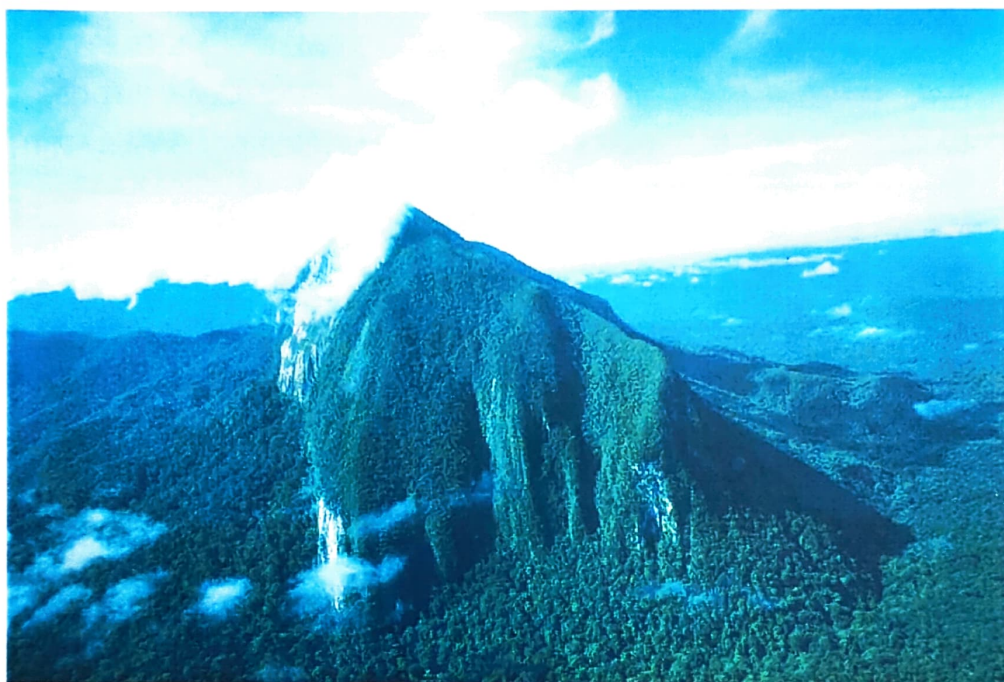


BENARAT 2000



**An Anglo-Malaysian expedition to Gunong Benarat,
Gunong Mulu National Park, Sarawak.**



G.BENARAT (*Andy Eavis*)

Leader: Dick Willis

Editor: Pam Fogg

We are greatly indebted to the following for their support and assistance:

The Sarawak State Secretary.

The Director of Forests, Sarawak.

The Staff of the National Parks and Wildlife Division, Dept of Forestry, Sarawak.

Dato Dr. James J. Masing, Minister for Cultural Development and Urbanisation,
Sarawak

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SUMMARY

Benarat 2000, a joint Anglo-Sarawak expedition to Sarawak's G. Mulu National Park, completed its work at the end of November 2000, having spent approximately one month in the field.

Based in the Melinau Gorge, at the National Park's "Camp 5", the team explored and surveyed approximately 13km of new cave passage

The majority of the discoveries took place in Cobweb Cave. We extended the total mapped length of this system from 15.1km to 26.7km, making Cobweb the 2nd longest cave in the National Park and the 5th longest in S.E.Asia.

A high level lead inside the Cobweb entrance was gained by using a catapult to thread a rope up through a couple of eyeholes and led to c1km of passage. The "Powder Mountain" was climbed by Tim Fogg and Tony White to give a couple of km of passage which was draughting strongly. There were hopes that this would connect to Blue Moonlight Bay Cave, but it ended in a draughting boulder choke after some nice phreatic tubes with very fine small crystal formations. Andy Eavis later found a bypass to the climb.

Southwards, "Paper Tiger" went significantly. Tim Allen, Pete O'Neil and Pete Hall dropped a level and found their way to a very fine section of large streamway; there are leads still to be pushed here. Above "The Top of the World" a tight vertical squeeze was located and pushed by Colin Boothroyd and Martin Holroyd. It went up to a boulder choke and into large passage going north and south and is still going...

In addition to the discoveries in Cobweb, the expedition explored a number of other caves in the Melinau Gorge and the west side of Benarat. A lot of surface checking was carried out between Cobweb and Camp 5 - to no avail. Pam Fogg and Dick Willis found one strongly drafting rift entrance, south of Cobweb about 100m off the plain, with a lot of unstable boulders where a collapse nearly put an end to the expedition leader. There is, however, an underlying passage that looks clear at the base of a 15m pitch but the collapse would require a considerable amount of effort to render it sufficiently stable for safe exploration.

Tim Allen, Pete Hall and Pete O'Neil bolted up the Super Ramp in Benarat Caverns. This was climbed to a conclusion at +200m. It took 3 days to reach the top only to find it was blind. They also checked various possibilities in Benarat that had not been conclusively pushed in '84. None of them went.

On the Benarat cliffs, they bolted up 40m to an entrance in the Gorge, visible from Camp5. This had 15m of passage and then choked.

A number of small caves in the north end of G.Api were surveyed. These were in a cluster about 45 minutes walk east of C5. Cave-pinnacle Cave, Pinnacle Cave, Rat Cave, Frog Cave and Bat Cave yielded about 1km in total. Unfortunately high water conditions meant that these surveys could not be carried out to their conclusion but a total lack of draught makes any extensions unlikely

A team went to look for the entrance to "Deliverance Cave" to try to confirm its position relative to Benarat Caverns etc. Unfortunately it could not be located in the time available. However, correspondence with the American team confirms that this

cave lies in a direct line to Benarat Caverns and a connection remains a tantalising possibility.

A photo-trip was undertaken into Lower Tiger Cave. Illegal birds-nesters have located a very small entrance below the Lower TC entrance on the same bed. It was surveyed by us in '84 but not marked on the survey as an entrance. They now use this to gain access to both levels of the cave with its huge population of swiftlets, avoiding the exposed face climb that was carried out by Martyn Farr and Tim Lyons in '84. A rope was rigged on the climb up to this entrance, using slings and maillons. 2 days later, the rope had been re-rigged on naturals and the slings and maillons taken: this was the only interference from birds-nesters, despite dire predictions from certain quarters before the team departed the UK. The nesters left untouched some rope that had been stashed in the Lower Tiger Cave entrance and also did not touch the rope and SRT kits that were stashed inside the entrance of Cobweb while the team was working there.

On the final afternoon of the expedition, a new cave entrance was discovered on the north side of the Melinau Gorge. This came from pushing a draughting hole originally located in '84 by Ben Lyon, Mike Meredith and Tama Bulan and re-located by Andy Eavis and Dick Willis in 1999. With a bit of persuasion, this went into a long squeeze and then big passage. There was only time for one final night trip and the team was strongly suspecting that it would connect with the "Homeward Bound" series in Benarat Caverns. The cave, Hurricane Hole, is big and is still going – but no connection was proven on that trip. Hopefully a future expedition will be able to explore and map this cave

During the one-month visit, the team was honoured to receive a visit from our Patron, Dato Dr. James J Masing, Sarawak's Minister of Social Development and Urbanisation. During his visit, Dr. James kindly gave us use of his helicopter to carry out an aerial reconnaissance of the mountain. This was very useful to identify the relative positions of several of the features.

"Benarat 2000" was the 10th in a series of Anglo-Sarawak caving expeditions to Mulu. The first, in 1978, discovered some 50km of vast cave passages including Clearwater Cave. In 1980 another 50km were explored and Sarawak Chamber, the largest natural underground chamber in the world, was discovered. Since then a succession of expeditions have enabled UK cavers and staff of the Forestry Dept, National Parks and Wildlife Division, to jointly explore and map the splendour of Mulu's stunning underground landscape. As on previous British expeditions, we received excellent support and assistance from staff of the National Parks and Wildlife Division.

The expedition logistics were organised by Tropical Adventure Tours and Travel Sdn Bhd. and the Royal Mulu Resort supported the expedition through the provision of subsidised accommodation at Long Pala.

The expedition is very grateful for the support of the Sarawak State Secretary, the Director of Forests and Dato Dr. James J Masing.

INTRODUCTION

THE RETURN TO GUNONG BENARAT – *Dick Willis*

Anyone flying east from Miri at the end of 1977 would have seen an apparently endless vista of forest divided by the brown, snaking trails of the huge rivers that meander down from the interior. Rising in the distance would have been the sandstone mass of Gunong Mulu, protected by the broken ramparts of the Limestone Mountains that flank its westward slopes, G.Api, G.Benarat and G.Buda. Then, as now, it would have been likely that Mulu was shrouded in clouds. The torrential rains that fall on its sides run off the impermeable sandstone slopes to collect into streams and rivers. These either disappear into the limestone or cascade through the spectacular gorges that have been carved through the limestone over millennia.

Down there, in the forest of the new G.Mulu National Park, Malaysian and European scientists were working together on an intensive 15 month programme to study the Park and its biodiversity in order to produce a Park management plan. For many of the Europeans, this expedition was to be a seminal event in their lives – forging new friendships, casting light on the almost unfathomable complexity of the environment and falling in love with an area of extraordinary natural beauty.

Amongst the researchers was one group whose discoveries were about to impact on a global community of explorers. Hidden in the trees of these green mountains was an entirely new world – a network of caves of previously unimagined proportions. This group of 5 cavers, more accustomed to the cold, wet complexities of British caves, where the discovery of 500m of new passage was big news, walked into the most spectacular underground environment on Earth. In the space of a mere 2 months they explored, surveyed and photographed over 50km of stunning cave passage. Their subsequent report, "Caves of Mulu", was a sell out, their seminars required repeat deliveries to overflowing audiences and their return trip was inevitable!

In 1980 a major expedition returned to the Park. Once again working with officers of the Forest Department, another 50km of passages were explored and surveyed in Api, Benarat and Buda. Sarawak Chamber, the world's largest cavern, was discovered in Api, hugely exceeding the previous record holder. The report, "Caves of Mulu '80", was another sell-out and Mulu's reputation as one the world' greatest caving areas was secured.

1984 brought another big team into the field, adding yet another 50km to Mulu's impressive total. In G.Benarat the main system, Benarat Caverns, was explored to a conclusion both north and south, leaving only one significant lead – the vast vertical mystery of the "Super Ramp". Outside, an epic climb up the cliffs took cavers into Upper and Lower Tiger Cave with their spectacular views over Borneo and a set of desperate, gear-consuming traverses. Meanwhile, on the west face of the mountain, a search of the slopes revealed the entrance to Cobweb Cave and 15km of complex shattered phreatic maze, a deeply hidden streamway and several tantalizing, remote leads.

But it was in Api where the most obvious potential was realised. Clearwater's second sump was dived and a subsequent surface entrance let the whole team share the

exploration of the stunning Clearwater 3 streamway and the network of passages above it. This set a pattern that established the Clearwater system as the major focus for subsequent exploration in Mulu and for 16 years Benarat was ignored.

However, fashions change in caving as in mountaineering: the late '80's saw a succession of smaller, shorter expeditions that located Black Rock Cave, in the north end of Api, and eventually linked it to Clearwater, establishing the system as the 7th longest cave in the world and the longest in S.E.Asia. Further in, an easy climb, which had been considered "too difficult" in '84, was climbed [in socks!] to reveal the 15km of Armistice Series and upstream Clearwater, where exploration has now stopped at the hideously flood-labile bypass to sump 6.

Drawing a blank with Clearwater's streamway and high-levels, attention eventually shifted in 1993 around the back of Api to the Hidden Valley. Here it was hoped to find an alternative route into Clearwater, upstream of the final sump. The Hidden Valley had last been visited in 1978 - when its remote and difficult terrain marked it out as an obvious objective of last resort! Subsequent expeditions in 1996 and 1998 have so far failed to find a new way in to Clearwater, but they have revealed the vastness of Bridge and Cloud Caves, with their link through the mountain to Snake Cave - a connection that had been missed in 1984.

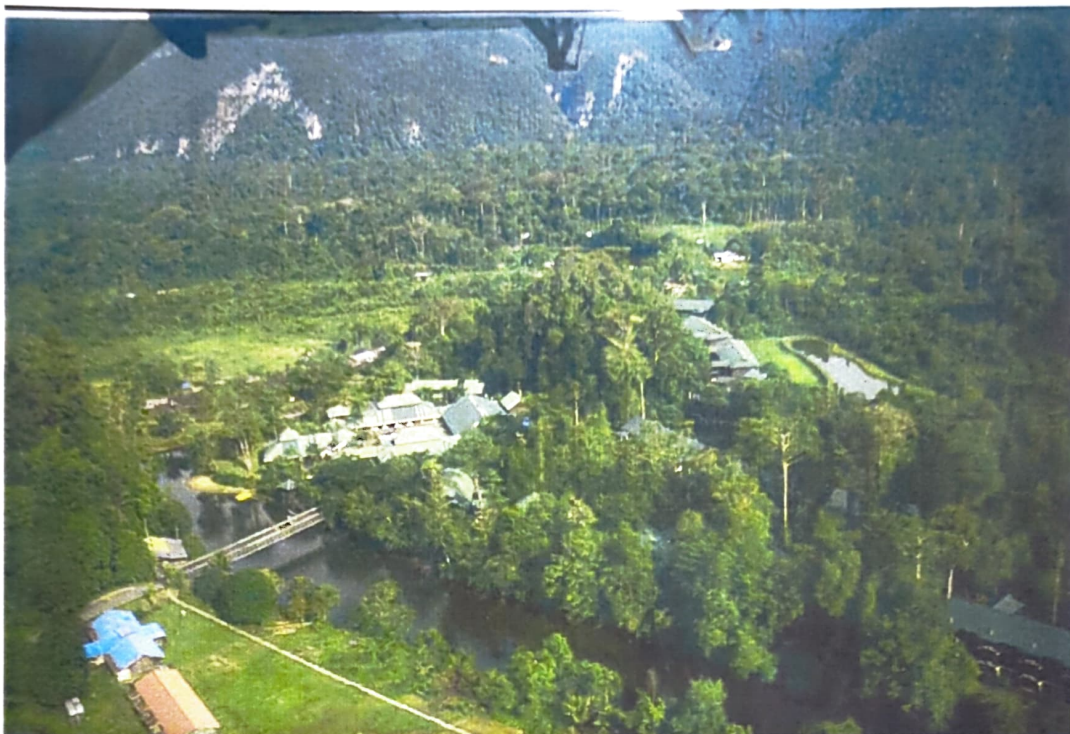
As new passage in Api became more difficult to locate, memories turned back to Benarat... Developments in bolting technology had made the Super Ramp a realistic possibility, and the leads in Cobweb seemed to become less remote as the years rolled by. In '84 a draughting choke in the Melinau Gorge had been noted and stories about it assumed an increasing importance as thoughts of a return expedition began to form.

In 1997 an American expedition visited Gunong Buda, the limestone block north of Benarat. The team was given permission to venture south across the Medalam River to prospect the northern slopes of Benarat and here they discovered a cave, which they named Deliverance, heading south through the middle of the mountain. By the end of their return trip in 1999/2000 it totalled 4.3km in length, had a vertical relief of 165m, and its deepest point was 145m below the entrance.

The discovery of Deliverance Cave had opened up the possibility of a through trip - traversing the length of Gunong Benarat, from the Medalam to the Melinau Gorge. A 2-kilometre gap separated the southern limit of Deliverance and the northern end of Benarat Caverns. The time had come for us to go back.

Benarat 2000 was a very different expedition to the 1984 trip. In '84, access to the Park involved a 3-day journey up the Baram and Tutoh rivers to our base camp at Long Pala. From here a further boat ride up the Melinau led to Long Berar and the start of the narrow forest trail to Camp 5. From leaving home in the UK, it was at least 5 days before underground activity could begin.

By 2000 however, Mulu had an airport, a 180-bed hotel with swimming pool on the site of our old base camp, where once we had swum in the cool, clear river. It had marked forest trails with boardwalks and small bridges to avoid the worst of the mud and, most importantly, it had a revitalised Camp 5 featuring fully equipped kitchens, showers and flush toilets. This time we flew directly into Mulu, stayed overnight in the hotel and the following day choppered all our team and supplies to Camp 5. Within 24 hours of leaving the UK, Colin Boothroyd and Tim Fogg were back in Cobweb Cave, feeling their way around the system and trying to make sense of the survey they had produced 16 years before...



MULU RESORT FROM THE AIR (*Dick Willis*)

This report consists of the contributions of members of the expedition team, recalling in our own words the experience of exploration in Mulu. Interspersed within the text are quotations from the expedition diary.

The delay in the production of this document has been largely due to the need to redraw the entire Cobweb Cave survey. The original survey, from 1984, was drawn using traditional techniques and fortunately, most of us are still able to revert to pencil, protractor and paper, since our laptop computer died in the field! The failure of this item meant that all survey data had to be reduced using programmable calculators and then transcribed by hand onto graph paper – a satisfying, sociable but laborious process. On return to the UK, all new survey data was then digitised and the original survey data was also processed and we are grateful to Dave Gill for his assistance with this task. Colin Boothroyd drew the short straw (he was allowed no option) and redrew the survey from scratch, a task made no easier by the demands of a young family and the pressures of his 'day-job'. Despite the frustration of constant nagging, we are all grateful to him for this labour of love.

Pam Fogg has edited the report and upon her shoulders fell the task of goading us all to make good our promises and committing pen to paper, or fingers to keyboard.

Finally, I would like personally to thank all the members of the team, both from the UK and Sarawak – I cannot imagine a better-humoured, more competent bunch of people with whom to explore the world's most wonderful caves.

Dick Willis.

Bristol, UK. August 2002.



BENARAT 2000 TEAM MEMBERS (*Andy Eavis*)

Top Row: Steven Mawan, Chris Victor, Tim Allen, Pete Hall, Pete O'Neil, Edwin Abang, Roland Gau,
Tim Fogg, Noah Abang Colin Boothroyd

Bottom Row: Ben Lyon (Visitor), Tony White, [Martin Holroyd], Pam Fogg, Dick Willis, Syria Lejau,
Andy Eavis, Rambli Ahmad

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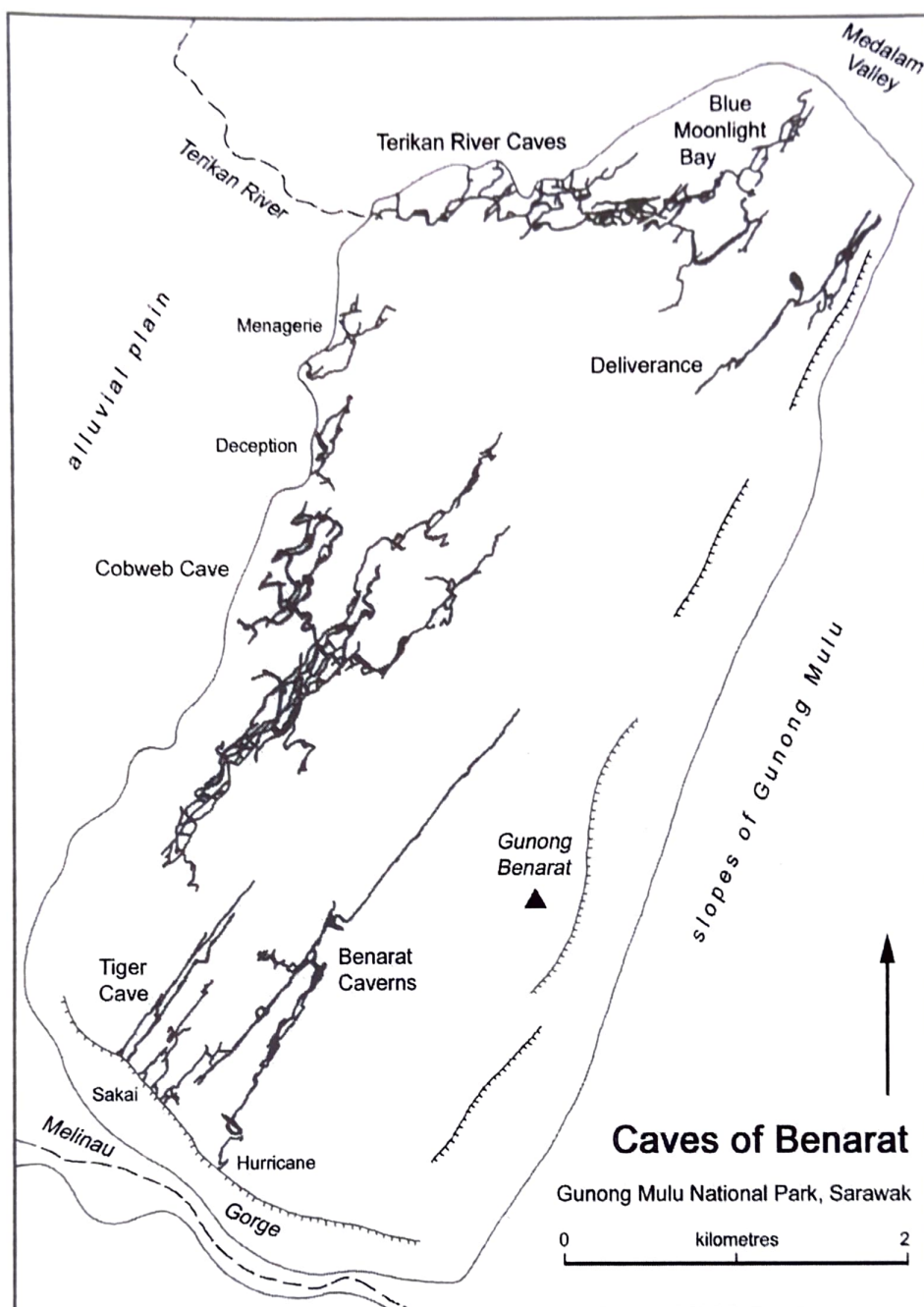


Fig 1 THE CAVES OF GUNONG BENARAT

TABLE 1: GUNONG BENARAT: CAVE LENGTHS

THE CAVES OF GUNONG BENARAT		TOTAL CAVE LENGTH	RGS 1978	Mulu 80	Sarawak 84	Buda 97 U.S.	Buda 99/2000 U.S.	Benarat 2000
Benarat Caverns	Lubang Benarat	8320m	1355m	4870m	2095m			
Sakai's Cave	Lubang Sakai	2645m		1120m	1525m			
Tiger Cave	Gua Harimau	3800m			3800m			
Cobweb Cave	Lubang Sarang Laba-Laba	25932m			15185m			10747m
Deception Cave	Lubang Tipu	1510m			1510m			
Menagerie Cave	Lubang Kumpulan Binatang	1875m			1875m			
Terikan Rising Cave	Gua Sungai Terikan	775m	775m					
Terikan River Cave West	Gua Sungai Terikan Barat	2270m	2270m					
Terikan River Cave East	Gua Sungai Terikan Timor	3840m	3840m					
Blue Moonlight Bay Cave	Gua Teluk Cahaya Bulan Yang	9400m		9400m				
Deliverance Cave	Gua Pembebasan	4317m				3577m	740m	
Hurricane Hole	Lubang Taufan	372m						372m

COBWEB CAVE: LUBANG SARANG LABA-LABA

The entrance to Cobweb lies half way along the west face of Gunung Benarat, between the caves of Terikan and Deception to the north, and Tiger and Benarat Caverns to the south. At the start of the 2000 trip, the cave stood at 15km of interconnecting passages with several tantalizing leads: a high level passage in the entrance series, Paper Tiger and White Fern to the south, and climbs up the Powder Mountain and Top of the World. By the end of the trip the total length of surveyed passage was 25,932 metres, with a vertical range of 248 metres.

POWDER MOUNTAIN AND BEYOND – *Tim Fogg*

On our last day in Cobweb in 1984, Ben Lyon and I made a trip to climb the steep ramp at the top of the Powder Mountain. The draught was a good indication that it would lead to a higher series of passages. A natural line, following dry water runnels on the right of the ramp, led me up to a height of 42 metres into a small chamber with huge boulders in the roof, no apparent way on and a lack of the big draught. The left hand side of the ramp, some seven meters away across a muddy wall, looked more promising. We de-rigged and departed for sixteen years.

The thought, "I should have gone to the left hand side," had festered and wormed its way around my head for all that time. It was therefore a major priority for the Benarat 2000 explorations in Cobweb Cave.

It took us, Tony White and I, a couple of trips and nights at an underground bivi to re-find and rig a route to the Mountain via the Monolith.



HUSKY HALL BIVVY (*Andy Eavis*)

On the way there, looking from the top of the unstable slope down to Streamway Three, another lead was seen which headed over the river via a sediment arete between great pits: one being the unstable slope, and the other was the top end of the passage on the left facing the downstream sump (the site of Ben and Mike's "complex of passages" described in Caves of Mulu '84). Over the arête, a classic tube followed the dip upwards and held the prospect of a bypass to the Powder Mountain Climb. The climb, which, to steal a line from Syria (park guide Syria Lejau), did "make me very scary", led up the ever steeping, slippery ramp. Near the top a window opened on to what proved to be the Powder Mountain, 20 metres below.

At the top, a climb required a few bolts, one of which became a lifesaver as I was spat from a slippery step. A few free moves led to a blank alcove and an embarrassing sequence of events - no bolts left - how the hell to get down. Rope throwing - rope snagging - tension traversing and at last lowered off - only to find that the drill had been carefully placed on a ledge while the delicate tension traverse was performed. This was easily voted the blunder of the trip but the blind alcove was regained and we left. The one other promising tube was climbed by Tony but only led to another small window down to Streamway Three.

On to the Powder Mountain and after three hours of blood, sweat and broken drill tips, plus mumbles of "sh.... I must have been going well 16 years ago", I was back at the old high point and the start of the leftward traverse. Exhausted, we retreated to the bivi by 1.30 am and out to Camp Five the next morning.

On the next trip, a mixture of bolting and undignified skidadaling side-wards, and I entered the black, blowing void. The rope was rigged, conscious of the precarious boulder jam in the top of the ramp, and Tony joined me. We waded a few tens of metres through guano to the top of a slope and down into a large chamber with a high vaulted roof - the Power Dome. It all felt very inhospitable in this swelchy, guano filled new world, as we wallowed in a survey loop around the Dome. The way on was northeast following a classic Mulu breeze and we slithered on into the night and the Chamber of Horrors, where five minutes were spent bashing to remove the upturned edge of a natural blade, designed to dismember.

The draft was relocated, issuing from choss on the northeastern wall of this 50 x 100 metre chamber, but the route was reminiscent of the remnants of an earth tremor. It led on through a shattered wet alley into a two-meter diameter tube with a powerful draft, the Air Line, and orange cricket-muds (olophane) that made the three or four metres to the head of a pitch treacherous. That was the end for that trip, as we had deposited the rope further back. Back to the bivi at 04:30, 19 hours after leaving Camp Five, but we had new passage and it was going...

The next day we were away at 15:30 to investigate the pitch, which at minus 2.5 metres was a big one! But Tony found a by-pass...

The passage increased in size and the main route led up scree to a sediment wall where a reflector was left in the hope that we'd pick up its blink from above, where open blackness replaced the roof. Tubes in a sidewall wormed up (Many Mice Munching) and in 60 metres the blackness above was reached in another hall with three obvious ways on. This later became our forward bivi site, called the Bivi Inn

During a subsequent trip, when we were joined by Pete O'Neill, the southern boulder slope looped back to a hole, at the bottom of which the reflector must have been lying (but we never did see it), and on into side passages concluding after 270 metres.

The high passage in the wall above the bivi was reached, up Pete's Slime Climb (P.20). All leads at the top petered out, one in a pitiful sump and another at an aven with freaky orange fingers of calcite pointing upwards.

The northeast lead was the plum, and the tease of adult cave explorers. Its direction into the mountain and towards Deliverance Cave added a fizz to the delight of discovering big, well-decorated dry passage. A boulder choke, 300 metres from the bivi, slowed the exploration but Pete broke through by moving the odd jammed block. Falling down-slope into open passage, one of these deceitful rocks made a mark like a footprint on a mud skimmed floor. This was enough to dupe us into thinking we had entered Deliverance! Just quite how over-excited we got, only the three of us will ever know, but 'cold turkey' was inevitable when the next choke was impenetrable. The Duelling Banjos Passage is characterised by super crystal flowers, lace-like roof patterns, mud floors and calcited bat skeletons.

150 metres from Bivi Inn, on the right wall of Duelling Banjos, are a series of upward trending tubes. These bring down torrents of water but are the best remaining lead in the area and our explorations finished at a short overhanging climb. Another lead in the same area went to a soak-away down a short pitch (Plumb Pit) and a shatter chamber was reached around the Plumb Pit pitch head. The head of the climb from the Powder Mountain is also a possibility. This was left undone, as tottering over the top of the boulder jam appeared more than "scary"!

Future trips to the area will be easier since, on the final photo and de-rigging trip, Andy bypassed the ramp by cruising a rising traverse-climb on the left wall of the Powder Mountain to break handily into the floor of the Powder Dome!

Tim Fogg



FORMATIONS IN DUELLING BANJOS (Tim Fogg)

31/10/00

... The Rubik Tubes are the nicest passages so far, and, like the rest of the cave are desecrated by graffiti. There are the remains of a bird nester's bivi in Husky Hall... T.W.

7/11/00

... we leave camp 5, restock the underground bivi and arrive at the Powder mountain climb at 2pm. Tim prusiks up and resumes climbing, using about 5 bolts to traverse across to the other side of the shaft, then a bold free climb up the last 4 metres to the top. After 16 years of dreaming about it -there it was - open passage... T.W.

3/11/00

...Tony's new boots lost a sole. That's his second pair...
T.F.

12/11/00

...at a choke things looked bad but the draught was still there. Pete followed it down a tube, kicking a flake or two out of the way. He disappeared for a while and came back singing. He'd got through and in the continuing passage thought he had found the footprints – Deliverance, we guessed, and got very excited...
T.F.

CATAPULT PASSAGE – Dick Willis

At the back of Cobweb's entrance chamber a large beckoning passage enters high on the north side. This lead had been noted in '84 but, because progress was being made deeper in the cave, it had not been tackled. However it had been one of those memories that had brought us back and was high on Tim and Colin's hit list.

An early recce by the pair revealed that the climb would either involve a 20m bolt climb up the steeply overhanging wall, or some nimble line throwing to place a rope over an obvious thread about 5m below the top of the climb. Unfortunately, whilst the thread was satisfyingly big, it also had an obvious crack running through it. Fortunately, over to the right was a smaller thread and it was decided that a second line placed here would provide some security for the lead climber as he placed the bolts at the top of the pitch.

We entered the cave in a large party, Colin and Dick were to try the climb, Tim Fogg, Pam and Tony were to carry on into the cave, shipping gear to the first camp. Ropes were fetched, throwing lines were untangled, weights were tied-on and a succession of attempts was made, with accompanying mirth and merriment, to get a rope over the main thread. After some time, the novelty wore off and the carrying party departed into the cave. Some hours later, they reappeared to find the throwing game still in progress and took over on the string. Another half an hour of boredom was excessive and most of the group left for camp, leaving Tim and Colin still trying. Eventually Tim succeeded with the main thread but they failed with the second, which was small, sloping and backed by an awkward ledge.

The following morning the spirit of Baden Powell was invoked and Dick made a catapult using some fishing line and shock-cord. This did the trick and Colin was soon yo-yoing beneath the main thread, with the prospect of a huge pendulum and crash into the opposite wall if it failed. Fortunately it didn't and the buzz of a drill marked the placing of 5 interestingly short bolts in the deep, soft flowstone of the pitch head.



CATAPULT PRACTICE AT CAMP 5 (Tony White)

Tiger Cave Entrance is in the cliffs behind.

With some apprehension, Dick joined Colin and, four and half hours later, they had surveyed 400m of satisfyingly large passage, which unfortunately was heading directly towards the edge of the hill. They turned back at a chamber with an apparent crawl through to another passage.

The following day, Colin, Dick, Pam and Syria returned and pushed on to the inevitable entrance. The crawl of the previous day turned out to be a mere loop, back into an earlier passage, and the group turned back, checking for possible leads. Investigating around the side of one huge boulder filled chamber, Colin found a potential lead at the top of a short wall of hanging choss, at the head of large slope of unconsolidated boulders. He made a valiant attempt to ascend (while the other

members of the team cowered below, sitting on arêtes of rubble) but, sensibly for once, backed off.

Later, Colin and Pete Hall returned. Pete hand-placed two bolts and gingerly climbed up a wall of collapsed bedding at the left end of the chamber. They traversed left and after 5 metres encountered a strong wind. Colin placed another bolt and clambered over teetering rocks to the top of the boulder slope. They surveyed north following the draught for 100 metres to emerge in daylight overlooking a valley, then they explored south through some well decorated passage with a midway notch level, and deep pits in the floor. The loud noise of thunder suggested that the pits dropped into the entrance passage below. Unfortunately, after 100 metres the southward trending passage choked.

Dick Willis

31/10/00

We headed into Cobweb with gear to bivi for two or three nights, stopping en route to watch Dick's amazing catapult performance, confirming that he spent his childhood in the back of the classroom terrorising little girls with paper clips and inkblot pellets...
T.W.

11/11/00

...photographic trip into Catapult. Extreme lassitude came out of the bag, along with the photo gear...
D.W.

STREAMWAY ZERO AND THE WAY SOUTH – Pete Hall

One of the leads begging to be examined at the southern end of Cobweb Cave was a passage heading west between Bogeydom and White Fern passage in the lower series. Pete Hall, Tim Allen and Syria went to examine it.

In less than an hour from the Husky Hall Bivouac the drop was reached and it looked poor. A slippery, draught-free hand-line climb led through a small passage and a steep ramp down to the head of a 15m free-hanging pitch – Gentlemen's Agreement – named after the agreement not to look at the tear in Syria's trousers. Below was a large passage - quite a surprise really. In one direction it ended after only 30m in a large, impenetrable boulder choke taking a reasonable draught. The other way meandered, passing a large oxbow and narrow stream series on the left at Quicksand Corner. A slope up and a climb back down reached a large level meandering passage, Ladies Present, with a passage off to the right that remains unexplored. At the next corner a complex maze of inlet passages lead to climbs down to a number of sumps, one of which is deep.

Back at Ladies Present, the easy going continued to The Chasm where a 10m handline was needed to climb down a deep rift across the passage from where an oxbow lead up a slope and back to the main passage. Around another couple of corners took the team to the climb, the Power Shower. As the name suggests it is well washed by a heavy and unavoidable shower, which would render it impassable in flood. It is a sharp, steep but stable climb of 15m leading down into a large and impressive river passage named "Streamway Zero".

Downstream, to the left, were 50m of wading to a large sump pool. To the right the stream meandered between sediment banks and through notches for 200m to the upstream sump pool. A well-decorated oxbow ran parallel to the upstream section

but the main point of interest was the draught, which was felt coming down "Razor Climb", about half way along on the left. The climb is started by using an etrier to pass the 3m-high overhang of the notch and continues up razor-sharp flakes of spray-lashed, loose rock to gain the mouth of a 10m diameter tube, about 15m up. For the first 100m, this runs parallel to the streamway to a balcony overlooking the stream near the upstream sump. It then continues for another 300m in fine style in a passage 5-10m wide before reaching the showery Monsoon Chamber, which appears to take the water from the Welly-Slicer series.

Beyond this point a choke stopped southerly progress, as it does in the upper series, but at the lower level the passage turned east. The team passed through a boulder choke - "The Air Conditioner" - and across another boulder chamber to reach a 10m pitch. Here there are several oxbows at various levels and the easiest was followed, traversing forward on chert ledges and a thin bridge into a roof passage and down a climb. The oxbows reunite at a shower and the passage crosses through the beds into increasingly large chambers of which those to the right (South) were all dead-ends. The way on was found by keeping left and clambering over boulders into "Drawbridge Chamber" where a large, steeply inclined and slippery boulder was descended. A climb up on the right wall and back down again reached the bottom of the next chamber where water issues from a low, sumped passage on the right and was heard flowing away under the boulders to the left. Just beyond, a side passage to the left also has the sound of a stream but remains unexplored.

"The Cobra", a remarkable, thin rock-flake about a metre long and shaped like a snake, even down to its diamond shaped head, marks the end of the bouldery section. Left and right turns here passed two more leads, a hands and knees crawl and a steep calcite slope, but all the draught came from Big Ben Traverse - named after a large chock-stone which gave a low-pitched ringing tone when kicked. A slippery climb down to a pool lead to a 50m long inlet series, which seems to provide a small portion of the draught. However, most of the air movement comes down "Welly Friction Ramp" on the left beyond the pool. This is a 40m-climb up-dip, which was left rigged since it has virtually no footholds. At the top, a smaller calcite encrusted passage slopes up and then down to the head of a 10m pitch where a bolt belay was placed (15m rope required). From here the passage carves through the beds in a strongly draughting tunnel 3m wide by 2m high. Soon, a dripping 18m climb, up coral calcite, reached a traverse over a pit and a further 5m upward climb. The lack of any more rope marked the end of exploration at this point - easily the most promising lead at the southern end of the system.

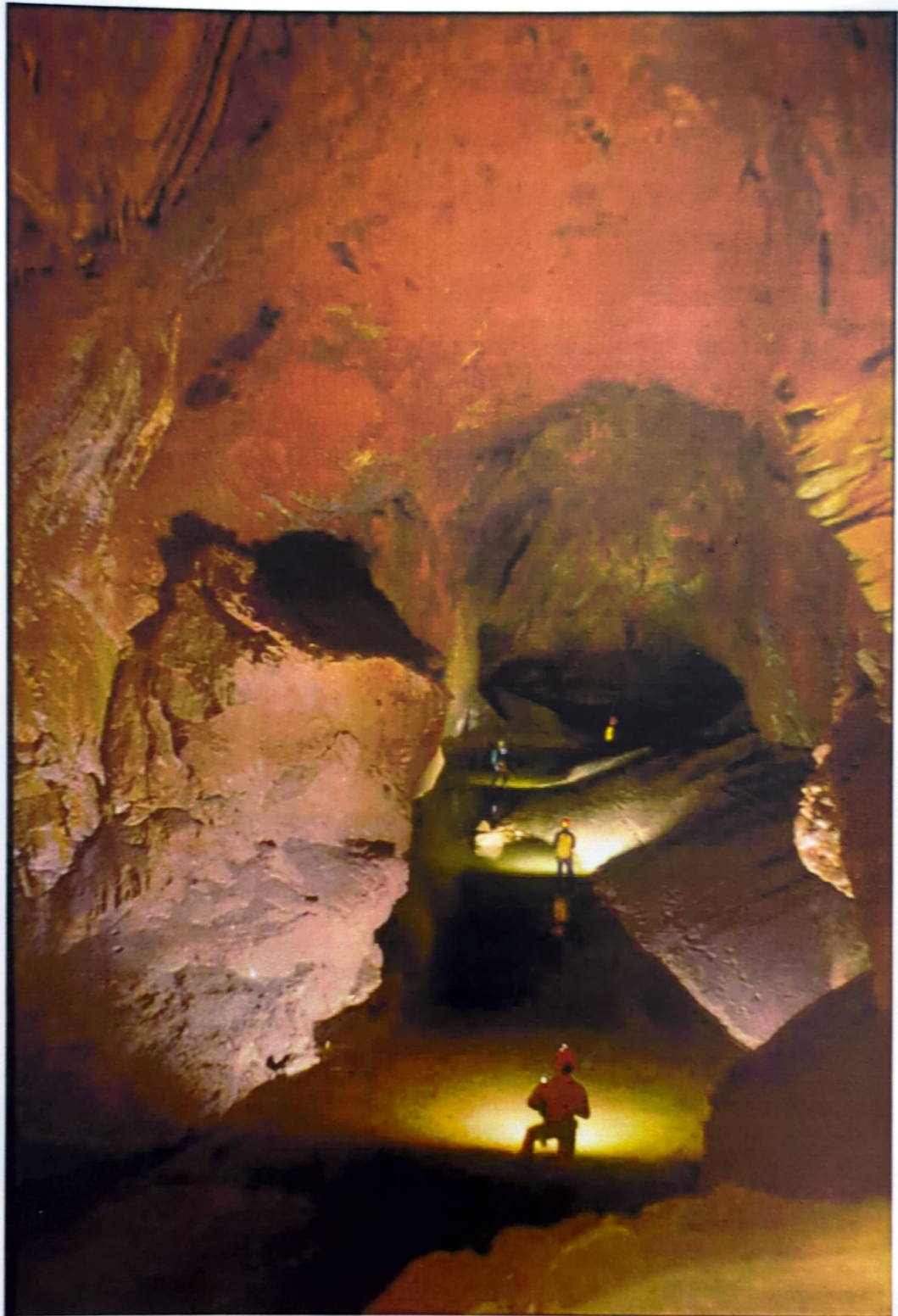
Pete Hall

10/11/00

.....the passage ended but a small, fretted hole promised blackness beyond. Tim eased his way through into a 5m diameter tube. Pete followed and both ran in opposite directions for 100 metres. Back at the hole Colin had appeared and Tim climbed up to tell him the news. A large flake dropped off the wall and landed on his foot. Ten minutes of ouching followed and heralded no permanent damage done. The steel toe-capped wellies had certainly saved the loss of all toes. Swollen and bruised we headed back. Reached camp at 3am after 14 hours caving.

11/11/00

*Due to his poorly foot Tim wanted to head out on his own leaving Pete and Colin to continue exploration. Colin wasn't too happy with this plan and didn't think he would sleep with the worry of whether Tim had made it back to Camp 5 safely. Since Colin doesn't sleep anyway we agreed to Tim's plan.
T.A.*



STREAMWAY ZERO (*Andy Eavis*)

The Cobweb River could be seen. The climb down was seriously gardened of large slabs which boom-boomed, splashed-splashed down. The sting in the tail of the climb was Power Shower Corner where a thorough soaking was ensured. Pete's face broadened into a large grin as we romped out 30m legs up the classic Mulu riverway, complete with notch under construction.

T.A.

16/11/00

all teams out of Cobweb - its still growing - a tangled web indeed...

P.F.

PAPER TIGER – Pete Hall

The following extract from the '84 report explains how this passage got its name:

'Perhaps it was the elation of discovery or, jiggery-pokery with a cairn which appeared from nowhere that lead Pete Smart to think that a connection had been made with Tiger Cave'.

Unfortunately, no such connection had been made and it was instead marked as 'continues' on the '84 survey and left until Pete Hall, Tim Allen and Colin Boothroyd returned to it in 2000.

On arrival at the end of Paper Tiger it didn't look good but we put in a bolt and Tim traversed across to a sediment ledge where a small crawl could be seen. The way on here is a crawl through a pool so he continued on down the 12m climb. A climb back up sediment and a short crawl leads to '[Rabbit from the Hat Passage]' with fine formations. After 100m a passage leads off on the right, whilst the passage straight ahead is 'The Coal Seam', so named because of its slabs of dark rock detached from the roof. This continues southwest for several hundred metres until it reaches a total choke with no draught. Passages double back at this point but all choke eventually. Back at the junction the passage leads horizontally northwest across the beds, past showers of water to end at a 10m pitch, which was not descended.

Directly beneath this, another passage leads down-dip, collecting the water from the showers above to a small hole and a climb down (the Welly Slicer), into a 6m-diameter passage. Southwest from here the passage goes a couple of hundred metres to end in another choked area somewhere beneath the Coal Seam.

The other way heads northeast, past an ascending passage and then a descending passage on the left, before intersecting another small stream flowing down a ramp, out of one boulder choke and into another after 40m. The ascending passage can be followed past a low passage and an aven, eventually intersecting the Welly Slicer water again before closing down. The low passage is "Stalactalia" which opens out into a beautiful walk heading northeast to 'Suspension Bridge Hall'. Here, a thin rib of rock spans the chamber and it is possible, although scary, to cross by straddling it. An alternative way is to follow the descending passage (above) to a bold step across to the far side of the suspension bridge.

From here "Hand Stabber Passage" gradually climbs for several hundred metres, becoming increasingly bouldery, before reaching a boulder choke through which a wriggle up, which is safer than it looks, pops out in Paper Tiger about 150m before "Rabbit from the Hat".

Pete Hall

10/11/00

Into Cobweb to check out the southern leads. A long sweaty climb up to Top of the World and onwards through mixed passage to Paper Tiger. The lead didn't look too promising but we placed a bolt and Tim abseiled down two metres to a ledge and climbed up to a continuation - a stal-grilled pool with no draught. Before committing himself to a back-scratching wallow he continued down to the bottom of the pit and clambered up boulders and through a squeeze into passage 25metres wide. We had pulled the rabbit out of the hat!

T.A.

11/11/00

... surveyed three or four legs, then Pete had a fight with the tape measure and just won, but in the process took a karate swing at a poor defenceless straw. The stal picked out a single exposed vein on the back of his hand and sliced it cleanly - the subsequent delightful red fountain was instantly sealed with Pete's thumb and a bandage was cobbled together with sections of Colin's t-shirt. The survey was abandoned and a steady return to camp was made...

C.B.

LED THE WAY TO JUSTA MILE – Martin Holroyd

Arriving two weeks into the expedition, I joined just as the attentions were being focused on Cobweb. Colin was itching to attempt a bolt route, estimated to be 60m, into a possible passage above Top of the World. Unfortunately for Colin, support for his plan was thin on the ground but, having just arrived, I felt I should serve some form of apprenticeship.

At the bivi site, Colin and Tim Allen discussed a possible climb along Swift Highway, which could, with luck, give an easier route up. Armed with Bosch drill, batteries, hangers and 70m of rope we staggered to Swift Highway guided by the modern LED lighting (nothing to do with my dead carbide light...). Colin started the climb after a bunk up, and traversed up right on a combination of crumbling clay and stal holds, until a bold move through overhanging jammed blocks led to an airy stance overlooking Swift Highway.

The way on continued up an almost vertical wall, characterised by extremely sharp calcite that would shred anyone who fell. By combining leads and passing an awkward vertical squeeze we found ourselves in a small passage with huge blocks forming the roof but initial investigations yielded no way on. Colin queried the presence of the draught, which prompted me to look again at a climb through blocks.

As I approached, I was aware of a draught issuing through a stal-filled hole. NCC ethics and quick work with the bolting hammer revealed a small chamber, from which a squeeze out led into a steeply rising tube with the clicking of swifts above and that magical Mulu echo. Our reward was a large passage heading off in both directions as far as our spotting beams could see. Containing ourselves just long enough to eat a bar of chocolate, we chose the name "LED the Way" for the climb and christened the newfound passage "Just Rewards". Since we had set out to find a way up from Top Of The World and that the razor sharp climbs of LED the Way would be no fun to repeat, we chose to explore in that direction to search for an easier route/pitch.

Surveying quickly along a large passage we passed below an equally large passage above us and we were stopped eventually at a short pitch dropping into yet another large tunnel - without gear we reluctantly turned back. We found a free climbable route into the large passage noted earlier. Some steep mud and boulder slopes entertainingly led steeply up and down into a large chamber/junction, from which the route to the right quickly choked and to the left led to a pitch but not into Top of the

World. Happy with the day's find but disappointed at not finding an easier pitch, we had to enjoy full-on misery by down-climbing the razors of LED the Way.

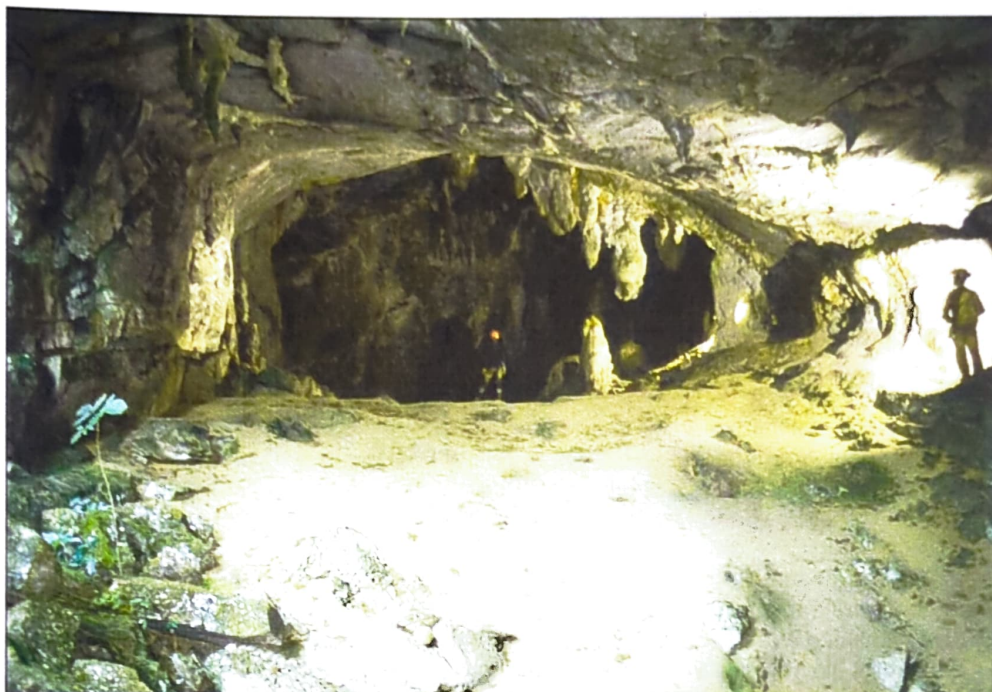
A blissful night's sleep at the underground bivi at Husky Hall meant that we were both eager for another day's shredding. This time we headed in the opposite direction to the previous day, initially enjoying similar sized passage until a choke appeared to block the way on. Eagerly Colin launched into the boulders, climbing up through blocks and into a continuation of the large passage with daylight pouring in from a beautiful entrance ahead.

From the new entrance we could not make out any obvious surface landmarks; we appeared to be in a large doline. Almost immediately another entrance led into the hillside on a NE bearing. Hungry for exploration we greedily racked up 30m legs along a superb section of cave until we were stopped by a large choke. We followed a squeeze along the right wall, with evidence of snakes polishing the rocks, and emerged again into yet more large passage still heading NE. Continuing in impressive style, the passage was begging to be explored but would tease us occasionally with tricky climbs; one such climb led under an impressive daylight shaft, which allowed an update on the weather: it was raining. Further on we stopped again at what appeared to be another choke with the sound of a heavy waterfall. After some foraging we found an easy route to the left, which passed through a small chamber with the remains of swiftlets in a squeeze leading out of it. The day ended when we reached a junction with the way on wide open and a large inlet passage joining in from the left. A good place to leave it! A summation of the survey notes revealed 1.7km of surveyed passage or, in Colin's language, a mile of passage, hence the naming of Justamile.

For the next exploratory trip, Pete O' joined me to push the leads which had been left on the second day, whilst Colin and Tony returned to the first day's limit to search for the 'easy pitch'. Again, we initially enjoyed large passage, although Pete became increasingly worried when we hit our first choke, soon after we started surveying, as he had unfairly picked up the reputation of closing up promising leads. Synchronized Blackout Choke was passed by squeezing through on the left wall and named after the predictable blackout of carbides in small places. Beyond, the cave began to open out into impressive proportions with the walls starting to disappear from sight. FFS Chamber was the censored name given, following the descriptive terms we used as we stared into blackness. A 12m pitch was descended on the right using a massive flake buried into the guano as a belay. Beyond, the way on descended steeply to a heavily calcited choke. A route was forced down the right wall through blocks and stal and the choke quickly picked up the title Arm Stabber after a large straw impaled my forearm. With the cave now fighting back, we were relieved to reach a low but well decorated chamber and then another large junction, with Pete's quote of "this is just outrageous" forming the name. A steep climb down led to a comprehensive choke with a possible passage 20m above. Sadly, the other way on from Outrageous Junction reduced in size and passed through a number of breakdown areas before ending at a comprehensive choke.

Colin and Tony were unsuccessful in finding a pitch down into Top of the World but finished off the leads left from the first day. The final trip was to explore all the small inlets that had been noted on the previous trips but no significant passage was found. Justamile provided some excellent exploration but the nature of LED the Way may deter future trips unless a route through the forest can be found to its entrance. We never did use the Bosch drill but the exercise did us good!

Martin Holroyd



JUST A MILE (Colin Boothroyd)

15/11/00

Another midday start - perhaps the thought of the razor sharp squeeze and climb still lingered...

... two big grins could not be disguised as we raced off into the unknown, racking up numerous 30m legs. After 10 hours of rich pickings, Colin felt that the two big leads heading off was a good place to stop.

Judging by the amount of water entering the cave it was obvious that it had rained particularly heavily - rumour had it that Pete and Andy were bivying out in this!

The others had made it back to the bivi much earlier but generously got up and cooked our supper. Good effort!

M.H

Further on yet another solid choke was met and Pete O' was heard to mutter, "I don't believe it, I won't hear the last of it if this ends now".

M.H.

BENARAT CAVERNS: LUBANG BENARAT

SUPER RAMP – *Tim Allen*

Super Ramp is a monstrous ramp feature located near Barking Dog Junction, on the route towards Homeward Bound, in Benarat Caverns. It had been partially climbed during the Mulu' 84 Expedition by Tim Fogg and Colin Boothroyd. From the '84 high point, the route above was reported to divide. A side passage was climbed into, leading to a calcited choke whilst the main aven continued more steeply upwards into the unknown.

Tim Allen and Pete O'Neill took up this challenge early in the expedition for two very good reasons. Firstly, the projected horizon at the top of Super Ramp lined up with entrances in the Melinau Gorge cliffs on a similar level to Tiger Cave and secondly, after several days of surface bashing, they were keen to get underground.

On the first trip in, with the assistance of Pete Hall, we carried rope and bolting gear to the base of the ascent. The real climb begins some 50m from the floor of Homeward Bound, at the top of a steep calcited scree slope. On this occasion, with rigging and route finding delays on the way in, there was only time to gain a toe-hold on the wall itself.

The following day saw a determined assault on the climb, and a slightly different route soon reached Tim and Colin's high point. This part of the ascent is mostly free climbing but with two short, bolted sections leading to a traverse into the side passage that had been previously explored; a point approximately 150m from the floor of Homeward Bound. The side passage was re-examined and a small extension was found through a hole in the boulder floor, from which a very sparkly passage leads to a complete choke after 40m.

The next trip tackled the much steeper ground above the traverse and was nearly all bolting, including one short overhang. Some eight hours were spent on the route, either climbing or hanging from a belay stance, awaiting a turn at the sharp end. The duration of the climb and the huge space around resembled more of the big wall climbs of Yosemite or Baffin Island than a caving trip to Mulu. By the time the drill had run dry, 50m of vertical progress had been made and the end was in sight.

On the final trip Pete Hall again accompanied us. From the high point, another 30m of bolting reached a sloping rocky ledge some 15-20m below the roof. From here it was obvious that lady luck had deserted us. Even with a spotlight, no way on could be seen. It was time to abandon the climb and de-rig the 240m of rope that we had strung up the face. This was achieved in five "pull-throughs" and within an hour all three were back at the base packing very heavy loads for the trip out.

Super Ramp was never fully surveyed but, by measuring the ropes used, we estimate the vertical height above the floor of Homeward Bound at 230m! Although it didn't "go", it was a fine few days of exploration.

Tim Allen

3/11/00

...returned to Super Ramp and proceeded rapidly to the belay ledge of two days before. Set off up the steep slope using a mixture of bolts and free-climbing. At the crux I rearranged the huge amount of gear dangling round my neck and, in the process, hooked the bolting hammer out of its sleeve and down, down, down it went. Pete O'. descended to look for it and found it in the gulley 40m from the bottom. He also pulled the 100m rope up from the bottom rigged section. This then got caught and he had to go back down to unhook it! Good exercise...! I descended back down to Pete and we swapped round. Pete's light cast a shadow on the opposite wall, which made him look about 100 feet tall as he ascended. He made the ledge with the last six bolts. The top looms only 15-20m further as the roof flattens to disappear tantalisingly behind the top edge... With about seven rebelay the ropes got us to the bottom with one metre to spare! (out of nearly 200m of rope!) We placed 39 bolts, gained approx. 50m height and spent nearly 8 hours on the wall - bloody good fun!
T.A.

LOWER TIGER: GUA HARIMAU – Pam Fogg

The return to Tiger cave was one of the most puzzling episodes of the trip, necessitating long-distance telephone calls to Australia on Andy's Inmarsat phone, in an attempt to solve the mystery.

The intrigue started as soon as we arrived in the park when, on our first night, we heard rumours that illegal bird-nesters were accessing Tiger Cave. The word was that they were climbing up the cliff face to reach the Lower entrance. This seemed an awesome feat, as the cave is perched approximately 250 metres above the river, above steep and over-hanging walls. When Tim Lyons and Martin Farr had done the climb in '84 it had been a major undertaking.

We sat in Camp 5 looking across at Lower and Upper Tiger Caves and wondered how on earth this could have become a trade route for the bird nesters.

Later, Andy and I were spending a day working our way along the base of the cliff line, from Benarat Caverns westwards, when we stopped for a break. By chance I glanced up and noticed a faint but definite sign of a route heading up the cliff. Curiosity got the better of us and we followed. It lead steeply up, using trees roots and liana to take us ever higher. Just above canopy level, we arrived at a small entrance with panoramic views back to Camp 5. The calcited entrance sloped steeply down to a small chamber, the walls of which were covered with graffiti laying claim to the cave and warning others to stay away. This surely must be the bird nester's route. From the small entrance chamber the passage headed steeply up flowstone and appeared to continue on.

We returned to Camp 5 and studied the Tiger Cave survey. It matched the passage we had been in perfectly but there was no mention of an entrance. A return trip was made and sure enough it lead easily through to Lower Tiger. We puzzled how, back in '84, Tim and Martin could have surveyed it so precisely but missed marking the entrance. Such was our curiosity that a satellite telephone call was made to Tim Lyons in Australia but he had no real memory of a 'Lower' Lower Tiger entrance. They had either just forgotten to mark the entrance or they had explored this part of Tiger Cave at night, and had looked down from the top of the steep calcite slope and assumed that the small chamber at the bottom was of no significance!

Pam Fogg

MELINAU VIEW CAVE – *Tim Allen*

Melinau View Cave is a cliff face entrance located in the north side of the gorge approximately 150m east of the Benarat Caverns entrance. It can be seen from Camp 5, low down through the trees.

Tim Allen and Pete O'Neill decided to attempt the climb in the hope of gaining access to passages overlying Benarat Caverns. From the screes at the top of the cliff line, the entrance looked to be about 50m up. The attempt was started one afternoon. A free-climb gained 15m in height before the route became overhanging and bolting began. The white limestone was solid but hot to the touch from the day's sun, and climbing was made particularly unpleasant by the swarms of sweat bees and ants that accompanied the climber. Later in the day conditions became more bearable as the afternoon rains came and cooled everything down.

The next day saw the earliest start of the expedition, as the explorers were keen to complete the climb before the sun came up. A small rift was entered just below the main entrance but this was choked. Above, the 10m-wide main entrance was finally reached by mid-morning. This offered a fine view across the forest canopy of the gorge and Camp 5 could clearly be seen beyond. Unfortunately, only 15m of finely scalloped passage were explored before we reached the inevitable calcite choke. The climb was de-rigged that evening during a wonderful sunset, with the final overhanging abseil being through the tree canopy, some 8m away from the cliff base.

Tim Allen



MELINAU VIEW CAVE (*Pete O'Neil*)

HURRICANE HOLE: LUBANG TAUFAN – *Tim Allen*

This site had first been spotted in 1981 by helicopter and was reached in 1984 but the report states that a boulder choke was found, "well cemented but emitting a howling draught; the time for digging has not yet arrived in Mulu." Nearly 20 years later Andy Eavis and Dick Willis returned on a recce and decided that the time for digging *had* at last arrived - Benarat 2000 was the result.

The cave is located approximately 500m east of Benarat Caverns and can just be seen from Camp 5, through the trees. Tim Allen and Pete O'Neill visited the site first and found a heavily choked entrance with strong draughts blowing from at least four different locations. All were investigated and the most favourable seemed to be on the eastern side, where at least the dig had a solid natural roof. Here a flat out crawl over sharp calcite ended at a small hole in calcited boulders. Armed only with parangs, Tim & Pete left this until heavier digging tools were available and spent the rest of the day digging out a muddy bedding on the western side of the entrance.

On their next visit they were armed with a drill, hammer and chisels. They removed some boulders but progress was slowed by the confines of the digging face. At least the cold draught acted like an air conditioning unit and the workers even experienced a slight chill, probably the only one of the entire expedition.

By this time Cobweb Cave had "gone" in all directions and it wasn't until the very last day of the expedition that a return was made. This time Tim Allen was persuaded by Andy Eavis to give it "one last go". Initially they were pessimistic but after a few hours the final boulder had been loosened and was on its way out of the crawl. This allowed the explorers a painful squeeze in over sharp rock to find a stal-grilled crawl-way leading off.



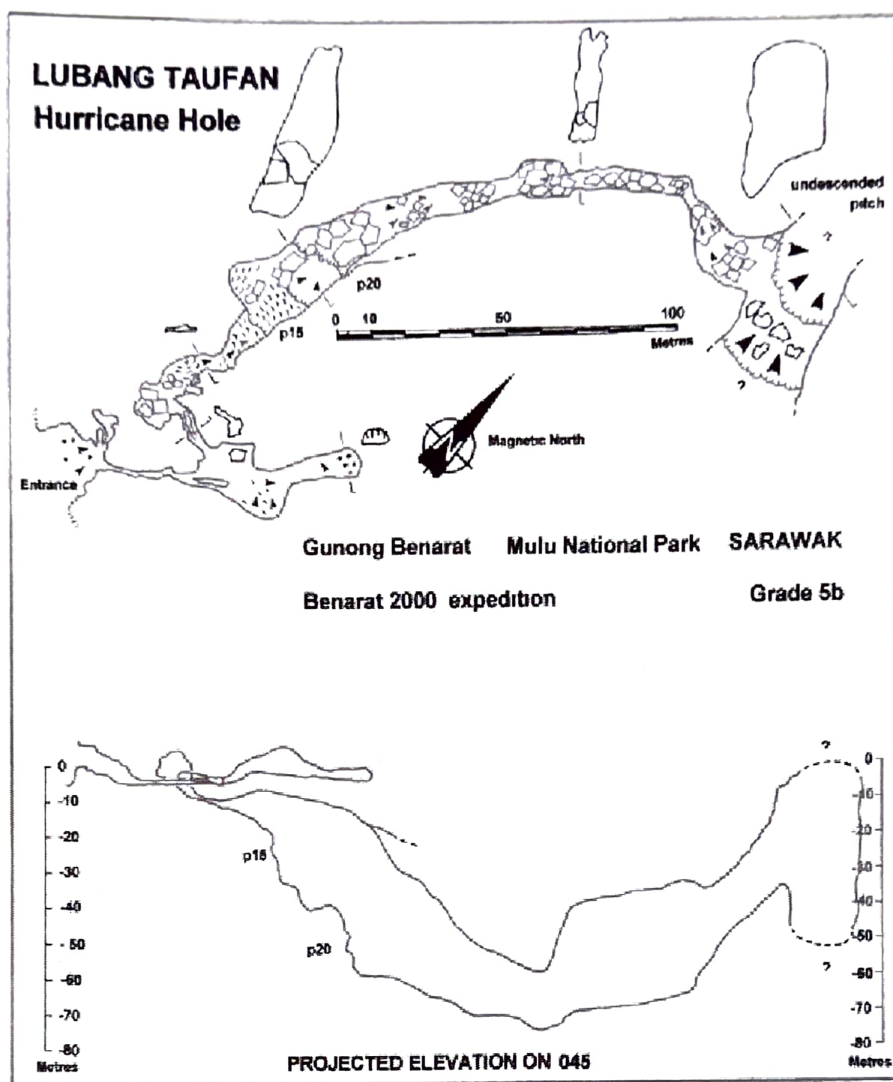
THE BREAKTHROUGH (*Andy Eavis*)

A few swings of the hammer and the pair were soon getting giddy with exploration fever as the passage opened up into a series of large, decorated chambers. The draught lead the way down the side of an immense stal-flow which nearly blocks the passage. Fortunately, it didn't and at the bottom, it side-stepped out into a large passage with one of Mulu's wonderful, 100 metre echoes. The continuation was down another flow, which required a handline and so the jubilant pair returned to Camp 5 for re-enforcements.

Back at camp it was calculated that the dig lined up with the end of Homeward Bound, in Benarat Caverns, and bets were taken as to whether a connection could be made. After tea, a return was made, this time with Pete O'Neill, Martin Holroyd and Colin Boothroyd (Colin had been one of the original explorers of Homeward Bound). Two handlines of 30m each were needed to get down to the floor of the passage, which was littered with large boulders, some the size of houses. Beyond, the boulder slope rose steeply and part way up a boot print was found in a muddy step. Had a connection been made? Unfortunately the boot print was destroyed as it was in the only foothold of the climb. At the top, the passage levelled out briefly before dropping down a ramp pitch for which we had no rope. Colin didn't recognise any of it and others doubted the existence of the boot print at all.

The team headed out in the early hours of the morning, having surveyed 372m. After a celebratory drink they briefly slept, packed and headed out on the return to Long Pala and home.

Tim Allen



SURVEY AND ELEVATION OF HURRICANE HOLE

POST SCRIPT: On return to the UK, Pete O'Neill took the sketch of the mysterious boot print to Karrimor for identification, to ascertain whether or not it was similar to the sole of the boots donated by them to the 1984 expedition – it was... It seems likely that the connection was made but not fully proven. As for the bet, it has gone to a stewards' enquiry, which can only take place on a future expedition!

TERIKAN RIVER CAVE: GUA SUNGAI TERIKAN – *Tony Waltham*

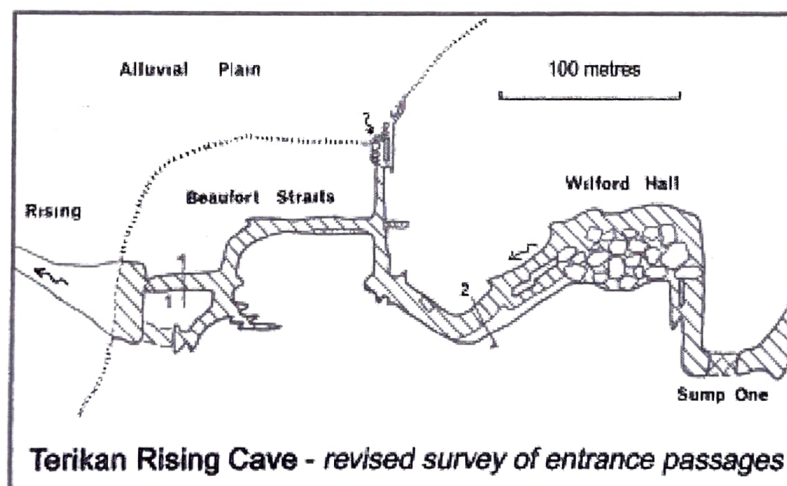
In 1978, the word was that the Terikan emerged from a sump pool. But late on the last day of their week's isolated camp, exploring the upstream via the many inlets, Tony Waltham and Mike Farnworth swam beneath a low arch at the resurgence. Thirty metres inside, still swimming, they turned left at a junction, swam to the end of the canals (Beaufort Straits), and explored up the streamway to Wilford Hall and Sump 1. Surveying out, they found another exit to the alluvial plain, and followed it to connect the survey to the upstream caves. They never returned to the resurgence, but added it to the survey as a low-grade sketch, leaving that passage to the right uninvestigated (and thought to link to a shadowy alcove further upstream).

For 22 years no one ever went to check that junction, where there was just a possibility that it was a major inlet from the caves later discovered in Benarat.

This year, passing through Mulu on holidays in Malaysia, Tony and Ben Lyon returned to Terikan, in the company of members of the expedition, swam inside and turned right. But there is no inlet: narrow rifts taper above deep water, and there is no sign of any inlet current. The water movement is downstream towards the rifts that rise above a flooded link (that carries most of the flow) to the resurgence pool. They also took a quick look upstream, and were impressed by the strong wind blowing down from Wilford Hall and out of the inlet passage to the alluvial plain.

So there's no southern streamway into Terikan. But there is a passage, probably high in the back wall of Wilford Hall, whose wind is strong enough to suggest some significant high levels - perhaps the dry way to Cobweb? There's always another lead in Mulu ...

Tony Waltham



extract from survey of Gua Sungai Terikan
Gunung Mulu National Park, Sarawak

SURFACE RECONNAISSANCE

THE EASTERN FLANK OF GUNONG BENARAT – *Andy Eavis*

Pete O'Neill and Andy Eavis left Camp 5 with a gang of others, heading east along the south side of the Melinau Gorge. At the head of the gorge, when the others went to check out entrances in northern Api, Pete and Andy continued on with Noah and Roland. They walked beyond the gorge onto the sandstone amphitheatre that comes down from Mount Mulu and, following an old route dropped to an abandoned Penan camp and crossed the Melinau River at an altitude of 180 metres.

Heading back up towards the limestone on Benarat, Roland was left behind to set up camp in a wonderful bivouac site under a huge limestone overhang. The other three continued on along a track that had been previously pioneered by Andy and Colin Boothroyd. Pete, Andy and Noah reached a height of 730 metres, which, the map confirmed, was just short of the top of the ridge and as darkness was approaching they returned to the bivi camp.

They spent a very comfortable night in the comfort of the bivi camp, watching first of all a torrential thunderstorm and then the sunrise behind Mount Mulu. The next morning the ridge was easily and quickly reached at an altitude of 760 metres. About 200m after reaching the top of the ridge a cave was found full of deer prints, plus large fruit bats roosting in the entrance. The shale floor of the cave dipped at 35° straight into the mountain. Pete and Andy followed it down for 150 metres until it closed down. At the entrance there was evidence of a visit from the American team and Roland thought that a Frenchman, working with the American expedition, had walked around the back of Benarat, probably visiting this cave.

A kilometre or so further on, along the base of the impressive cliff, another large entrance was found at an altitude of 730 metres. It appeared as though the cliff line had receded to intersect a passage running parallel with the cliff, exposing an open length of nearly 100 metres. Inside the southern end, where Pete had a close encounter with a porcupine, the passage turned down-dip on a shale floor and after approximately 60 metres sumped. Back-tracking upstream from the sump, along the passage to the north, some low crawls were followed on the left but got too tight. The passage then continued to a blockage, with a small trickle coming in at about 60 metres from daylight.

After taking photos and attempting a GPS reading, a return to Camp 5 was made in torrential rain, using the track on the north side of the Melinau Gorge. This is the more direct and probably the better route through the gorge to the back of Benarat.

Andy Eavis



THE EASTERN FACE OF G.BENARAT (*Dick Willis*)
(viewed from the north)

ROCKFALL CAVE – Pam Fogg

A large, relatively recent rockfall and associated forest clearing was encountered during the systematic recce of the cliff line from the Cobweb entrance, south to the Melinau Gorge. It lies at the south west corner of the Benarat massif. The collapse is well known amongst the local people, and must have been a dramatic event when it happened.

At the top of the breakdown boulders, at the 'new' cliff base, is a small entrance leading into a single, heavily calcited chamber. Perched inaccessibly, 50 metres above towards the top of the cliff wall, is a sizable entrance. Considerable time was spent peering through binoculars at its airy position. Was the vegetation at the entrance swaying in a cave draught? Were the swifts circling outside because this was their way in to cave passage? A brief attempt was made to climb up the unstable wall beneath but it remains unvisited.

Pam Fogg

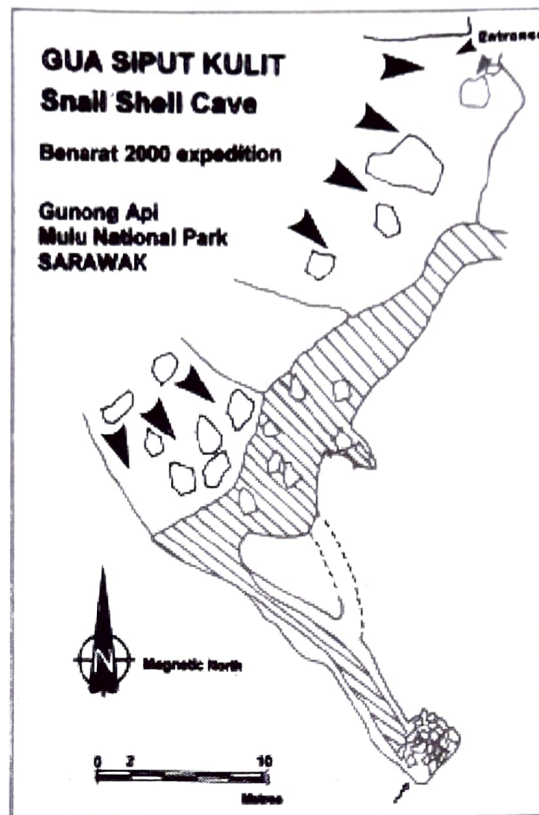
NORTHERN GUNONG API

Based as we were at Camp 5, we were ideally suited to include the slopes of northern Api and the Melinau Gorge in our explorations.

This area has been well investigated in the past. Known caves such as Wilford's Pinnacle Cave were revisited, and a few minor new caves were explored and surveyed.

SNAIL SHELL CAVE: GUA SIPUT – Pete Hall

Edwin & Noah Abang, two of our forest guides, discovered this resurgence cave whilst we were exploring the caves around Bat Cave. It is at the head of the most eastern tributary of the stream, which enters the Melinau River at Camp 5. Stooping and crawling follows the stream through an area of blocks to where it enters a rift passage through a pool at a sharp left-hand bend. After 30m of encouraging passage it ends at a choke of shaley chippings. Slopes lead up from the entrance to higher boulder chambers and entrances. A total of 110m were surveyed.



PINNACLE CAVE No 1: GUA MERCU No 1 – *Pete Hall*

This cave was partly explored by Wilford in 1963 and is related to Bat Cave 100m to the west. Twin, two metre high entrances soon lower to a short crawl and climb down into Main Passage. On the left, daylight can be reached at the entrances 15m up the cliff on the way to Bat Cave. To the right, Main Passage leads down through a guano-floored passage for 80m to a choke and tight rift very close to Bat Cave. Off to the right from the main passage are several interconnecting oxbows leading back towards the entrance. The cave is home to birds, bats, racer snakes, long-legged centipedes and huntsman spiders, to name but a few.

BAT CAVE: GUA KELAWAR – *Pete Hall*

This has been a shelter for Penan people for a long time and there is still a camp at the entrance. It is situated about 45mins walk from Camp 5 along the trail that goes through the Melinau gorge on the south side of the river. A large, daylight entrance chamber 25m wide by 5-10m high closes down after 80m. Two passages lead off on the left side.

The first of these is a climb up into a muddy bat roost and slippery guano traverse to a 10m-handline climb down. This leads to a T-junction. Left closes down after a few

metres but right continues by following a ledge at the top of a tall rift through a thickening cloud of bats, to a slope down to a junction. A traverse down a rift to the left leads to a T-junction with a rift, which closes down although small stream can be heard below. Another slope leads back up before doubling back up a 10m climb. The climb was not attempted but is only a few metres short of the end of Pinnacle Cave.

RAT CAVE: GUA TIKUS – Pete Hall

The location is about 100m west of Bat Cave at the foot of the same cliff. A 3m-climb down leads into an entrance chamber with several pools of water. In dry weather a choice of crawls can be followed through a complex area, the Rat's Lair, into Pinnacled Chamber which is, unsurprisingly, full of pinnacled breakdown. The water rises from a sump in one corner but back on the right, a squeeze between blocks through the Guillotine regains the water. Beyond is an inlet on the left with a 50m wet crawl and short swim followed by a squeeze at a double bend. This finally pops up into a larger 8-metre diameter passage, still going in both directions. Beyond, the inlet has been followed for a further 50m of wading and stooping in a clean-washed, phreatic tunnel to a junction with several ways on still going.

Back at The Rat's Lair an ascending passage leads up into another section of large, well-decorated, guano-floored tunnel. One end is calcite choked and the other is boulder choked, close to the surface where a chink of daylight can be seen.

Warnings: The Rat's Lair floods completely and does contain rats the size of rugby balls! There is an obvious risk of Leptospirosis.

FROG CAVE: GUA KATUK – Pete Hall

A small stream sinks about 100m beyond Rat Cave at the foot of the hillside. An uninviting flat-out crawl in water, accompanied by frogs, continues for 30m winding its way through water-worn breakdown to a duck into a solid passage [at last]. Only 20m of walking sized streamway were explored, to a passable boulder obstacle with the way on clearly open beyond. A slight draught was noticed.

This site is particularly interesting as it is only 100m or so from a large impenetrable resurgence.

Warning: This system floods with only the slightest rain.

Pete Hall

4/11/00

...at Andy and Steven's limit the rat was there, looking at us, about the size of a large rabbit. It wasn't in the least bit afraid. After a few minutes it got bored and wandered off...

P.H.

22/11/00

...after Martin's morning jog up the Pinnacles we set off to finish Rat Cave and Frog Cave at Dick's mythering insistence... the whole place is a popular bat roost, knee deep in guano, very smelly and slippery - both caves are still going but unappealing. You'll need a dry day or two before you visit.

P.H.

POT CAVE AND PINNACLE CAVE No 2 – Dick Willis

45 minutes walk east of the Camp 5 and beyond Pinnacle Cave and its neighbouring systems, is another promising area. Considerable time was spent here, looking for open entrances on the northern slopes of Api. A number of promising small entrances were examined. One, named Pot Cave because the remains of a Penan cooking pot were found at one of its two entrances, contained about 15 metres of small calcited passage. 10 metres up slope from it was a highly unstable entrance blowing cold air.

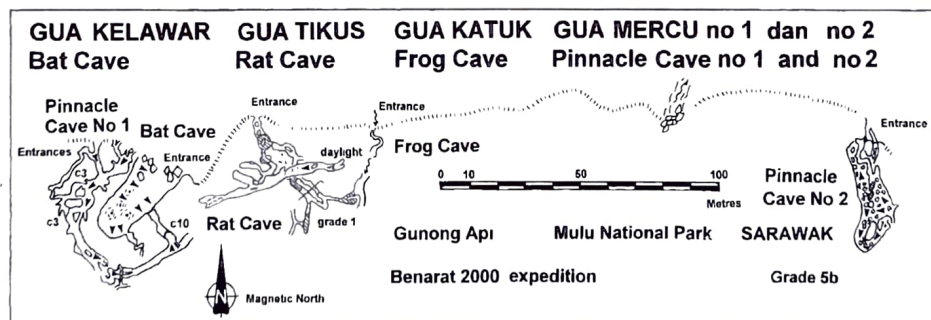
Another obvious, small, draughting entrance 15 minutes further up the valley from Pot Cave and about 50 metres above a small resurgence, led, via a short passage, to the head of pitch. A continuation lay directly ahead, and a passage trended back up right towards the surface. A traverse around the pitch-head on crumbling rock gained a rift passage that, after only a few metres, opened into a large chamber with a boulder slope leading up into the mountain. At the entrance to the chamber was a group of large boulders, eroded into perfect Pinnacles. Since Api already has a Pinnacle Cave, this one was named Cave Pinnacle No 2 in recognition of these features.

The boulder slope led steeply upwards to a choke. The draught was coming from a steeply ascending, very narrow passage in the upper left corner. Evidence of animals, dead leaves and the smell of fresh vegetation suggested strongly that this was a connection to the surface.

At the base of the slope, a climb down over boulders passed a side passage that connected through to the base of the pitch near the entrance. Unfortunately there were no ways on amongst the boulders at the foot of the climb.

Dick Willis

*... headed up the gorge to Pot Cave – it took ages to find the small entrance near Frog Cave. Found 15m of passage and a fine crop of mushrooms, which later tasted delicious back at Camp 5, cooked-up by Noah.
D.W.*



NORTH API CAVES

A MEDICAL SUMMARY – *Pete O'Neill*

There was to be no trained medic on this trip. Furthermore, failure to attend a pre-expedition meeting resulted in the job of medical officer being thrust in my direction; the reason for this was my girlfriend, Dr Angela Hare: expertise based purely on close association! In truth, she did most of the pre-expedition hard work.

In the field, illnesses were few. The general luxury of Camp 5 with its washing facilities and flushing toilets, aided by a good diet, undoubtedly had a positive effect. Hygiene levels were high and expedition members were vigilant with wound care - cleaning cuts and applying Betadine. Also cuts, insect bites and leech bites were kept to a minimum with the wearing of long trousers, e.g. Ron Hills, and consequently few wounds needed medical attention. There were two cases of deep cuts sustained underground. One caver slipped and cut his hand at the base of the little finger. The wound was cleaned daily and Betadine applied. Leukostrips were used, although a single stitch was really needed. The second caver impaled his forearm on a stalactite at the start of a three-day underground bivi: the wound was deep. It was cleaned treated and dressed, and a seven-day course of Erythromycin started. The following morning the wound showed signs of infection so the caver was given the day off. By the third morning the infection had calmed down sufficiently for the caver to resume exploration.

Two cases of allergic reactions needed attention, the most dramatic being Ben Lyon's adverse reaction to sand flies. Ben was visiting the expedition during a holiday in Malaysia. His presence was greatly appreciated by all members of the team since he attracted the attentions of every biting fly in the area, with the result that his whole body was covered in itchy red bites. Antihistamine tablets were taken and Savlon used to cool the itch. The sight of Ben's spots was enough to brighten up everyone's day!

One caver developed a bad back near the end of the expedition. Arthrotec 75 was given as an anti-inflammatory and pain killer and proved successful.

Another member of the team experienced an ear infection in the final week and this persisted until back in the UK. Erythromycin was taken.

One caver experienced a crush injury when a large rock parted company with the wall and landed across his foot. Luckily he was wearing steel toe-capped wellies but the foot still became very swollen. Ibuprofen was taken to relieve the pain and swelling. The caver resumed caving after several days' rest and the foot returned to normal after a week.

There were only two cases of diarrhoea; the one serious case occurred near the end of the trip. A five-day course of Metronidazole was taken, however ten days later the illness re-occurred in the UK. A further seven-day course of Metronidazole was prescribed and worked. The eventual diagnosis was Gardia. A second expedition member also succumbed to diarrhoea just after returning home and was ill for two weeks.

In general, the most used items were the Betadine, Daktacort foot powder, Ibuprofen, antibiotics and dressings. Elastoplast tape proved more effective than micropore in the humid environment.

There were no cases of Leptospirosis. Mulu Foot never got a grip of any caver. Good foot hygiene and the regular washing of socks to remove sand and grit no doubt helped along with the generous use of Dakarin foot powder whenever the feet started getting itchy and warm.

No more than 6 caver days were lost, in total, due to illness or injury during the trip.

Dr Angela Hare provided a full list of instructions. All medical supply items were stored in watertight, numbered Daren-drums, for each of which there was an itemised list of contents. This ensured that the contents were not mixed or lost.

Twelve drug companies and medical suppliers were approached with requests for support and there were two positive results. Life Systems offered a 25% discount on their travel range whilst Searle Pharmaceuticals provided four boxes of Zydol SR100 (Trumadol), two boxes of Arthrotec 75 and two boxes of Arthrotec 50, free of charge; our thanks go to Tricia Persad, Projects Manager. Most of our supplies were purchased at cost from Gary Hush Pharmacy, Barnoldswick. Mr Hush also provided dosage labels on all medications to aid use in the field. The Barnoldswick Group Practice loaned two wound stitching kits, prepared for us by Sister Rachel Strickland.

Pete O'Neill

Martin stayed in the bivi all day to allow his suppurating wound to heal. Instead he performed the role of bivi-hostess to incoming teams, gallantly attending to their every whim and fancy.
P.F.

11/11/00

... surveyed three or four legs then Pete had a fight with the tape measure and just won, but in the process took a karate swing at a poor defenceless straw. The stal picked out a single exposed vein on the back of his hand and sliced it cleanly-the subsequent delightful red fountain was instantly sealed with Pete's thumb and a bandage was cobbled together with sections of Colin's T shirt. The survey was abandoned and a steady return to camp was made...
C.B.

17/11/00

It was the day Datuk Dr. James Masing came to visit us at Camp 5. The Cobweb teams were seduced by the thought of lamb chops, and delayed their departure accordingly. Ben Lyon arrived in the Datuk's helicopter, jammy so and so, but then the sandflies came out..!
P.F.

FINANCES, SPONSORSHIP AND ACKNOWLEDGEMENTS

Individual member's contribution £1200

Members of the Benarat 2000 team are very grateful to the following for their financial support:

Mount Everest Foundation	£1300
Sports Council of GB	£ 800
Ghar Parau Foundation	£ 500
David Hood Award	£1000
China Caves Project	£1000
Speleological Union of Ireland	£ 312

We are indebted to the following for their support and assistance:

The Sarawak State Secretary
The Director of Forests, Sarawak
The Staff of the National Parks and Wildlife Division, Dept of Forestry, Sarawak

Patron: Dato Dr James J Masing, Minister for Cultural Development and Urbanisation, Sarawak, Malaysia

SPONSORS

Ittronix Ltd	Laptop computer
Sharp Electronics Ltd	Calculators
Leica (Australia)	Rangefinder
Penfold Pty Ltd	Stationary
Jerry Wooldridge	Photographic services
Avon Business Computers	Computing support
Princeton Tech	Lighting
Royal Mulu Resort	Accommodation
Righa Royal Hotel	Accommodation
Julbo	Sunglasses
Beal	Rope/ t-shirts
Petzl	Technical equipment
Tropical Adventure Tours and Travel	Logistics
Lyon Equipment Ltd	Technical equipment
Hilti UK Ltd	Drilling/rigging equipment
Searle Pharmaceuticals	Medical supplies
Life Systems	Medical supplies
Gary Hush Pharmacy	Medical supplies
Sister Rachel Strickland	Medical supplies

Specific thanks are also due to:

Dr Angela Hare for her medical advice and support.
Dave Gill for advice
Alan Steele and the staff of Ingelsport
Steve Jones and Dave Checkley for their help with equipment
Brian Clarke for his help with the translation of cave names
Miss Tricia Persad of Searle Pharmaceuticals
Matt Kirby for graphics and advice

THE BENARAT 2000 TEAM

Steven Mawan, Chris Victor, Tim Allen, Martin Holroyd, Pete Hall, Pete O'Neill, Edwin Abang, Roland Gau, Tim Fogg, Noah Abang, Colin Boothroyd, Tony White, Pam Fogg, Dick Willis (Leader), Syria Lejau, Andy Eavis, Rambli Ahmad.

And, as welcome visitors, Ben Lyon and Tony Waltham.

PERMISSIONS ETC

Permission to carry out exploratory caving in Mulu is strictly controlled. The guidelines are reproduced below. However, the management of the Park has recently been contracted to a private sector organisation and the guidelines may therefore be revised.

GUIDELINES FOR KARST RESEARCH AND SPELEOLOGICAL EXPEDITIONS TO PROTECTED FOREST ESTATES AND TOTALLY PROTECTED AREAS, SARAWAK

1. Introduction

The National Parks and Wildlife Division of the Sarawak Forest Department has now formed a Karst Management Unit. This Unit has been entrusted with the responsibility to constitute karst area within the State, as Totally Protected Areas, and to monitor and take part in all karst and speleological research work.

Previously all foreign expeditions have been entirely controlled and organised by their respective members with little input from the Sarawak Forest Department, sometimes with the loss of valuable information for the future management of karst areas.

There is an increasing number of foreign groups wishing to undertake karst and cave research in Sarawak.

2. General Guide Lines and Requirements

2.1 For the reasons as stated above the following criteria applies to all foreign groups wishing to carry out cave and karst research within P.F. Estates and T.P. Areas.

2.2 All foreign karst research expeditions will be joint ventures between the foreign group and Sarawak Government, with the Forest Department taking overhauled responsibility for control and management of the expedition.

2.3 It is recommended that the name of the expedition should be "The Sarawak (? name of the foreign country) (???) Expedition.

2.4 The naming of caves and passages will be the prerogative of the Sarawak Forest Department.

2.5 The expedition report will be compiled and published in Sarawak in full co-operation with the foreign group.

2.6 Some items of equipment will be donated to the Forest Departments expedition equipment pool for future expeditions by mutual consent between the foreign group and the Forest Department.

2.7 The full costs of the expedition for the foreign participants will be borne by them.

2.8 Any report for publication in any foreign journal or the press must be first submitted to the Forest Department for approval.

2.9 The Sarawak Government and its officers shall not be held responsible for any loss of life, limb, property or otherwise, arising from the expedition, as regards to the members of the foreign team, before, during or after the expedition.

2.10 Any discovery of new species of fauna and flora must be regarded as a Sarawak discovery.

2.11 The decision of the Director of Forests or his representatives shall be final in all matters appertaining to the expedition.

2.12 The expedition leader will be required to sign a Memorandum of Understanding with the Forest Department.

3. Pre Expedition Requirements

As the Forest Department is responsible for all aspects of karst research, initial proposals from foreign groups wishing to undertake karst research and speleological expeditions must first be forwarded to the above department, well in advance, with brief details of the following.

3.1 Objectives and areas.

3.2 Dates of proposed expedition.

3.3 Numbers of expedition members.

3.4 Name of the leader.

3.5 Name of the expedition.

3.6 Agreement to abide with the preconditions and guide lines for research expeditions as outlined above and below.

4. The proposal will then be discussed by the Forest Department. The main criteria will be that the objectives are in line with Forest Department and state government

policy, the dates do not clash with other research projects, and the numbers of foreign personnel are logistically possible.

5. When a favourable reply is received with any suggestions or amendments, the leader or leaders can then proceed with the following.

6. Full details of 3: above with exact dates, scientific programme and CV's of all the team members.

Curriculum Vitae's should include the following information:

- 6.1 Name.
- 6.2 Passport No., Date and Place of Issue, Expiry Date.
- 6.3 Date and Place of Birth, Sex and Nationality.
- 6.4 Address, Phone No., Fax No., E-Mail No.
- 6.5 Education Details, Academic and Professional qualifications.
- 6.6 Present Occupation and Responsibilities.
- 6.7 Previous Professional Experience.
- 6.8 Membership of professional bodies, research, speleological, sporting etc., date of membership, membership number and positions held if any.
- 6.9 Publications and papers, in brief.
- 6.10 Expedition experience, in brief.
- 6.11 Brief details of relevant research expertise.
- 6.12 Signed agreement that the member agrees to the conditions and guide lines.

7. When the above information is received formal permission will be sought by the Director of Forests from the State Secretary. When this permission is received a formal invitation will be sent to the expedition leader.

8. Requirements during the Expedition.

8.1 The leader or his representative must pay courtesy calls on the State Secretary and the Director of Forests on arrival and at the close of the expedition.

8.2 On arrival the team must report to the Director of Forests for briefing and discussion on the logistics and objectives.

8.3 Training will be freely given to Forest Department staff where necessary.

8.4 The Forest Ordinance, National Parks and Nature Reserves Ordinance and the Wildlife Protection Ordinance must be adhered to at all times.

8.5 All caves will be surveyed to BCRA Grade 5. Important station numbers at junctions to be marked in waterproof ink on tape or waterproof paper for future reference.

8.6 All cave and survey data will be entered on the Forest Department Cave Survey Data computer programme before departure.

8.7 A preliminary report in English shall be submitted to the Forest Department before departure. This should include details of work carried out, scientific and otherwise, photo copies of all survey notes and log books. Photo copying and typing facilities can be provided by the Forest Department.

9. Post Expedition Requirements

9.1 The Report will be a joint effort between the foreign group and the Forest Department as stated above.

9.2 Cave surveys, cave and scientific reports must be submitted within 6 months from the close of the expedition. Details on the compilation of the report will be by mutual agreement.

9.3 Copies of the final report will be freely supplied to the foreign group members and their sponsors by the Forest Department. Additional copies for sale will be supplied at cost.

9.4 General guide lines for the report are as follows:

- The report will be written in English to include, surface location maps of all caves explored and cave topographic overlay.
- Detailed cave maps with projected elevations showing important station numbers, unexplored leads etc., and length, depth, location grid reference, names of surveyors etc.
- Full descriptions of all caves explored.
- Full details of all research undertaken.
- Logistic details and expedition members.
- Acknowledgements.

9.5 Good copies of all quality photographs, slides and videos taken will be supplied to the Forest Department free of charge for purposes of lectures and tourism promotion.

10. Address List

The State Secretary, Pejabat Ketua Menteri, Tingkat 18, Wisma Bapa Malaysia, Petra Jaya, 93502 Kuching, Sarawak.

Tel No. (0106) 082 441957 Fax No. (0106) 082 441677

The Director of Forests, Ibu Pejabat Jabatan Perhutanan, Wisma Sumber Alam, Jalan Stadium, Petra Jaya, 93660 Kuching, Sarawak.

Tel No. (0106) 082 442180 Fax No. (0106) 082 441377

Senior Assistant Director, National Parks and Wildlife Division, Forest Department, Kuching.

Tel No. (0106) 082 442180 Fax No. (0106) 082 441702

National Parks and Wildlife Office, Forest Department, 98000 Miri, Sarawak.

Tel No. (0106) 085 436637 Fax No. (0106) 085 431975

AIMS AND OBJECTIVES OF THE KARST MANAGEMENT UNIT, NATIONAL
PARKS AND WILDLIFE DIVISION, SARAWAK FOREST DEPARTMENT.

- 1: To protect and preserve karst areas within the State and to constitute such areas as Totally Protected Areas.
- 2: To undertake research, documentation and exploration of caves and karst.
- 3: To produce management and development plans for karst areas.
- 4: To provide training and education on such topics as Speleology, Caving Techniques and Karst Management.
- 5: To set up a computerized data bank of all speleological information and a library of speleological and geological information.
- 6: To control and monitor foreign expedition groups to karst areas.
- 7: To establish contact, and cooperation with the international speleological community.

