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GORDON RIVER EXPEDITION 1974-75

By Kevin Kiernan

Five limestone belts were visited during the 1974-75 Gordon River expedition, which utilised two jet boats for heavy gear carting, two Canadian canoes and inflatable craft for access on the river, which forms a natural highway through the western sector of Tasmania's south-west wilderness. Participants were primarily from Sydney, but included representatives from four states. To suggest that the trip was dramatic would be rather understating the situation. Continued heavy rains swelled rivers and cave streams to a level that precluded detailed exploration, but extremely promising discoveries were made that await the attentions of a party blessed with better weather conditions.

The trip was expensive. Investment in boats alone was around $14,000, in addition to the normal costs of mainland participants' journeys to Tasmania, and more usual expenses. To this can be added repair bills, and there was no shortage of these. Such, apparently, is the attraction to mainland speleos of the wilderness caving which only Tasmania has to offer.

It is anticipated that full details of discoveries made, and revision of cave lists for the limestone belts visited will appear in Journal Syd. Spel. Soc. in due course. The following is simply a narrative summary of events as they occurred.

COMMENCEMENT

With both canoes and people aboard the jet boats and other participants aboard the tourist launch Denison Star, the party set out on Christmas Day to cross Macquarie Harbour to the mouth of the river up which some were to penetrate to 100km from Strahan. Twenty-nine kilometres across the Harbour and a further 35km upstream at Butlers Island supplies and people were unloaded from the Denison Star into the speedier jet boats from which base camp had by then been established 46 km from Strahan on the pleasant green lawn of a river bank terrace beside a tall limestone cliff, 4km upstream of the Franklin River junction. More participants arrived the following day to build the maximum complement to 17 persons, just in time to help shift base camp onto a higher terrace from a site which was later flooded to the astonishing depth of over 5m by the Christmas rains, which while vital to provide sufficient flow in the river for progress up rapids by jet boat, persisted long after they were welcome.

GORDON SPLITS AND NICHOLLS RANGE VALLEY

An advance party of four, set off upstream on December 27th aboard the jet boats, with their pilots, the expedition's cine cameraman and two canoes. After pausing briefly at the Olga River junction, the limit of a preliminary jet boat reconnaisance two weeks previously, the party continued into the 200m deep Sunshine Falls Gorge. A hidden rock holed one of the boats in a particularly vicious rapid, but the party had to push on through several more rapids past the Tributary Falls themselves, and the Smith River junction at the mouth of the gorge before beaching at the mouth of Harrison Creek where repairs could be effected.

Leaving the crippled craft, one canoe set off in a hopeless paddle against the swollen current and the remaining jet boat made an easier passage upstream past the river-front limestone cliffs, of the Nicholls Range Valley area and beyond the Denison River junction 96 km upstream to the foot of the sinuous Snake Rapids. There camp was established in a disused HEC recorder shed, a lucky find placed by helicopter, with floor space for four at a squeeze, while the jet boat pilots and cameraman strolled the further 1.5 km to join the select few fortunate enough to have seen the Gordon Splits, then returning to pick up the other canoe before the long slog getting both jet boats back to base.

If water levels had been at an optimum that day they were not the next day. After heavy overnight rain the narrow channel and great sandstone pavement at Snake Rapids had vanished beneath a wide expanse of surging, crashing water. The canoeists visit was less easy, taking four times longer, clinging to riverbanks and thrashing through heavy undergrowth.

It was worth the extra work to see the Splits as they should be seen, not so obviously deprived of water by the Pedder scheme dam only 14 km upstream. From a rock midstream three air mattresses skirted to a ledge giving access to the first chamber of the Splits. Here, 100 km from Strahan in this stupendous slot through the Nicholls Range, words like awe and majesty take on a new relevance. For 25m. the two walls of the corridor rise barely 3m. apart, with the waters of the Gordon pouring through. Above this the great overhanging north wall towers over 100m. against the sky. The place has a unique presence which can only be experienced, and is photographically inexpressible.

Came the morning of return from "Cupboard Camp" the river was, as usual, in flood. Ten minutes to stow the gear in the canoes saw a further 5 cm. rise, and it was here well upstream of the principal tributaries which lay before base camp. Time seemed of the essence, for the river might not drop for several days, so after negotiating the eddying turmoil at the Denison River junction only a brief stop could be contemplated at Nicholls Range Valley.

The most obvious feature was a waterfall issuing from the middle of a cliff, cursorily examined to reveal a serpentinuous passage and other access routes inland. Next stop was a massive overhang with a chamber at one end, exploration by canoe being enlivened by the comical sight of two speleos struggling to free their vessel from a squeeze through which the smaller craft had readily slipped. Downstream were more overhangs and then a shock for which all were quite unprepared. A scramble over a mud-bank led to an immense opening in the cliff from which there flowed a volume of water dwarfing that of any other Tasmanian cave. Beyond, the 10m. diameter passage continued into the gloom past two large entrances in the roof, admitting daylight. Exploration would have required canoes, but more importantly time, which in the circumstances could not be risked. Despondant faces turned downstream again.

Brief skirmishes with rapids, eddies and whirlpools led back to the now unrecognisable Smith R. junction, and the blind corner into the jaws of the Sunshine Falls gorge. Hauling the canoes ashore the party scaled the southern ridge to the unoccupied HEC camp and helipad to consider that part of the gorge visible from this perch a kilometre away. To risk a continuation or wait a day and probably find things worse? The final decision was as rational as one's dislike of leeches.

In ignorance committed (the first blind corner, steep rocky walls, and the surging waters of the cateract) the choice was now irreversible. A great unexpected upwelling suddenly spun the larger canoe, which shot backwards through a rocky constriction before control was regained by its two unnerved occupants. The epic now had that spice that stems only from a genuinely serious situation. A quick stop in a backwater, and another more confident decision taken with misgivings being overwhelmed by exhilaration, portage being physically impossible.

The canoes knifed, leapt, vanished and reappeared through the rapid which had previously claimed the jet boat. Massive standing waves, then it all seemed over, the worst set passed and comparatively plain sailing after one more smaller rapid. Smaller? This was not the rocky yet predictable channel of days before, but the unpredictability of a mighty river in full flood, surging around hidden obstacles not permanently subject to the scouring and streamlining of the torrent. Standing waves, big but straightforward, then from one side the impossible and the inevitable. Foaming chaos, a rope thrown to a bobbing figure, a rolling and tossed canoe, then a strangely silent bubbly world of water all around, with no way up. Oh well, at least its less boring than a coronary. Then suddenly, after all reason decreed otherwise, the sky, and air. The river had its go and no second chances. But where is everyone? Another few hundred metres and the shore is within reach. Then a figure in the water way upstream. Soon both were on the shore and it all seemed over.

But only for a second. No food, no companions, no gear, no matches, soaked to the skin, many kilometres of thick scrub back to base, and not expected for another day. It was presumed the other two must have got out somewhere downstream. But then came two hours of demoralising thick scrub and shouting with hollow re-assuring comments over-ridden by unspoken acceptance of the worst, compounded further downstream by the sight of an upturned canoe on the other side of the river. Bashing onwards past cave entrances and resurgences, uncaring, still hopeful, and at last a responding voice.

The larger canoe had been smashed as its crew, one entangled in a rope, clung on through whirlpools and eddies for 4 km. Suffering very seriously from exposure one occupant had been hauled from the water and ensconced in two sleeping bags by his companion who had then set out for help, exhausted, and still on the wrong side of the river. The situation, if happier, was still desperate with night approaching. and nothing with which to meet it. So those on the east bank continued, but with relief had come exhaustion and slower progress. Then suddenly came the sound of one of the jet boats with relief turning to momentary despair as it passed without noticing. Further upstream its occupants were horrified by the unexpected discovery of an upturned canoe caught in riverbank vegetation. Flagged down on its return to raise the alarm at base, it stormed back upstream to rescue one, then coasted down, calling for his lone companion, who was eventually located now also suffering severely from exposure. His journey, during which he passed numerous cave entrances, at one stage involved floating on logs swept downstream by the flood, but ended with the aggravation of a knee injury in a scrub-fall, and relief at the sound of the jet boat, which had ventured upstream "just in case", on a journey which undoubtedly saved lives. And so miraculously the advance party passed the night recovering sleeplessly in the well-fed warmth of base camp.

FRANKLIN RIVER

While this drama had been unfolding, the jet-boaters were examining the Franklin River, upstream of Verandah Cliff, the impressive 15m high limestone overhang which on the previous trip had been the limit of upstream penetration by air mattress after the heavy conventional run-about used had been blocked in its upstream passage by the shallows of Shingle Island. A river of more even gradient in its lower reaches than that area of the Gordon being similtaneously explored by the other party, the high water meant an easier passage for the jet boats.

The boats eventually turned back at a rapid which may have been the remnants of Double Fall, 12km from the mouth, the flood having blotted out a lower feature known as the Big Fall. Up to that point the principal discoveries were two large openings in a cliff, one at river level with a higher decorated entrance several metres above it, and in the same area a most promising entrance about 5m in diameter at river level, all left unexplored. Exploration of numerous small unexplored stream caves further downstream, known from the previous trip, was similarly impossible due to the ubiquitous water. Indeed, the roof of the Verandah itself could almost be touched from a passing boat, while the sheer volume of water debouching into the Gordon from the Franklin, undiminished by damming, appeared sufficient to hold back to some extent the waters of the Gordon, perhaps accounting at least in part for the disproportionately high levels being experienced as far upstream as base camp.

BUTLERS RIVULET

Immediately upstream of the Butlers Island damsite is an apparently fairly small limestone belt on the northern side of the river. While it has been previously regarded as part of the Lower Gordon belt it appears in fact to form a quite discrete outcrop, being separated from it by the elongate north-south ridge of which Butlers Island is a remnant. The most obvious feature of this area is a perched karst lake, some 60m above river level. This body of water, occupying a large sinkhole, is several hundred metres in diameter. A party briefly visited this lake and explored a number of holes in the area, one of which, in the bank of Butlers Rivulet itself continues as quite a promising prospect.

GORDON-SPRENT

The most noteworthy discoveries here may well have been the uninvestigated caves seen by the walking canoeists after the Sunshine Falls Gorge mishap. A few small holes were also discovered in the Angel Cliff area, immediately downstream of base camp, and on the opposite bank of the river in between. Not unpredictably few were of any great size as exploration was again primarily concentrated close to the river, a vital artery through the area with which it is difficult to persuade oneself to sever connections.

OLGA

Brief surface exploration of the river mouth area again not unpredictably bore little fruit, the bulk of the limestone lying in the broader valley further upstream. Disaster struck again when on its return down the now lower river, one of the jet boats got out of control and hit a rock, bounced across a shingle bar into another pool and before its pilot could regain his feet took off again into more rocks and cannoned up the riverbank into the scrub, coming to rest badly holed, its engine bounced from its mountings and minus its steering wheel.

At last two heavily patched jet boats with all the gear limped back towards Strahan. Yet even now the Gordon hadn't finished, for as a final gesture one of the boat loads was imprisoned for the night with electrical trouble at the site of the old Sarah Island convict colony in Macquarie Harbour.

On reflection the Gordon had, as usual, not revealed any secrets easily. As a wilderness experience it had simply maintained its unparalleled position, as a wild spirit that will never be tamed unless its last drop is tragically wrung from it by the dam complex now planned by the H.E.C. In speleological terms what was seen, despite the weather, served only to further whet appetites and already next summer's expedition is on the drawing board.

Damn the dam. Let the Gordon flow free!

A REVIEW OF THE INFLUENCE OF CLIMATE ON KARST LANDFORM DEVELOPMENT.

By Steve Harris.

Limestone has so distinctive a range of landform expression that it warrants its own specialised study. Karst landforms result from the characteristic of limestone that gives it to ready solution by various ground and surface waters thus moulding the rock and giving rise to caves, potholes, dolines, cockpits, ramparts, natural bridges, tower-karst and numerous other macro and micro landform expressions. Limestone ($CaCO_3$) and dolomite ($MgCO_3$) are the two more significantly soluble rock types. Other rock types weather differently. Limestone (which in this essay is also taken to include dolomite) is a largely homogeneous but chemically unstable rock in present environments. Most metamorphic rocks (marble is a notable exception) are unstable but karst doesn't usually form because of the highly varied constitution of the rocks and their incapacity for solution. The same is true for most igneous rocks (carbonatites are an exception here). Although pseudokarst is common on granites, the processes work to decompose granites <u>in situ</u> and it's constituent minerals are broken down into more stable clays while other alteration products result from reactions between minerals and percolating water. Sedimentary rocks other than limestone are either too weak to carry sculptured form for very long, eg., mudstones, shales, unconsolidated sediments, friable sandstones; or else consist of recycled silica incapable of solution, much less reprecipitation under present landscape conditions.

Limestone then, has not only the capability of solubility in waters but it's calcic content is reprecipitated as calcite. For this reason I perceive the rock as "plastic" with water as the moulding influence acting under very variable conditions.

Up to 1936 when H. Lehmann presented his work on the tropical karst in Java, most previous work has centred on the Dinaric and Central European karst and landforms in these areas were considered as stages in a universal evolution of landform development on karst. Karst landscapes could not really be perceived as being rooted in a climatic morphogenesis until a general conception of world climatic zones, emerged in the 1930's.

At a Karst Symposium in Frankfurt in 1953, each climatic zone was designated it's own "clima-specific" landform development, while in 1956, the Karst Commission of the International Geological Union claimed that "..... in view of the dependence of karst upon climatic conditions, it was unfortunate that the classical karst research started with the karst regions of the mid latitudes because they were exposed to changing climatological conditions during their development". (Sweeting 1972).

In the 1960's, healthy reactions set in against climatic morphogenesis, this reaction producing realisation of the many variables which come to act in limestone solution. Smith in 1969 gives a list of factors which control the solution of limestone. This list finds five broad criteria, those of site, lithology, climate, soil, and vegetation. In discussing some landscape features in Jamaica, Smith submits that "...one might even question whether the correlation of cockpit landforms with tropical climates is more than chance!"

Recent research has centred on karst water and its effects under different climatic conditions. This reassertion of climatic influence is not a naive linking of weather effects with limestone solution but is becoming more, a probing of indirect effects of climate. Naturally, vegetation is a product of climate more than anything else, but vegetation type combined with soil type has probably a profound influence on limestone solution. This is an example of the indirect influence of climate, and is exemplified in numerous other linkings of variables, which will be brought out in the discussions of the individual climate-type karst studies.

Before reviewing studies of karst in different climes, a brief review of methodology will be made. Temperature was once considered to be a direct influence in limestone erosion and a positive relation between increasing hardness of karst water and decreasing temperature has been established. The temperature effect is mostly masked by other things, the most significant of these being the amount of CO_2 dissolved in the water. The more CO_2 in the water, the more aggressive it becomes. Pure water itself can dissolve limestone in significant amounts but is rarely found in nature as rainwater combines with a certain amount of CO_2 in the atmosphere as it falls. This water can absorb more CO_2 when it reaches the ground and absorbs the CO_2 which is locked in soil voids in much greater concentrations than is found in the atmosphere. The status of the soil is significant. There is less CO_2 in bare ploughed soil than there is in humus rich soil for example. The interstices of ice and snow contain CO_2 which may be dissolved into meltwater giving it greater potency.

The kinetics of limestone solution is an important area of consideration. The "mixing effect" is a phenomenon which simply means that a solution "A" saturated with calcite, and a solution "B" saturated with calcite, when mixed, are capable of dissolving more calcite.

Flow rate is a factor which can affect the amount of solute dissolved. If a cave stream for example, is very turbulent, there will be greater agitation, thus more $CaCO_3$ dissolved. Hydrodynamic studies of karst water will in the future enable more accurate assessments of limestone solution rates to be known.

The effect of humic acids in dissolution of limestone is underplayed in all the literature but it's effect could be very considerable.

Essential in the understanding of the morphogenesis of limestone terrains is accurate data of present processes acting upon it including rate of denudation. Equations have been devised for this, firstly by Corbel in 1959 and subsequently in modified form by Williams in 1963 and is given as:

$$X = \frac{E(Tc+Tm)}{10D}$$

where: X = vol. of limestone removed by solution in cubic metres/km./yr
Tc = mean Ca content of natural waters; ppm. $CaCO_3$
Tm = " Mg " " " " $MgCO_3$
D = density of limestone in gm./cc.
E = effective annual run-off in decimetres.

These equations have received far from universal use because of different conditions of limestone terrains, the difficulty of obtaining some of the data and the little understanding of the relative importance of several presumed processes.

Current research trends as indicated by Pitty (1966) and exemplified in the paper by Goede (1973) show multivariate statistical analyses to be a sensible approach. Computer programs are needed to cope with the great volume of calculations needed as each new variable introduced, cubes the amount of calculations needed to be done (Pitty 1966).

Varying techniques have been used in the studies which follow, ranging from the purely descriptive to computer - statistical and including use of the Corbel equation, and employment of geochemical means.

Smith (1969) studied limestone solution erosion in an artic morphogenetic region consisting of a deeply incised plateau surface on which outcrops of bedrock were infrequent and obscured by felsenmeer composed largely of joint blocks and fragments; the whole thing being devoid of soil. The climate was truearctic with an annual average temperature of -17°C. average annual precipitation of 13 cms. and permafrost extending over 300m. deep. The permafrost excludes the possibility of any subterranean flow, the streams present being surficial. Smith took 200 water samples from 3 types of sites:

(i) from major rivers draining limestone catchments
(ii) of water draining from snow banks
(iii) from pools at sites where small patches of marsh or sedge meadow were developed.

These sites gave the results shown in the table. Water temperatures varied between 0°C and 6°C.

SAMPLING CONDITION	$CaCO_3$ppm.	$MgCO_3$ppm	REMARKS(TOTAL HARDNESS)
(i)	46	11	mn.range 44 - 64; lowest 36ppm.; highest 95ppm.
(ii)	46	14	
(iii)	84	22	3 samples with total hardness of > 130 ppm.

Results of sampling of karst water under 3 conditions

(see text)

The results show that no significant increase in solution takes place under snow banks, that it is probably the supply of CO_2 that is the controlling factor here where, with no soil or vegetation cover, CO_2 content of surface water is roughly in equilibrium with atmospheric CO_2.

Significantly higher solution rates are presented from samples near soil/vegetation but it is uncertain whether this is due to higher CO_2 or the presence of humic acids.

Goede (1973) in the study of the hydrology of a cool temperate humid region in the Junee area in Tasmania, found that hardness values were low when compared with values obtained in Western Europe, and attributed this to two possible causes: the low growth rate of a mature wet sclerophyll forest, combined with shallow soils on steep slopes and the fact that water moves rapidly through large underground conduits. Mean annual precip. in the area varies drastically between 500mm. and 1500mm. The author employed multiple correlation and regression analyses to compare the following variables of the water: temp., conductivity, field pH, saturation pH, ppm. $CaCO_3$, ppm. $MgCO_3$, and calculated discharge. It was found that discharge is the most important influence in the removal of carbonate ie. the sheer volume of water is important.

Campbell (1973) writes of a typical alpine karst plateau with many scattered solution features. The area has an average annual precipitation of approximately 50", mostly as snow, snowbanks $>$ 100' deep, and a seasonally extreme temp. variation (80°F in summer to $<$0°F in winter). Many of the karst features are completely free of snow only during dry years, in fact, Campbell claims that the location of the larger sinkholes is controlled by the position of large north-south trending snowbanks. The extra meltwater available for solution under these snowbanks leads to larger pits developing here. The area is barren of vegetation. The age of the karst is probably post - Pleistocene.

The distinctiveness of tropical karst features is well described by Monroe (1968) in an article on the Peurto Rican mid-Tertiary limestone landforms. Cockpits, for example are underlain by pure massive limestone, zanjones form as enlarging joints in bedded phases of the limestone rather than in the pure massive varieties. Differential solution appears to work. Mogotes, are sub-conical, steep sided hills surrounded by flat alluvium covered plains. The exposed limestone hills develop an indurated crust as a result of heavy rain dissolving the limestone which, afterwards, is quickly evaporated by hot sunlight resulting in precipitation of the calcic solute. These hills are asymmetric with their western sides steeper with thinner indurated caps. This is a response to trade wind rains driving towards the west. Ramparts are high bare ridges along larger surface rivers, and are genetically related to mogotes. These features are typical of tropical areas.

The sinks and the mogotes depend on the presence of a soil cover supplying quantitites of CO_2, plus torrential rain. The plains around mogotes undergo sheet solution from water percolating through the surficial debris cover, while exposed limestone is case/hardened by reprecipitation of calcite. Under these conditions, erosion ceases, so increasing the amplitude between topographic highs and lows.

Similar tropical features are found elsewhere including Malaysia and Jamaica. Smith (1969) says that cockpits, in Jamaica, have a high lithological correlation but the solutional rates on these lithological areas are similar to other limestone lithologies on the island. Smith even ventures to question whether cockpits have any associations with the tropics other than chance.

It can been seen from the individual studies that karst areas of different climates differ greatly in their morphology. Climate seems to me to be the major controlling factor but rather than controlling merely the change of the limestone itself, it rather controls the many variables which in turn control the karst expression. For example, temperature is not a direct factor but rather is important in that it speeds up chemical reactions such as are involved in the production of humic acids. We cannot generalise too much from one region to another, the processes which act in those regions. The total hardness measured from water taken from snow banks showed no difference to waters from larger rivers in the Somerset Island study by Smith, but while there was no physiographic expression resulting from these snow banks, largely because of the permafrost and the inability of water to percolate or move through the bedrock, the Scapegoat plateau alpine karst showed deep sinks preferentially developing under snow banks.

Smith, in his Jamaica study claims that "there is no evidence that the hardness values of water or the processes of limestone solution are in any major respect different from those of temperate latitudes and climates" but Nicholson and Nicholson in the same publication claim that "CO_2 content of soils over limestone in the Tropics is generally higher than in temperate regions", thus, the potential dissolving power of percolating water is greater in the tropical regions. In any case, Smith seems to take an unnecessarily negative view of influences due to different climatic regimes.

The total hardness values from Goede's study are much higher than from Somerset Is. but about half the order of figures for Jamaica, thus climate is a definite influence. It was once argued that tropical karst is well developed and the only reason temperate karst does not show the same physiographic expression is because such landforms as towerkarst, at whatever stage of development were obliterated by periglacial processes of the last Cold periods while climates in Tropics haven't altered. Goede found evidence of the temperate latitude interruption in the Junee Valley where some sinks, which were active before glaciation were choked with rubble and their streams took surface courses. As the volume of meltwater lessened, the streams eventually retreated to their former sinks. Thus, possibly only limited cave development occurred during cold periods of the Tasmanian Pleistocene as a result of some seepage.

This leads onto the problem of morphogenetic studies in temperate regions. There are more complex climate changes over time, the effects of which have first to be sorted out before a particular temperate karst can be fitted into some world-wide schema.

The authors of the Jamaican and the Peurto Rican studies both attributed landform control primarily to lithology type. Although lithology may restrict the potential for varying types of landform, it is the climate which is the ultimate influence. The mogotes in Peurto Rico for example couldn't form in the same manner outside the Tropics, which supplies the right conditions for induration of the mogote cappings.

Finally, it might be said that there is a great lack of standardised studies on limestone areas of different climates thus making comparisons, on anything but a superficial level, quite difficult.

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PRESIDENTS AWARD

The Editors are pleased to announce that the President Steve Harris has kindly donated a prize in the form of a copy of Norbert Casteret's Book, 'More Years Under The Earth' to be awarded to the author of the best article to appear in "Southern Caver" Volume 7, Numbers 1 and 2.

THYLACINE SIDELIGHT

by Chris Harris

The recent discovery of Thylacine remains in the Florentine Valley and in Western Australia prompted recollection of a conversation between Steve Harris, the author and Bob Tanner, a school teacher, last March that throws light on an earlier apparently forgotten rare find of Thylacine remains in a Tasmanian cave.

Bob Tanner remarked that in the early 1950's he visited a cave in a quarry at Flowery Gully. He described the cave as small in size and having one main chamber with much formation including straws up to 8' long and several small side passages too tight to explore.

A local farmer named Beams charged a fee for showing people through caves on his property nearby and these were nowhere near as good as the cave in the quarry, according to Mr Tanner.

Skeletons of Thylacines (incomplete) buried in clay were recovered and taken to the Launceston Museum which was then under the directorship of E.O. Scott whose son had accompanied Bob Tanner into the caves. Some photographs were taken of the cave for the Examiner newspaper. I believe that Bob Tanner has a photo of the bones in his possession. Bob also claimed that theirs was the first ever excursion into this cave.

The Thylacine remains were supposedly correctly identified, however details of the find were probably never published and the bone specimens may languish somewhere in the vaults of the Queen Victoria Museum in Launceston.

AREA REPORTS

These reports cover the period from 5th November to end of December 1974. This period is usually subject to fewer trips because of the exam season however some significant trips were conducted. The highlights from all trips appear below.

MOLE CREEK (2 trips)

Wet Caves, Westmoreland Cave and Herberts Pot all received scrutiny as part of the celebrated Mole Creek System. A team under the leadership of Graham Bailey examined upper levels in Westmoreland. This cave provides the main stream running into Herberts Pot and could stand much more exploratory work. In early December a small 3 man team carried out exploration in downstream Herberts Pot. A possible high level route was searched for to bypass the sump but - no luck! The sand passages were followed to the end, the party proceeding on through the "draught hole" and into the talus chamber. This chamber as far as we know it is the frontier of downstream exploration in Herberts Pot. This party has followed a small tradition in failing to penetrate through this chamber. Much of the talus here is reportedly very tight and many hours of hard work will perhaps be necessary here to make a breakthrough.

HASTINGS (1 trip)

A familiarisation trip for prospective members was led by Kevin Kiernan into King George V Cave. The big aven was climbed.

IDA BAY (1 trip)

An extensive investigation was made of Entrance Cave by 3 of our members.

FLORENTINE (1 trip)

A small party visited Welcome Stranger, exploring some side passages.

FLOWERY GULLY (1 trip)

An area not often visited by this club. G. Bailey, Dave Montgomery and Rod Hughes visited 201 and 202.

GORDON, SPRENT, FRANKLIN AND OLGA RIVERS, NICHOLLS RANGE, BUTLERS RIVULET

These areas were visited by the 1974 Gordon Expedition. A fuller account of this epic adventure appears elsewhere in this journal. The various teams comprising the expedition were beset by retorts to their presence by the fury of a wilderness: rivers in flood, boats dashed onto rocks etc. Little actual cave exploration could be attempted, however prospects in some of the areas have been described as "brilliant".

S. HARRIS