CHILLAGOE

by
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A description of Chillagoe tower karst and recent scientific studies done in the caves.

Transcribed from an audio recording.

I thought that I should report on this expedition at this convention because there hasn't been much news about it in Australian speleo circles. The expedition was sponsored by the New York Explorers Club and organised by our old friend Brother Nicholas.

Its aim was not exploration, the exploration of Chillagoe has been pretty well done over the years, firstly by members of the Sydney Speleo Society then by various local residents, in particular, Vince Kinnear with his concern for understanding the area and making it available to people; and in more recent years by the Chillagoe Caving Club. So the basic exploration has been done or is being done. The purpose of this expedition was scientific study. The purpose of my presentation today is firstly to tell you a bit about what is going on, and secondly for those of you who are not familiar with it, to give you some introduction to Chillagoe as an area.

Chillagoe is not a particularly big town. It had a smelter in the early days sited near Chillagoe Creek, which is the town water supply. The town and area has a very long history of mining. The layout of the land is that of a basically flat area with a few low rolling hills with tower karst poking out of it. You can tell the limestone by the greyish vegetation. Chillagoe limestone is covered with a deciduous rain forest alternatively explained as a remnant rain forest or as a forest which results from selective dispersal of only certain species. The land between towers is a savannah plain.

The towers have very fluted, very sharp limestone. Most towers rise fairly abruptly out of the plain but some have a bit of debris slope at the base. Solution pans are a common feature on the karst. The towers are typically full of holes - tens of shafts can be seen from the air but traversing the surface of them is hard on the footwear and they are obviously dreadful to fall on.

Each day started with a briefing in the local town hall where each indicated what they wanted to do for the day or intended to do. Any loose bods were allocated to parties and the day got underway. A number of people flew in from North America and around Australia which meant that transport was at a premium and poor Don Matts spent a lot of his time shuffling people to and fro. One of the major elements of the expedition was the continuation of archaeological work in the Walkunder Arch. In this particular excavation, at the top it is some 12,000 years BP and the earliest date so far 18,000 BP, but on a pro-rata basis the present level of excavation will come out at between 25 and 28,000 years BP and there is still Aboriginal material being recovered.

A 14,500 year old woven grass sleeping mat (?) was uncovered during the dig. A second gallery in the Walkunder Bluff was investigated but little archaeological material was located in the soil and it seems that this was a religious site rather than a living site. Extensive paintings are on the walls. Ryan Imperial Bluff to the north has a further series of paintings.

Setting traps for insects in Spring Cave produced some 300 species of invertebrates in the course of the expedition. To make sure that taking specimens of the biota from the caves did not significantly affect the ecology nor the species caught, live traps were used. The animals could be released unharmed and traps had to be checked frequently. Tropical caves are very profuse in cave life although the troglobitic species are few. Only a small number of each species trapped were taken from each cave. Swiftlet guano was searched for insects. At the end of each day, the biological team with which I was involved would get back to sorting, processing and preliminary identification of material. Walter Schoept from New York sorted material then Audrey Stafford from Philadelphia was the registrar in the team.

Tea Tree Cave was studied: an extraordinary hot cave containing fossils of crocodiles and early Australian marsupials. The excavation of material from there was continued with an electric drill to excavate the very tough breccia that is there. The high temperature of Tea Tree Cave was discussed and a generally accepted hypothesis was that the cave had, in part, been created by sulphurous acid from the adjacent orebody rather than the usual carbonic acid mechanism.

Sulphur dioxide can be smelt at the high points of the cave near the orebody and the heat is probably due to the exothermic reaction of the ore with its surroundings. A nearby vertical pothole is also extraordinarily hot, which cannot be explained by the capture of hot air from the surface.

Vince Kinnear, who was honored at this conference with the Edi Smith award, is no longer so actively involved. He single-handedly cleaned out Royal Arch by removing hundreds of wheel-barrow loads of rubbish to convince people that it could be a show cave again, and went over hectares of wall with a wire brush removing grafitti.

The caves typically have a wide entrance and a series of daylight holes along their passages. The light from the holes produce interesting colour effects within the cave. Tiny algae produce photokarst - a calcite deposit that is orientated towards light. These might be related to those found in the cenotes of S.E. South Australia. "Sucker Pods" or "Elephant's Feet" are common in these caves and are not caused by the removal of supporting debris but seem to be due to organic action on the limestone. Oolites are so common that they can cover the cave floor in places.

The Donna Cave is open to the public. It has signatures from the Atherton family from whom the Atherton Tableland was named. They were amongst the earliest pioneers and explorers of the area. False floors are common here as in other caves at Chillagoe.

Cave swiftlets inhabit many of the caves. It will be a very long task getting the biological material collected on this expedition identified and described. Glennis Wellings some years ago obtained one single specimen of a very tiny, completely eyeless and colourless cockroach. Glennis had found one and searched fruitlessly for more. We returned with 6-8 specimens of that species and another five different species with varying degrees of troglobitic adaption. None were more than 2mm long and were found in four caves of the area.

We have been successful in opening up the troglobitic potential of the area and also are starting to elucidate the ecology but it is going to take many more expeditions and a great deal more backroom work before we can get to real results.