

Junee Cave – February 1998

Junee Cave is a big resurgence, collecting water from many deep inflow caves situated up to 14 kilometres away from Kubla Khan Cave. 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 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 Cavemeering 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, reserve at least two-thirds of your air supply for return from the point of furthest penetration. 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 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 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 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 which 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 gas 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.'

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