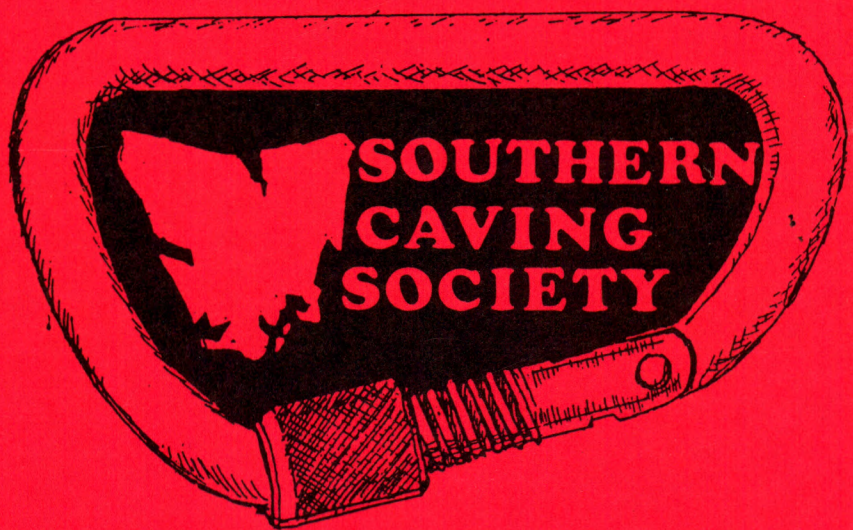
SOUTHERN CAVER



NUMBER 54
NOV 87

ISSN 0157-8464

SOUTHERN CAVER

Published by the SOUTHERN CAVING SOCIETY

Postal Address: P.O. Box 121, Moonah, Tasmania, 7009

Price $3.00

NUMBER 54 NOVEMBER 1987

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EDITORIAL

Well, this is my first issue as editor. Thanks to all who sent in articles, and keep them rolling in for the next issue. For an editorial comment, I'll hand the pen over to Jeff Watson who wants to say a few things :-

Well, here is another issue of the Southern Caver (2nd in 5yrs!) due in no small way to the efforts of Lindsay Hicks. Perhaps for later issues we could rustle up some more assistance for him. Well done Lindsay.

All members of the club are no doubt aware (and if you're not, I can give you something to read which sets it all out) of the problems which we experience when trying to gain access to ANM's concession in the Florentine Valley. Of late, the TCC have also had problems and there have been rumours from that club of doing something about this. But we all know about TCC, so don't hold your breath!! Now if we got off our collective arses and indicated a willingness to be involved in a joint effort at tackling the problem, we may get some results- after all, two clubs are better than one.

We all know about the blatant discrimination, the ridiculous conditions of access, the inconsistency, etc. etc. that are applied to cavers, and I stress only to cavers. It has gone on long enough, it is now worse than it has ever been and I personally am well and truly sick of it. A concerted effort from both clubs can solve this problem, because morally ANM don't have a leg to stand on. But I say again, anything that is done should come from both clubs, which means a temporary shelving of any club "rivalries" in the interests of caving in general.

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TRIP REPORTS

For the first ten months of 1987 there were 36 trips recorded in the Minutes up to the 506th meeting. Here are the area summaries.
IDA BAY (16 trips) The Exit Cave system was visited nine times, with a highlight being the inaugural through-trip from the new Valley Entrance to the main entrance in April. Old Ditch Road, the new vertical entrance to near the Ballroom was done as a down and through trip and also as a down and up trip. Digressing from Exit, the

Midnight Hole-Mystery Creek through-trip went twice. Number IB 113 was entered twice and finally derigged over six months after the initial entry, with still some potential to go. So the legend lives on . . . perhaps it needs a name at least? Meanwhile, Revelation was descended once, with a valiant attempt (by Jeff W.) to push the terminus- maybe there's something there. Pseudochairus was thoroughly surveyed and photographed, while Arthur's new IB 110 (under Lune Sugarloaf) received a survey trip.

MOLE CREEK (10 trips) Our survey of Kubla Khan for National Parks (to ASF Grade 55) has begun. Four trips have seen the surface survey link the two Kubla and the Ghengis entrances and the near completion of the primary traverse through the cave. There was also the usual camera-clicking trip. Surface surveying was done around Wet Cave and its neighbours. Other caves to receive casual visits were Herbert's Pot, Shishkebab, and believe it or not, Ron went caving (at Croesus).

FLORENTINE VALLEY (9 trips) Two trips went to Growling Swallet; one with the police S&R officers. Three Falls was partly rigged for a while, and although it was profusely bolted, it was not bottomed. Pendant Pot was also visited twice- rigged and derigged. A trip went down Khazad Dum, while two trips were required to allow Phil Hill to dive the second sump of K.D. The gear was brought in and out through Dwarrodelf, and about 100 person-hours were required to facilitate the seven minute dive. Unfortunately, Phil reported the sump didn't yield anything too exciting.

OTHER (1 trip) One trip went to the Picton area (Cook Ck.).

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SCS OFFICE BEARERS

President	Jeff Butt
Secretary	Phillip Jackson
Treasurer	Ron Mann
Quartermaster	Jeff Butt
Editor	Lindsay Hicks
ASF Councillor	Arthur Clarke
S&R Officer	Andrew McNeill
Trip Secretary/Archivist	Phillip Jackson

THE GEOLOGY OF THE CRACROFT VALLEY, SOUTHERN TASMANIA

The Cracroft karst was discovered around 1881 but was left untouched until the rediscovery of Judd's Cavern in the 1970's. A recent burst of caving activity leading to the discovery of several new caves in this area prompted the compilation of this review.

Goede(1977) divided the Judd's Cavern limestone sequence into three units:

1) thickly-bedded limestone with Maclurites and Girvanella fossils
2) limestone conglomerate
3) thinly-bedded shaley limestone

He considered these formed a stratigraphic sequence with (1) at the base and assigned an Ordivician age on the basis of the fossil association.

Correy(1983) conducted detailed mapping and defined three units:1) Judd's Cavern Beds, 20m of intraoncosparite

2) Judd's Cavern Breccia (a karst collapse deposit rather than a conglomerate, as described by Goede)
3) Griggs Spur Beds, 100m of burrowed, algal laminated dismicrite

The relationship between (3) and the underlying Judd's Cavern Beds is obscure, but they are both litho- and biostratigraphic correlates of the Cashions Creek Limestone (Judd's Cavern Beds) and the lower member of the Benjamin Limestone (Griggs Spur Beds; using the stratigraphy of Banks and Corbett 1974) from the Florentine Valley. Conodont evidence suggests a Whiterockian (mid-Ordivician) age.

Dixon and Sharples(1983) suggest that the Cracroft limestones are continuous with those at Vanishing Falls and Precipitous Bluff, although the outcrop may be discontinuous at the Cracroft -New River watershed. They also consider that a fault zone running through the Cracroft and New River valleys separates the limestone from Precambrian quartzites to the west.

The contact metamorphosed limestones at Lake Sydney, described by Goede(1977) as Gordon Limestone, are apparently correlates of the basal part of the Eldon Group (Correy 1983;Wyatt 1982). These limestones are thus younger than, and unrelated to, the limestone at Judd's Cavern. A dolerite sill forms the base of the sequence

and intrudes a correlate of the Westfield Beds, of the Florentine Valley. These are overlain by 119m of sediments, of which the basal 40-50m are crinoidal and bryozoan limestones, occurring in the Lake Sydney sinkhole and on the lake's eastern shore. Permo-Carboniferous Parmeener Supergroup unconformably overlies this sequence.

In conclusion, although advances have been made in the stratigraphy of these rocks, the areal extent and total thickness are still unknown and warrant further investigation.

Andrew McNeill

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THE CAVES OF MARBLE HILL

Introduction

Marble Hill is the more western of two prominent hills to the south of Lune River township. Further west lie the Moonlight Flats and Moonlight Ridge, with Mt. La Perouse and Pindars Peak continuing into the southern highlands. Situated to the east of Marble Hill (alt. 476m) is Lune Sugarloaf, a slightly higher feature (514m) which is connected to the former hill by a ridge or saddle near the 250m contour. This saddle approximates the southern limit of the present limestone quarry. The area is covered by two maps

published by the Tasmanian Lands Department- the 1:100,000 HUON sheet and the 1:25,000 LEPRENA (4818) sheet. Marble Hill (DM 877/869) has also been referred to as "Caves Hill" in earlier literature, but will remain as Marble Hill in the current reference. (To avoid confusion in nomenclature between the current reference and others where alternate names or titles might have been cited, such previous names will be bracketed with their first-mentioned reference herein.)

Geology

The caves located in Marble Hill and surrounds have been formed in limestone described as being middle-late Ordivician in geological age (460-490 million years old), although the caves have been formed in relatively recent times during the Pleistocene epoch. (Isotopic dating of speleothems in Exit Cave has given dates in the order of 315-over 400,000 y.o.) The limestone sequence in Marble Hill is estimated as being in the order of 250m deep above the present day water table, although Mines Dept. drilling has indicated a depth potential in the order of 550m. It follows a broad band, trending east-west from the north and north-eastern slopes of Lune Sugarloaf, continues west through Marble Hill and presumably extends to the south-eastern slopes of Moonlight Flats. The limestone is bordered in the north by the South Lune Road and Mystery Creek; in the south by the D'entrecasteaux River.

Generally speaking, these limestones lie in relatively flat beds capped by Permian mudstones in the Marble Hill region and to the west, then with mudstones and a thick belt of Jurassic dolerite on Lune Sugarloaf. The limestones under Marble Hill appear to have been gently folded creating an anticline, with the Mystery Creek-Exit Cave systems and the anticline axis both trending north-south. There has been considerable faulting in the area and evidence points to several large down-thrown blocks which, together with the effects of Quaternary glaciation, have divided the limestone landscape into several separate drainage systems, some of which have been subsequently linked through cave and karst development.

Geomorphology

Cave formation and karst development in this area appear to be largely joint-controlled rather than strike-controlled as with several of the other karst areas in this State. Karst in such areas as the Cracroft, Mole Creek and the Florentine Valley has often

developed in patterns where cave entrances are aligned following the strike of beds because of their steep dip or incline. (In limestone deposits, some beds are often more soluble than others, hence carbonate dissolution and subsequent cave development will follow these bands. A cave may sump under less soluble limestone beds to reappear where more favourable solubility conditions prevail, usually parallel i.e. at similar strike to the previous cave passage.) The only apparent patterns of cave development in the Marble Hill region are along the contact zones with the overlying rock (impermeable mudstones and dolerite), as well as along major joint structures, particularly where drainage through these has reached or is approaching the base level of erosion.

Rainwater enters the limestone as surface run-off or streamsinks near the contact zones, or in large collapse features (dolines and uvalas) which often become "gullied", or simply by ground seepage draining through minute cracks or previously formed erosion channels (including those passages formed phreatically when the limestone was below the water table or sea level, prior to uplift). Dissolution has led to the development of vertical features (fissures, shafts, avens, etc.) and horizontal or inclined passages, and collapse features have inevitably occurred which often extend to surface subsidence and dolines.

Types of Caves

Cave entrances in the Marble Hill region are typically vertical, with only a few swallet/resurgence openings. On the ridges or where the limestone outcrops, usually in lighter forest growth, shaft entrances predominate and are usually clean-walled and accessible. Along the contact zones, caves tend to be infilled with rock debris from collapse or glacial erosion and deposition, invariably either limiting access or forming talus piles which are often unstable. There are obvious exceptions where entrances are narrow, preventing debris from blocking progress for cavers, or sufficiently large to allow loose rock and debris to gravitate into the depths! Similarly on the denser-forested hillsides and in the doline gullies, where the only successful entrances are those that are sufficiently wide; even then forest debris, mulch and skeletal remains form large talus slopes which often impede progress. Typically the dolines in the rain forest yield only short caves if any, and then usually as a result of enlarged joint fissures with narrow pitch-heads to give vertical systems.

Decoration in the caves found in the more rain-forested surrounds of Marble Hill is often termed "fossil" formation- crusty growths often partly decayed, occasionally a few (sometimes mis-shapen) straws and the abrasive "coral-like" forms that line fissure walls and sometimes occur underfoot. Perhaps such formation is not as startling as the clean, white, glistening speleothems seen in more active cave systems, but nonetheless is quite photogenic despite some staining or discoloration due to leaching from the forest mulch and soil. Many of the dolines in these forests of sassafras, native pear, giant eucalypts, old myrtles and abundant manferns are choked with the mulch and debris that have collapsed or fallen in, along with logs, branches and trees left by the old-timers.

First Footsteps

Man's first footsteps in the area were probably made by aborigines that inhabited the nearby coastal fringes. However there has been no positive evidence to date to confirm this. Historically then, the loggers were the first people into the Marble Hill area as evidenced by the numerous old stumps with their notched climbing-board holes, their benched-in paths, the gouged-out log runs (such as up the Midnight Hole track), the elaborate winch station platforms and the amazing network of old tramways. In fact it was during the 1890's when one of these tramways was being constructed along the plains of the meandering D'entrecasteaux River (out to the Catamaran/Leprena line on the coast) that Exit Cave was first discovered. However it was not until 1947, the year after the formation of the Tasmanian Caverneering Club, that we have the first record of cavers having visited Exit Cave. It was nearly a day-long bush bash then, over what was to become the "Kokoda Trail" from the north side of Marble Hill, climbing up from the (old) Blayneys Quarry.

In 1915, the Tasmanian Government Geologist (W.H. Twelvetrees) visited the area to investigate the mineral potential and particularly the possibility of establishing a cement industry. Apart from limestone, the necessary ingredients of clay and coal were in abundance, with a brick works in the district and coal being mined down the line at Catamaran and south of Cockle Creek. Henceforth the lime became "popularised" and quarrying operations began. The first quarries were the "Lune Sugarloaf Quarries" operated by the Commonwealth Carbide Company, which adjoin and lie south of the old railway line about 1 km NNE of the present quarry and uphill almost directly south of Loons Cave (IB 2,3).

In the 1930's, the quarrying operations were moved further west to what is now the old quarry site, at the end of the original Ida Bay Railway and south of Mystery Creek. This old site is herein referred to as "Blaneys Quarry", named after one of the original foremen at the quarry. Mystery Creek Cave (or Entrance Cave as it was called then) was found and soon became regularly visited by the locals and quarry miners' families. Ironically, this quarrying site had to be abandoned due to the ever-increasing amount of clay being encountered, which both hindered progress and contaminated their product. This is also becoming a problem with the present site at Benders Quarry (Newlands Quarry), causing considerable concern regarding its future viability. Much of the limestone today is being utilized by E.Z. at Risdon and/or being directly sold as agricultural lime, with the contaminated clayey product finding some market as road metal for driveways and the like.

Early Exploration by Cavers

Apart from Mystery Creek Cave (IB 10), Exit Cave was the main area of concern in the early days. The first major "Exit" trip in 1954 was accessed from the present quarry over Marble Hill, necessitating a long weekend- a days' walk each way and a day in the cave. After the first Hobart Conference (Christmas 1958), another route was blazed from the old (Blaneys) quarry, and cutting commenced and finished the following year. (It was during this period when a certain "machette" was lost!!) This track was equally tortuous as the first access, with a steep climb over Marble Hill through thick, wet rain forest, with cutting grass and rotten logs giving rise to plenty of cursing and perspiration, and thus was soon referred to as the "Kokoda Trail". This route still required a long weekend or more to visit Exit Cave and soon became less used (never surveyed), and interest in Exit waned for a few years until 1966.

By this time, the first kilometre of cave was well known, with the "Rockfall" still a barrier to further upstream exploration. After studying aerial reconnaisance photographs, two enthusiastic T.C.C. members, Albert Goede and Brian Collin started a new track across relatively flat terrain from the Catamaran/Leprena (old) road. Expecting buttongrass, they soon encountered 3m high tea-tree and bauera, but nonetheless completed the route in July 1966. (In November that year a route was finally found through the rockfall in Exit Cave.) This Catamaran road route was soon shortened by the Forestry Commission's South Cape road and later modified in 1974 to

avoid some of the boggy sections.

Explanatory Note

The "Marble Hill" title of this article should not be taken too literally. The caves in this area are referred to as the Ida Bay Caves, hence the "IB" prefix to numbered sites. Apart from Marble Hill, there are two known and listed resurgence caves draining north from Lune Sugarloaf; one over 1km long with several known entrances. There are also numerous caves reported in the area well south of Lune Sugarloaf, and an elusive efflux (??) yet to be located. Similarly, west of Marble Hill there are caves in the Western Creek area, and it would seem logical to expect more cave development (perhaps originally an extension of the Exit Cave drainage system) further west towards Moonlight Flats. Limestone has been reported in the Many Falls Creek area on the south-eastern flanks of Moonlight Flats; also limestone has been reported on the upper northern and north-eastern slopes of Lune Sugarloaf.

Researched and Compiled by Arthur Clarke

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ARRAKIS

Arrakis (MW 1) is located on the north-eastern slopes of Mt. Weld. It was rediscovered on 13.7.85 as outlined in Southern Caver No. 53, January 1987. Considerable resources went into the exploration and surveying of this majestic dolomite cave; the three accompanying maps being the product of those endeavours.

The vital statistics of Arrakis, together with details of the survey are listed in Table 1 (over).

At a depth of 225m Arrakis ranks as the eighth deepest cave in the country; however depth alone shouldn't be used to judge any cave. The layout of the upper levels with the 20m wide arch separating twin collapses is very spectacular, especially when viewed from the Family Atomics entrance pitch. Beneath the arch on the steeply inclined doline floor is a veritable forest of tree-ferns, whilst the light-zone of the upper levels is well vegetated with saplings and bushes. General dimensions of the upper levels are huge by most standards. Access to the lower levels is through a

Table 1. Arrakis- details of the cave and survey

Location	Tyenna 1:100,000 - 686392, 610m altitude
Depth	225 ± 2m from lowest side of the shield wall
	243 ± 2m from Family Atomics pitch
Pitches	68, 31, 12, 8, 3 m
Length	approximately 720m
First bottomed	SCS 7.9.85
Survey	ASF grade 54A
Instruments	Sunto compass and clinometer; fibreglass tape
Surveyed by	J. Butt, S. Campkin, A. Clarke, R. Fulton, P. Jackson, T. Rudman. SEP-OCT 85, JAN 86.
Accuracy	main traverse closure averaged 1.1%
	data adjusted to effect closure
Map number	7MW1.SCS88 (3 sheets)
Drafted by	Jeff Butt AUG 86
Relocatable Stations	a bolt 1m above floor on right
	b high point atop 14m boulder
	c high point on balcony edge under arch
	d eastern extremity of boulder top
	e top of prominent boulder
	f base of prominent roof protuberance
	g secondary peak on huge boulder
	h high point on 2m boulder
	i top of prominent stalagmite

forbidding black "railway tunnel" entrance and down an impressive 68m pitch. The lower levels which generally slope steeply give the impression of "going forever"; however the stream passage consistently narrows to become impassable.

Nomenclature was borrowed from Frank Herbert's novel "Dune". This stemmed from the difficulty in obtaining water (we had to resort to collecting drips, which is unusual for Tasmania). The inevitable analogy to the desert planet Arrakis followed and almost instantly, appropriate names for features came to our lips. Table 2 summarises the names chosen together with the "Arrakian" meanings and relevance to cave features.

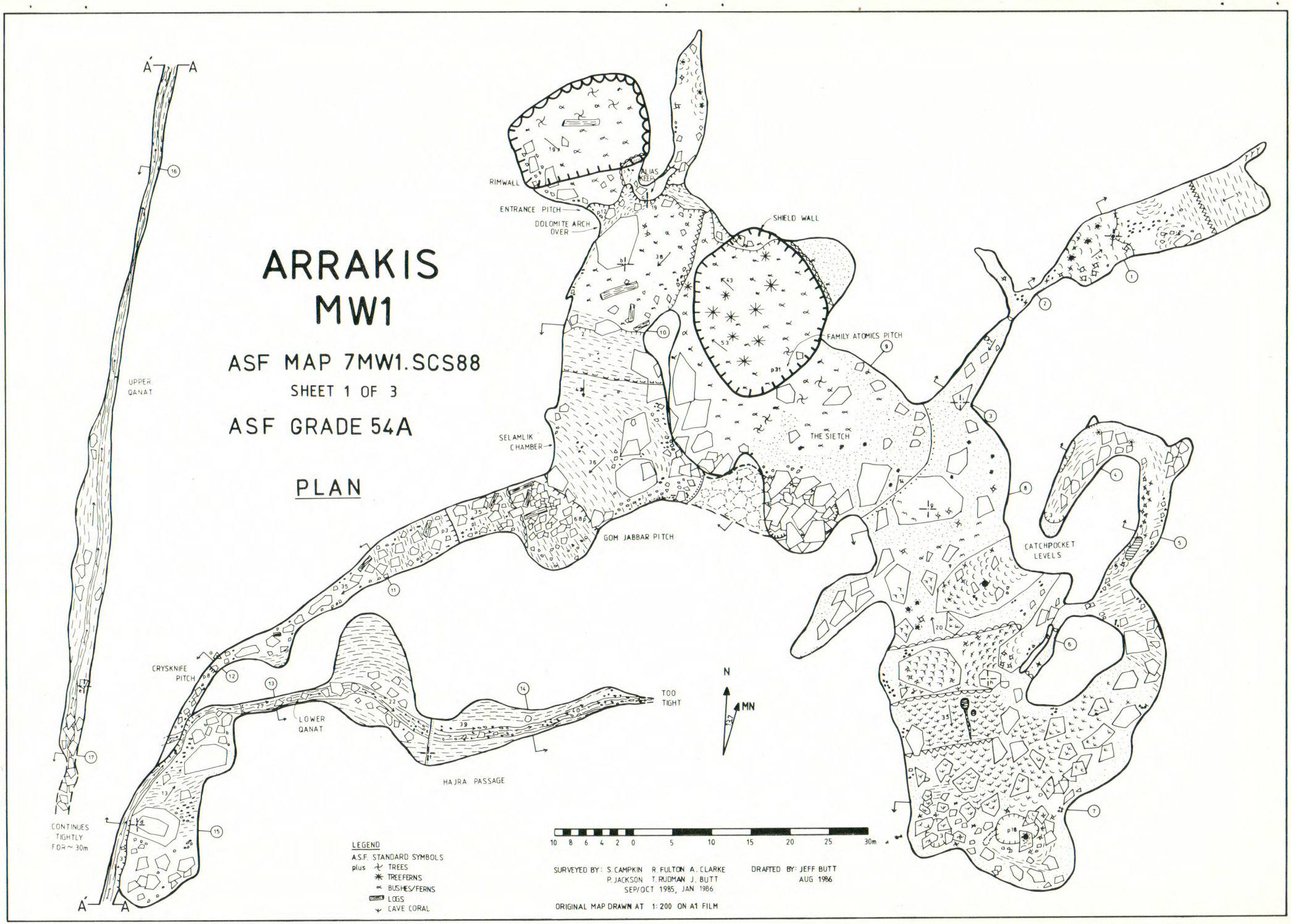
For those interested in a visit to Arrakis, access has been described in the article referred to earlier. Note that as a 2hr slog is required to reach the cave, a day trip is somewhat macho/

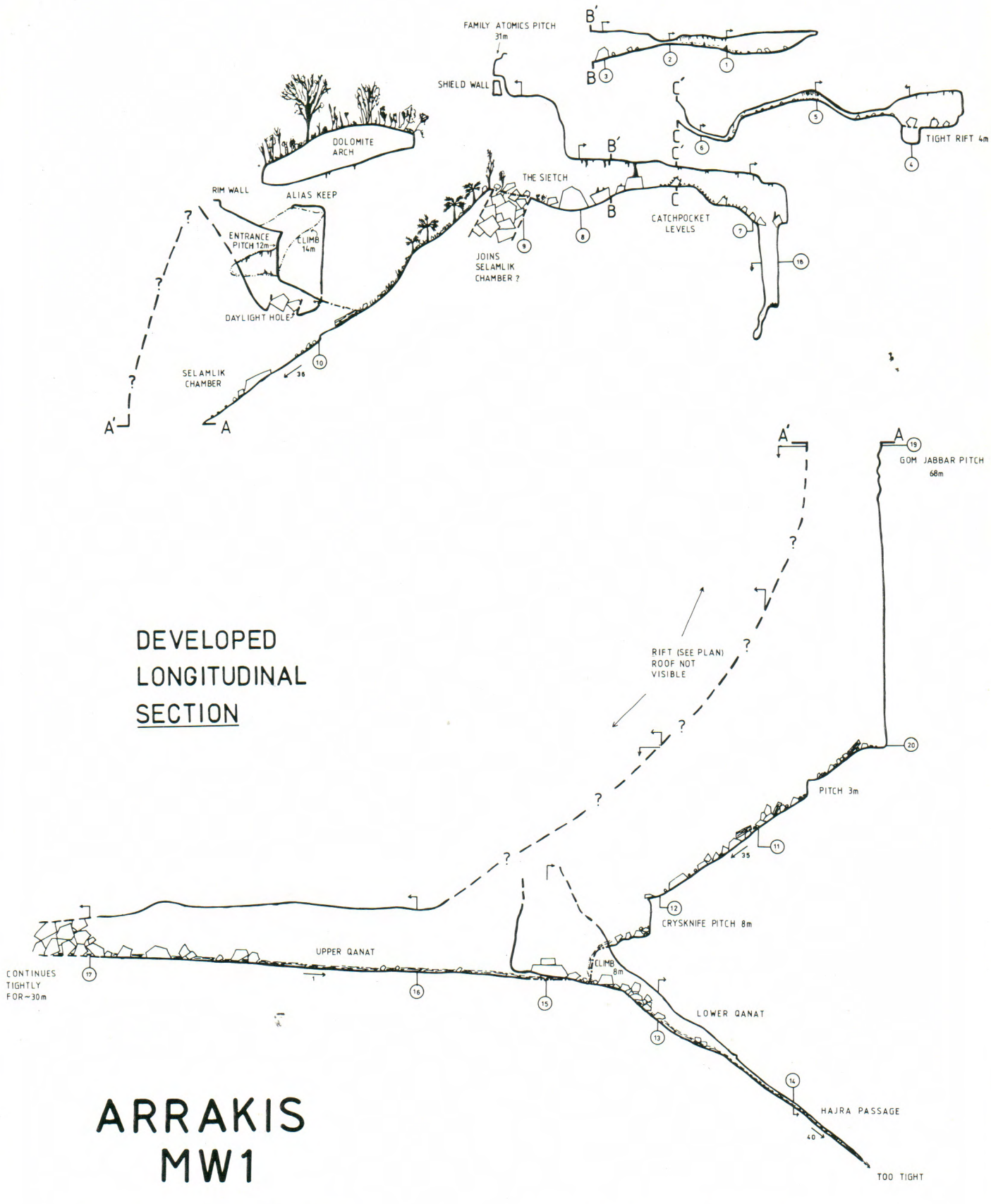
Table 2. Notes on the nomenclature used

Name	"Arrakian" meaning	Relevance
Alia's Keep	place from which Alia watched over all	balcony under the arch from where all the upper levels can be observed
Arrakis	desert planet Dune	dryness of dolomite ridge
Crysknife (pitch)	sharp weapon made from sandworm teeth	sharp chockstone near pitch head over which one must pass
Catchpocket (levels)	pocket where water is caught and stored	region where ceiling drips were collected
Family Atomics (pitch)	family atomic weapon caches	shield wall entrance pitch where loose material dislodged bombards the doline below
Gom Jabbar (pitch)	implement used in the death alternative test of human awareness	main pitch over which any dislodged doline material is funnelled
Hajra (passage)	journey of seeking	steeply inclined stream passage leading to the cave's end
Qanat (upper and lower)	open canal for carrying irrigation water	stream passage in the lower levels
Selamlik (chamber)	imperial audience chamber	at about 11AM a narrow shaft of sunlight from under the arch streams into the chamber creating a divine effect
Shield Wall	mountainous geographical feature protecting a small area of Arrakis from storms	cliff edge surrounding the upper entrance which provides shelter from the weather
The Sietch	warren inhabited by Fremen	convenient place in the doline to camp
Rim Wall	second part of the protective bluffs on Arrakis	smaller cliff edge around the lower doline entrance

masochistic, but by no means impossible.

There are two routes used to gain access to the cave proper. The most spectacular is via the Family Atomics pitch (tie to tree, use 10m trace to rebelay at -10m), then a 20m handline down a ferny slope (tie to manfern). Alternatively from the other side of the arch a 12m pitch (bolt on left side of lip, 10m tieback to log) or an awkward 14m climb down an inclined rift


ARRAKIS
MW1
ASF MAP 7MW1.SCS88
SHEET 1 OF 3
ASF GRADE 54A
PLAN
A
A'
UPPER QANAT
RIMWALL
ALIAS KEEP
ENTRANCE PITCH
DOLOMITE ARCH OVER
SHIELD WALL
FAMILY ATOMICS PITCH
THE SIETCH
SELAMLIK CHAMBER
GOM JABBAR PITCH
CATCHPOCKET LEVELS
CRYSKNIFE PITCH
LOWER QANAT
TOO TIGHT
HAJRA PASSAGE
CONTINUES TIGHTLY FOR ~ 30m
N
MN
LEGEND
A.S.F. STANDARD SYMBOLS
plus TREES
TREEFERNS
BUSHES/FERNS
LOGS
CAVE CORAL
10 8 6 4 2 0 5 10 15 20 25 30m
SURVEYED BY: S. CAMPKIN R. FULTON A. CLARKE
P. JACKSON T. RUDMAN J. BUTT
SEP/OCT 1985, JAN 1986
DRAFTED BY: JEFF BUTT
AUG 1986
ORIGINAL MAP DRAWN AT 1:200 ON A1 FILM



DEVELOPED LONGITUDINAL SECTION

ARRAKIS MW1

ASF MAP 7MW1.SCS88

SHEET 2 OF 3

ASF GRADE 54A

20 10 0 20 40 60m

LEGEND

ASF STANDARD SET

plus CAVE CORAL, LOGS, FERNS, TREEFERNS, TREES

SURVEYED BY: S.CAMPKIN R.FULTON A.CLARKE P.JACKSON T.RUDMAN J.BUTT SEP/OCT 1985, JAN 1986

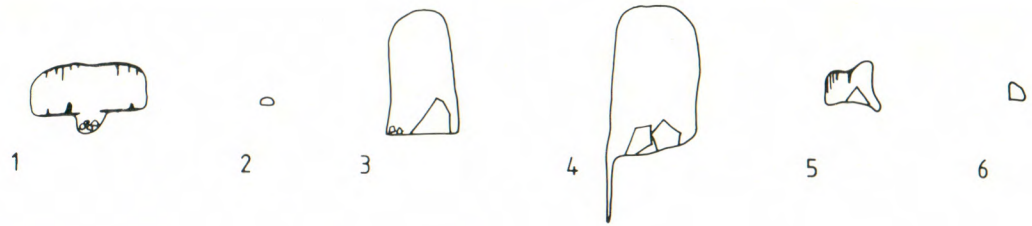
DRAFTED BY: JEFF BUTT AUG 1986

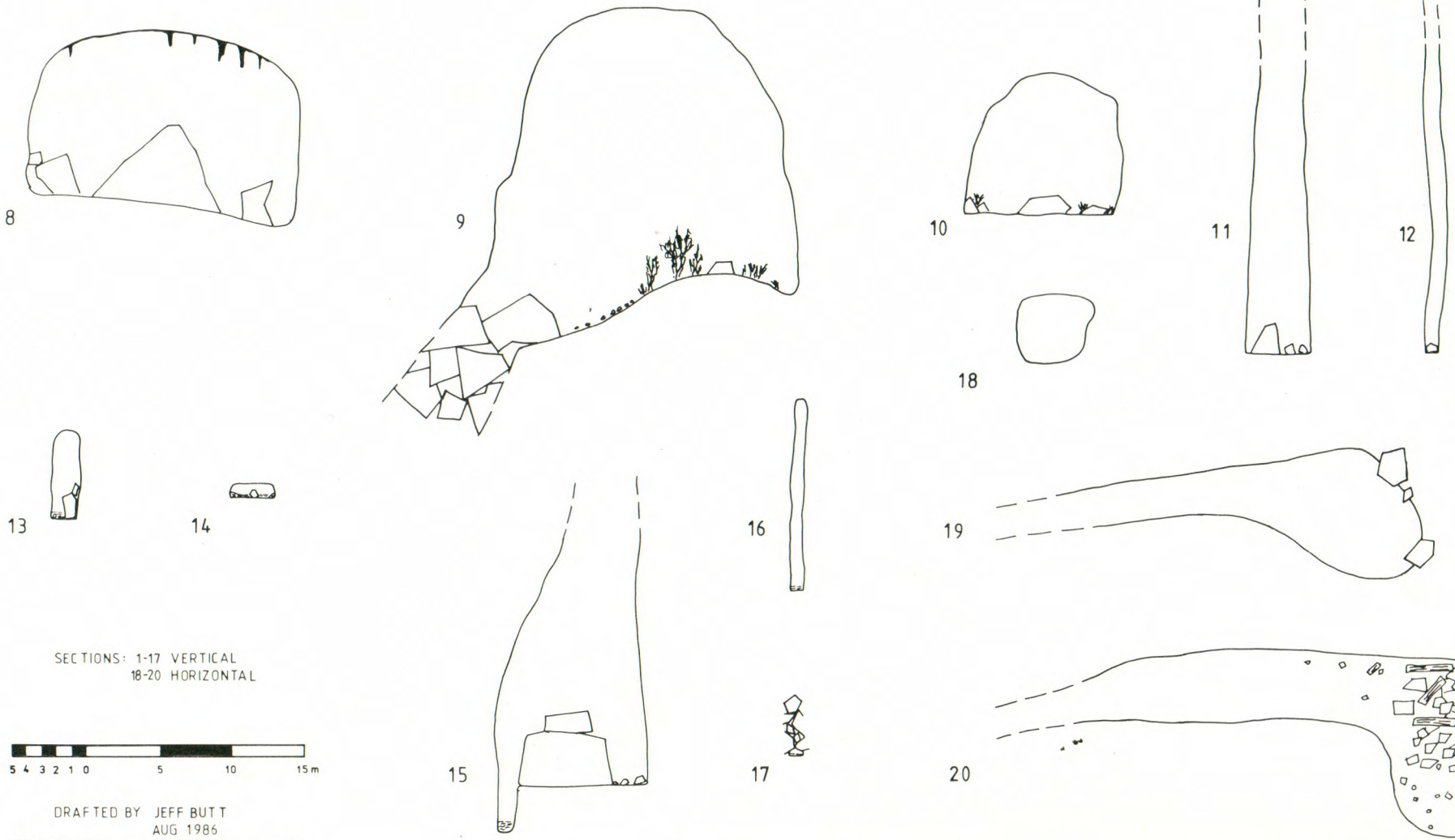
ORIGINAL MAP DRAWN AT 1:400 ON A1 FILM

ARRAKIS
MW1

ASF MAP 7MW1.SCS88

SHEET 3 OF 3





SECTIONS: 1-17 VERTICAL
18-20 HORIZONTAL

5 4 3 2 1 0 5 10 15m

DRAFTED BY JEFF BUTT
AUG 1986
ORIGINAL DRAWN AT 1:200 ON A2 FILM

brings one to the same place in the doline.

Further down the slope the ferny vegetation slowly disappears and a 30m safety line (#7 hex in a keyhole on face of huge boulder) takes one into the Selamlik chamber. As any material dislodged in this region is dumped over the 68m Gom Jabbar pith and funelled down the cave it is wise to restrict movements whilst others are proceeding down to the Qanat. The 68m pitch is approached on rope (with 95m tied back to large boulders). The original route was down the right hand side, but now two strategically placed bolts (one at pitch-head level on the left wall, a second 6m below) offer the easiest access down this impressive shaft.

From the base of the pitch the rift continues steadily down, it is interupted by two pitches- a 3m step with a potentially dangerous boulder on the lip (best rigged with 7m of rope from a finger-width crack on the left) and the 8m Crysknife pitch (using a bolt and sling through eyehole on right). An eight metre climb leads to a large chamber with a stream (The Qanat). Approximately 100m upstream a rockfall is reached, this continues for a short distance. Downstream the steeply sloping passage gradually constricts to become impassable. The stream has been reported to back-up in this region.

Jeff Butt

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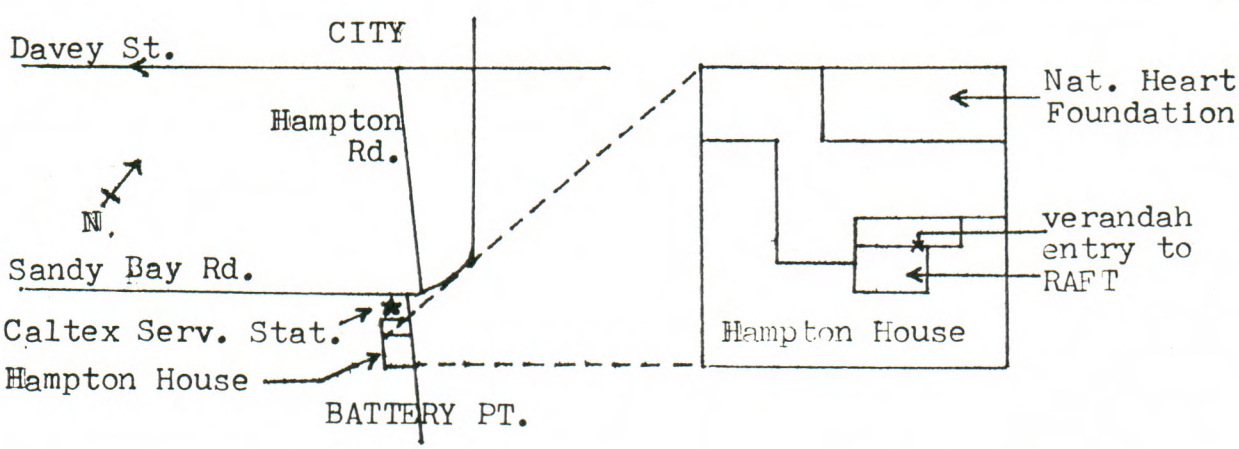
SCS MEETINGS

The Southern Caving Society meets on Wednesday nights (usually start about 8-8.30 p.m.) in the RAFT (Rheumatism and Arthritis Foundation of Tas.) Room of Hampden House, at 84 Hampden Rd., Battery Pt.



AURORA CAVE

(in New Zealand's South Island)

After a long, wet, expensive trip to Milford, Jeff and I staggered up to Fiordland National Park HQ in Te Anau with heavy packs. The success of this whole foray into Fiordland now depended on this trip. Things looked promising right away, when a Jacko-type wagon pulled up with a fully loaded trailer. Suddenly we were amongst 10 other cavers and the happy sound of hammers on carbide rang through the air. We had a good chance to meet everyone before the boat skipper announced that the lake was too rough for travel. "Come back in two hours".

The team. Graeme Bremner- on his umpteen dozenth trip to Aurora; organizer extraordinaire. He carries his alarm clock and what's more, uses it. The whole expedition is paced by Graeme, and expedition it was- for each pack there was an equivalent amount of party gear. Our imaginations ran wild- extra light?, or even better- hundreds of meters of rope?, or best of all- heaps of tucker! The rest consisted of two locals and a couple of Dunedinites (recreational cavers), Norman (experienced, old, but he always gets there... eventually), and four scientists collecting insects and fossils.

Eventually, the boat got away at 11 AM. The swell was high, but as it was a lake, we weren't allowed to get sea-sick. Nevertheless it was damned tempting.

Off the boat, there was a frantic scramble for clothing as sandflies homed in on dinner. Fleeing the horde, we headed up the hill (3/4 hr) to the cave. The bush was pretty, but the slope was steep, the mud deep and the rain wet. Jeff felt right at home. The entrance was 40m wide, 20m high, with the sound of lots of water. We dumped gear and returned to the lake for another load.

With dinner at six, Jeff and I had a couple of hours to reccie the upstream section of Aurora. The general idea was to go up the Styx River, cross over to the Tunnel Burn and return down that. We had a map, so there shouldn't be too many problems. In actual fact we ascended the Tunnel Burn to a waterfall pitch, crossed over to the Styx River through the connection, went down the Styx to the Devil's Workshop where a river the size of Growling (or more) spills into a horrifying cauldron of foam. Naturally we searched for the infamous "Devil's Workshop bypass", and after finding the right way, we rejoined the river at the entrance. It

was an excellent trip. The two rivers were carrying more water (each) than I've ever seen in a cave before. The cave was nice and roomy and it had shown us a few interesting climbs and squeezes already.

So, down to dinner at base camp some five minutes into the cave. After our map had confused us so much in the upstream section, we were not at all sure if we could find the camp. So, down we went, past the tumultuous Twin Falls, probably the most spectacular falls I've seen. After finding ourselves facing a deep river, we decided we'd missed the turnoff again. So back we went only to find the others extracting themselves from an inconspicuous hole in the wall. We were invited in for an interesting short cut to base camp, via a pleasant sandy grovel lasting 10min. or so. We decided to stick to the drier sections of the cave from then on. With the cave in flood, the wet bits were very wet.

Dinner in "Graeme's Boudoir" of mutton stew and brussels sprouts was downed uncerimoniously; the kiwi fruit-covered cream sponge received a lot more respect. After dinner, Jeff and I tried another map-following exercise to the confusion that is "The Junction". We didn't expect to go as wrong as we did in the "Coal Mine", but we ended up somewhere at a pitch. Not knowing what the hell was going on, we returned to camp. Later, we worked out that we had gone all the way to the "Big Room", past the 15m pitch on the map. The map had been right in every case; unfortunately it was our sense of direction that was woefully wrong.

After supper, it was back to our sleeping bench at the entrance. We left the year-round comfort of 14°C in Graeme's Boudoir, also the 10°C of the Bunkrooms and arrived at the 0°C at the entrance. Something told us this was not the place to be. We cleverly built a drying rack so we could hang up our clothes for the night. They only got wetter and colder. Oh, the joy of pulling on wet socks and heavy, wet, gritty, mud-covered gear.

Sunday was to be spent looking at new swallet finds one hour round the hill. Now, I personally hate walking to a cave in the rain, arriving drenched, facing a wet hole in the ground. Nevertheless I went in. The water immediately found that gap between neck and clothing. This was not a good start! I wasn't too disappointed to see the cave sump 5m further on. Out in the rain, we followed the others into a cosy little chamber. Jeff pushed a squeeze to its limit and returned with an enormous weta for Brian's

collection, but it got away.

Stuff this; we went to look for other entrances. We found a few- the best was 15m deep, 5m across. So, to swallet no. 2. I dived in; it just had to be better inside than outside. I was wrong. As I pushed on down a wet, rocky grovel, I successively dropped off the two Graemes. I stopped 30m in, in the first chamber- all 2x2m of it. I could almost keep my feet out of the water. Then, with the sounding of trumpets and the flash of fireworks, in rolled Jeff. We were set- a "going" cave, heaps of water, tight tunnels and we were keen. On we went; a tight, Serendipity-type serpentine passage dropping down awkward little waterfalls and occasionally almost sumping in horrible water-filled tubes. But it kept going, with more water entering here and there through other tubes. We used our rope on a 4m handline and continued another 30m in a steadily enlarging passage to another 3m drop. I down-climbed, leaving Jeff atop as I wasn't sure of being able to reascend. I required another handline 20m further on- time to return. We had basic survey gear, but with the difficulties of the passage, we decided not to survey. Going out was extremely tiring. We were losing coordination in the cold and the cave had dropped some 50m in its 250m length (so far) and the trip was quite difficult.

Out into the ecstasy of rain, wind and cold, it was round the hill for communal lunch. In swallet no. 1, a small pitch had run into 100m of open serpentine, then becoming tighter. The explorers of that cave had turned around at that point. Jeff and I were amazed, as that point was the start of the real sporting cave. We were too tired to push that cave and no-one seemed interested in swallet no. 2, despite the lure of retrieving the handline I'd left there for some unknown reason.

With the others following at a more leisurely pace in search of new entrances, Jeff and I returned to the dryness and warmth of Aurora and cooked dinner for the team. We proudly served up burnt mutton stew and under-cooked brussels sprouts followed by lukewarm steam pudding. Graeme actually liked it and demanded the leftovers for his breakfast.

Our assignment after dinner was to re-find an old entrance to the Big Room via Rabbits Canyon, last visited in 1984. As it turned out, this passage is now blocked, so we (Jeff, Hugh and I) returned via base camp to the Coal Mine, sending a message to the Big Room to tell Graeme that we weren't coming down the 6m pitch at the end of Rabbits Canyon for a speccy photo. Instead, we took off on a guided

tour of the upper levels of Aurora, courtesy of Hugh. The highlights for me were Juliet's Balcony- a window overlooking the main river winding its way very noisily through a gorge far below; the Sewer System- a large serpentine passage with crystal clear gour pools set in white rock (it reminded us of a waterslide); Picasso's Gallery with its decaying formation; and the Emerald Pool- a deep clear pool in white surroundings. After a long day, we had supper at 12:30 AM, allowing us to tuck into the next day's rations! This was Graeme's 30th night in the cave, an occasion celebrated by his downing of cold, undercooked brussels sprouts- this lad is not normal.

Monday 7:40 AM- I pulled on wet clothes (the quicker the better) and demolished what was left of the porridge, sausages and eggs. We all returned to the entrance, en-route to a vertical entrance spotted yesterday. Jeff finally stirred, with the lure of getting in some abseiling. The hole turned out a fizzer, and three of us had ascended by the time Jeff was ready. Abandoning that, Hugh, Jeff and I decided to re-enter Aurora via the Knee-wrecker Entrance. I didn't like the sound of it, as I had inflamed knees. The tunnel turned out to be a maze of small phreatic tubes- clean, great grovelling. After lunch at base camp, we went to the main entrance again. Jeff entertained himself and the cameras by abseiling the entrance, while I packed up and took off downhill to look at a couple of likely holes- Windy Hole and El Posso resurgence, only 20m by the map from El Posso sump in the cave. Windy Hole and a tiny hole near the resurgence looked likely to go; unfortunately the water levels were too high, so we continued down to the lake.

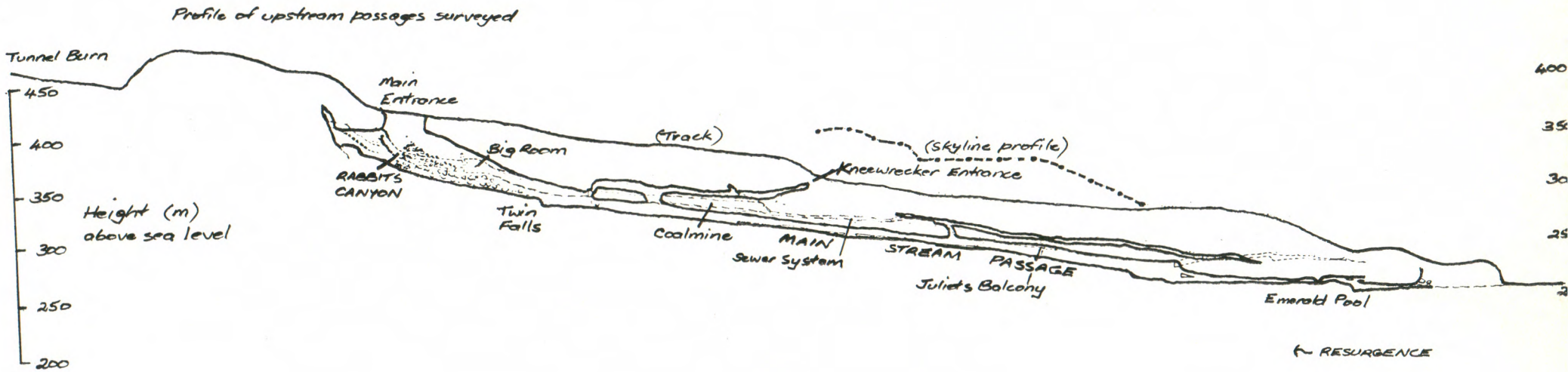
Finally all the others arrived, and we took a quick excursion into the tourist cave (200m long, connects to Aurora sump via a small dive) followed by a relatively tame return to Te Anau.

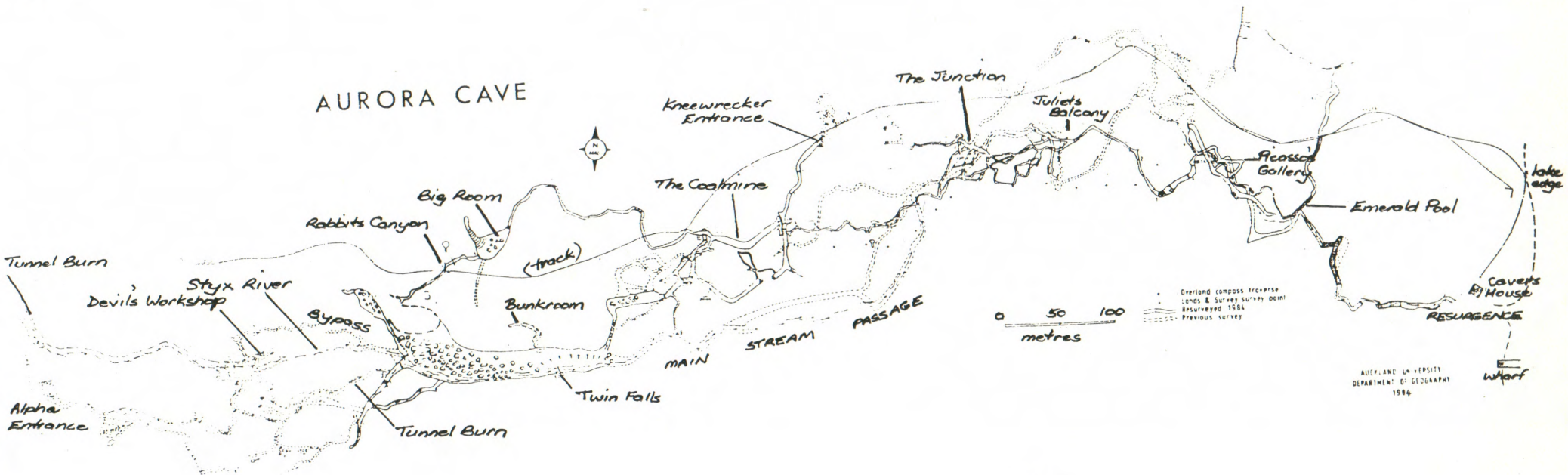
As far as Jeff and I were concerned, the trip had been a great success; for the scientists, the caves had been less than kind- no bones and only a few insects. This cave is generally not highly regarded in N.Z., but we were impressed, and I will certainly return at the first opportunity.

Participants: Jeff Watson*, Dave Green*, Graeme Bremner, Graeme, Norman, Brian, Hugh, Dave, Tony. (*SCS members)

Date: May 30 to June 1, 1987

Dave Green


Profile of upstream passages surveyed
Tunnel Burn
Main Entrance
(Track)
(skyline profile)
Big Room
Kneewrecker Entrance
RABBIT'S CANYON
Twin Falls
Coalmine
MAIN
Sewer System
STREAM
PASSAGE
Juliets Balcony
Emerald Pool
RESURGENCE
Height (m) above sea level
450
400
350
300
250
200


AURORA CAVE
Kneewrecker Entrance
The Junction
Juliets Balcony
Big Room
The Coalmine
Rabbits Canyon
Tunnel Burn
(track)
Styx River
Devils Workshop
Bypass
Bunkroom
MAIN
STREAM
PASSAGE
Twin Falls
Alpha Entrance
Tunnel Burn
Emerald Pool
Lake edge
Covers House
RESURGENCE
wharf
0 50 100
metres
Overland compass traverse
Lands & Survey survey point
Resurveyed 1984
Previous survey
AUCKLAND UNIVERSITY
DEPARTMENT OF GEOGRAPHY
1984

A CONCISE MANUAL OF CAVE PHOTOGRAPHY

PART ONE

1. Introduction

Caves are one of the hardest aspects of the natural world to photograph. Mud, water and the prospect of physical damage in transit provide something of a disincentive to many otherwise keen shutterbugs. Also, the absence of ambient light means it's a case of BYO light source(s) for the camera, entailing a lot of gear and some expertise in using it. Finally, many trips provide little time for setting up photos; the photographer has to be fast or risk being a nuisance to the trip. In the end though, it's worth all the effort, as well-taken shots are always appreciated at slide nights.

This article will hopefully provide some practical information on creative photography. Wherever possible, quantitative information is given for lighting and exposure, but please recognize that these will be guides only, as the user's choice of equipment can have some bearing on these requirememts.

2. Equipment

The key factors to consider are versatility, picture quality, ease of use and protection from water and mud. Unfortunately it is impossible to optimize all of these with the one setup of equipment. It is handy (but expensive) to have a range of equipment for various situations.

For versatility combined with reasonably good picture quality, a 35mm SLR is best. Besides the option of lens focal length, the useful features are the tripod socket, B setting and cable release socket for multiple flash (human-triggered) and time exposures. A flash synch socket is more useful than a hot shoe, as off-camera flash is always better than on-camera flash. If there is no such socket, a remote hot shoe and cable can be bought ($27). A self-timer is handy for solo work or self portraiture.

However, SLR's are the most difficult to protect from the ravages of mud and water. Often, the best that can be done is to wrap it in a small towell and then in a number of plastic bags, if a watery trip is undertaken. Watertight, clear housings can be bought, but they are bulky and expensive (over $150). Old ammo boxes and Lowe cordura bags offer general protection from

mud and knocks.

If the cost is bearable, an underwater Nikonos V is probably the best overall solution, as it has most of the desirable features. The Hanimex 35 Amphibian costs 1/3 as much, but it offers little in the way of exposure manipulation and no external flash connections. Similarly with the Canon Aqua Snappy, and also a number of "weatherproof" compacts which have appeared recently. However, they are easy to use and if required, multiple flash could be achieved with slaves.

Basic rangefinder cameras can also be used. They are cheap (under $100 2nd hand) and easily protected in a foam-padded small camera bag (e.g. from K Mart). Many have fast (f 2.8) lenses, have manual control of apertures and sometimes shutter and show reasonable picture quality. Most don't have shutter speeds slower than 1/60 sec.

SLR LENSES. For full chamber shots as well as in tight situations, a wide-angle lens of 28-35mm is useful. If much detail is needed, the subject has to be fairly close to the camera. For good detail of both foreground and background, a lens of 50-70mm can give a good selective composition. Extra care is needed in focussing and also extra light to give desired depth of field.

FLASHES. Old or 2nd hand flash units (pref. with synch socket and cable) are often adequate for cave work. A guide number of 30m(ASA/ISO 100) or more is needed for large chambers, while those of less than about 15mhave limited use in caves. In the options department, autoflash facility may be useful in quenching the flash output, power ratio control (Sunpak flashes) is great for absolute control over output especially with close-ups, and a focussing/rotating head gives control over the destination of the light.

FLASH POWER SOURCES. Nickel-cadmium batteries are extremely economical in the long run and also charge the flash up rapidly. Brands seem to vary a bit in quality- according to Choice Magazine (Nov. 1983), National and Dick Smith are the best. Nicads need a bit of careful management for best performance. Avoiding parallel, partial discharges before each recharge will prevent a memory effect.

Gell cells can also be used- see Jeff Butt's article in the last Southern Caver; plus there may be more forthcoming. Use of gell cells with expensive flash units is not recommended, as there is a slight risk of the tube overheating with the very rapid

cycling possible (a boom for lighting up huge chambers).

SLAVE UNITS. These are remote, light-sensitive devices which can trigger an attached flash, as a result of light from another flash (esp. one attached to the camera). Nissin claim that their slaves are sensitive up to 20m away from the triggering flash. However, in the dark cave environment, a Nissin slave is barely able to work at half this distance, even with a large trigger flash. Sometimes, damp cable contacts from condensation can disrupt their action- a quick wipe is all that is needed. Note that the photocell should squarely face the trigger flash (less important when close-up). Always test the setup before clicking the shutter. Slaves are a very time-efficient means of multiple flash photography, as they lessen the dependence on tripods, time exposures and human slaves.

Slaves are expensive little things- $30-40. Jeff Butt is currently experimenting with a cheap, sensitive, homemade one. We hope to hear how that goes.

FLASHBULBS. Bulbs involve the burning of metal in an oxygen rich atmosphere. They are used in conjunction with the M (medium - 20msec duration bulbs) or FP (focal plane - 40msec bulbs) shutter synchronization settings. Being non-renewable and less versatile than electronic flash, they are not greatly used. However, they have a few advantages- they are small and powerful, give a good light spread, can be taped together and fired at once, and can be fired underwater. Because of the relatively long duration, they produce blurred images of moving water (cf. the frozen effect of electronic flash).

FILM. For moderate to large chamber shots, 400 ISO film is popular. In close -ups, the fine-grained slide films Kodachrome 25 (esp.) and 64 are best. If cost is no worry, Kodachrome 200 would be an ideal all-purpose film in caves, being both fine-grained and high-speed; while Fujichrome 1600 would be great for those really big caves. Generally, there is no shortage of films to choose from, for colour slides and prints. Black and white shouldn't be overlooked totally; it comes into its own for exposure latitude, sharpness and contrast.

MISC. A sturdy tripod is an essential item in multiple flash (unless slaves are used) and time exposures. Normal-sized ones are often clumsy and bulky in caves; short ones (about 0.5m high) are especially useful for close-up work.

Lens tissue and a blower brush are required to combat the

problems of condensation and dirt. If a lens or film was changed in the cave, the camera should receive a dusting out with compressed air at the earliest opportunity.

3. Composition

Composition is something to be discussed with caution, as it is something of a personal interpretation. A theoretical knowledge of composition provides only guidlines to follow, rather than hard and fast rules. In cave photography, some of these guidelines have little application, and only the relevant ones will be discussed.

Composition involves arranging and presenting a subject or a number of subjects in a photograph, in a pleasing or intriguing manner which will hold a viewer's attention.

Subject matter in caves is both unusual and interesting. It includes formations (stals, flowstone, shawls, helictites, gour pools, crystalline forms, etc.), rock (floors, walls, ceilings, talus), mud (floors, slopes), water (pools, streams, falls), cavers and their equipment, and cave entrances (intrusions of vegetation and natural light).

FORMAT. It is immediately evident that vertical lines will be encountered more frequently than horizontal lines (e.g. stals, waterfalls, dangling rope, cavers standing around). Photographs with predominantly vertical lines tend to be enhanced by the the vertical format (FIG. 1). Although it is harder to manipulate a camera on a tripod in the vertical position, it is often worth it.

CENTRES OF INTEREST. Subject matter will usually consist of one or more (rarely more than three) centres of interest. If one of these is very prominent, it is most often best not to put it in the exact centre of the frame. One idea is to follow the "Rule of Thirds", the rationale being that placing it 1/3 of the way across the frame will draw the viewer into the picture rather than just divide it. Another idea is to place it in the optical centre- the point just above where the diagonals meet- which the casual eye perceives as the centre. These concepts are illustrated in FIG. 2. Yet another school of thought says to place centres of interest where they simply balance each other out (next paragraph). It is an individual's choice as to which approach is best for the situation at hand.

BALANCE. Most photographs portray an element of balance, with the basic philosophy being to mix and match, e.g. a large stal on one side of the frame balanced by two smaller ones on the other

side, illustrating a balancing of size. Other aspects which can be balanced are colour (e.g. a brightly coloured caver dwarfed by a large area of monochromous rock or formation), lighting (light and dark areas), shape (various shapes; also regular and irregular) and lines (straight and curved). In relation to lighting balance, a problem emerges. Conventional ways suggest that dark areas should be kept towards the bottom of the picture, as they are perceived as "heavy". In caves, this may often be difficult if not impossible, as lower areas (floors) tend to be well lit. Sometimes, this principle could be borne in mind; e.g. in a very selective composition. Sometimes, its lack of application could be advantageous; e.g. in a tight claustrophobic picture, dark areas towards the top could add to the mood of tension.

LINES. Centres of interest consist of or create lines, which are key ingredients of composition. Curved lines, though not particularly abundant in caves, are especially effective. Smaller examples (helictites, shawls) require getting fairly close up and composing carefully- in particular, avoid stray/misplaced lines which may lead the viewer out of the picture (FIG. 3). Larger examples, such as meandering stream passages and waterfalls, can create powerful leading lines to a well-placed centre of interest (FIG. 3). With less impact, straight lines (e.g. stals) can achieve the same.

ARRANGEMENT. As the viewer inspects a well-composed picture, the eye is drawn to the strongest element (the major centre of interest), then to other elements before returning to the strongest element again. In doing so, the path taken by the eye may be circular, triangular or diagonal (FIG. 4). The circular and diagonal forms, arguably the most effective, are the hardest to achieve in caves, given the subject matter available.

DEPTH. The best way to achieve a feeling of depth in a caving scene is to use directional lighting, allowing a separation of foreground and background, e.g. a backlit stal will stand out strongly from a wall behind it. Alternatively, if the background is not wanted, it can (sometimes) be blurred out by selective focussing whilst still imparting some depth to the scene. Note that blurred objects in the foreground are distractive and should be avoided.

PERSPECTIVE. It is often difficult to choose or vary the perspective in a caving situation, due to the risk to delicate formations, risks to safety and to equipment, limitations to tripod

adjustments, etc. Manipulation of lens focal length is one way out.

TEXTURE. The portrayal of detail of an object which is close to the camera can be a powerful drawcard. Wherever possible, move in close. See later section on close-up photography.

CAVERS. Placing a caver or cavers in a photo can serve two purposes- to provide scale, and to provide a contrast in colour, shape, size to another centre of interest. Many scenes can be enhanced by the inclusion of human figure(s). If the figure is a fair distance away (several meters or more), he should probably face into the view or the main centre of interest, i.e. not the camera. In a closer situation, if the caver is facing the camera, avoid on-camera flash which may give a "red eye" effect. For those really close up, claustrophobic-type photos, reduce the "big nose" effect by using a lens between 50 and 70mm, and make a tightly-cropped composition.

FIGURE 1. FORMAT: Vertical lines favour vertical format.

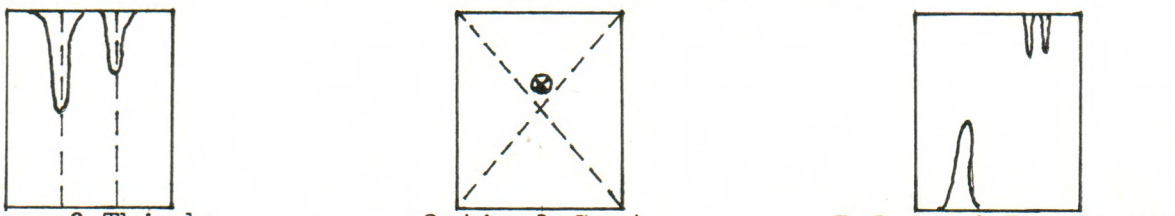


FIGURE 2. CENTRES OF INTEREST: Placement ideas.

FIGURE 3. LINES: Things to watch for.

FIGURE 4. ARRANGEMENT: Ways to place Centres of Interest.

Lindsay Hicks

FLOW CHART FOR AN IDA BAY CAVING TRIP

An almost serious look at the decisions involved.