firefly, the BF1.



BF1, bulb-firing unit

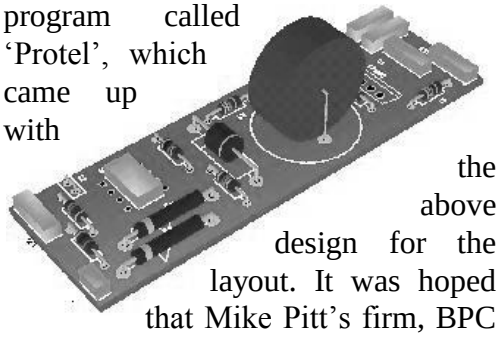
The unit features a BNC socket to which a fly lead connects terminating in an AG bulb holder. It is possible to make your own adapters for other small size bulbs that may be of a screw or bayonet type connection.

Alternatively, a domestic ES (Edison Screw) bulb holder can be wired to the fly-lead version of the Firefly to take larger bulbs of this type. The unit is based on a David Gibson design for the Firefly2 slave unit, and features a bulb-OK LED to indicate good bulb connection. The device is deliberately kept simple and has no on-off switch.

Kits and Published Bulb-Firing Circuits

To stretch our budget further, we decided to look at the possibility of building our own units. Indeed David Gibson's pages on the BCRA website revealed that kits existed for IR slave units and RALF units (mentioned later). Unfortunately at this time a combined slave and bulb-firing unit was not available. I contacted David Gibson who kindly sent a copy of an early article "Flashgun Slaves for Flashbulbs". This mentioned two circuits based around the Gibson flashgun slave kit. The first of these bulb-firers used power from two 1.5v alkaline batteries to the bulb and was triggered by the Gibson slave unit. The second was capacitor based, with push break switch and LED's to indicate when charging and when fired. Also mentioned was an alternative circuit by Steve Clark with a slave unit capable of removing the effect of ambient light. Both of these circuits were developmental and required suitably valued components to avoid their slave units latching on. In this situation, the slave unit enters a continuous cycle of charge and discharge. A later article "An Improved Circuit for Firing Flashbulbs" contained additional improvements such as manual firing, bulb 'correctly seated' indicator and rotary bulb isolation switch for safety. It should be remembered that bulbs generate a lot of heat and can also shatter when triggered. We eventually obtained a copy of this final circuit, which was repeated in a later article "A Practical Flashbulb Firer" by Richard Rushton.

Our first thoughts were to design and build this PCB for the bulb firer in preference to constructing it on Vero board in order to make it as reliable as possible. Alister was able to feed the circuit information into a computer program called 'Protel', which came up with

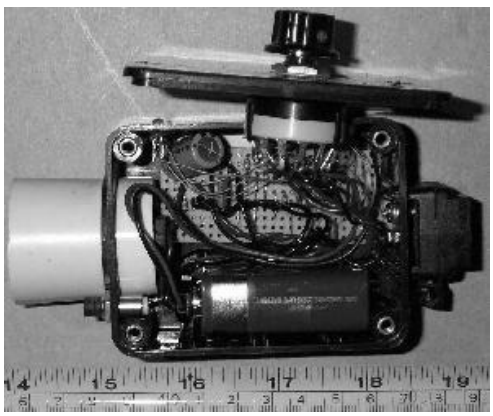


the above design for the layout. It was hoped that Mike Pitt's firm, BPC Circuits would manufacture the boards but time was unfortunately not on our side and, as a prototype was thought necessary, we opted to use Vero board instead.

Bulb-Firer With Firefly2

As we already had a couple of Firefly2 slave units in our arsenal, it seemed possible that we could build some flexibility into our photo kit. If the Firefly2 units were used in conjunction with a simple bulb-firer then these units could be split up if required. The bulb firers could be used manually allowing the Fireflys to be used on a separate flashgun trip.

A prototype circuit was soon rustled up and successfully tested.

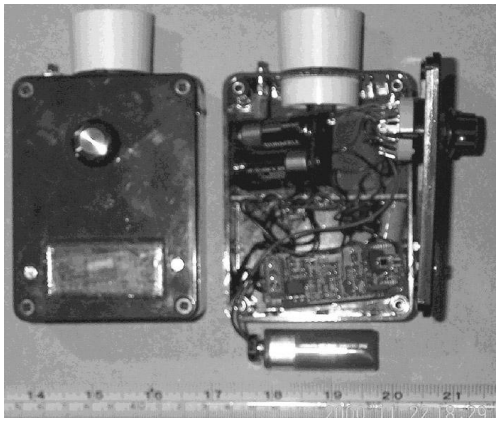


Bulb Firer with hotfoot connection, manual fire button, bulb isolation / on switch, power on LED and bulb correctly seated LED

Combined Slave and Bulb-Firer

In addition to the Firefly/bulb-firer combination, three combined bulb-firer and slave units were also

planned. Alister reckoned that these could be built by linking the slave part of the RALF kit to the improved version of the bulb firing circuit, whose parts we would supply ourselves through Farnell and Maplin.



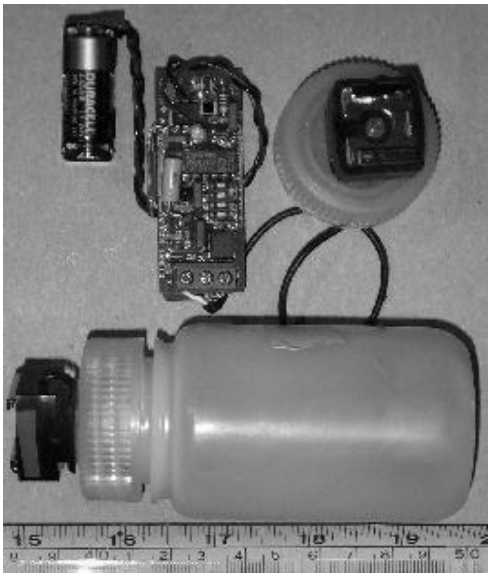
Combined Slave and Bulb-firer

At the same time, RALF PCBs were ordered in and we could begin looking for suitable project boxes to house all the components for our two projects. Apart from the circuitry itself, the bulb-firer box had to house a PP3 9v battery, a bulky three-way rotary switch, and the base of an ES bulb holder. In addition to these, the combined unit required a larger box to house the RALF PCB and its two MN9100 batteries. It should be noted that the RALF PCB uses smaller 0.2" components which are not readily available. The RALF circuit is designed for use with flashguns and because it is electrically separated from them, it requires its own power supply at a reduced voltage.

Several weekends were spent at the club hut carefully soldering, drilling, filing, gluing and bolting-on components to make the finished articles. Not all units worked first time when tested but with perseverance we ended up with all units working.

RALF Redundant Array of Little Flashguns

RALF is a modification of the Gibson slave unit. The idea is to use several flashguns fired in close succession to produce an extended period of illumination, similar to that of a flashbulb. By using a longer exposure, moving water and airbourne droplets do not get frozen. The effect of motion is therefore maintained. The circuit incorporates a switch that can be preset to delay triggering of the flashgun. The delays range from 2ms to 32ms in approximately 2ms steps.

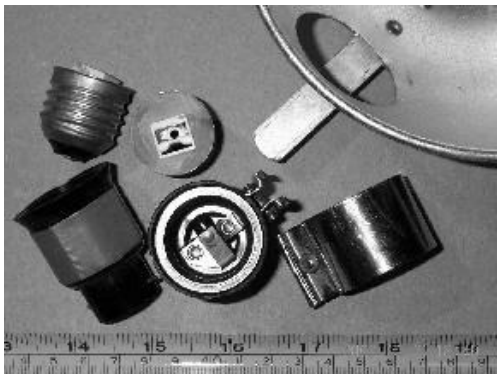


RALF Unit, housed in Nalgene bottle, complete with hotfoot connector

The circuit for RALF is published in an article by David Gibson entitled 'A High-Performance Flashgun Slave Unit'. It should be noted that the terminal block, to which the flashgun connects, has three contacts. There are two connection possibilities to these which bring into play different components and is supposed to allow the unit to work reliably with differing makes of flashgun. Unfortunately, during our trip, we experienced problems firing our Jessops flashguns with RALF. The resistor used to protect the opto-triac from the high voltages produced by certain flashguns, is probably responsible for

de-sensitising the RALF unit. The problem was corrected by adding in an SCR (Silicon Controlled Rectifier) and a bridge rectifier as suggested in the Problems and Further Work section of David Gibson's article. The Firefly2 appears to use these components between the opto-triac and the output.

The housing provided with the kit was a plastic medicine bottle with push-on lid. It seemed almost impossible to fit all components into this, especially since we had chosen to bolt on a hotshoe adapter. The search for an alternative eventually settled on a small opaque Nalgene bottle which was robust, not brittle and had a watertight screw top lid. A bolted bracket on the lid held the pcb and battery holder attached to prevent the components rattling around and easing their removal from the bottle.

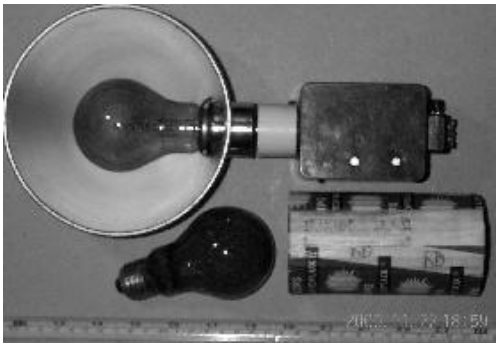


ES to AG1B adapter, BS to ES adapter, 5" Reflector with collar

Reflectors And Bulbs

Although excellent results can be obtained by using aluminium disposable baking trays for bulb reflectors, it is preferable to locate purpose built versions. If you trawl second hand photographic shops, you should be able to pick up reflectors and bulbs that were used in the days before electronic flashguns. I was put in touch with a gentleman after ringing a shop in the Yellow Pages who dug out and dusted down some old Bowen flashbulb equipment which he used in his days as a professional photographer. He now specialises in the manufacture of world class Ely studio equipment and his own design of giant flashguns.

The 5" reflectors were ideal, being light, fairly robust and stackable. I preferred to replace the push fit Bowen bulb holders with an Edison Screw (ES) holder, but those found encroached too far into the project boxes. Instead, a standard bayonet bulb holder was



Blue-coated PF60 fitted to Bulb-firer

chosen. The thread of this passed neatly through a hand cut hole in the side of the project box. Its cowling was retained as a locking nut and cut down to minimal size thus exposing the contacts for wiring to the circuitry. A bayonet to ES adapter, with flange cut down, was fitted with the collar for the reflectors. Our supply of PF60 and PF100 type bulbs could then be screwed in and the reflector height adjusted to centre the bulb within it. We were initially in contact with Meggaflash Technolgies Ltd, who sent us a sample box of PF200 bulbs that they manufacture. Because PF200 are now a specialist bulb, they are not particularly cheap. However, if you are looking to light up a large chamber, they are certainly worth considering, having a guide number of 143m (100 ASA, open flash). As these are clear bulbs, you will need a

blue filter (e.g. 80C) to compensate your daylight film for tungsten light.

Our smaller AG1B bulbs were sourced from Firefly Electronics and proved to be very useful. Because of their smaller size, they were less likely to be confiscated on the plane and were easy to carry in the cave. The output from three bulbs sellotaped together proved very satisfactory for large chamber shots.

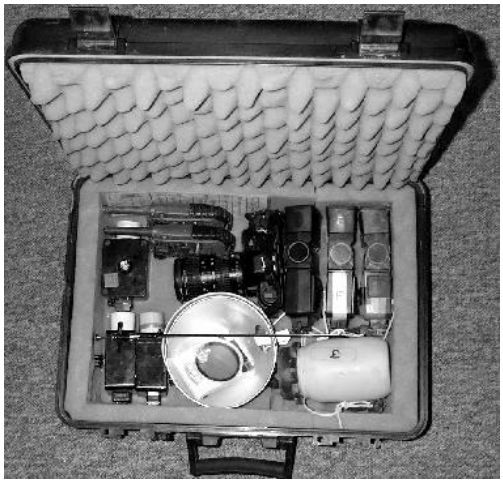
We needed an adapter to fit them into the ES bulb holder. The first of these was made from the base of a domestic light bulb. A wedge base PCB lampholder from Farnell was wired to the ES base, but needed some modification to accept our push fit AG1B bulbs. A reasonable fit was achieved by snipping off a couple of unnecessary contacts. Araldite was used to fix it in it place. Later versions used lighter, less messy plastic padding for this purpose and ES bases donated by Meggaflash Technologies.

Prior to the trip, we sent out a test package by UPS which contained twenty or so large flashbulbs. Within five days, these had reached their destination in China. It was possible to track their progress on the internet. Feeling confident, we carefully packaged up about 140 bulbs into two boxes. Plenty of bubble wrap was used and care was taken to maintain weight and package size restrictions. We even persuaded the girls from the Chinese medicine shop to write safety notices and label them as expedition equipment. These were sent by Parcel Force but never reached their final destination. The internet tracking service was not updated and later enquiries revealed that they had been held up at Chinese customs. Perhaps a commercial invoice would have eased their passage, or a more realistic value stated for their worth. With a bit of leverage, I was able to secure a refund and the safe return of our bulbs. Hopefully these can be put to use on a future trip. Fortunately we were able to obtain favourable results using our smaller bulbs on the trip.

Some advice, which turned out to be extremely useful, was to acquire some cheap radios. With cave photography, co-ordinating several people over distances of up to 100m can prove extremely difficult. Indeed, confusion can ruin a carefully setup picture and waste valuable bulbs. Alister managed to get hold of two Motorola TA-200s from the States and I supplemented these with a couple of my own.

A silky-tongued Mike Pitt secured a donation from Pathfinder-Fox of two waterproof camera boxes. These were very robust, as we found out when a porter jettisoned one down the hillside. The contents were unharmed. The waterproofing was also tested in the huge river systems found in several of the China caves.

We decided that there should be two photo kits since the team would be caving in more than one region at a time. Also, some redundancy was necessary should one kit be lost or damaged.



Pathfinder-Fox Kinetics Case

The following kit list was drawn up:

SLR Kit1

Large Waterproof box (with foam cut out lining)
Pentax P30 SLR
Cable release
Tripod (JCW)
58mm filter 80C
3 x bulb firers (with manual fire option and hotfoot connection to Firefly IR slave units)
3 x ES to AG1B adapters
3 x BS to ES adapter fitted with 5" reflectors
2 x small radios (BJB to finance)

SLR Kit2

Large Waterproof box
Nikon SLR
Cable Release (JCW) BJB can supply if necessary
Tripod (JCW)
52mm filter 80C
3 x combined IR slave/bulb-firers (with manual fire option)
3 x ES to AG1B adapters
3 x BS to ES adapter fitted with 5" reflectors
2 x radios (AR to supply from USA)

Bulbs

250 x (PF60, PF100) clear and blue bulbs (Selection to be sent by UPS)
288 x AG1B bulbs (hand luggage)
Large Nalgene bottle (280mm high,150mm diameter, 87mm diameter neck) bulb carrier
4 x RALF units (Redundant Array of Little Flashguns). Mimick flash bulb exposure)

Compact Kit 1

1 x 6 ltr 'waterproof' bag
1 x sealable bottle (for fireflys) (140mm high, 75mm diameter, 53mm diameter neck)
3 x Firefly IR Slave units (hotshoe connection to flashgun)
3 x Jessops (rotate,swivel) non-dedicated flashgun (280 ABZ)

Compact Kit 2

1 x 6 ltr 'waterproof' bag
1 x sealable bottle (for fireflies)
3 x Firefly IR Slave units (hotshoe connection to flashgun)
1 x Jessops (rotate,swivel) non-dedicated flashgun (280 ABZ)
2 x Second hand flashguns (Zoom,swivel)

Misc

2 x 8-battery NiCd, NiMH chargers
24 AA NiCd batteries (6 flashguns x 4 batteries)
24 AA Spare batteries

References:

'Images Below', a book by Chris Howes
'Flashgun Slaves for Flashbulbs' by David Gibson CREG Journal 14 Dec 1993
'An Improved Circuit for Firing Flashbulbs' by David Gibson CREG Journal 23 1996
'A Practical Flashbulb Firer' by Richard Rushton CREG Journal 31 Mar 1998
'A High-Performance Flashgun Slave Unit' by David Gibson Nov 98 (Modified May'99)

The photographic development team would like to thank the Yorkshire Ramblers' Club for its generous support. The photographic kit was also significantly enhanced thanks to contributions from a number of firms that we approached.

Special thanks to:

Peter Moss, Elys Photographic Equipment Ltd, Studio Lighting, Units 11 and 12, Gun Barrel Centre, Hayseech Road, Cradley Heath, B64 75Z Tel: 0121 5856068
Rachel Markham, Marketing Department, Jessops, Jessop House, Scudamore Road, Leicester, LE3 1TZ. Tel: 0116 2326000
David Gibson, 12 Well House Drive, Leeds, LS8 4BX Fax: 0870 1640389 david@caves.org.uk
Richard Rushton
Nigel Jennings, Firefly Electronics, 10 Darran Street, Cardiff, CF24 4JF Tel: 029 20340078
Ben Lyon, Lyon
Pathfinder Fox Ltd, Clifton Technology Park, Wynne Avenue, Clifton,Manchester, M27 8FF. Tel: 0161 7948137 Fax: 0161 794 0157 www.pathfinder-fox.co.uk
Meggaflash Technologies Ltd, Clonroad Business Park, Ennis, County Clare, Rep of Ireland Tel +353 65 6828677 Fax +353 65 6822688 www.meggaflash.com

Useful Websites and Contacts:

Cress Photo www.flashbulbs.com
www.dhios.demon.co.uk/flashbulbs

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Richard Sealey,
John Whalley.

Evidence of Cave Occupation in South-West China

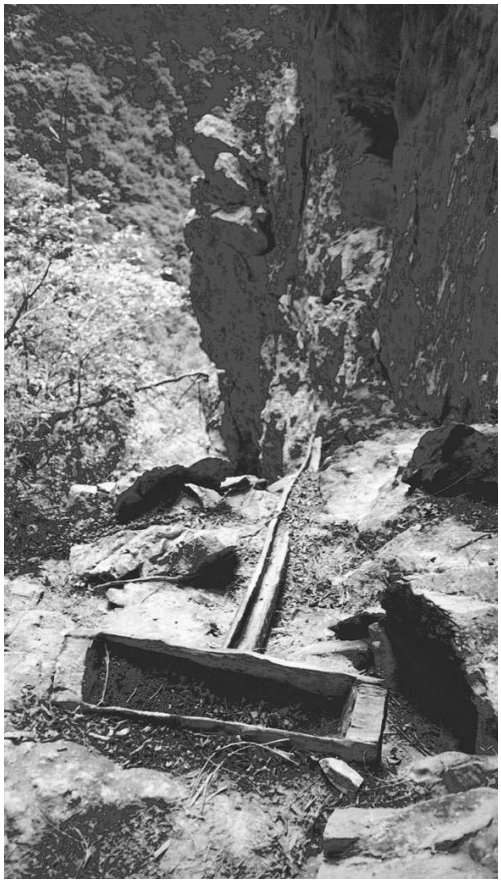
Tony Penny of the Wolverhampton Caving Group

There is a reference In "British Caving" (Cullingford) to a fissure at Caslemartyr in Count Cork, Ireland, which yielded a human skeleton covered with gold plate. I lived tantalisingly close to this area in my teens and spent many hours wading through mud and slime hoping to repeat such a find, alas, to no avail.

Not until descending the Great Doline of Dashiwie in South-West China many years on, did I find a man-made artifact used by cave dwellers. Our abseiling party of six, accompanied by various local hunters and Cherry, our interpreter, had split into two groups for speed and ease of movement. John Whalley and I were to be the support team encamped some 60m down the cliff face, in an old fossil cave set back in the rocks.

The entrance to this cavern was guarded by lush vegetation, mostly bamboo and large ferns. During daylight hours there was very good visibility, due to the large classic entrance. From here the second descent rope was belayed and, having seen off the "shock troops", we lowered all necessary tackle bags, hammocks, drills etc. to them. Night was just creeping in as we erected our tent and set about gathering wood for the obligatory cooking fire, which soon expanded to a bonfire, accompanied by Chinese folk singing. This was a haunting and evocative series of dirges by one of the hunters in our party, who had collected these songs from village ancients in his spare time.

The crackling of the radio-phone at 6am the next morning outlined our orders for the day. We were to stand by to retrieve all equipment and await the return of the advance guard as the lower river was in spate and therefore too turbulent for further exploration. This gave John and me an unexpected day's grace in which to examine and photograph our surroundings.



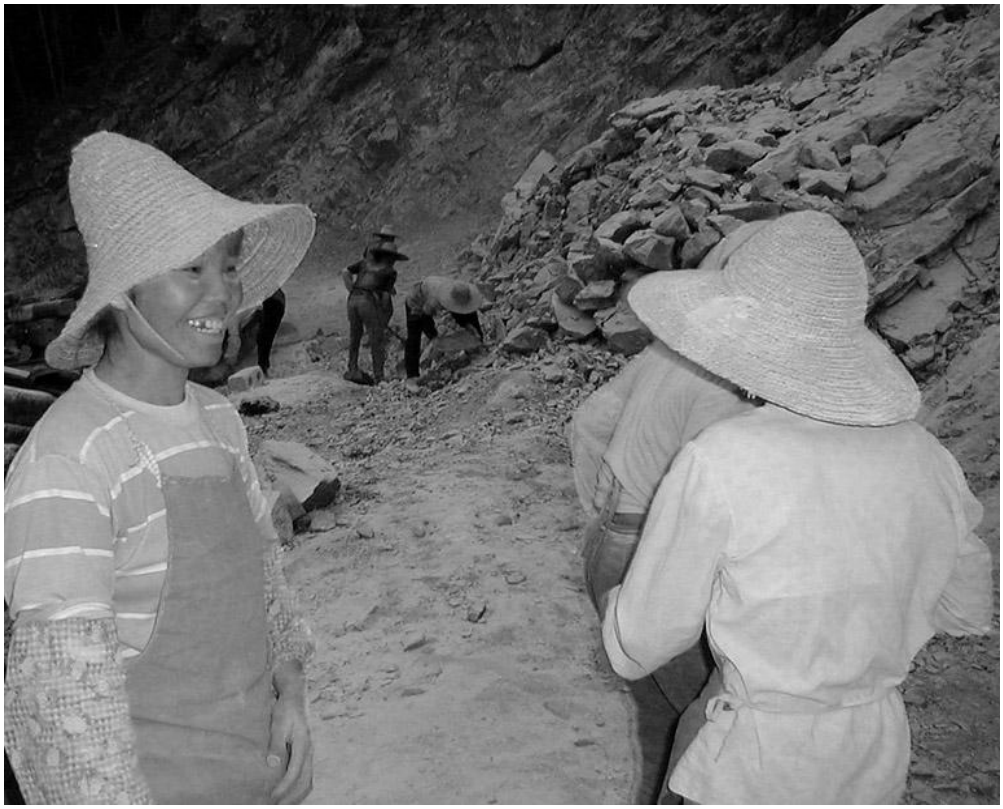
Not far from our tent was a man-made hollowed-out log about 1 metre long and 400mm in diameter containing what looked like spent food pellets. This log was positioned over a steep drop and was obviously a drinking trough for small animals, possibly chickens judging by the pellets within. It was fed with water by means of a split bamboo conduit and contained a drain bung for discharging spent liquid. Overlapping lengths of bamboo were packed on stone wedges and secured with creeper. I had seen such logs in front of a farm dwelling in Lingyun when looking for cave entrances there, but I thought it very

odd to come across one in such an inaccessible position. The Dashiwei Doline is remote from the nearest town and is approached on narrow tracks after steep climbs up from the valley and our own camp site was 55m from the rim.

Further in to the 350 metre long cave, we noticed three large dry-stone walled circles, again fed by split bamboo conduits from the overflowing gour pools in the far recesses of the cavern, these in turn filling up from water dripping slowly off the roof. The construction of these dry-stone "butts", each one feeding the other, led us to speculate that people had dwelled here in the cavern for long periods, possibly using the series of interconnected pools for drinking water, bathing, clothes washing etc.

The other surprise was discovering two straw baskets, in reasonable condition, nestling among the boulders. The boulders themselves, which were considerable in number, had been collected in giant spoil heaps towards the centre of the cave, leaving paths all around the walls. The Chinese hunters in our party told us about local guano gatherers who used to climb down into the cave about 60 years ago by means of a tree which has subsequently decayed and died. With the tree gone, they could no longer descend into the cave. It seems unlikely that, with the abundance of bamboo in the cave and the evident skills of the people in erecting wooden scaffolding, that the death of a tree would have stopped the occupation and collection of guano if used solely for the fertilisation of crops.

The most likely explanation for this industry was nitrate production. Natural organic nitrates are still sometimes used in the manufacture of gunpowder and modern nitrate based explosives, and still mined today in many parts of the world for use in the manufacture of agricultural and



Female quarry workers

horticultural fertilisers. The series of water butts could have been used for the washing out of impurities in the natural product. Limestone quarrying was very much in evidence in this area, used for road building and, in past years, as a flux in iron smelting, so gunpowder for blasting was an essential and constant requirement. I expect that more modern means of producing TNT had caused the decline in guano gathering from inaccessible caves.

Below is another example of a hollowed-out log fed by a split bamboo conduit. This one was at the top of a steep slope, embedded in the rock and covered by a calcareous deposit. It was pointed out to us by one of our Chinese companions whilst surveying East Cave and in an area remote from daylight. Steps had been cut into the rock to facilitate access to a higher section of aven where, presumably, guano had also been previously gathered, the log again possibly serving as a water source for tethered chickens, one of the region's staple diets, accompanying working parties everywhere.

Much further work remains to be done to establish the exact reasons for the fixtures that we found, the explanation given here seeming most logical. Gold-plated skeletons they are not, but these structures added an interesting adjunct to our main tasks of cave hunting, surveying etc. Needless to say, nothing was disturbed or removed, the only things taken were the skilful photographs by John Whalley.

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