

PLUMBING THE DEPTHS OF INKY BLACKNESS

By Stefan Eberhard

[All Photos by Stefan Eberhard]

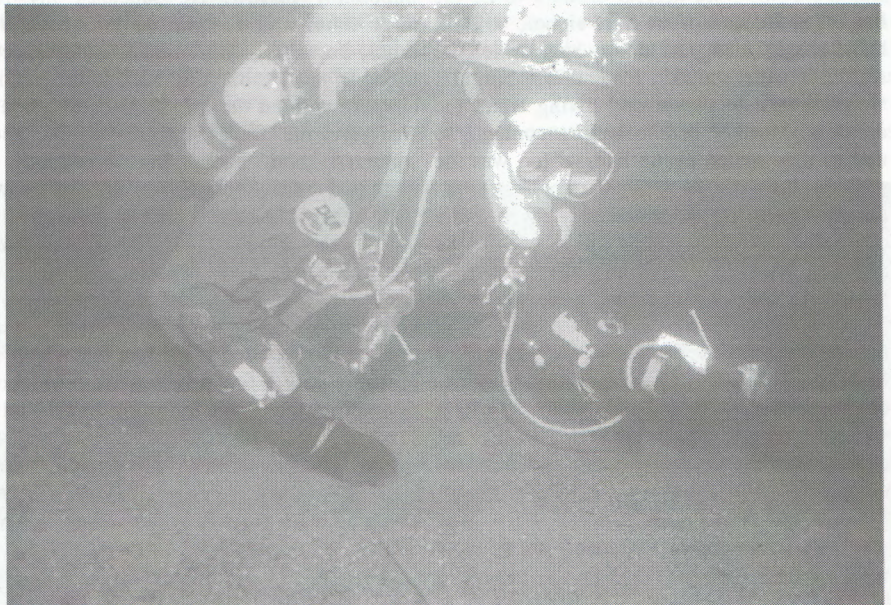
*"In Xanadu did Kubla Khan
A stately pleasure-dome decree:
Where Alph, the Sacred river ran
Through caverns measureless to man
Down to a sunless sea"*

- Samuel Taylor Coleridge

In March 1959, Bill Kunert, Glyn Davies and Michael Tobias penetrated 200 feet into an underground spring at Mole Creek. The divers were attempting to explore the resurgence of the River Alph, which disappears into a siphon inside the fabulously decorated Kubla Khan Cave before emerging about a mile away on the other side of the hill. It was the first cave dive made in Tasmania (Frauca 1959).

Kunert carried a sealed beam light of 12 volts powered from a lead wire connected to a battery on the surface. The lead ran along a 200 foot lifeline tied around the waist of Kunert and fed from the surface. Tobias and Davies were clipped into the line with karabiners. With Kunert leading the three divers submerged and disappeared. They had to dive headfirst through a bottleneck that was so narrow their aqualungs scraped the rocks.

At the end of the 200 foot line the divers surfaced in an airbell. Clinging to the crumbly mud walls, their breath steaming around their masked faces, the frogmen stared in wonder at the eerie sights in an underground stream. Their teeth were chattering, their limbs were almost numb and they found breathing difficult underwater in the intense cold. There was only one thing to do - retreat. Had they gone on they might never have come back, as the cold waters would have claimed their lives (Frauca 1960).



Tim Payne In Junee Resurgence

In February 1965, Brian Barlow, Lance Barlow and Carl Summer borrowed 1,000 feet of baling twine from nearby residents and managed to penetrate 750 feet into the resurgence - an Australian record (*The Mercury* 27-2-1965). On their next attempt the team claimed to have penetrated a distance of 1,685 feet.

In 1974 Bill Kinnear and two companions made a series of dives using a base fed line with a communication cable which enabled the surface crew to talk with the divers when they surfaced in air pockets. Two of the divers surfaced in an air pocket 80 metres into the resurgence and using their 'black box' device

they informed the surface crew that the third diver had failed to show up. They were informed that 120 metres of line had been fed out to the missing member who had apparently become entangled underwater. He eventually surfaced in the air pocket festooned in rope. The team continued on, but not without further incident;

'The torches did nothing but reflect a blinding glow and all I could see were my own bubbles.... I had the rope in my hands but didn't know which way along the rope was out and which was towards Bill. I pulled in yards of the stuff, first from one direction and then the other, and finally felt Bill pulling at the rope and swam to him and surfaced. Both air tanks were approaching the half full mark and return to the surface became urgent' (Robertson 1977).

On a subsequent dive Bill Kinnear pushed ahead alone. His single air tank was drawn to half full when he turned around at a point 1,200 feet into the resurgence. Plans to return were abandoned when Kinnear died in a hunting accident a few days later.

It wasn't until February 1978 that the connection into Kubla Khan Cave was completed by Ron Allum, Phil Prust and Peter Stace (Stace 1979). The connection was surveyed by Nick Hume and myself in 1983, revealing 1.1 km of passage containing three siphons of 500m, 120m and 40m length. The length of the siphons varies considerably depending on water levels.

The first exchange through trip soon followed. Nick Hume and Stuart Nicholas dived from the resurgence end whilst Rolan Eberhard and



David Doolette & Tim Payne preparing to dive the second siphon in Junee Resurgence

Duncan Holland abseiled into Kubla Khan at the other end of the system. The teams met up in Cairn Hall, where the diving and caving gear was swapped, then each team continued out in the opposite direction. So far everything had gone according to plan. However, there was a lack of solid natural anchors to tie the line off at the start of the third siphon, so Nick had brought along an onion bag, which he stuffed with mud for this purpose. Unbeknownst to the second diving team, the onion bag anchor had leaked its contents so that as they reeled in the line, so too was the now useless anchor pulled into the sump towards them. Rolan and Duncan were soon confronted with an empty onion bag in the middle of the siphon. Duncan was unperturbed, so leaving Rolan with the reel, which was their only security, he swam on until he surfaced on the other side of the siphon - it was Duncan's first cave dive! They continued on their way out but became separated again in the first long siphon. Duncan had got entangled in the line and by the time he sorted himself out he was completely disoriented - with no compass or detectable current he couldn't tell which way was in and which was out. He took a guess which proved to be correct - Duncan seemed to lead a charmed existence.

Recalling those early days now I think we had all been very lucky. I remember getting scared on numerous occasions, as we learnt the rules of survival in cave diving by trial and error. One hard-learned lesson in particular is worth relating. Union Cave at Mole Creek had received brief diving forays by Toby Clark in 1971. In 1979, Frank Salt and Peter Cover passed three short siphons but were unable to scale the sheer wall leading out of the water on the far side. Rolan and I ventured in there soon after we started cave diving. We passed through the first duckunder and peered into the second siphon - the water was beautifully clear and there was no silt on the bottom, so throwing caution to the wind we dived through without laying a line, which we intended to save for use later on. The third siphon was not so straightforward as the sediment we stirred up obliterated all visibility. Before losing the visibility entirely we were able to find our way some 40 metres through to the far side. We eagerly clambered out of the water and explored about 250 metres of nicely decorated cave before encountering another siphon.

We felt pleased with our discovery, but a little apprehensive about the return dive in zero visibility, so we organised some signals to communicate with by a series of 'hand-squeezes'. One squeeze meant 'Stop', two squeezes meant 'OK', and three squeezes meant 'There is a slight problem'. We set off, reeling in the line as we went, until the line

unexpectedly disappeared into a narrow slot - until now we hadn't learnt the technique of rebelaying the line to prevent it being pulled sideways into hazardous restrictions, or so-called 'line traps'. Rolan attempted to follow the line into the slot but it soon became impossibly narrow. He squeezed my hand three times and I squeezed him back three times, because I didn't relish the prospect of trying to reverse our way back to the previous airspace without the line in place to guide us. He gave me three squeezes again, and I squeezed him back. My breathing rate increased as the seriousness of our situation took hold. We were probably going to die I thought, as vivid images started to roar through my brain at 100 miles per hour, one image was the tragic scene that would confront Nick when he came to retrieve our bodies. After a period of time that seemed like ages, but which was probably only a few minutes, we developed a new underwater communication signal - lots of squeezes meant 'There is a very big and very serious problem here.' Then a miracle happened - the line came free from the slot it was caught in and we were able to follow it out.

reeled-in Rolan from the other side. We both learnt a lot about cave diving that day.

KUBLA KHAN February 1998

Chris Brown disappeared into the gloom as I struggled along behind, the gumboots I was wearing were causing considerable drag thus handicapping my finning movements. I caught up with him as he was clipping on the fourth reel of line, which would hopefully take us to the end of the first siphon. He scampered ahead again but soon came back, bringing with him a cloud of silt which enveloped both of us. Using sign language he indicated that the passage ahead got narrow, and also could I please disentangle the line which had wrapped itself around his tank valves. He then thrust the reel into my hands with the obvious implication that I should take the lead since I had been through the siphon before and therefore ought to know the way. In deteriorating visibility I probed ahead cautiously until getting to an unpleasant restriction which I did not remember from my previous visit 15 years before. I glimpsed an old piece of rotted line buried in the silt, a relic from the pioneering dives done here in the 1950's and 60's. I sensed the feeling of extreme

isolation and loneliness, which must have accompanied those early explorers when they first entered this cold, dark and inhospitable place. I felt in control of the situation but I definitely wasn't having fun as I groped around in zero visibility trying unsuccessfully to find the way on - it seemed like the passage had been nearly filled up with sediment. There was only one thing to do - retreat. I couldn't see Chris but I knew I'd found him again when our helmets 'clunked' together. I gave him a gentle shove in the direction of 'out', and with no further encouragement he was gone.

David Doolette and Tim Payne meanwhile had been patiently waiting for us to appear at the Pleasure Dome in Kubla Khan Cave - the plan had been to do another exchange through trip. It was a disappointment not to succeed in completing the through trip, but as my pommie cave diving friend, Scoff, put it, 'No one died so that's a positive result!'

JUNEE CAVE

Junee Cave is a big resurgence, collecting water from many deep inflow caves situated up to 14 kilometres away. The site clearly has potential to lead the way into a very

extensive cave system, the so-called Junee Master Cave. The Junee River emerges from a siphon about 100 metres inside the cave entrance.

In February 1966 Carl Sommer, Lance and Brian Barlow, and Dick Lane swam 550 feet



Daniel Eberhard in Junee Resurgence

Upon surfacing we both swore never to go cave diving ever again. Our trials were not quite over however as we still had another siphon to get through - the one with no line in it, and which by now was completely silted-out. Suddenly no longer brash, I groped my way through using the line reel, and then

into the siphon to a depth of 55 feet (The Mercury 28-2-1966).

In February 1978 Ron Allum, Phil Prust and Peter Stace penetrated 120 metres into the siphon, but reported there was little chance of breaking through due to the hazards of cold, poor visibility, strong flow and the small and treacherous nature of the cave (Stace 1979).

In 1981 the Tasmanian Caverneering Club took up the challenge at Junee. Nick Hume, Rolan Eberhard and myself were the chief protagonists, assisted by Stuart Nicholas, Attila Vrana and others. Over the course of numerous dives, a heavy duty fixed line was gradually installed further and further into the siphon. The effort finally paid off in 1982 when Nick located a small air-bell, and then shortly afterwards Rolan reached the end of the 220 metre long first siphon. A piece of the puzzle to the Junee Master Cave had at last been realised. A magnificently decorated section of river passage - named 'For Your Eyes Only' - was tantalisingly short before we encountered a second siphon. This siphon proved to be a major obstacle as it started to descend deeply, thus incurring serious decompression problems. Hume reached a depth of 30 metres, and then in 1985 Ron Allum and Peter Rogers got to 35 metres depth but found no apparent way on. Cavers meanwhile kept searching for an alternative route into the master cave via the deep, wet caves located on the mountain slopes above.

In 1992 I went into Junee for another look. Passing the previous limit of exploration I negotiated a minor restriction at a depth of 44 metres where the current was screaming past me like a freight train from hell - so much water had to force its way through somewhere. At this depth I was suffering from nitrogen narcosis, the effects exacerbated by the cold water and poor visibility. The tunnel continued on - enticing, deeper.

My elation at discovering the cave was still going was tempered by an incident on my way back out. One of my regulators began to free-flow - a pebble lodged in the valve causing rapid loss of air. I struggled unsuccessfully to clear the blockage, then attempted to turn off the valve to the tank when suddenly I got severe cramp in both legs. In a short period of time one of my air supplies was completely drained. I exited using the one-third reserve supply of air remaining in the other tank. This sobering episode reinforced a couple of the fundamental rules of cave diving - that is, always use at least two independent air supplies, and, keep at least two thirds air supply in each tank for the return from the point of furthest exploration. On my way back through the first siphon I was dealt one final humbling experience - the zip on my drysuit failed and the suit flooded with water. The cave seemed to be smirking at my futile,

hollow victory - if Junee were to be personified its most enduring characteristic would be *Schadenfreude*.

The exploration had reached the limits of depth and decompression using air, so far as I was concerned anyway. To push further required the use of mixed-gas techniques to combat the narcosis, as well as pure oxygen to cut down the decompression times. Such technical diving demands considerable expertise and a serious approach, and it isn't cheap either. It wasn't until February 1998 that a team of

removal of the nitrogen and helium absorbed by their tissues under pressure. If they ascended too rapidly they risked the formation of bubbles in their tissues causing decompression sickness - the 'bends'. The rate of off-gassing can be significantly enhanced, and hence deco times reduced, by breathing pure oxygen at the deco stops. Pure oxygen however, has its own physiological complications - it becomes toxic under pressure. The likelihood of suffering an oxygen convulsion above 9 metres depth is



Chris Brown in "For Your Eyes Only" - Junee Resurgence

divers with the appropriate credentials were lured into Junee - Cocklebidy record holder Chris Brown, diving medicine expert Dr David Doolette, and rising 'top gun' Tim Payne.

David and Tim did the first push dive. They breathed a special gas mixture containing 40% helium, 12% oxygen and 48% nitrogen. The inert gas helium was used to reduce the percentage of nitrogen in the breathing mix (normal air is 78% nitrogen), thus reducing the effects of nitrogen narcosis - this would allow them to dive deep without experiencing narcosis symptoms more severe than those encountered at an equivalent air depth of about 40 metres. Helium however, aside from distorting your voice to sounding like that of Donald Duck, rapidly sucks the heat out of you because it has a high thermal conductivity - clearly not desirable in cold water. To combat this the divers inflated their drysuits from a pony tank containing argon gas, which has better thermal properties. The lowered oxygen concentration in the breathing mix (normal air is 21% oxygen) meant it would be hypoxic if breathed at shallow depths, so David and Tim also carried a tank of 'travel gas' containing normal air, which they would use between the surface and 35 metres depth.

The dive profile still required lengthy staged decompression stops, to allow the controlled

remote, but to increase their chances of survival in case of such a mishap, David and Tim had full face masks attached to their oxygen tanks. The full-face masks also helped to reduce the chilling effect of the cold water.

Tim and David got to the previous limit of exploration but were soon confronted by a daunting restriction - jagged blades of razor sharp rock hung from the roof like menacing teeth. They pushed through to a depth of 50 metres where the passage seemed to pinch out, but they noticed a possible alternative way on back at 'The Teeth'.

'It's a scary, narky place down there', David and Tim both commented afterwards.

It was Chris's and my turn next. We had a strict time schedule to keep if we weren't to violate our dive and decompression profile. The schedule had been carefully calculated by Tim and David using a clever computer program - both are experts in this field of diving. It boosted my confidence to know that we were doing this dive with a very high margin for safety. Needless to say, 'For Your Eyes Only' is not a good place to get hit by the bends.

I felt unexpectedly calm before my first mixed-gas dive. We dumped our oxygen cylinders at 6 metres and continued on to 35 metres where

we dumped our cylinders of 'travel gas' and switched to the deep mix carried on our backs. - We were on schedule. We got to 'The Teeth' and wended our way through, carefully positioning the line so we wouldn't get stuck whilst returning in zero visibility - we did this by anchoring the line to pieces of poly pipe shoved into the sediment like ice screws. Throughout the second siphon we took great care in positioning the line to prevent it being severed on sharp rocks during next winter's floods, and to prevent it being pulled into line traps.

Following Chris in the clouds of silt that billowed past me I got occasional glimpses of green water and blue rock as he disappeared down virgin tunnel. I was intoxicated by narcosis and adrenalin, but focused my attention on monitoring my gauges - at this depth both time and air supplies go very

quickly. All too soon we had reached our turning point - the depth was 60 metres but the tunnel kept barrelling onwards. We groped our way upwards. For just 10 minutes of exploration time we incurred 60 minutes of decompression - by the time we finally surfaced I had stopped shivering.

The final push was done by Tim and David again. It had rained overnight and the Junee River was still rising as we wrestled our way upstream. Both divers were already chilled and a little unhappy with the situation even before they commenced their dive. After they surfaced they were even less impressed - they had got to the previous limit but were unable to swim any further against the strong current. In 1985, Hume and Vrana had also been spat out of Junee when a flood pulse came through. David and Tim conveyed their feelings to me, 'Stef, you can keep your bloody cave.'

Living up to character, it seemed that Junee had the last laugh once again. We'll be going back for more next summer.

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Daniel Eberhard in Junee Resurgence