

AUSTRALIAN CAVER

THE AUSTRALIAN
SPELEOLOGICAL QUARTERLY

No. 112

1987



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DEADLINE FOR COPY

All articles should be submitted to the editor by the end of:—

**FEBRUARY
MAY
AUGUST
NOVEMBER**

If you find writing a chore, why not phone the editor directly???

COVER PHOTOGRAPH

Mark Wilson at the top of the 310m final pitch in Nita Xonga. Photo by A. Warild.

The opinions expressed in this journal are not necessarily those of the A.S.F. Inc. or the Editor.

CHILCHOTLA '85: An Australian Caving Expedition to Mexico

By A. Warild

Chilchotla is a newly discovered caving area in the NW corner of the Sierra Mazateca, Oaxaca State, Central Mexico. While in the same massif as the well-known "Sistema Huautla" the area lay unexplored by cavers until we visited it in April 1985. The area had been spotted while we were on a reconnaissance of Xincinteplt, a limestone massif to the north. We were fruitlessly bashing through burnt out scrub and looking across at the Meseta Huautla on the other side of the river. The hills to the south of the township of Chilchotla looked good and an examination of the map and air photos showed it not to be the area of Sistema Huautla but an overlooked area of karst at an altitude of 1700m - 2000m asl.

After four weeks on Xincinteplt we had found only a few dry shafts so we moved across the river to visit the Sistema Huautla and do some real caves. But within two weeks we had tired of touring and were looking for more constructive things to do. A large Huautla project team under the leadership of Mark Minton had arrived and there was inadequate accommodation in the village of San Agustin. So we took a chance on wasting the last two weeks of our hard won official permission and went to look at the hill above Chilchotla.

APRIL RECONNAISSANCE

Based in the village of Maria Luisa we scoured the slope above but turned up mainly grot-holes. During the first week of prospecting only two caves worthy of comment were found. El Sotano del Oso Muerto (Dead Bear Pit), -242m deep and 1130m long, starts with a spectacular 80m entrance shaft and continues through a series of rifts and loose boulder piles which become progressively worse until no way can be found through the breakdown. El Sotano de los Ladrones (Pit of the Thieves) has a magnificent entrance with a near freehanging 170m pitch and nothing more.

With eight days of permission left we made our breakthrough. Three of us climbed the muddy hill to the pueblecito of Zongolica. Because of the heavy rain we sheltered in an obvious streamsink. It was more than just a shelter however; it had walking passage, a breeze and a pitch. Over the next week we pushed down the cave but never wanting to drag too much gear up the hill meant that we were always running short of rope. On the last day all six of us joined forces to descend a 55m pitch only to be stopped by a longer pitch at -430m. We had clean black rock, a large stream,

30m of rope and no time left. We called the cave Nita Xonga (Little Stream Cave) - a great objective to head for on our next expedition.

NOVEMBER / DECEMBER 1985

November was the earliest our group could return, fortunately this was also after the wet season which runs from May to September. On this occasion we rented a house in Zongolica only three minutes from Xonga. In Mexico the "alpine caving" drudgery of carrying enormous sacks up mountains can usually be avoided. Fourteen mules and burros did it for us.

Within a week we had Xonga bottomed. The pitch at -430m turned out to be 310m and took us three days to rig and survey. At the bottom was a giant chamber floored with boulders and no passable leads. The only chance was a blowing slot but none of us could fit through and we had no bang to enlarge it. We also tried a parallel shaft system but it only connected back so our total depth stayed at 740m. Not bad for the first one but we were hoping for better!

Simultaneously with Xonga we were pushing down Nita Chaki (Cricket Cave). Smaller, wetter and cleaner than Xonga it kept us entertained for a few days but the enjoyment turned to horror as the quality of the rock became...abysmal. We had been suitably impressed by the "Clean Bowled Pitch", got down for the "Mulligrubber" but were mercifully "all out" for -493 (metres) in an impenetrable bedding-plane squeeze.

At this stage (early December) we had eight people and no caves left but one day's surface bashing fixed that. Nca Nita (Hole 20) went easily, but with some interesting climbs to -240m where exploration halted at the top of a 30m pitch. Another cave we called "Putá" after the Toilet-wall style grafitti on the roof but that eventually got changed to Guixani Ndia Guinjao (You're About To Get Married Cave!) which the locals insisted was it's real name. We had two good going caves and not enough rope to do them simultaneously. We chose Guixani.

For two weeks Guixani had us rushing in day after day. The gentle streamways of the upper section eventually gave way to a pitch series which took us to the bottom, a sand choke at -940m. The bottom was quite unpleasant so a good climbing lead was left in favour of trying to connect in some higher entrances. The gear shortage hit us again. We

had to derig Guixani before we could push any of the other caves.

Another hole, Sonyance (Place of the Yance Tree), came to the fore. Unlike the previous caves it was very clean and began to collect other streams from the outset. Hopefully this time we had got the "Main Drain" and would have great caving all the way down. In two weeks (interrupted by a flood) we pushed this truly superb cave to -750m. Only in two spots were we forced to search for bypasses through dirty rockpiles when we couldn't follow the water. A fine cave and once again a chance of continuation; only 50m from the bottom we lost the draught.

The caves higher up the hill were a little disappointing. Sondanga (Place of the Deep) was a "certain" connection with Sonyance until it stopped dead at only -213m, again towards the bottom we lost the draught. Thao Guinjao (Wind Cave) and Thi Guinjao (Child Cave) started as large dry fossil systems around 2000m asl. They were the only connection of the trip and between them reached -300 metres, heading parallel to, not towards the known caves.....

In nine weeks we had achieved quite a lot - 4300 metres of virgin vertical cave and 8355m traverse length explored and surveyed. The Zongolica caves are over 5km from the nearest Sistema Huautla cave and both systems head away from each other so we had definitely found a new system. All we had missed was a cave over 1000m to cap it off but with 1700m of potential we should manage it when we return in 1987.

Caves over 175m deep at Zongolica/Maria Luisa.

	Depth	Length
Guixani Ndia Guinjao	940 m	1950 m
Sonyance	745 m	1785 m
Nita Xonga	740 m	1550 m
Nita Chaki	493 m	1060 m
Thao/Thi Guinjao	300 m	1050 m
Sotano Del Oso Muerto	242 m	1130 m
Nca Nita	240 m	370 m
Chatsi Guinjao	219 m	264 m
Sondanga	213 m	354 m
Sotano De Los Ladrones	175 m	-

Expedition Members

Carey Barlow	A + 1-4	
David Barlow	A + 1-4	A = April Recree
Mark Bonwick	5-7	1-5 (etc) = weeks present
Stephen Bunton	A	in November/December
Phil Cole	1-7	
Anne Gray	A + 3-7	
Ed Holliday	3-7	
Nick Hume	A	
Julia James	5-7	
Guy McKanna	5-7	
Jim Smith	3	
Alan Warild	A + 1-7	
Mark Wilson	A + 1-7	

Acknowledgements

Jane and Peter Wright
 Bill Stone
 Katherine Bretz (Australian Vice-Consul to Mexico)
 PMI Ropes
 Oligerio and the people of Zongolica

AMCS Newsletter 16 (not yet published)
 P.O. Box 7672 Austin, TX 78713 USA



Anne Gray in "The Mulligrubber", Nita Chaki.

(by P. Cole)

ZONGOLICA/MARIA LUISA CAVE LIST

MARIA LUISA

1. SOTANO del OSO MUERTO (Dead Bear Pit)
242m deep, 1130m long, 1420m asl.

A large open entrance leads to a descending series of dry chambers which are connected by rifts and rockpiles. Most of the pitches are short drops between jammed boulders. The cave ends in an impenetrable rift.

2. CUEVA de la OLLA PERDIDA

(lost Pot Cave).

20m deep, 500m long, 1525m asl.

Inactive horizontal stream cave explored upstream to avens. Has a good draught. Not surveyed.

3. CAVE 30m deep, 100m long, 1520m asl.

A handline just inside the cliff foot entrance leads to a tight meandering streamway. There is a small trickle in the bottom and some airflow. Not surveyed.

4. HOLE 60m deep, 1515m asl.

A shaft entrance with some small, tight extensions. Not surveyed.

5. SOTANO de los LADRONES

(Pit of the Thieves).

175m deep, 1520m asl.

A very spectacular 170m pit entrance. The rope can be hung free from a tree to a bolt at -140m. The pitch bottom is covered with clean boulders. No continuation was found.

6. CAVE 110m deep, 1520m asl.

A series of interconnecting rifts with two drops. Not surveyed.

7. CUEVA de la HORMIGUERA

(Ant's Nest Cave).

160m deep, 200m long, 1550m asl.

Small fossil stream passage with spikey walls. Steeply inclined with no pitches. Not surveyed.

8. HOLE 100m deep, 1510m asl.

Three pitches in a rift. Not surveyed.

9. NITA XONGA

(Little Creek Cave).

740m deep, 1550m long 1700m asl.

All three entrances lie close together in a pinnacle-karst outcrop, the lowest one takes a small stream. After a short, straight streamway the water diverges and was not followed. From here (-20m) to -330m is a near continuous series of pitches linked by short stretches of easy rift. Most of this section carries a small stream, but not the one flowing in the entrance. At -330m is a large boulder-floored chamber but no route could be found onwards. At -300m a short climb

leads up into a dry fossil passage which intersects another small streamway (the "Grot Streamway"). This is followed down some small pitches in poor rock to a 55m pitch where the cave cuts into more solid black rock. Shortly afterwards a larger stream is met which can be followed through some blocks to the final pitch. Its' total depth is 310m but this involves some sloping sections and a large ledge giving it a lateral displacement of 60m. The final chamber is 80m in diameter and 100m high, with a floor covered in clean boulders. In one wall is a tight draughting slot which requires blasting.

10. HOLE 80m deep, 1715m asl.

A 60m entrance pitch lands on a gravel floor. A small meander drops another 20m to a mud choke. Not surveyed.

11. HOLE 70m deep, 1720m asl.

A single pitch to a boulder floor. Not surveyed.

12/13. NITA CHAKI

(Cricket Cave).

493m deep, 1060m long, 1700m asl.

The two entrance shafts are connected by a narrow slot at the bottom. From the lower one the cave descends about 15 pitches as a steep, narrow (but rarely tight) streamway. Initially clean and solid the rock becomes gritty and soft at greater depth. After a short, wet duckunder is a narrow flood-prone passage which ends in an impenetrable bedding-plane squeeze.

14. HOLE 30m deep, 1780m asl.

Not surveyed.

15. HOLE 90m deep, 1795m asl.

Two 30m pitches lead to a large chamber which is boulder choked. Not surveyed.

16. HOLE 15m deep, 1740m asl.

Not surveyed.

17. GUINJAO CHATSI

(Rainy Day Cave).

220m deep, 264m long, 1730m asl.

The walk-in entrance leads to continuous series of pitches down a wide, clean rift. The final 65m pitch is into a large chamber.

18. HOLE 25m deep, 1800m asl.

Small triangular entrance. Not surveyed.

19. HOLE 35m deep, 1770m asl.

A large pitch entrance to a dirt plug. Not surveyed.

20. NCA NITA (Hole 20).

240m deep, 370m long, 1750m asl.

A large, usually open dry rift descending steeply down a series of pitches. The 30m pitch at -240 was left undescended. The cave carries a strong breeze.

21. SONDANGA (Place of the Deep).

213m deep, 354m long, 1844m asl.

A large cliff foot entrance leads to a 50m pitch. From there the mainly wide-open cave leads down small pitches to a final chamber where the breeze is lost. The undersized stream is lost at -170m.

22. THI GUINJAO (Child Cave)

300m deep, 1050m long, 1950m asl.

23. THAO GUINJAO (Wind Cave). 2010m asl.

Both have large walk-in entrances with signs of human habitation (walls, sleeping platforms) and a very strong breeze. A short pitch in Thi leads to a junction. Upwards connects to to Thao via a large passage and a 70m pitch. Down leads to a streamway with only a small stream. While initially large, it narrows down to become small and sharp, reaching an inconclusive end in a rock-pile area.

24. HOLE 75m deep, 1700m asl.

Not surveyed.

25. CAVE 3m deep, 100m long, 1730m asl.

Small horizontal stream cave ending in dirt fill. Not surveyed.

26. CAVE 30m deep, 300m long, 1740m asl.

A gently sloping streamway to an undescended 20m drop. Not surveyed.

27. GUIXANI NDIA GUINJAO

(you're About To Get Married Cave).

940m deep, 1950 long, 1720m asl.

The dry walk-in entrance leads to boulders, below which is a series of three pitches to the first streamway. It is a tall, narrow, meandering slot often too narrow to follow at water level. The water flow is slight. At -130m is a pitch into a larger streamway. This normally comfortable walking-sized passage drops gently to -450m where a horizontal section with some wading and later crawling interrupts things. At -550m begins a string of longer pitches with only short walks between them all in solid black rock with occasional areas of chert. The final near vertical section splits at -850m. One route goes to the deepest point - a complex sand-choked area with good but elusive draughts all well protected by some tight squeezes. The other route drops almost straight to -910m and a sand-choke.

28. CAVE 20m deep, 1700m asl.

One pitch to a small stream which cannot be foll-

owed. Not surveyed.

29. SONYANCE (Place of the Yance Tree).

745m deep, 1785m long, 1750m asl.

The 25m entrance pitch begins 200m of continuous pitches followed by a narrow section called "Hydro-Horror". This narrow, clean washed section would be impassable/dangerous in high water. Below it is an open clean streamway which collects several more streams. This simple steep passage is broken by bypasses through boulder chokes at -300m and -600m and a horizontal "lake" section at -500m which requires some swimming. The water appears to have banked up behind a dyke. The final section is once again a clean streamway which becomes progressively steeper until a very large final chamber (100m diameter, 70m high). The breeze is lost somewhere between the last two pitches.



Anne Gray traversing a pool
in Sonyance
(by P. Cole)



ZONGOLICA CAVES

ZONGOLICA-CHILCHOTLA,
OAXACA, MEXICO

Survey by CHILCHOTLA '85,
April, November-December 1985

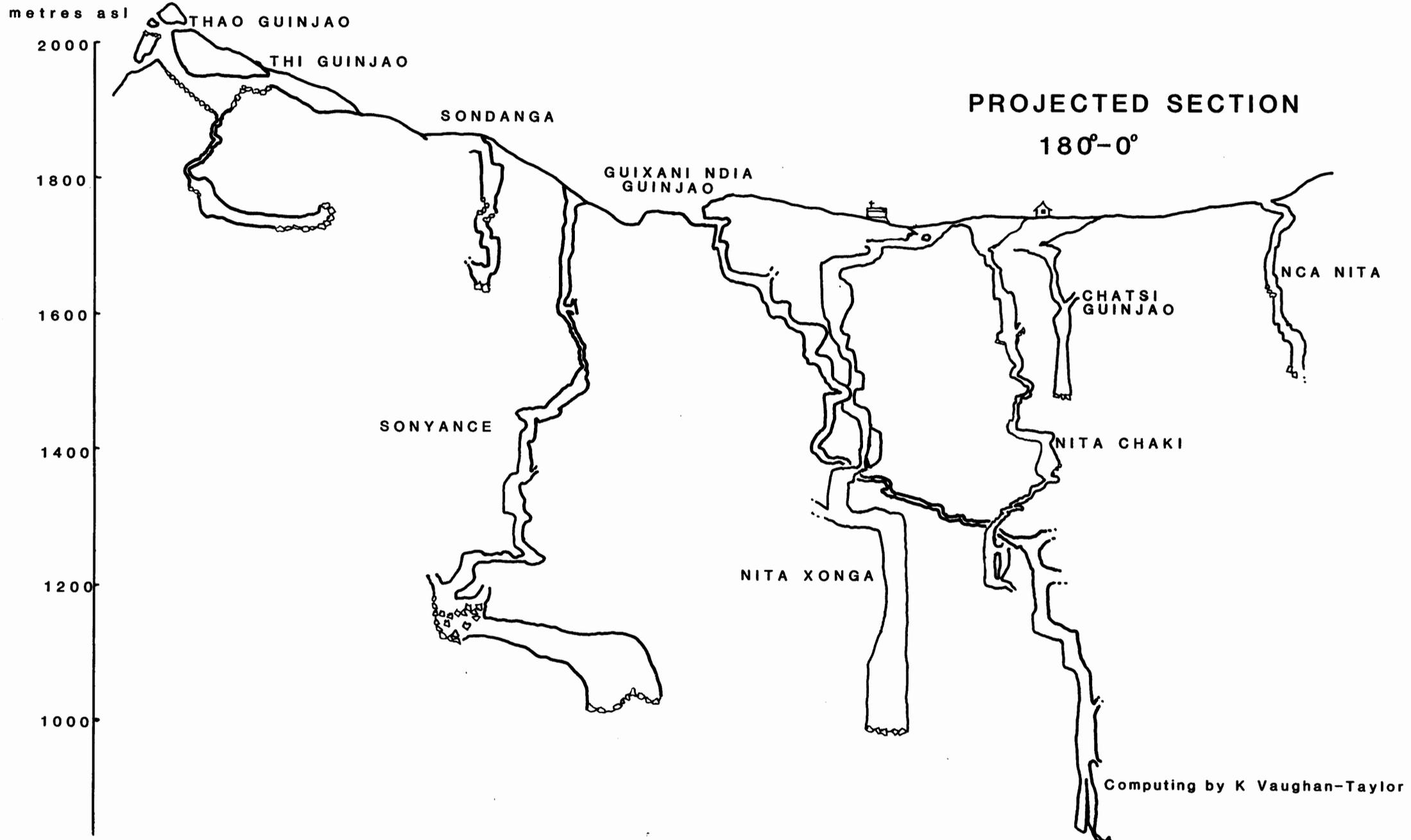
Computing by K Vaughan-Taylor

PLAN



ZONGOLICA CAVES ZONGOLICA-CHILCHOTLA, OAXACA, MEXICO

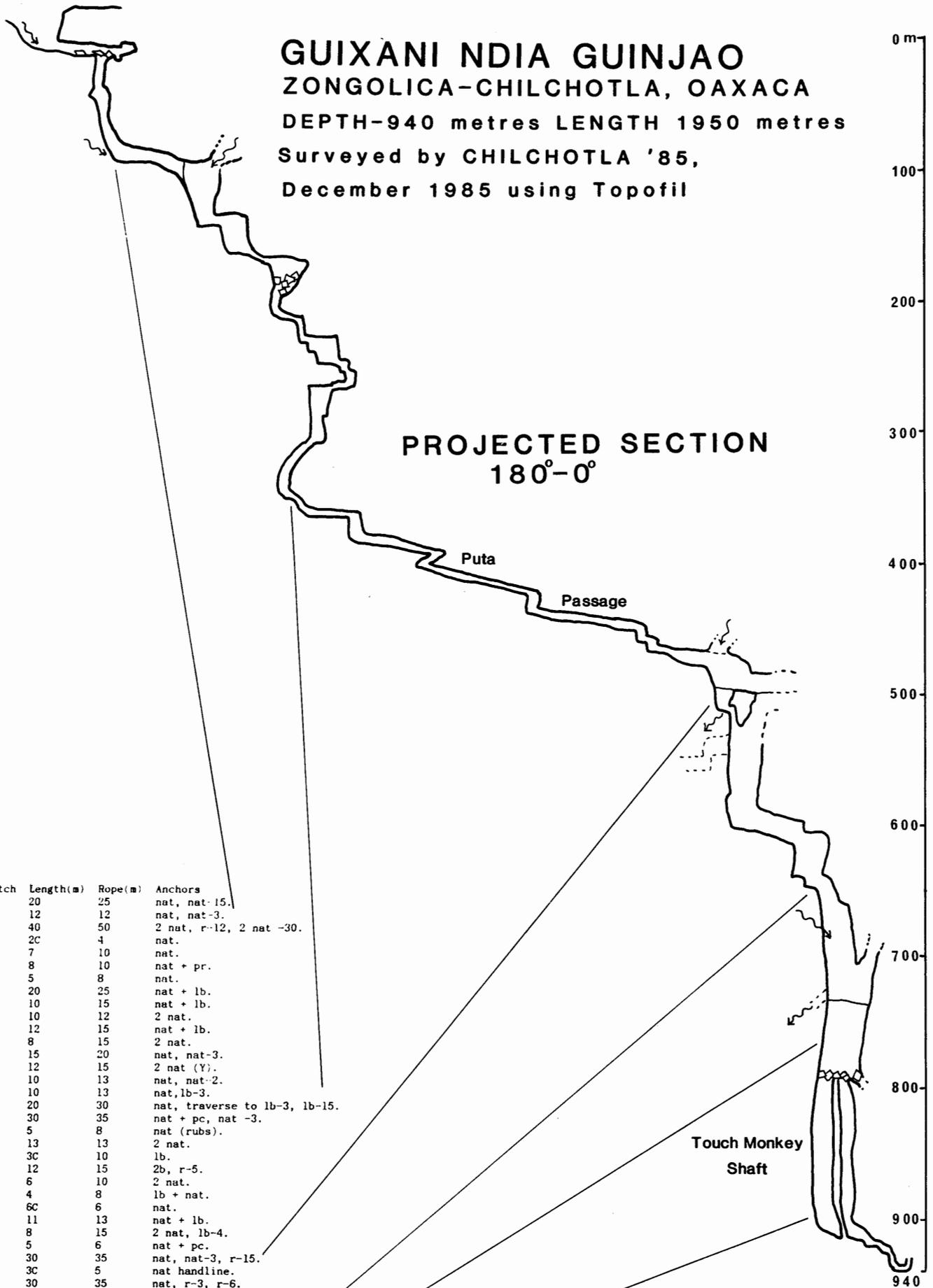
Survey by CHILCHOTLA '85, April, November-December 1985



GUIXANI NDIA GUINJAO

ZONGOLICA-CHILCHOTLA, OAXACA

DEPTH-940 metres LENGTH 1950 metres
 Surveyed by CHILCHOTLA '85,
 December 1985 using Topofil



Pitch	Length(m)	Rope(m)	Anchors
1	20	25	nat, nat-15.
2	12	12	nat, nat-3.
3	40	50	2 nat, r-12, 2 nat -30.
4	20	4	nat.
5	7	10	nat.
6	8	10	nat + pr.
7	5	8	nat.
8	20	25	nat + lb.
9	10	15	nat + lb.
10	10	12	2 nat.
11	12	15	nat + lb.
12	8	15	2 nat.
13	15	20	nat, nat-3.
14	12	15	2 nat (Y).
15	10	13	nat, nat-2.
16	10	13	nat, lb-3.
17	20	30	nat, traverse to lb-3, lb-15.
18	30	35	nat + pc, nat -3.
19	5	8	nat (rubs).
20	13	13	2 nat.
21	30	10	lb.
22	12	15	2b, r-5.
23	6	10	2 nat.
24	4	8	lb + nat.
25	60	6	nat.
26	11	13	nat + lb.
27	8	15	2 nat, lb-4.
28	5	6	nat + pc.
29	30	35	nat, nat-3, r-15.
30	30	5	nat handline.
31	30	35	nat, r-3, r-6.
32	30	40	lb + pr, r-15.
33	25	27	lb, nat-2.
34	2	3	nat.
35	35	40	nat + lb, r-20, nat-23.
36	70	75	nat + lb, lb-6 (rubs).
37	100	130	lb + 2b (Y), nat-10, r-13, r-15, lb-20, lb-70.
38	50	60	lb + pr, nat-15 (poor).
39	40	60	lb + pr, nat-5, lb-30, lb-35, r-50.
40	8	12	nat.

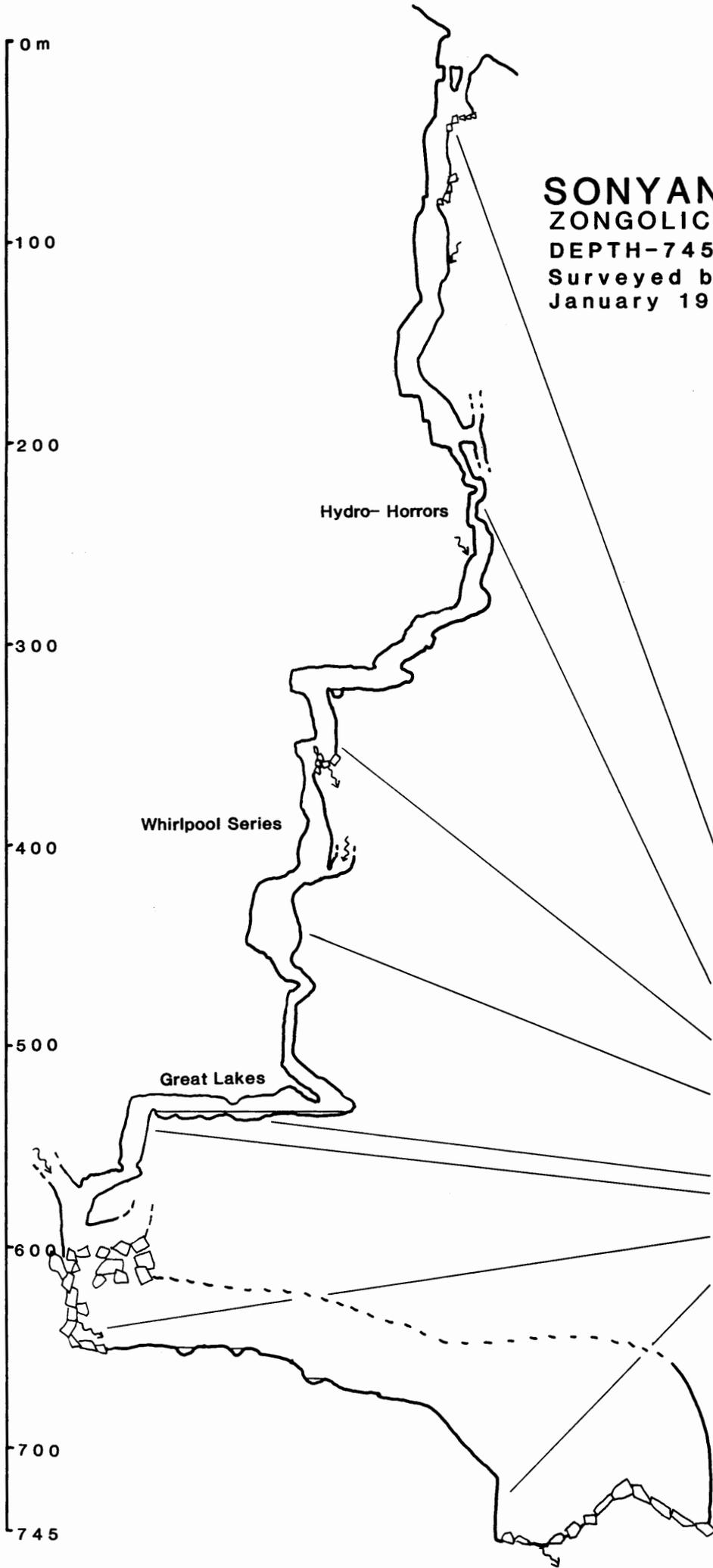
nat = natural belay. lb = bolt. r = redirection (deviation)
 pr = previous rope. Y = Y belay.

Computing by K Vaughan-Taylor

GUIXANI NDIA GUINJAO Tackle List.

Pitch	Length(m)	Rope(m)	Anchors
1	20	25	nat, nat-15.
2	12	12	nat, nat-3.
3	40	50	2 nat, r-12, 2 nat -30.
4	2C	4	nat.
5	7	10	nat.
6	8	10	nat + pr.
7	5	8	nat.
8	20	25	nat + lb.
9	10	15	nat + lb.
10	10	12	2 nat.
11	12	15	nat + lb.
12	8	15	2 nat.
13	15	20	nat, nat-3.
14	12	15	2 nat (Y).
15	10	13	nat, nat-2.
16	10	13	nat, lb-3.
17	20	30	nat, traverse to lb-3, lb-15.
18	30	35	nat + pc, nat -3.
19	5	8	nat (rubs).
20	13	13	2 nat.
21	3C	10	lb.
22	12	15	2b, r-5.
23	6	10	2 nat.
24	4	8	lb + nat.
25	6C	6	nat.
26	11	13	nat + lb.
27	8	15	2 nat, lb-4.
28	5	6	nat + pc.
29	30	35	nat, nat-3, r-15.
30	3C	5	nat handline.
31	30	35	nat, r-3, r-6.
32	30	40	lb + pr, r-15.
33	25	27	lb, nat-2.
34	2	3	nat.
35	35	40	nat + lb, r-20, nat-23.
36	70	75	nat + lb, lb-6 (rubs).
37	100	130	lb + 2b (Y), nat-10, r-13, r-15, lb-20, lb-70.
38	50	60	lb + pr, nat-15 (poor).
39	40	60	lb + pr, nat-5, lb-30, lb-35, r-50.
40	8	12	nat.

nat = natural belay. lb = bolt. r = redirection (deviation).
pr = previous rope. Y = Y belay.



SONYANCE

ZONGOLICA-CHILCHOTLA, OAXACA

DEPTH-745 metres LENGTH 1785 metres

Surveyed by CHILCHOTLA '85,
January 1986 using Topofil

PROJECTED SECTION

180°-0°

Pitch	Length(m)	Rope(m)	Anchors
1	10C	12	nat + peg.
2	30		nat + lb, r-4, r-10, r-15.
3	10		lb + pr.
4	25		lb + pr.
5	35	200	lb + pr, r-10, r-30.
6	25		nat + pr, r-15.
7	10		nat + pr.
8	15		lb + pr.
9	12		lb + pr.
10	10	15	2 nat.
11	12	15	lb + pr.
12	60P/C	90	"Hydro Horror". many nats. lb-40.
13	15	20	2 nat, nat -10.
14	2	6	nat.
15	2	10	nat (pool traverse).
16	40	50	nat + pr, lb-3, lb-6, lb-10, nat-15, lb-20.
17	12	15	nat, lb-5.
18	50	55	nat, r-5, lb-10, lb-15, r-30.
19	45	50	nat + lb, lb-3, lb-8, nat-15, r-20, lb-25, nat -40.
20	12	15	nat + lb.
21	45	55	nat + lb, lb-15 (opp. side).
22	10	12	nat, nat-6.
23	10	15	2 nat(Y).
SWIMS			
24	25	40	nat, lb-15, r-20.
25	4	6	nat + pr.
27	35	45	2 nat, r-15, nat-25.
28	30	40	nat, nat-2, nat-10, nat-12(poor).
29	15C	15	nat (handline).
30	15C	20	nat (handline).
31	30	40	nat, lb-3.

nat = natural belay. lb = bolt. r = redirection (deviation).
pr = previous rope. Y = Y belay.

SCG

SONYANCE Tackle List.

Pitch	Length(m)	Rope(m)	Anchors
1	10C	12	nat + peg.
2	30		nat + lb, r-4, r-10, r-15.
3	10		lb + pr.
4	25		lb + pr.
5	35	200	lb + pr, r-10, r-30.
6	25		nat + pr, r-15.
7	10		nat + pr.
8	15		lb + pr.
9	12		lb + pr.
10	10	15	2 nat.
11	12	15	lb + pr.
12	60P/C	90	"Hydro Horror".many nats.lb-40.
13	15	20	2 nat, nat -10.
14	2	6	nat.
15	2	10	nat (pool traverse).
16	40	50	nat + pr, lb-3, lb-6, lb-10, nat-15, lb-20.
17	12	15	nat, lb-5.
18	50	55	nat, r-5, lb-10, lb-15, r-30.
19	45	50	nat + lb, lb-3, lb-8, nat-15, r-20, lb-25, nat -40.
20	12	15	nat + lb.
21	45	55	nat + lb, lb-15 (opp. side).
22	10	12	nat, nat-6.
23	10	15	2 nat(Y).
SWIMS			
24	25	40	nat, lb-15, r-20.
25	4	6	nat + pr.
27	35	45	2 nat, r-15, nat-25.
28	30	40	nat, nat-2, nat-10, nat-12(poor).
29	15C	15	nat (handline).
30	15C	20	nat (handline).
31	30	40	nat, lb-3.

nat = natural belay. lb = bolt. r = redirection (deviation).
pr = previous rope. Y = Y belay.

NITA XONGA

ZONGOLICA-CHILCHOTLA, OAXACA

DEPTH-740 metres LENGTH 1550 metres

Surveyed by CHILCHOTLA '85

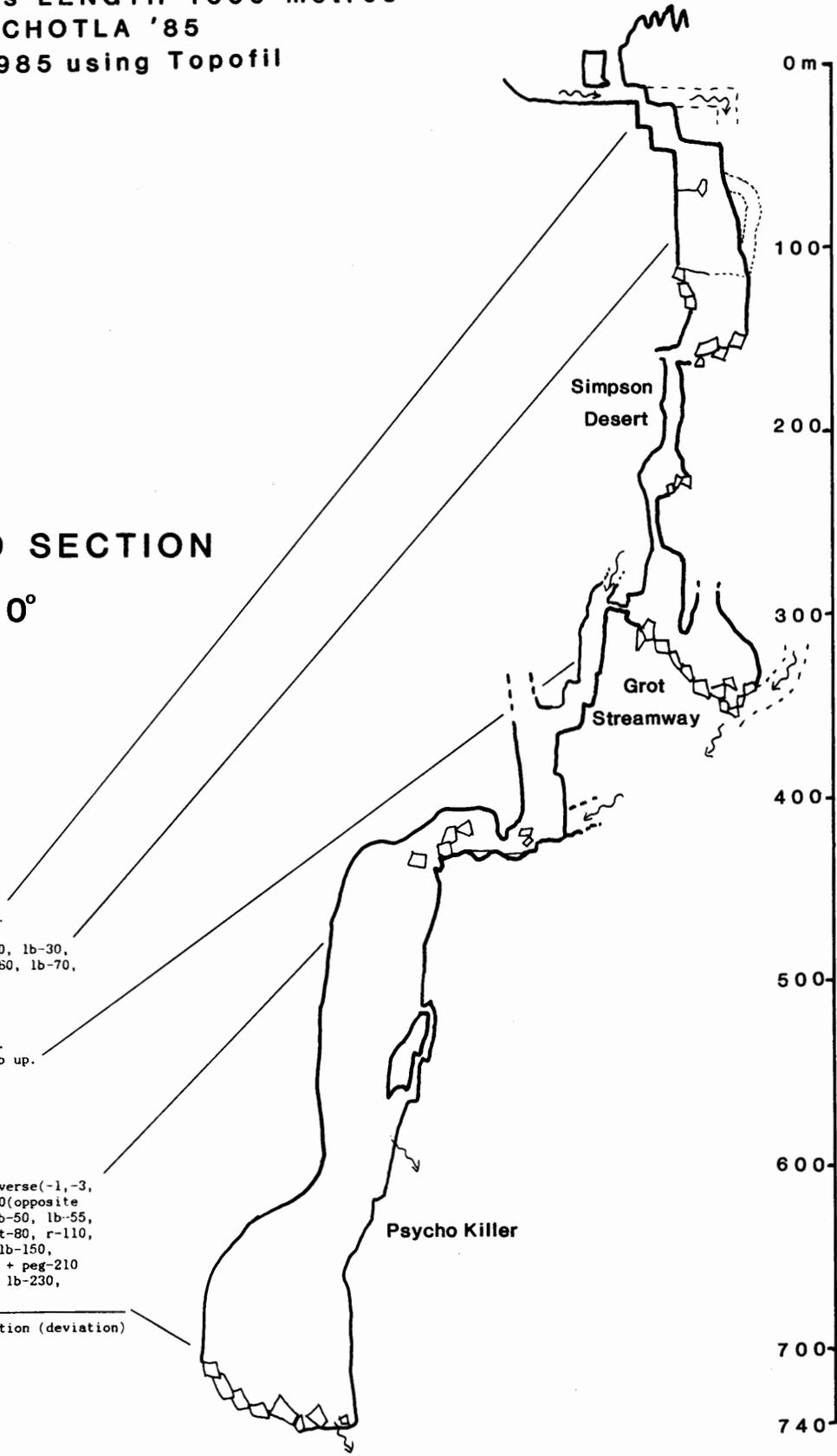
April, November 1985 using Topofil

PROJECTED SECTION

270°-90°

Pitch	Length(m)	Rope(m)	Anchors
1	12	20	nat + ring, lb-6.
2	3	6	lb.
3	90	100	nat + nat, nat-20, lb-30, ledge lb-50, 2b-60, lb-70, lb-85.
4	20	25	nat + lb.
5	30	35	lb, lb-5.
6	30	30	nat + lb.
7	45	50	lb + nat, nat-15.
8	20	—	4 m ladder -climb up.
9	30	35	nat, r-5, r-20.
10	6	10	lb.
11	10	12	lb + pr.
12	12	14	2b, both poor!
13	4	10	nat.
14	55	65	lb + pr, lb-20.
15	10	15	2 nat.
16	310	360	nat + pr, 3b traverse(-1,-3, -8), lb-20, lb-40(opposite wall), nat-45, lb-50, lb-55, nat-65, ledge nat-80, r-110, lb-120, lb-130, lb-150, lb-190, ledge lb + peg-210 lb-215, ledge lb + peg-225, lb-230, 2b-240.

nat = natural belay. lb = bolt. r = redirection (deviation)
pr = previous rope. Y = Y belay.



NITA XONGA Tackle list.

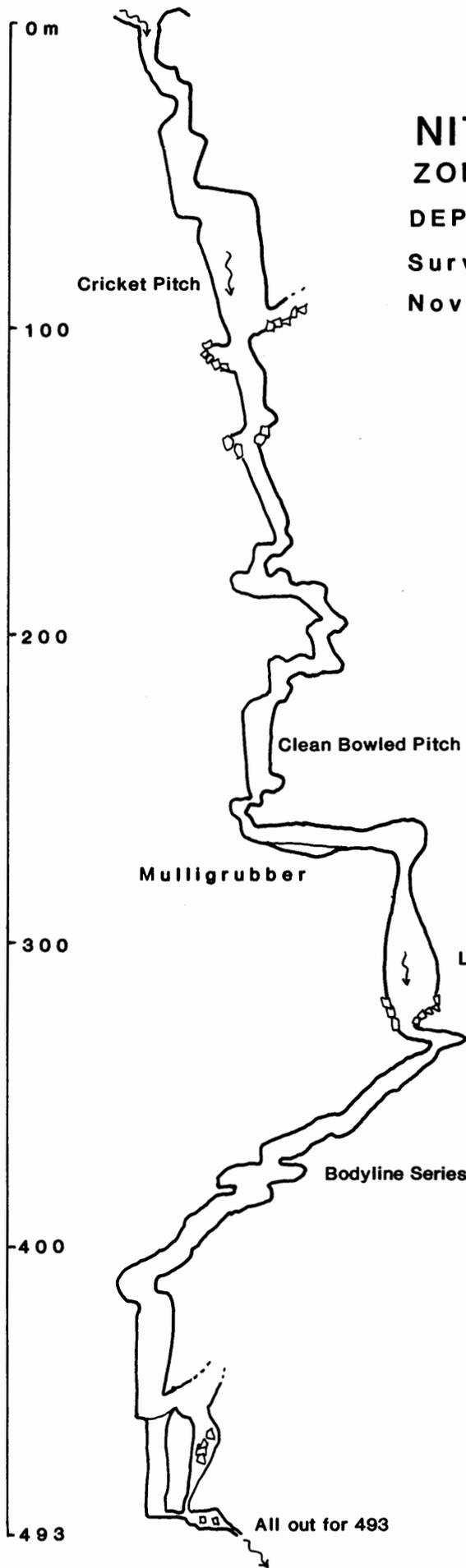
Pitch	Length(m)	Rope(m)	Anchors
1	12	20	nat + ring, lb-6.
2	3	6	lb.
3	90	100	nat + nat, nat-20, lb-30, ledge lb-50, 2b-60, lb-70, lb-85.
4	20	25	nat + lb.
5	30	35	lb, lb-5.
6	30	30	nat + lb.
7	45	50	lb + nat, nat-15.
8	2C	—	4 m ladder -climb up.
9	30	35	nat, r-5, r-20.
10	6	10	lb.
11	10	12	lb + pr.
12	12	14	2b, both poor!
13	4	10	nat.
14	55	65	lb + pr, lb-20.
15	10	15	2 nat.
16	310	360	nat + pr, 3b traverse(-1,-3, -8), lb-20, lb-40(opposite wall), nut-45, lb-50, lb-55, nat-65, ledge nat-80, r-110, lb-120, lb-130, lb-150, lb-190, ledge lb + peg-210 lb-215, peg-225, lb-230, 2b-240.

nat = natural belay. lb = bolt. r = redirection (deviation).
pr = previous rope. Y = Y belay.



Al Warild ascending the
entrance pitch of
Sonyance.

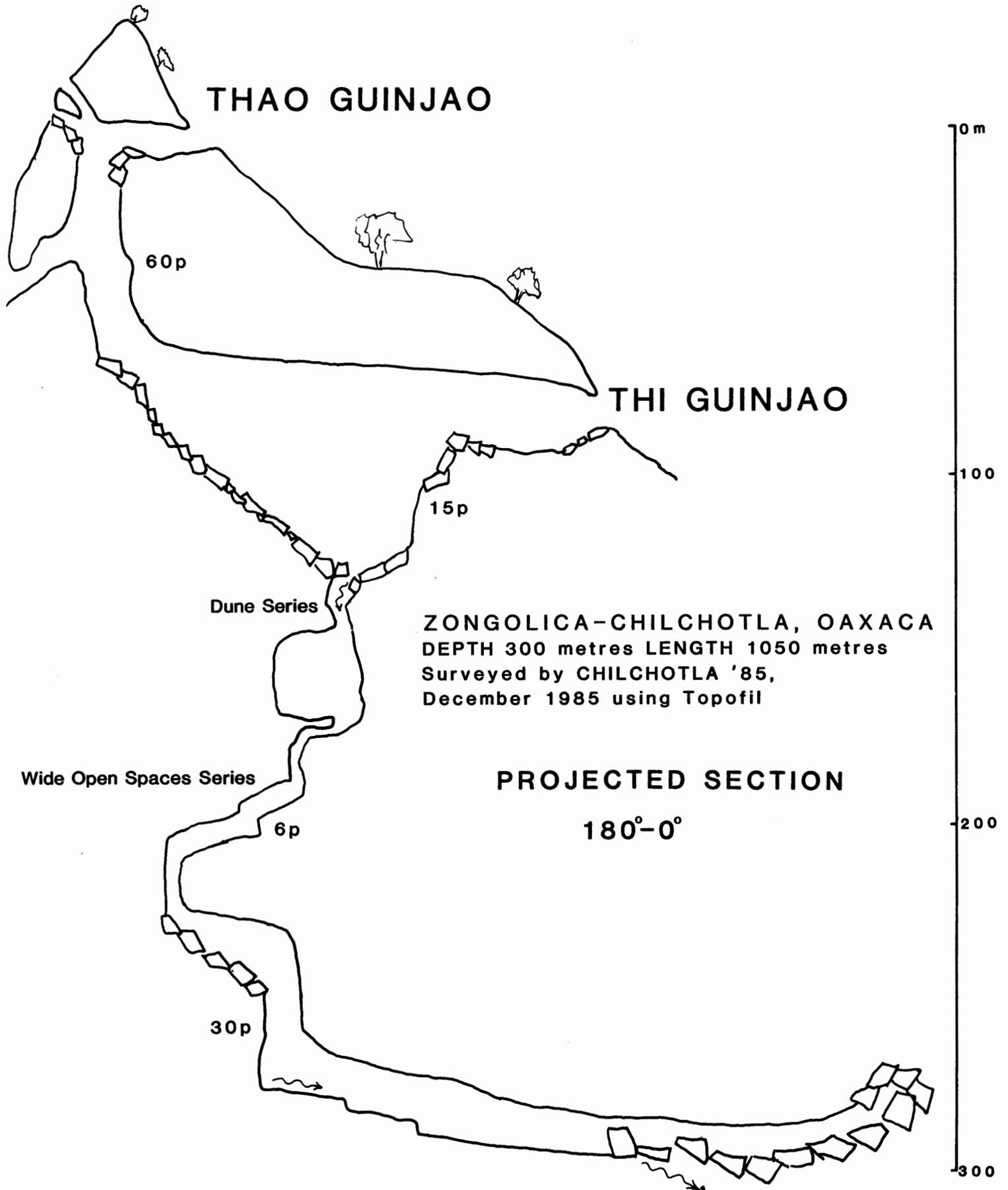
(by J. James/A Warild)



NITA CHAKI
ZONGOLICA-CHILCHOTLA, OAXACA
DEPTH-493 metres LENGTH 1060 metres
Surveyed by CHILCHOTLA '85,
November 1985 using Topofil

PROJECTED SECTION
180°-0°

Computing by K Vaughan-Taylor

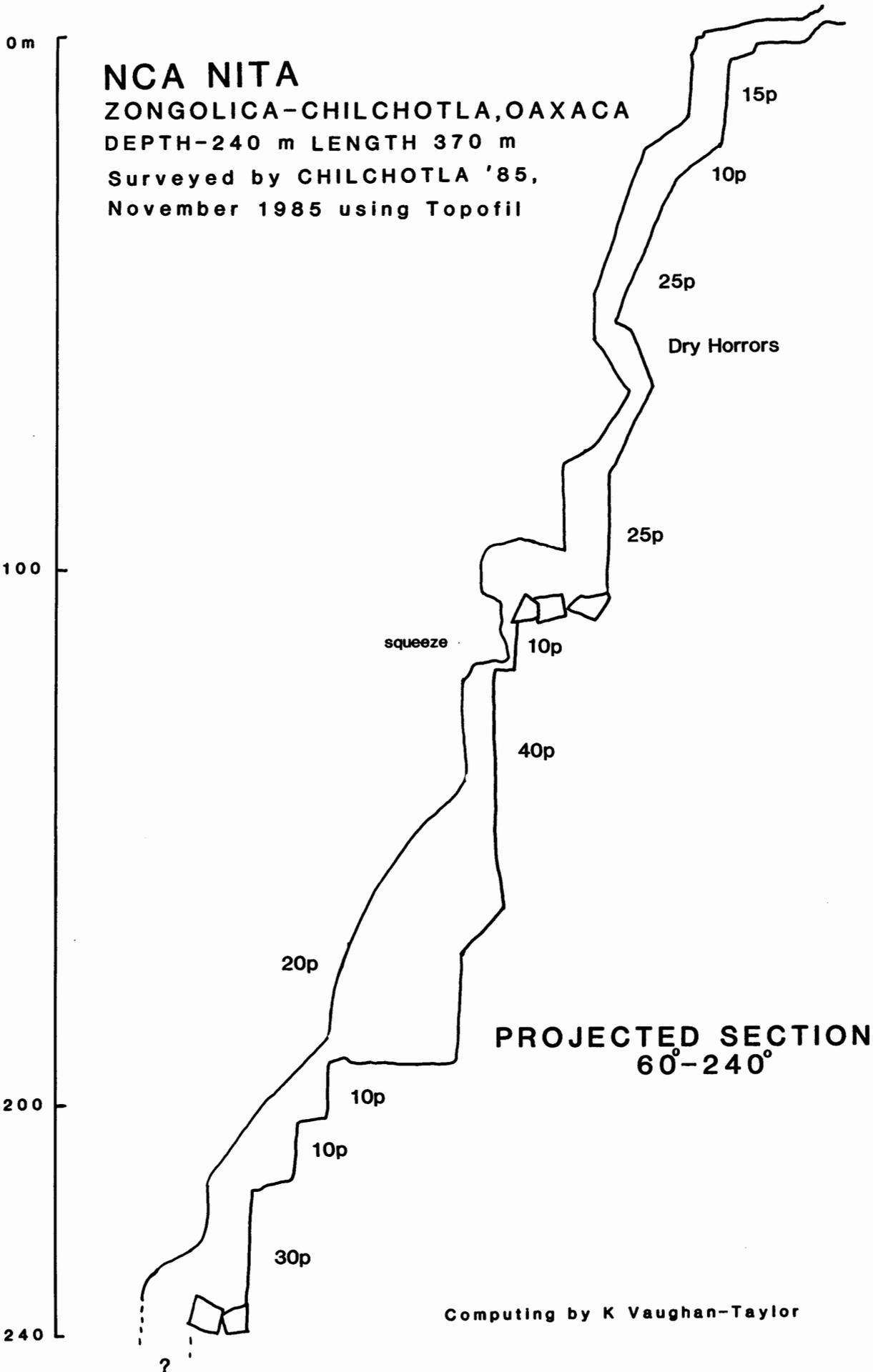


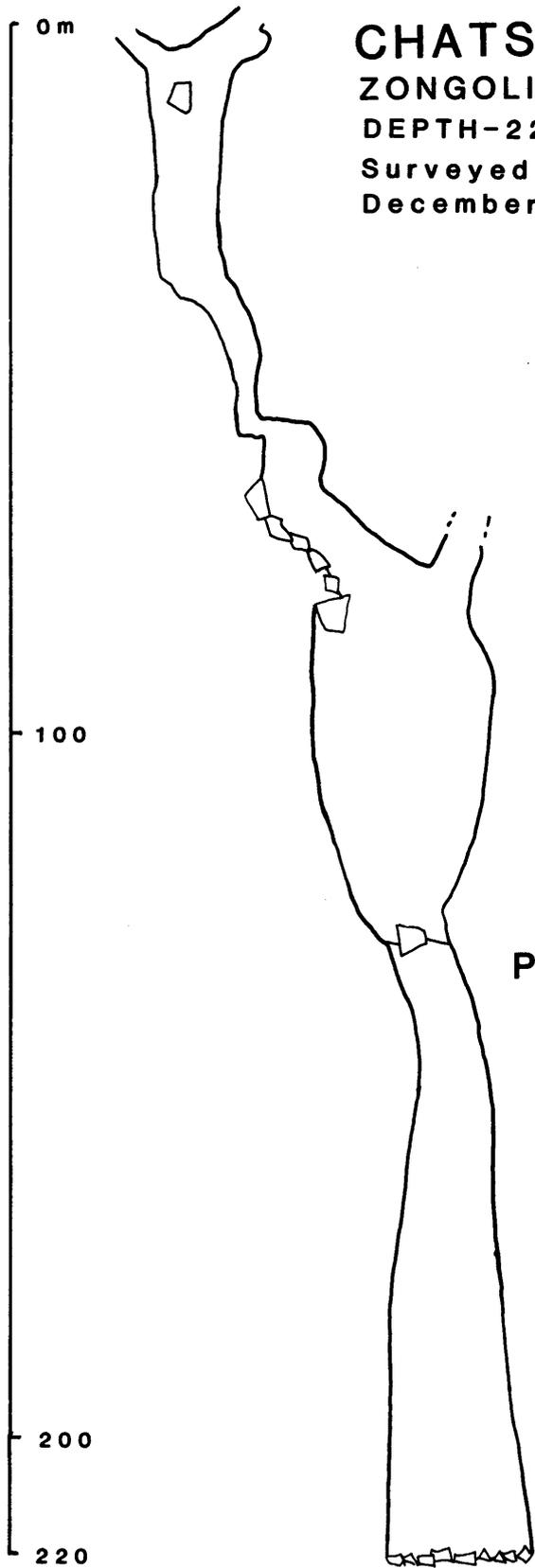
Computing by K Vaughan-Taylor



SOTANO del OSO MUERTO
ZONGOLICA-CHILCHOTLA, OAXACA
DEPTH-242 metres LENGTH 1130 metres
Surveyed by CHILCHOTLA '85,
April 1985 using Tape and Suuntos

PROJECTED SECTION
270°-90°





CHATSI GUINJAO

ZONGOLICA-CHILCHOTLA, OAXACA

DEPTH-220 metres LENGTH 264 metres

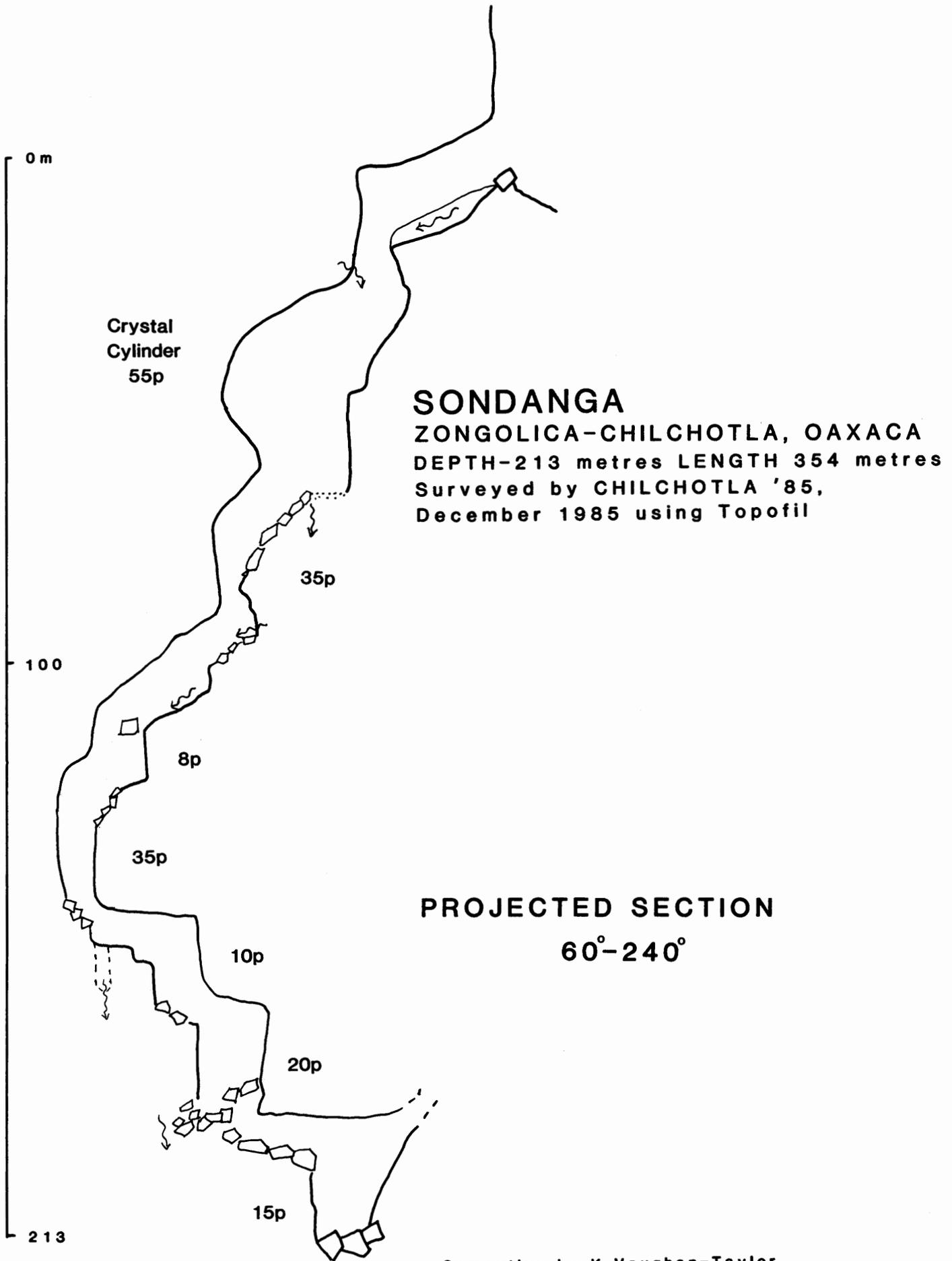
Surveyed by CHILCHOTLA '85,

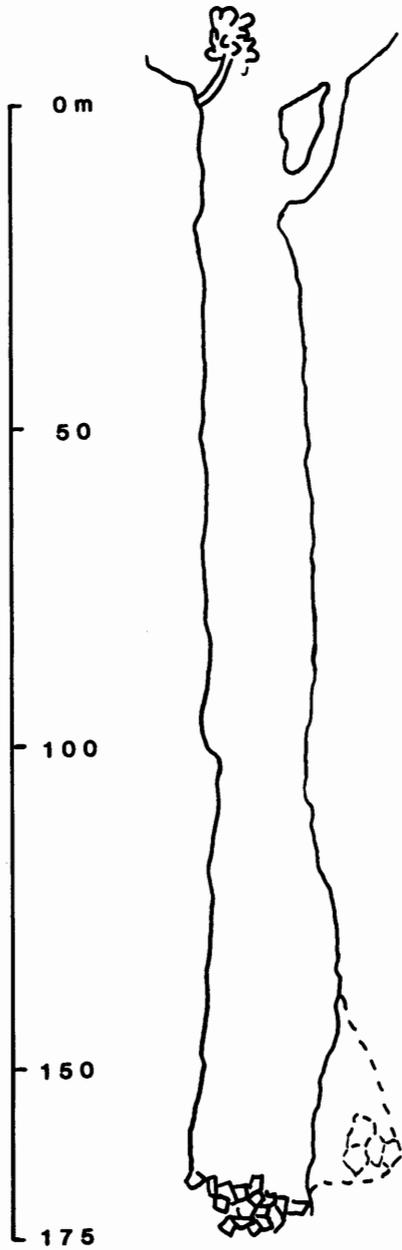
December 1985 using Topofil

PROJECTED SECTION

60°-240°

Computing by K Vaughan-Taylor





SOTANO de los LADRONES
ZONGOLICA-CHILCHOTLA, OAXACA
DEPTH-175 metres
Surveyed by CHILCHOTLA'85, April 1985

PROJECTED SECTION
90°-270°

An Aussie Caver in France - a Letter

Stephen Bunton

Hi Mum!

Hello, I'm sitting by the pool at the Autrans caravan park in Vercors. It's quite beautiful here, pinetrees and gently rolling green fields with chalets etc. Dad would like it here, the geology is quite spectacular, textbook anticlines and synclines with huge cliffs exposing the strata. The area is perfect for skiing in winter, both nordic and downhill. They held some of the events of the 1986 Grenoble Winter Olympics here. We are right opposite the Ski-jump Run. Been doing a bit of hitching around here and it seems that every second person is a caver - at least in summer anyway. In winter they are all ski-instructors, better money and lots of spunky women, you know the Frenchman. Anyway, what have we been doing?

Got into La Chapelle-en-Vercors on the 24th. Went up to the Maison de Speleo and collected the mail. Thanks for writing. Sorry to hear that the cat died but at least you people are all alive and well. The Maison was in a state of chaos preliminary to the start of the film festival, they're in the thick of organizing it. There was a letter from Al Warild so we met up with him at the C.N.S. Hut (Centre National Speleo) at St. Martin just down the road. Went caving with him a few days. One vertical cave about -400m, Scialet Vincen. Quite good rope-work all the way. Easy to rig off preplaced bolts. The other cave was infiltrated with a few Belgian cavers so we used their ropes to get down a few pitches before we got bored.

Al's got a lease Citroen from Paris, the same deal as Graeme Smith had for us while we were climbing in the alps earlier. Anyway we travelled around for the week as a group of 5 Aussies; Dave and Carey Barlow and Mark Wilson.

The film festival was quite well organized with sessions each evening for 4 nights, starting 27th August. This is an annual event, starting about this time each year, ending with the prize giving at the last session on a Saturday night. There were sessions on the last 2 afternoons as well. There were films from Poland, Portugal, Bulgaria, Britain, Switzerland, Italy and lots from France, of course. Most were pretty good but some were real shockers. With about half a dozen awards, at least all the top films got recognition. Some of the best were Otter Hole by Sid Perou from Pommyland. Otter Hole has a tidal sump connected to the estuary of the River Wye. Consequently the cave is full of mud, it looks a horrible place but the film was just excellent, crystal clear, well lit images and the story was just a recreation of the discovery and original exploration but it was quite effective and entertaining.

They awarded the top prize to the film "Deep into the Blue Holes" about cave-diving in the Bahamas on the island of Andros. Again it was a BBC film and I'd already seen it on TV since it was made in 1982. Martyn Farr made his world record 3,000' dive into a marine cave. We met two of his support divers in Spain on the Tresviso 85' expedition; Julian Walker and Rob Parker.

Antennae 2 The local TV station in Grenoble sponsors a bloke called Guy Meauxsoone (pronounce that!) to make action films about canyoning and caving films in the Vercors. One of his films should have been called "Cruise and Bruise" instead of EAUX de??. These two macho men in wetsuits (luckily) abseiled down a canyon and into a cave with a pretty exciting looking streamway in it. Most of the film was of them cascading, no body surfing down this underground river with packs for bouyancy - even through a free-divable sump. A few more abseils brought them back to the surface again and from here they kept floating downstream until they got back to Pont-en-Royans. The trip looked great but a bit brutal, actually it was filmed in several of the caves around the area.

An interesting documentary on the saltmines of Poland won an award but it was lost on me. It was in Polish with French dubbing and over-voicing like all the films except the English ones. I suppose that's designed to give the French a little practise at understanding the true international language. Gee! we're bloody lazy as travellers, speaking English-we've no incentive to learn another language. Really we're not doing too badly, all of us make an attempt.

Us Aussies really get on quite well with the French since we both have common ground in P.N.G., if not Muoroa Atoll, but diplomacy decrees we don't talk about that.

Anyway, the most novel film was "Saxaphones and Stalactites". A few cavers took a couple of musicians caving for the first time to see what it would sound like. The film was pretty funny with the apprehensive looks on the faces of the novices and the vibes were OK as well. Even more bizarre was "Malefice" a horror fantasy about an evil spirit haunting a cave. Very well done, quite enjoyable, funny and the heroine was pretty nice too.

The best bit of the festival though, was that we met a bunch of Poms from the Imperial College Club London. They had the Berger booked for the week after the festival so we touched 'em up for a trip down the cave. They were delighted since they were a bit strung out for manpower and time on the derigging side since some of their

lads had to go home early. They were camped up at Autrans so we hitched up here Sunday. Monday we psyched up by sitting by the pool.

The Gouffre Berger down to its 1,122m sump used to be the deepest cave in the world, or it was when I started caving. I was featured in an epic B/W film "Siphon 1122" by a British mob that I saw years ago. It featured the "Hall of the Thirteen" which is shown in Waltham's pretty picture books. Ever since then I always wanted to do a Berger trip and now it was going to happen.

Tuesday was the designated day and it dawned overcast and ominous. Apparently you can drown in the passages at the bottom if the cave floods after heavy rain but we went anyway. Actually unless you went for the final swim through the pseudo-siphon or were lucky enough to be hit by a flood pulse below the 1,075m inlet you could do the cave almost anytime, although the lower cascade series would be a bit gutsy.

The first 250m is all ropework punctuated with a meandering rift, not tight at all, then there is just huge passage leading down to camp 1 at 494m. With the cave rigged we were at camp 1 in two hours and then we spent a further 2-3 hours photographing in the Hall de 13. Below this was another few pitches and some long cascades. Nice streamway stuff and again we spent time photographing. The pitches were well rigged and again we made good time. Did the whole cave in dry grot gear so we didn't attempt the last 100m swim. We really only made it to -1,100m. Took a few "summit" photos and then began the long slog up

the 19 or so pitches to the surface. We pulled out, from the bottom, Hurricane series 44m, 25m, 5m and Grand Cascade 27m, 10m, 10m, 20m and Topographer's 5m. These we took to the surface but we also dragged the Claudine's Cascade ropes back to -700m for the lads tomorrow.

Got back to Camp 1 slowly for a bite to eat about 1.00am. The long climb up the boulder piles of the Great Rubble Heap and Grand Gallery were a bit demoralizing. We arrived at the ropes a bit tired and in a bit of a conundrum. If we got out too early we would have to wait to be picked up at the pre-arranged time of 8.00am. As it was I got out at 5.15am (19 1/2 hours, 9 hours down and 10 out), and froze to death with damp sweaty clothes. A howling gale was blowing across the tops. The other three timed it nicely for the pick-up, mind you it's an hour's walk back from the bloody cave.

We were all a bit cave-lagged yesterday. I managed to bludge a lift into Grenoble (in my sleep) to book a flight home, so I'll see you all in about two weeks.

As I said, today we're enjoying the French tarts by the pool, most of them are topless, though my French can only score me the jam and cream variety and haven't we pigged out on them for the day.

See you eventually, Au Revoir!

EDITORIAL

Notes on Australian Caver

You may have noticed the increased size of the last Australian Caver. This is due to the fact that people have decided to send in articles and to be fair to those people, articles are printed as received.

So we now have articles coming in and the Caver coming out regularly but as with everything else in today's economy we have been hit with increases in production costs beyond our control. The production cost per subscriber has risen in the past 12 months from \$1.90 to \$2.50 for a 20 page issue. If there are more pages then ofcourse the cost rises proportionally.

It is plain to see that \$8 (the proposed capitation fee for 1987) will not meet costs and so I propose either 1 of 2 options.

Firstly, we can cut production down considerably to keep costs within the \$8 mark, a move that will put us back a few years.

Secondly, we could increase capitation fees to an amount that will keep up with inflation.

The newsletter commission is in favour of this second option as it is the only means we can use to ensure the continued quality standard of the Australian Caver, and as such we will be recommending to the council meeting in January that the capitation fee for 1987 be \$12.00.

This descision is up to you the member to decide, so make sure you let your delegate know your wishes.

Also the back issues need a new home as they are tired of residing in my spare room. If anybody has some spare room or rooms and wish to have them as guests, please let me know. If there are no takers by the end of January 1987, they will become destitute and take up residence in the local tip.

IAN MANN

TRESVISO '85

by Carey Barlow

In July 1985, four Australians were part of a British expedition to the Picos de Europa of northern Spain. Lancaster University Speleological Society (LUSS) annually runs a caving trip to this extensive limestone area. In the mid '70's, the village of Tresviso was the centre for much of the cave exploration.

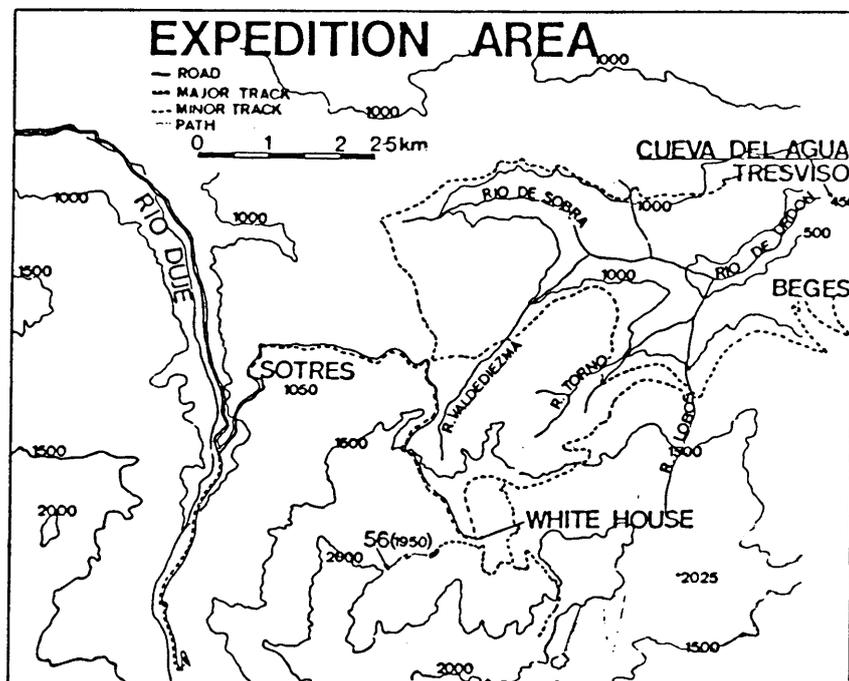
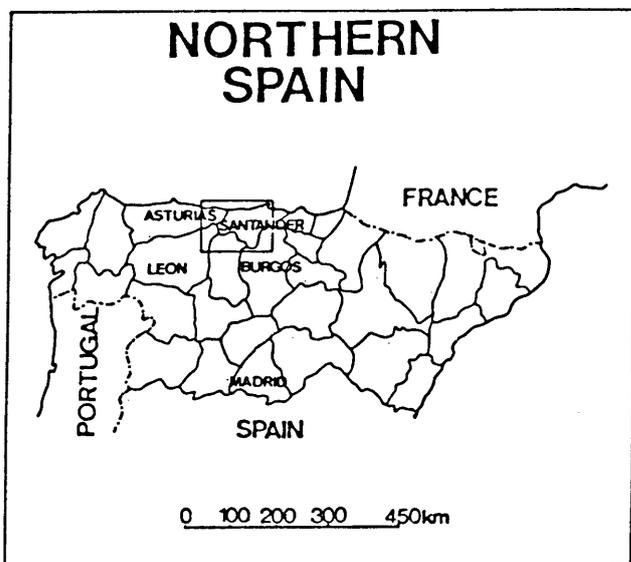
Famous for its cheeses, which are matured in the caves, Tresviso is at the end of the road, perched on a hillside above deep limestone valleys. The misty weather rolls across from the 2,700m Eastern Massif to the south, swirling around for several days. The village seems deserted in the heavy mists, except for the distant ringing of a cowbell, the chug of a tractor as a farmer collects another load of hay. The weather changes and the sun clears the mist for a few days, revealing the rolling green hills dotted with cabañas, small stone buildings with terracotta tile roofs. These overlook the soaring limestone cliffs and spires of the spectacular Urdon Gorge. Five hundred metres below, the waters of "Cueva del Agua" can be seen flowing from the side of the gorge, the major resurgence of the Eastern Massif. "Agua" was the primary aim of LUSS expeditions for five years from 1975 to 1979. It was explored upstream to a height of +392m, and with over 10km of passage it was extensive and complex enough to necessitate the use of underground camps.

In 1977 it was decided that the expeditions should be searching the immense limestone area above for a connection, as there was potential (at that time) for a world depth record. Improving on their SRT by exchanging ideas with the Spanish club, Seccion de Espeleologia Ingenieros Industriales, LUSS began exploration on the Eastern Massif in a region known as the Andara.

The 1977 "top camp" was situated in a lake depression amid an area of high limestone peaks and craggy "lunar" landscape, the only wildlife being lizards and birds, and the occasional herd of sheep or goats. The area bounds in mine entrances (gem-quality sphalerite was mined there until 1978), and many caves were found by following mine passages until they intersected natural caves.

In 1978 the "White House" (a miner's hut) was utilised as a base for the expedition and several caves were explored over the next four years to considerable depth. The most significant of these were "Sara" -635m, "Flower Pot" -723m, and "Tere" -792m. The caving was particularly arduous - tight rifts, crawls and squeezes, with icy temperatures - many of the caves had snow-plugs in the entrances and warm weather on the surface meant snow melt-water down the caves.

"56" was discovered in 1977 but not actually entered until the following year. The 122m entrance pitch was somewhat daunting to cavers who, at



that time, had little expertise in SRT. This problem was gradually overcome with experience however, as "56" was slowly explored over the next few years. It gained a fearsome reputation - the whole cave was extremely loose, with each pitch explored leading into collapsing rubble. By 1982, the system had been explored to over 800m deep, but proved exhausting work for the small team of people with enough enthusiasm. Finally in 1983, with camps in "Humbug Hall" (-300m) and "Dripping Blood Passage" (-630m) the cave was pushed to its ultimate depth of -1169m, the deepest cave explored so far by a British expedition.

"SIMA 56"

The 122m entrance pitch, "Tigger's", is a superb shaft. With a re-belay about 28m down, the rope hangs free to the floor. This spectacular shaft opens out as you descend, spinning slowly as you pass a huge bridge, some old but still spectacular curtains, finally descending into the void where small lights far below show your fellow cavers.

Probably the most infamous part of "56" is the notorious "Slasher", so named after the many trog-suits it has claimed. Although we had heard stories of "The Slasher", we were still not quite prepared for just how awkward, strenuous and horrible a section of cave it was! "The Slasher" is a rift characterised by its body-sideways width. It has undefineable height and depth, the caver must traverse at a level somewhere between the floor and the roof of the passage. It is not so much the tightness that makes the rift difficult, but the fact that the caver must wedge and inch forward at the same time. Although only about 100m of length is gained, the passage meanders considerably, taking almost an hour to traverse when loaded with packs. Fortunately, a lot of the sharp projections which give "The Slasher" its name have been broken by passing cavers. Now the rift has smoother walls which indicate to new-comers the level at which it is best attempted. With the reduction of oversuit-slashing projections the traversing is probably a little more difficult. Now the caver must exert pressure outwards to maintain his precarious position in the rift.

"The Slasher" is at approximately -200m, hence the tackle required for the rest of the cave, including camp gear, must be taken through this devious piece of passage. Progress is slow and arduous. Tackle-bags cannot be hung from a harness as they would continuously jam in the narrow rift. They must be carried-thrust ahead and wedged, as the caver thrutches his way along, then thrust ahead again - energy-sapping work! "The Slasher", by natural selection, determines the size of the packs. These were much smaller than we had seen before, round and only 30cm in diameter, and about 80cm in height - hardly worth

carrying you would think? But considering the awkwardness of the rift, these packs were difficult enough!

Escaping from "The Slasher", the cave becomes considerably easier. "Humbug Hall", the site of Camp 1 on previous exploration trips, is soon reached. The character of the cave now changes. Solid rock higher up has now become fractured. Good anchors at pitch heads are hard to find. "Death Wish" pitch, which follows from the camp, has a reputation for being extremely loose - even the belay is still regarded as "dubious", and the other pitches in the series are also unstable.

The next section is aptly named "The Crumbles", but eventually, at a depth of -630m, the more solid phreatic passage called "Dripping Blood" is reached. This is probably the most pleasant passage in the cave to that depth. Its rather alarming name is derived from a very impressive and aptly-named stalactite formation which has been stained blood-red by iron deposits. This was as far as we were going for this year. Chemistry experiments left the year before, were retrieved, and de-rigging began.

"TORCA LABARGA"

This is one of the more enjoyable caves in the area, with a spectacular entrance series. Pitch follows pitch for 180m, with a small amount of water spraying down the lower shafts - a more relaxing diversion to "56". At the bottom a long, easy walking horizontal passage is encountered. Impressively large gypsum formations grow in profusion along most of the walls. Another series of short dry pitches leads to a small stream and a large deep green pool. The sump is at -390m. The water is hypothermically cold as discovered by one caver who swam to the far side on a previous trip looking for leads. This year, a small draft in the sump chamber indicated that perhaps the sump had opened, but no-one was prepared to go swimming. A couple of possible high-level leads were checked by the aid-climbers of the group, but to no avail. A kilogram of dye was dumped in the sump to hopefully be traced at a later date.

"CUEVA DEL AGUA"

A "tourist trip" down "Agua" would be a highlight of any caver's trip to the Picos. A large lake at the entrance is sometimes diverted to an aquaduct system to create hydro-electricity, forcing cavers to rig a flying-fox across the lake in order to stay dry. Following a high passage a thundering noise is heard, and soon a frothing river is encountered. It is possible to stay dry by traversing and climbing as the river swirls and crashes past, the noise is impressive as is the amount of water leaving the river, upwards-trending squeezes have the ominous characteristics

of flood-overflow passages. These would be full of water during the spring snow melt, a sobering thought! Dry, sandy passages then lead upwards.

We entered a large chamber, on the other side of which lights could be seen. The rest of the party were helping prepare for a dive, but between us lies "The Road to Certain Death". This ominous-sounding passage turned out to be a smooth-walled rift, traversed by difficult bridging, chimneying and climbing with the stream about 5m below. It is an eerie place, with the noisy stream and the line of lights disappearing into the distance.....

At the end of the "Road" is a waterfall flowing beside the perched sump" - actually a huge flowstone dam. The object of the dive was to investigate and push the sump. It turned out to be an easy dive for Rob Parker, who laid out all of his 125m of line in a large water-filled passage with good visibility. He established that it was well worth returning next year with a larger team. The prospect for more discoveries is good!

"DOSSER'S DELIGHT"

Many people held high hopes for the possibility of "Dosser's" breaking 1000m on this trip. Exploration had halted in 1981 at approximately -300m, where a tight rift in flowstone was deemed impassable. A tantalising draft blew through the narrow aperture. The cave was considered a "doss" when compared to "56" which was being explored at the time, hence the name.

In 1984 it was decided to have another look, and with some hammering, a determined caver managed to force his body through the incredibly tight vertical squeeze in the flowstone ("Dosser's Despair") and continue exploration. The cave's name was soon disproved - in fact, the name could not have been further from the truth. After each successive pitch was bottomed, the passage went into impassable rift. To bypass this, cavers had to traverse high above the rift in muddy, exposed positions. At the end of each traverse, passage leading on was found, invariably, this was tight, sharp and ridiculously constricted. The exploration was arduous, with many tight sections and narrow squeezes, giving new meaning to body contortion. Quite often the caver was forced to climb out over the head of the pitch without being attached to any safety-line, simply because the passage was too tight.

It is no surprise that at one particular pitch, some of the explorers did not wish to continue, due to the cold and the many survey hours they had spent. After some discussion they exited the cave leaving Tony White to continue exploration solo. This 48m pitch was later named "The Mutiny". The following pitch, a magnificent 60m freefall with beautiful scalloped walls was called "The Bounty", a very apt name. The base of this pitch was the limit of exploration for that year, the

cave still going at a depth of -500m. To this point, the nature of the cave can be described as beautiful pitches, followed immediately by strenuous thrutching in awkward rifts. At the bottom of many pitches, valuable depth was lost by ascending rifts - the only way on. It is interesting to note that to gain the 500m, 600m of ropework had to be passed.

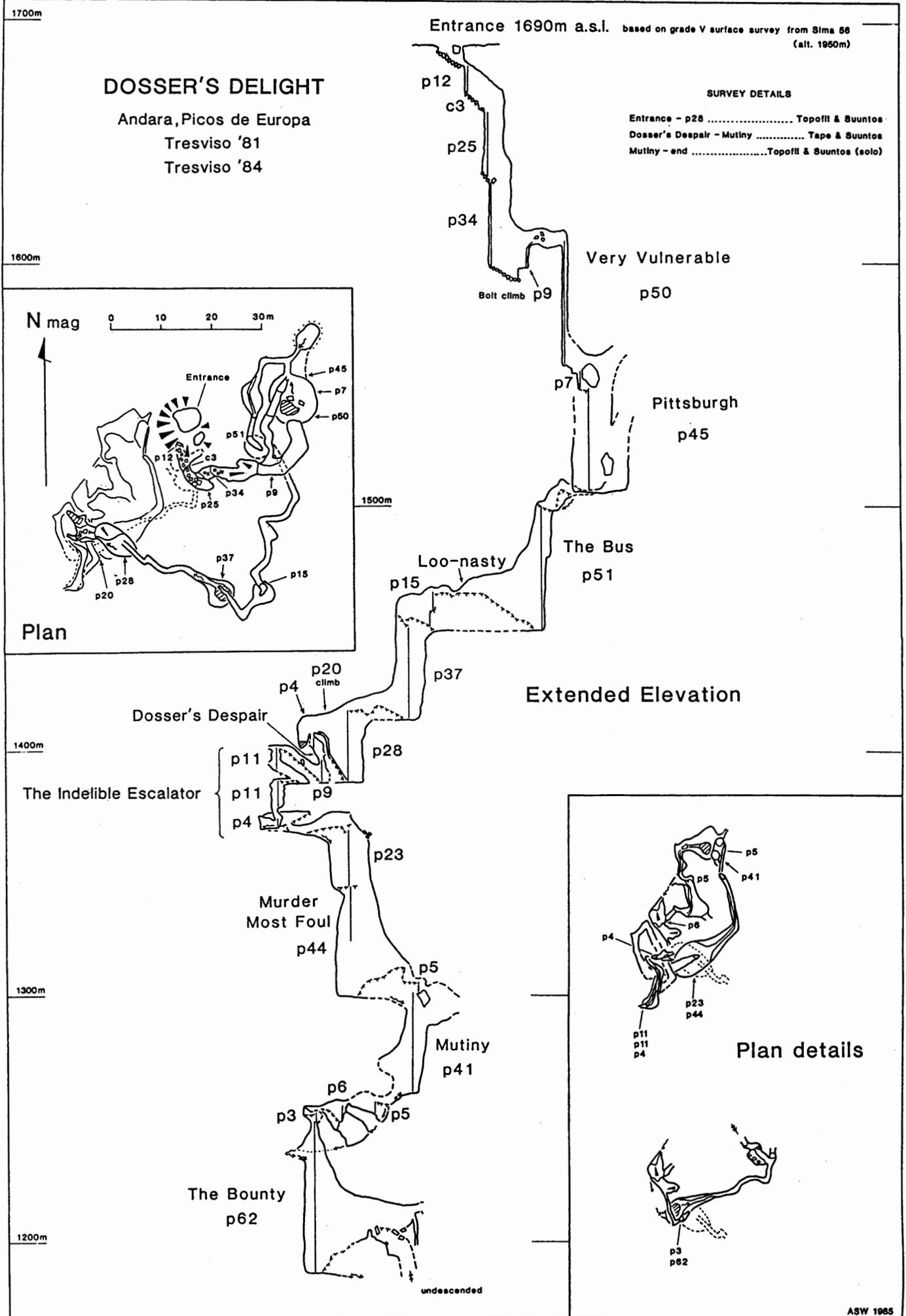
In 1985, "Dosser's" was high on the list of objectives, and people were queuing up for push trips. The first of such trips returned with good news - after a short pitch from the -500m level, the caves had met a small streamway which they followed downwards. The cave began to open out, losing some of its narrowness, and for the first time it gave the cavers some respite, with small drops and climbs, adding almost 100m to the depth of the cave. They also had the best news any caver would wish to hear - they were stopped on top of another pitch.

After a gear-hauling trip down to -500m in order to reduce the work on the push trip, the next group continued down the ever-increasing streamway, with several small pitches, and was stopped at a larger pith by lack of sufficient rope and time. This pitch was estimated to be greater than 80m. That trip lasted 24 hours.

By this stage, a trip to the lead in "Dosser's" was becoming extremely difficult. Due to the number of rifts in the first 500m, most of the ropes were becoming dangerously coated in mud. People prussiking out were having the alarming experience of sliding back down the rope when both ascender cams failed to grip. This tended to increase the adrenalin when nearing the top of a 60m pitch! As a result, everyone carried a toothbrush and meticulously cleaned their gear at every available pool. One near bad accident occurred when the rope was so slimy that one person's descent could not be controlled, and he slid for 30m before landing on a ledge, twisting his ankle. As most of the cave is either crawling/squeezing or prussiking, he was able to exit without outside help. Needless to say, regular rope replacement and washing was necessary.

This new section of "Dosser's" was fortunately not quite as arduous, but it was taking at least 8 hours of difficult caving to reach the lead. It was therefore decided to put in a 2-man "bivvy" at the -500m level, in a rather sticky ascending rift. This was deemed to be the only "dry" place suitable. It was in the main through passage, and so narrow that the hammocks had to be hung end to end - not a pleasant place at all! A team of four carried in the hammocks, sleeping bags and bivvy bags, as well as stoves, food and dry clothes, whilst a team of two went directly to the lead with (hopefully) sufficient rope.

The large pitch turned out to be a total of 125m, later named "Poza de Los Picos". This dropped into a chamber of huge dimensions compared



to the rest of the cave. A short walk, a climb and a rift led to a further 10m pitch and the passage started to close down. A few squeezes and rifts ended in a small chamber of distinctly "sumpy" characteristics, with mud 10m up the walls and a small pool at the end. The "Dame Edna Everidge Memorial Sump" had an airspace of about 4" which was later pushed and a few more metres of muddy passage gained, although not much more depth.

Feelings ran high with disappointment on everyone's face but not far below the surface was relief! At -817m, "Dossier's" was dead.

Australians on this trip:-

- Mark Wilson**
- Stephen Bunton**
- David Barlow**
- Carey Barlow**

* * * * *

LETTER!

Dear Mr. Editor, (Hi Kerrie)

I feel that some comment is necessary about the article titled "Karst Protection" in AUSTRALIAN CAVER No: 110 (p14) and replies to this article in issue 111.

This article was written by me some 18 months prior to its publication - in which time it was grossly out dated and out of context. My apologies to all concerned for assuming that it would not be published so long after it was written.

It should also be noted that even though the Tourism Commission may only administer 3 of N.S.W.'s karst areas that these three areas contain one third of N.S.W.'s caves. Does this not make the Commission the largest single manager of caves in N.S.W.? The largest is often considered the leader - just as A.S.F. is the largest caving organisation in Australia.

As my article was aimed at A.S.F.'s responsibilities it is good to see that it has provided the desired result - CONSTRUCTIVE self criticism. Cave owners, managers and now Government Departments such as N.S.W. Tourism Commission are becoming more professional and business-like. A.S.F. did not take this initiative so now it can only follow. Such clubs as C.D.A.A., Hills Inc. and now S.U.S.S. have become more business-like. And not only have they grown with these changes but are now considered to be professionals - not just academics, scientists or "hobby" cavers. This has been due to club restructuring and the delegation of authority to get things done. Should or will A.S.F. restructure, in order to realise the Federations' goals? More letters please.

Guy McKanna

Combined Speleos Annual Dinner-1986

Graeme Pattison

A thoroughly successful dinner was held on Friday 5 September at Woolwich Pier Hotel Function Room. Over 60 attended from eight clubs, plus Andrew Spate from Canberra, Sue White from Melbourne and Mirian from Chillagoe.

The Hotel provided panoramic views of the harbour while Sydney provided a warm night. The traditional bun fight could not be held as the caterers only provided sliced bread.

The guest speaker was Mike Augee, a lecturer at the University of NSW School of Zoology. Mike is the owner of the deep hole next to "the largest stal in the world" at Wellington Caves. He explained the painstaking and meticulous care that was taken in its excavation, looking for microfossils down to the two metre depth where a gramophone record was found. Below that the chronological record became more interpretable. His analysis of fossil types, relative abundance and dates indicates that many larger species of Australian animals became extinct not because of the arrival of man, as previously believed by many, but due to climatic changes. Mike also told of his observations of the universal tourist cave guide spiel around the world.

* * * * *

NETWORK PLOTTING PROGRAM

by Keir Vaughan-Taylor

Surveying complex cave systems is a skilled and adventurous process. After a survey is recorded (sometime in the field on a micro-computer) the data is used in conjunction with pencil, protractor and field notes to construct a map of the cave. This can involve weeks of tedious work.

The following dissertation describes a plotting program that uses field survey data as input to create a computer representation of a cave system and then produce a plot of the cave. A second program plots the cave in three dimensions from any perspective. The original application used data from the 1985 Mexican Cave Expedition where caves up to a kilometer deep were discovered and exhaustively surveyed.

The survey information can be stored on a data base permanently. If in the future any person wishes a plot of that cave system the data base can be accessed and a plot provided. Sydney University Department of Computer Science is now establishing such a service. Plotmaps in the data-base will be available to any member of A.S.F. Unfortunately, production of quality plots consume resources and manpower. There is a charge to cover this cost. All submissions concerning Jenolan will be processed free of charge.

Definition of a Network: A network or graph is generally defined to be a set of points called vertices together with a set of lines called edges joining certain pairs of distinct vertices. Two vertices are called adjacent if there is an edge joining them.

Caves can be thought of as networks. The computer represents the cave as a network in the computers memory and then a network traversal algorithm is used to "visit" every path through the network. A series of passes through the network are made to establish the dimensions of the system and allocate a colour scheme to subsystems within the network. Further passes calculate the rectangular co-ordinates of each station then plotting commands are output to a plotfile, first for the survey traverse line and then the plotting information for the left and right walls of each passage. As this is done, absolute data regarding each station is written to a file for use by a 3d perspective program.

A vertex shall here be also referred to as a station. A point at the mouth of the cave of known latitude and longitude is defined as the first station. From the first station a measu-

ring tape or cord is stretched to some point inside the cave which then becomes the second station. The tape length, its compass bearing and angle to the horizontal is recorded. At each station the height and width of the passage or chamber is also recorded. This procedure is repeated throughout the cave.

A "known" survey point is any point that is connected to the starting position outside the cave. It is advisable from the point of view of data handling to always survey away from known station points rather than begin surveying from an unknown point towards a known station and then join on. The program cares not at all if this is done and will quite happily process any ordering of the data. However all parts of the cave have to be connected or the program can not calculate where in space the unconnected survey station belongs. If a plot containing several disjoint caves is desired then each cave should be connected using a surface traverse. (Left, right, up and down measurements would be zero) This surface traverse is quite enlightening since it clearly displays the caves relationship to surface features. It is often a good idea to perform a surface traverse anyway to get this relationship displayed.

All surveys should contain height and width data. The dimensions of the passage even if only guesstimated allows the computer to represent the shape of the passageways as rectangular cylinders and give approximations to the shape and dimensions.

The survey team is obliged to think in terms of how the computer will interpret the information rather than just recording data. A passage on a survey leg changes height and shape, so the dimensions written down for any particular survey leg is representative of the passage as a whole and the measurement of the average passage/chamber size requires a little "eyeballing".

The passage described for the computer will be a rectangular cylinder that does not change size along the length of any survey leg. If then the survey team is recording a passage that gradually increases in size then to show this, several survey legs would be made along the passage with the increasing dimension sizes included with each station position. It might be that a single survey leg could have been recorded for such a passage. However is even for surveys not destined for the computer a survey station should be specified at any place of change or significance.

A problem arises as survey legs become more and more vertical. In the extreme with a totally vertical passage one might have difficulty deciding which way in the vertical passage was left and right since although left and right lies at right angles to gravity and the direction of the bearing once the passage is vertical both the bearing and gravity point in the same direction. Left and right can therefore lie on any point of the compass. The direction of up and down can also be debated.

A moments reflection will remind us that as the passage dips more and more to the vertical the compass bearing measurement becomes more and more imprecise and difficult to determine. The compass bearing for a vertical passage is meaningless. If however the surveyor gives the vertical and near vertical passages an artificial compass bearing, the definitions of up, down, left and right fall into place. This artificial bearing can be selected to be the most convenient for describing the four dimensions of that station. Up is always normal to the traverse and in the direction of the compass bearing. Left and right are always at right angles to the compass and also the up direction. In general terms then all dimensions are given in reference to the traverse direction and a compass bearing.

The computer program is affectionately called Netraglyph. It is written in the language Standard Pascal. This means it will run on many computers even desktops. This is a slight advantage however, because the program makes extensive use of Pascals pointer facilities and consumes large amounts of dynamic memory, (head space). Larger caves require more memory. The program was to initially process survey data for 1985 Mexico Speleological Expeditions and also the gigantuan survey efforts performed in Papua New Guinea. The volume of data from these surveys is so large that few machines have the stack/heap capacity to perform the processing.

Using a computer system at the University of Sydney this program produced plots for both New Guinea and Mexico. The New Guinea data contains many errors. 16 kilometres out of 55 kilometres of surveyed passage has been produced. Mexico however was a highly professional survey and required virtually no correction. The results were very satisfactory.

The colour of the any particular part of the plot is determined by the first letter of the station identification number given by the survey team in the field. The colour can be made to highlight any characteristic the survey team leader would like to appear on the final plot. Different colours can differentiate a variety of attributes

of subsystems. For example in some caves it might be of interest to highlight different geomorphological characteristics such as water filled passages, hydrologically active sections and dry sections. It could be used to differentiate different types of limestone.

Netraglyph produces plan and side views in any rotation and scale specified at runtime. Often a rotation from magnetic north to geographic north is desired. The plan view (looking from above) shows the dimensions of the passages by calculating the position of left wall at the ends of each survey leg and then joining them. This then is also done for the right hand wall.

All endpoints are labelled either with the station identification number of a substituted label. Junctions are not labelled because a number of passages converging closely on causes the label to interfere with the plot of the actual cave. Should it be desired to name the endpoint with the name of the cave or chamber the program searches a label file for a set of characters to match any of the left most station id numbers and then substitutes whatever text follows if there should be a match. For example, suppose the label file contained the single line:

"J1457 Barralong Cave"

If an endpoint with the the number J1457 is found then the endpoint would be labelled Barralong Cave. If the label file contained the line "K Barralong System" then any endpoint station id beginning with the letter K (and any number following) would be labelled "Barralong System". A record of the positions of all labels is maintained in memory while the program is running so that if two labels should overlap the program will adjust the position of the second label to the nearest available place on the plot that doesn't overwrite the first.

A credits file enables any information a user might want about the cave system plotted on the right hand side of the plot. There are two types of text recognised from this information. Heading Text and subheading. Heading text is recognised in the label file as any text beginning in the first column, subheading text is any text beginning in any other column. On the plot Heading text is plotted out with a larger charactersize then subheading text and in a different colour. The subheading text is indented.

Underneath the Credits information a simple north south indicator line points the direction of a magnetic north. This direction changes depending upon the angle of rotation specified at runtime.

It was quickly realised that it would be possible to write a quick interface program for a perspective package. The perspective package calculates the view of a three dimensional object viewed from any distance and angle.

The interface program has to provide the perspective package with the 3D co-ordinates of the surfaces making up a solid in space. Each passage or chamber can be approximated as an elliptical cylinder surrounding each edge (survey leg) joining two stations. Each quadrant of the ellipse at the ends of the edge segment has a major and minor axis determined by the "left, right, up and down" measurements made at each station. The cross-section of a passage from the top to the right hand side of the passage is the shape of the top right hand side of an ellipse with y axis equal to the height of the passage and the x axis equal to the distance measured to the right wall of survey point. The cave system is of course made up of many of these elliptical cylinders.

The perspective package has a number of nice features. It will colour and shade the cylinders, remove parts of the cave that are behind parts in the foreground (hidden line removal) and display this on a colour monitor. At present, the only way to get hard copy is to photograph the screen or record it with a VCR. The possibility of making a film that travels around the cave and travels through it viewing its structure from various positions should be realised in another two months.

How do We Get it?

Ideally you are on the network.

In this case netsend your files to:

if overseas: seismo!munnari!bassser.oz!suss
if Australia: suss&bassser.oz.au

Otherwise write me a letter: Keir Vaughan-Taylor
c/o Basser Dept of
Computer Science
University of Sydney.

Include listings of your files so I can give them a quick check to see if they are likely to run.

I will return to you the dial in line number and details of how to connect. You will need communications software such as kermit.

Magnetic Tapes can be accepted. Please specify number of tracks, bytes per inch and records per block (blocking factor).

We can accept tapes suitable for a Sun computer and would in fact prefer this.

An initial \$45.00 charge will be made to cover costs. Each plot with an appropriate plotter size. If however the scale of the

plot exceeds the maximum size of plotter a smaller scale will have to be used. It is expected that unsuitable plots will be produced. Within reason there will be no charge for this. Perspective 3D photographs can be provided (\$3.00 per slide). Cheques should be made out to "The University of Sydney".

Format for Survey Submission

Main data file

The first line should contain the name of the cave, its tag number and the latitude and longitude of the cave, and then the station identification number corresponding to the entrance at the specified latitude and longitude.

Following lines should contain the survey authors' name and if desired the names of those in the survey team.

All data is in free format, that is there can be any number of spaces or tabs or blanks following each data item. Integer data should not contain decimal points but numbers that do contain decimal points can have any number of places following the decimal point. Titles, remarks and comments can be placed on any line, but should not contain any text corresponding to a station name. No titles, remarks or comments should be inserted in the middle of a data line.

Topofil survey technique is a much faster method of cave survey. A thin cord is spooled out through the cave and its length measured on an odometer. Bearings are sighted along the cord. The cord is used once and discarded (naturally removed from the cave). Since the cord breaks and surveys are composed in a disjoint fashion each survey leg contains the tape start measurement and the tape end measurement for each pair of survey stations. If topofil and standard survey measurements have been mixed, standard survey format can be presented by entering a zero in the first topofil tape reading and then tape length should be entered in the second position.

The format should be as follows:

Station from	Station to	Tapestart	Tapefinish		
EG: J0100	J0101	40672	40822		
Compass	Clinometer	Left	Right	Up	Down
165	+10	5.0	2.0	15.0	0.0

Topofil tape lengths are in centimeters, other distance measurements are in meters.

Explanation:

Stationfrom: A station identification string from where the bearing was sighted from. The station identification number should begin with a character in the range A - Z followed by a character in the range A - Z, 0 - 9 and then three more characters in the range 0 - 9. There should be no spaces in this name. The first character determines the colour of the plot drawn between these two stations.

Stationto: A station identification code representing the point to where the bearing was sighted.

Tapestart: Integer number (no decimal point) in centimeters indicating the measurement on the tape at the stationfrom.

Tapefinish: Integer number in centimeters indicating the measurement at the station to point.

Compass: The compass bearing taken from stationfrom in the direction of stationto. Magnetic North 000 degrees increasing in a clockwise direction.

Clinometer: The angle of elevation in the direction from stationfrom to stationto.

Left: Distance in meters representing the average dimension of the passage to the left of the survey traverse.

Right: Distance in meters representing the average dimension of the passage to the right of the survey traverse.

Up: Distance in meters representing the average dimension of the passage above the line of the survey traverse.

Down: Distance in meters representing the average dimensions of the passage below the line of the survey traverse.

Control File:

A five line file specifying characteristics of a desired plot.

Format:-

(Each item on a separate line)

- device type
- scale
- gridsize
- angle of rotation
- sides
- stationname

devicetype: The type of plotter that the output is destined to be plotted on. At this time it can only be hp7220 or hp7580.

scale: The absolute scale of reduction.

gridsize: Specifies the size of the grid drawn across the plot. 0 suppresses the grid altogether.

Angle of rotation: The number of degrees that the plot is wished to be rotated. 0 produces a plot with magnetic north straight up.

sides: This can be zero or any positive integer. 0 will plot the survey traverse line alone and a non zero will plot the rectangular representation of the cave.

stationname: The station identification code that is going to be plotted at co-ordinates 0.0. It can be any station on survey at all.

EXAMPLE:

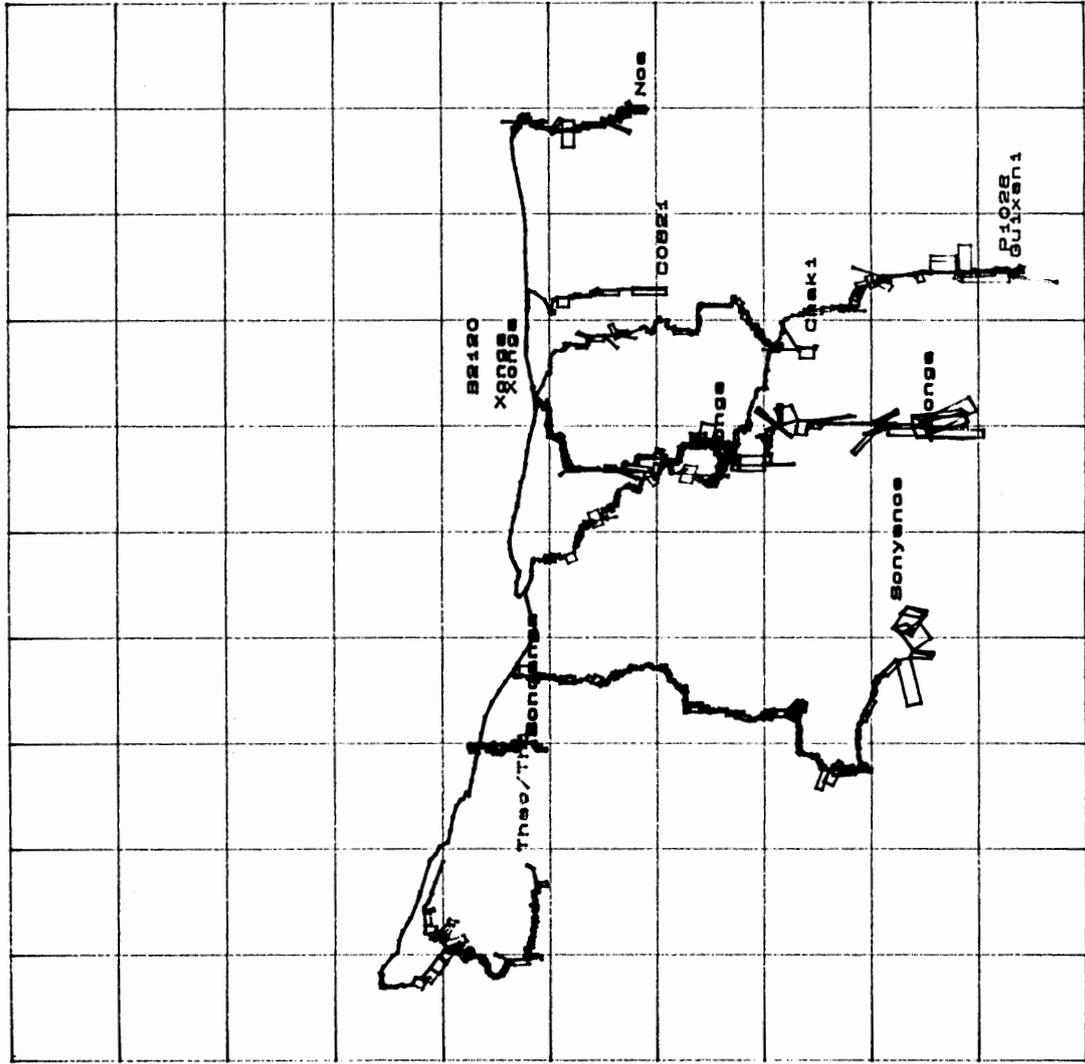
The following is a control file that will produce plot output suitable for a Hewlett Packard 7220. The scale will be 1 to ten thousand. A grid will be drawn over the plot at every 200 meters. There will be no rotation. Station Z1201 will be at co-ordinates 0.0 and the edges of the cave will be drawn in.

```
hp7220
10000
200
0
1
Z1201
```

Credits File

Contains any text that is wished to be displayed on the plot. There are two types of text: heading text and subheading text. Heading text begins in the left hand column and subheading text begins in any other position. Heading text is plotted in a different colour from subheading text and is slightly larger. The subheading text is indented.

1000m
800m
600m
400m
200m
0m
-200m
-400m
-600m
-800m
-1000m



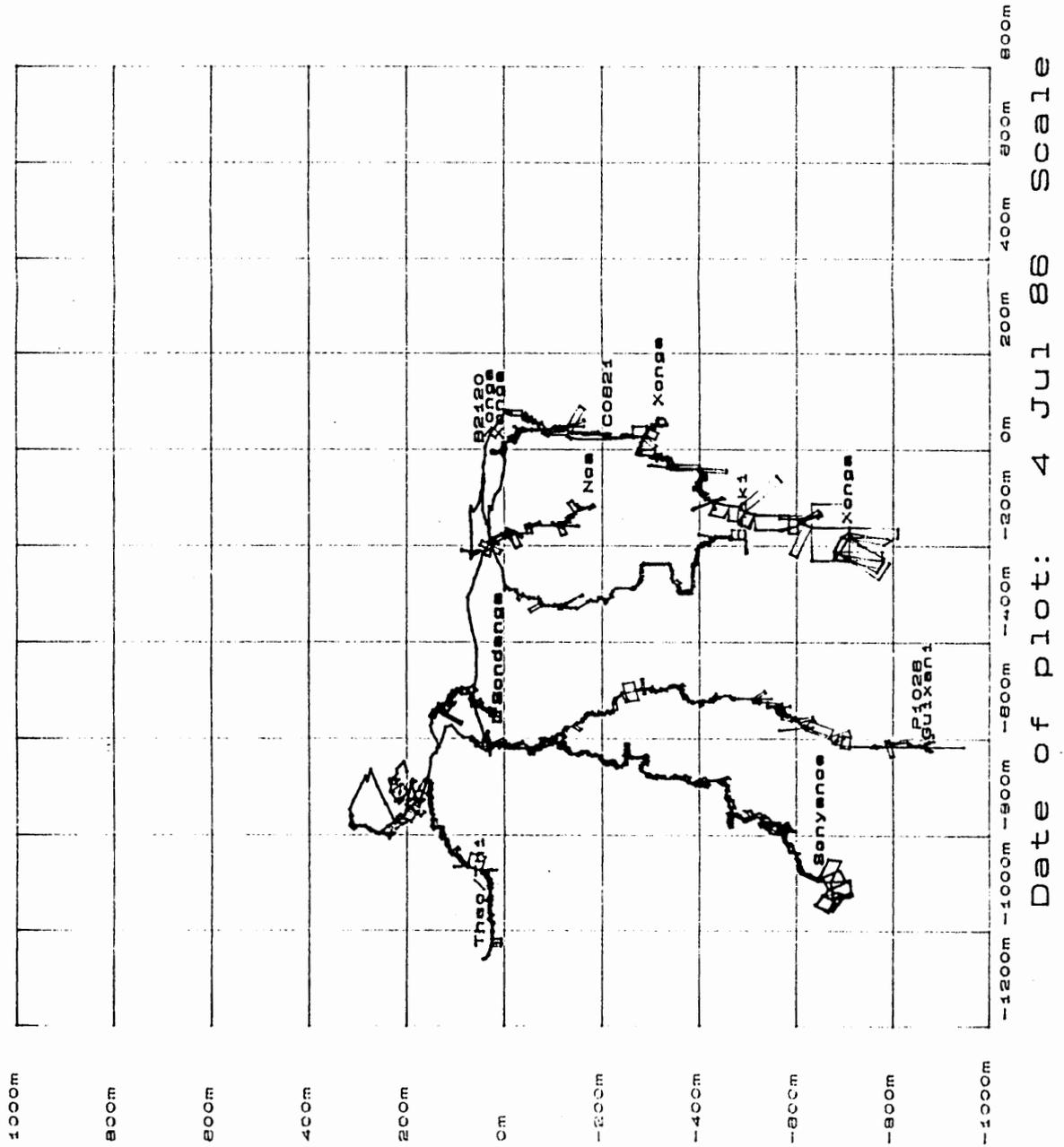
Mexico85 Speleological Survey

Programming
Keir Vaughan-Taylor

Survey Organisation
Alan Merild
Julie James

Date of plot: 4 Jul 86 Scale 1: 10000

Mexico85 Speleological Survey
 Programming
 Keir Vaughan-Taylor
 Survey Organisation
 Alan Warid
 Julie James



DOWN UNDER ALL OVER

HSC : GLENROCK CAVES - N.S.W.'s NEWER AREA.

SO - whose heard of Glenrock? not many hands up I see. Well neither had we until a few years ago. What could have been a scungy piece of Limestone is anything but, and now yields a very high number of caves.

GLENROCK lives in the upper Hunter Valley and the caves are situated entirely on Private Property and any intending explorers must gain permission from the property owner.

The limestone is part of the Tamworth Group (which includes Timor/Isis and Crawney Pass) and is of the middle Devonian Age. The area also contains areas of Paleokarst (which is where volcanic flows change the development of existing Karst and later effect subsequently forming karst. - Osborne 1984).

- The limestone outcrops for about 8 kilometres discontinually and to widths of 1.5 kilometres and with a possible depth potential of 100m. The limestone varies from massive unfractured, to blocky jointed and highly fractured areas.

The caves are generally small, tight and vertical, often containing foul air in reasonably high concentrations, very sharp bedrock and unfortunately little formation.

Going on the amount of area to be searched and the current rate of cave finding, GLENROCK has the potential to yield around 110 to 115 caves. Currently the cave count stands atGasp....98. Cave depths vary between 0 and 47m and lengths between 2 and 140m.

Foul air has defied further exploration in GR30-Hens Teeth, but has great potential to continue to greater depths, and GR43-Bats and Bandicoots could continue further and deeper by pushing an unstable rockpile in foul air.

We (Hills Speleo's) intend finishing documentation early to mid 87 and are currently organizing a photo-copy type publication containing cave descriptions, cave maps, and details on the geology etc. of the area.

So there you have it - Glenrock at a glance - a completely new area of 100 caves. Impressive Eh.

Rick Pinnock

MUCG:

1986 has been a busy year for the members and executive of MUCG. In the past twelve months club members have been on an MWS&DB tour of the Old Tank Stream beneath the streets of Sydney, been on a couple of trips through the Narrow Neck Tunnel, walked in the Jagungal region of the Snowy Mountains, been on a number of canyoning trips in the Northern Blue Mountains, and been caving at Bungonia, Jenolan, Wee Jasper, Colong and Tuglow. A small group of club members were even able to visit Chillagoe Caves whilst on holidays in Far North Queensland.

The principal project for 1986 has been the exploration and mapping of Shaduf Cave (B.15) at Bungonia. At the beginning of the year word soon got around that the sump passage connecting B.15 with the B.4-5 Extension, which had been flooded since 1983, had finally dried out. Using the club forestry compass, a high grade survey of the whole of Shaduf was carried out, over 400m of passage being mapped. The results of surveying work were fed into a computer, using the Cavesurv programme, for all the necessary number-crunching, and the accuracy of the survey was later confirmed using Radio Direction Finding gear on loan from the Victorian Speleological Association. During the survey, the plunge-pool aven and a small hanging chamber were explored using scaling poles.

As a footnote to activities at Bungonia, MUCG's previous dig at Bungonia - 'The Great Escape' - has now been numbered and tagged - B.156.

During the past year various executive members have been particularly busy. Club Safety & Equipment Officer, David Rothery, along with Jeanette Jordt and David Hamilton have joined the NSW Cave Rescue Group, David Rothery recently being elected CRG Training Officer.

David Hamilton has been continuing with collecting material for a second special edition of the club journal, Quaver, and has completed abstracting all issues of Quaver to date for inclusion in Australian Speleo Abstracts.

One of the busier members of the executive has been Derek Hobbs, who in addition to his duties as MUCG's ASF Inc. rep., is also ASF Inc. Assistant Secretary, NSW Speleo Council Vice-President, Convenor of the NSWSC Subcommittee on Jenolan, Wombeyan & Abercrombie Caves, and is one of the signatories to the lease to the new Jenolan Caves Cottage.

At the end of the 1986 MUCG members look forward to the 16th Biennial Conference of ASF - Speleotec '87 - to be held at Macquarie University in January 1987, and members are currently organising a number of events including Speleosport, and will be helping with some of the post-conference field trips.

David Hamilton

MSS: THE YEAR IN REVIEW:-

DECEMBER 1985 - NOVEMBER 1986

MSS turned 21 years of age on the 13th September 1986. We therefore had reason to celebrate, which we did in the following manner:-

DECEMBER 1985 We discovered a new cave at Jenolan. We called it Winch Cave, which depicts its method of discovery. We plan to call our next discovery Dynamite Cave! The cave is only small, being some 10m in length, however it has dig potential and this is being pursued.

JANUARY 1986 We launch our booklet "An Introduction to Abercrombie Caves" at the ASF meeting in Melbourne. The booklet contains 17 pages of information on the area including details of the caves, the history of the area, fauna and speleological activities. Stocks are still available at \$2.50 each, so don't miss out as they are selling fast.

FEBRUARY Our RDF equipment after some years ago suffering the fate of an amateur "I can fix it" specialist, was successfully reconstructed to excellent working order with some assistance from VSA. Thanks VSA. We have since put the unit to good use.

APRIL Halley's Comet. We decided that the hills around Abercrombie would be a good spot to view the monstrous glowing light in our skies.... We are still looking for it! The trip created great interest within the club, with over 60 people attending the trip. A full caving trip was planned together with a comet party and a 21st birthday cake for MSS. The celebrations lasted well into the night and it was amazing how many comets we saw at 3.00am. The next morning a group photograph was taken to commemorate our birthday and the fact that it was our largest trip.

MAY Surprise! Our ASF Handbooks arrive and a new game is invented. "Lets spot the errors"

JUNE Rare bones were found and identified at Abercrombie. Specimens of *Protemnodon* (Giant Wallaby) and *Stenthoras* (Stub nosed browsing Kangaroo) identified to be between 30,000 and 1,000,000 years old (give or take a few moons) are being investigated by the Australian Museum.

OCTOBER New caves were found at Abercrombie. Sixteen caves were found in one weekend, bringing the total found in the year at Abercrombie to 21. However, we are still looking for that elusive cave which is big enough to fit a battleship!

NOVEMBER Our 21st Annual dinner was held at the Billabong Restaurant Trunkey Creek. This was an excellent evening, with some of the Society's earlier members present who were able to reminisce with some of our older members.

During the year, MSS held in excess of 20 trips, including Jenolan (4), Abercrombie (5), Bungonia (2), Wombeyan (2), Mudgee, Yarrangobilly, Wyanbene, Wellington, Tuglow, Tasmania (Ida Bay and Mole Creek) and one Field Day. We also held trips to various tunnels and other pseudo caves.

Our membership is steadily growing and is approaching 40 members. Next year will be another busy year. We plan to become incorporated and we also plan to reprint some of the older maps of caves at Abercrombie. These maps are being laboriously redrafted to conform with ASF standards. With the new caves being discovered, we will probably have to print a special edition of our Newsletter.

Scott MacFarlane

LETTERS (cont.)

I would like to comment on two 'letters to the editor', by D. Hobbs, NSW Speleological Council, Australian Caver No.111.

1. The clarification made on G. McKanna's article, was well founded. Such opinionated views, as reflected by Mr. McKanna are of true detriment to the ASF and its affiliates.

2. Unfortunately, the Council seems to be under the same illusion, as to what constitutes speleology, as the remainder of the 'caving' fraternity in Australia. Speleology is the science, Caving is the sport.

The credibility of 'familiarisation' as a bona-fide speleological activity, is extremely questionable. Cave familiarisation

is essentially pure 'sport caving'. When areas of vulnerability, either zoological or geological are considered, 'familiarisation' obviously has no place.

3. The recommendation to Mr. Bryan, by the Council, that the Tourist Commission only grant permits to 'non-affiliates' under exceptional circumstances, reaffirms the obvious monopolization which the infrastructure A.S.F. has held hitherto.

Whilst this monopolization has effectively enhanced karst preservation by limiting access to ethically bound affiliates, it does not protect the said karst. General public access to 'wild' cave areas is presently denied in order to protect the caves from damage caused by undisciplined persons. Unfortunately, the Federation itself, has no true screening technique for affiliate societies, and as such cannot guarantee that any such affiliate society will function within the Federation's ethical guideline.

The increased caution exercised by the managers of certain karst regions today, when considering speleological activity applications, is a direct reflection of the uncertainty of the effectiveness of Federation control. This uncertainty stems directly from past activities of affiliated societies whose motives were dubious, and in the opinion of controlling bodies, unproductive.

When non-affiliates can prove to region managers, that they are at least as competent if not more, as affiliated societies to the Federation, the Federation's standing as a controlling body of speleological groups diminishes.

For the Council, acting as representative of the Federation, to recommend that 'affiliate' access be the only form of access to 'controlled' karst regions, it must be able to affirm that those said affiliated societies will function within the ethical guidelines of the Federation, whose guidelines provide an ethical understanding which surpasses that of the general public.

Todd P. Dennis

1986 Australian Expedition to Thailand

by John Dunkley

An expedition of 10 from Australia with similar local logistical support spent a month in Thailand in April-May 1986, mostly in the Nam Lang - Nam Khong karst, in the northern province of Mae Hong Son.

The most significant exploration was of Tham Nam Mae Lana, located in February 1986 after an intermittent search lasting 3 years. With a stream passage of 7.2km and a total explored length of 8.4km this is now the longest cave on the mainland of South-East Asia, and was explored using lilos from a base camp at the downstream entrance. Two weeks later local information led us to the upstream entrance in a curious double karst window, and Attila Vrana and Kerry Hamilton were able to make the first through trip in 11 hours, discovering 3km of new stream passage as they went. A number of side passages remain unexplored.

Last year's big news, Tham Nam Lang was pushed to just under 8.4km in a 53-hour bash from an underground camp. Photographs were at last obtained of the massive 40m high stalagmites in the upper levels.

A side trip to the border of Burma explored several sporting caves in remote country. As well a number of significant archaeological sites were located and further geological and geomorphological work was carried out.

The expedition then moved to the massive karsts of west central Thailand only to find the wet season in full swing and many roads impassable. In the last few days a new base camp was established in the air-conditioned, \$15-a-double rooms of the New Lak Muang Hotel in downtown Pha Ngua, from which occasional sorties by foot or bus resulted in exploration and surveying of several kilometres of local tower karst caves. We also became fixtures in the restaurant/"night club" on the ground floor.

A report on the Expeditions of 1983 to 1986 is in preparation, complete with maps and photographs and should be available by the end of the year.

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SPELEOTEC '87

is almost here

If you have not already registered now is the time to do so to ensure your requirements are catered for.

- Registration fee is \$35 per head
- Registration forms were sent out with Australian Caver #109 or if you require additional forms contact:

Ian Mann
28 Stephen Street,
LAWSON NSW 2783
Home phone (047) 591890 (between 7 and 9 pm)

- For accommodation other than camping you MUST contact us NOW otherwise you MISS OUT
- Papers and Abstracts are NOW due and if they are not forthcoming they will not be printed in the pre conference handouts (these should be in the format outlined in the Speleotec '87 information sheets.
- If you require helmets, lights or ladders, Macquarie Uni Caving Group will be hiring these out at the conference.
- If you wish to partake in pre conference field trips it is imperative that we be informed NOW otherwise we cannot arrange permits, guides etc.
- You are not obliged to be at the conference in order to be at the dinner. Contact Ian Mann (as above) for tickets at \$15/head.

AS THIS PROMISES TO BE THE EVENT OF THE YEAR, LET IT NOT BE SAID THAT YOU
MISSED

SPELEOTEC '87