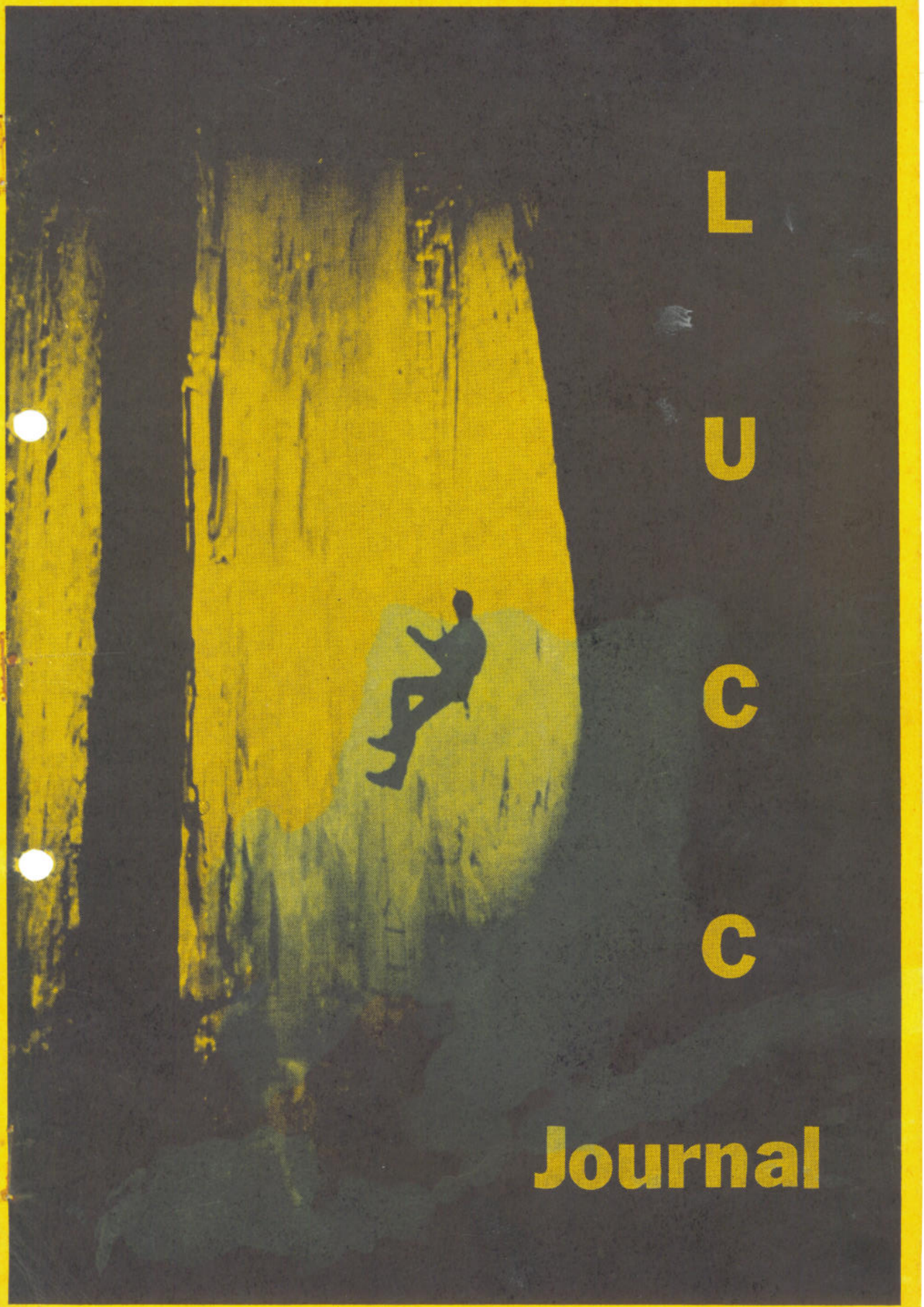
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THE JOURNAL

of the

LONDON UNIVERSITY CAVING CLUBS

CHELSEA COLLEGE CAVING CLUB

IMPERIAL COLLEGE CAVING CLUB

QUEEN MARY COLLEGE CAVING SOCIETY

UNIVERSITY COLLEGE LONDON SPELEOLOGICAL SOCIETY

No. 12 Winter 1971

Page

Surveys.

PRICE 15p.

EDITORIAL

This edition of the journal reflects the summer activities of the colleges, with expeditions to France, Morocco and Yugoslavia. Also included are the meagre results of several hundred man-hours spent in Lost Johns.

It is a pity to see that all of the activities reported in this journal were those of only two of the participating clubs. Let us hope that they will have something to contribute to the next issue.

We have a number of projects lined up for next term, so lets have the articles about these in plenty of time for the next journal. Articles will also be welcomed from anyone in the four clubs who produce one.

Many thanks to all the contributors, to the IC Geology Department for running off the surveys and to Lloyd Tunbridge and John Walkington for production assistance.

Rog Bowser.

In addition to the Editor, R.J.Bowser, Chemical Engineering Dept., Imperial College, London S.W.7, the following can supply copies of this journal:
Pen-y-ghent Cafe, Horton-in-Ribblesdale, Settle, Yorkshire.
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ECONOMICS OF CAVE PHOTOGRAPHY

Taking photographs underground is not a particularly cheap occupation, and when colour transparencies are taken it is, quite simply, expensive. Furthermore it is an occupation fraught with hazards, and the costs per useful result may be almost astronomical. (eg the cost of colour slides using triple flash exposures on forced Ektachrome stock, if only alternate pictures are useable is 57p per success), let alone the costs of dropping the camera down a pitch.

Consequently cave photography should probably be left to the expert or the rich, but times do occur when the ordinary caver wants to take a few colour photographs. This recently happened to the writer who also took the opportunity of comparing some different films.

First, a note on equipment. At this strictly amateur level the equipment is assumed to be common and normaly available- the benfits of various better items of equipment are not relevant here. The camera type is not significant as long as it has a flash synchronisation on it. It is assumed that the lens will open to f3.5 - a reasonable figure without undue expense. The focal length of the lens does not matter either, though it is worth mentioning that a reasonably wide angle (about 35mm) normally gives the best results underground. It is also assumed that a single (remote perhaps) flashgun will be used; multiple flash techniques are to be avoided by the amateur as they cost more in bulbs, more in flashguns, have a higher failure rate and require the use of a tripod on the camera (more expense and effort in carrying required). Electronic flashes which have adequate power for cave use are ludicrously expensive for taking underground.

With these limitations the major problem that arises is the amount of light that can be recorded on the film in use in comfortably large cave passages. As the flashbulbs larger than PF5 are no longer available, this means using an adequately fast film. Basicly, the faster the film the better (until colour distortion comes in) as this is the only way to photograph large passages and chambers. Even on shots of smaller features the light available does not permit the use of a smaller aperture with its corresponding increase in depth of focus.

Three different high speed films were used, and their objective qualities are summarised in the accompanying table. Anscochrome 500 produced by Gaf, is the fastest

standard colour film available - stocked at any reasonable photographers. High speed Ektachrome is Kodak's fastest colour film; it withstands force-processing very well and can be reasonably forced to 1000ASA. These two films are the best known high speed colour stocks. Perhaps new to many readers is the Agfachrome 50 S Professional film (not the normal Agfa CT18) which withstands forcing from 50 to 500 ASA remarkably well; it is available from most large camera shops. The ubiquitous and excellent Kodachrome 2 is the film with which all others are compared. It is, however, far to slow for most use in caves but is included in the table for the benefit of comparison.

Film	Ansco 500	Ektacm H.S.	Ektacm H.S.	Agfacm 50Spr	Kodacm 2
Number of exposures	20	20	20	36	36
Normal rating ASA	500	160	160	50	25
Forced rating ASA	-	-	320	500	-
Cost £	1.83	1.10	1.10	1.30	1.96
Processing cost	inc	0.60	1.40	0.80	inc
Guide Number PF1 metres	52.5	34.5	42.0	52.5	12.6
Guide Number PF5 "	87.0	52.5	67.5	87.0	21.0
Max distance f 3.5 metres	24.9	15.0	19.3	24.9	6.0
Cost per frame p	9.1	8.5	12.5	5.8	5.4
Cost inc flash and mount	14.1	14.5	18.5	11.8	10.4

Kodachrome is available in rolls of 20 or 36 frames (on 35mm film - which the entire table refers to), though the others are only available as in the table. Speed ratings are quoted by the manufacturers, though a critical eye may suggest that the Ansco film is sometimes not quite up to 500 ASA. Costs of processing are included on Ansco and Kodak purchases. The processing cost of Ektachrome at 160 ASA is as quoted by Kodak. However Kodak will not force process their film and processing laboratories put a 100% surcharge on forcing their film. The price quoted is that by Colour Processing Laboratories, 9 Grafton Mews, London W.1 (who are very reliable and if sent cash with order provide a return of post service) for Ektachrome at 320 ASA. Agfachrome may also be processed at C.P.L. but is cheaper as there is no surcharge for forcing.

The guide numbers in the table are those for the different flash bulb sizes recommended by the makers but divided by 1.5. The resulting figure is a fairly good average for cave conditions but requires modification for unusually large proportions of reflective calcite or dull mud. Consequently the maximum distances for each film,

with PF5 bulb and f3.5 aperture are noted in the table for cave conditions. This shows that Kodachrome 2 is only useable in rather small caves, while the Ansco or Agfa can reasonably be used to show the entire walls of a 30m pitch allowing for reasonable light fall-off. The costs per photograph provide some interesting comparisons. Finally the table gives the cost per photograph including one flashbulb (both PF1 and PF5 are about 5p each) and plastic mounting (about 1p, but Ansco is already mounted in plastic and Kodachrome is ready mounted in card).

Anscochrome 500 works out with a reasonable price and has the advantage of maximum usability with its high speed rating. The resulting transparencies are however very red, exceedingly red in most cave conditions, and are also very grainy.

High speed Ektachrome (unforced) also is reasonably priced but is a little on the slow side for large passage photography. It makes up for this with extremely good, strong colour reproduction and excellent fine-grained quality.

Forced high speed Ektachrome is undeniably expensive but its increased speed rating is often worth paying for. It still has excellent strong colour reproduction, though it may be a little on the yellow side, and maintains very good quality.

Forced Agfachrome combines commendable economy with a very high speed rating. The results have a quite definite green colour though this is not as strong or obtrusive as the Anscochrome red. It is also grainy, though it does have better definition than Ansco. It is also distinctly tolerant of exposure latitude - resulting in minimal light fall-off away from the flash gun. A slight disadvantage is that it only comes in rolls of 36 frames.

Finally Kodachrome is very cheap, has perfectly accurate, though perhaps a little weak colour reproduction and is almost undoubtedly the best quality film available. It is however too slow for the majority of cave photography.

In conclusion it should be noted that the above remarks are only the personal opinions of the writer, but two features seem aparent. If top quality transpariencies are required, suitable for taking off-prints, then forced high speed Ektachrome is probably the answer and the expense must be suffered. However if the photographs the only required for projecting, and not for publication or competition work, then the forced Agfachrome offers the best alternative at a great cost saving, while still providing very high guide numbers and

subsequent adaptability.

A.C.Waltham.

CHEALSEA COLLEGE CAVING CLUB EXPEDITION TO YUGOSLAVIA 1971
(or Tourist Tripping in Yugoslavia)

Expedition members:-	Bill Frost	CCCC
	Phil Green	CCCC
	Martin Leach	CCCC Leader
	John McMahon	ICCC
	Viv Satchwell	CCCC
	Matt Walton	CCCC

After last years successful trip to Ireland it was thought worthwhile venturing further afield to Yugoslavia, and so after a bit of organisation on the part of Martin we left Ramsgate on the 19th of August by hovercraft for Calais. Four days later we were in Yugoslavia knocking on the door of the Institute of Karst Research, Postojna hoping to arrange something to do (by some small oversight we had received no reply to the letter of introduction we had written ourselves a few months before). Unluckily the 'Chef' was away for the weekend caving and so we decided on a few days rest by the sea side. After 2½ days even the most ardent of the sun worshipers amongst us (John) had had enough and so we headed back inland to the cool forests around Postojna and made camp in a forest at a place called Pivka, we were to camp here for the rest of our stay. The next day we again presented ourselves at the Institute and this time we were successful. We met Dr. Peter Habic, the assistant director, who was to prove most helpful and patient over the next two weeks in pointing out to us worthwhile caves to visit.

Our first days caving took us to the two star show caves of the many that abound in the region. One at Postojna, Postojnsha Jama is the world famous home of the 'Human fish' or Proteus, a blind amphibian that lives in the system. The other was Skojanshe Jama and was a complete contrast to the former, its 100-120m deep underground river gorge and near complete lack of formations being far more favourably received by us all than the incredible formations, railway, underground hot dog stalls etc. of Postojnska Jama. Being guests of the Institute we received free passes into both caves.

Caving proper began the next day at Predjamski Jama. Here

we were guided (the only occasion on which this occurred). The cave was very big and was more interesting for the skeletons in boxes to be seen down there rather than any caving we were required to do, which consisted of strolling through a lot of greasy mud. After this initial disappointment our spirits were restored by the next days caving down Mali Karlovice a cave on the edge of Cerknica polje which is a large flat area surrounded by high ground flooding to a depth of 2-3m in winter. The large entrance quickly shrank to a series of tight flat out crawls which eventually opened out into a series of large chambers filled with masses of rotten reeds and tree trunks. After one or two false trails, leading to many delights in a stagnant pool full of rotten weeds which belched great bubbles of methane whenever trodden on, the way on was found to be a rift filled with neck to head deep water. Soon we were in a pleasant streamway and pushed on seeing some green crayfish - animal and vegetable life being a common feature of Yugoslavian caves. At this point by way of diversion Matt slipped about 3 metres and badly gashed his hand on a handy sharp rock. It was covered with a poly-bag and off we set out. Once out a quick rinse with half a bottle of TCP and off to the doctors for stitching. Matt was out of commission from the caving point of view for the rest of the trip.

No caving the next day as we all drove to Trieste for the day and also to enable Martin and Viv to catch a plane home. The three Stalwarts left consisted of Phil, John and myself who continued caving daily until we left for home.

Back in Yugoslavia we drove 120km to Tolmin in the Julian Alps on the Yugoslav-Italien border to see Yugoslavia's deepest cave, Polska Jama. The entrance is half an hours climb up a mountainside. Exploration of the cave has taken place uphill and so far the total length is 8km and it has a depth of 465 metres. The entrance was littered with pairs of tattered gauntlets, a warning as to the nature of the rock to be encountered. The system is quite complex and once we had decided to turn around we had a little trouble in getting out until we discovered a convenient telephone line which led us to the entrance. Once out we slipped, slithered and fell in the darkness back down to the van and drove back to camp.

Other caves visited included Magdalene Jama, 18m entrance pitch closely followed by a 33m pitch into a huge chamber filled with a great mound of stal and bosses piled on top of each other. A passage led off from the chamber to the Puka river (the same river as runs through Postojnska Jama) which soon sumped in both directions. The downstream sump could be bypassed and one was then presented with a large, deep, wide and very cold lake stretching way beyond the light from our puny carbides.

a situation we were to encounter often in Yugoslavia. Another visit was paid later with the expedition boat (airbed) but little progress was made. The lack of a dinghy was a serious handicap to the exploration of some of the caves visited and is a necessity in Yugoslavia.

Plavinska Jama was visited, a very large river cave with very cold water. Proteus was spotted in the wild, lilywhite and not that unhealthy pink colour that it develops on exposure to light and from where it gets its nickname of Human Fish.

Towards the end of our stay we were sent to see the chief of one of the local caving clubs who would show us some good caves to visit. Being unable to find him we settled down to lunch in a nearby cafe. Two hours, a heavy lunch and a pleasant amount of wine later we were dragged out by Krystof, a Polish caver who had somehow got the idea that we wanted to go caving. (How Krystof knew who we were, discovered us etc is still a mystery.) Feeling more like a further two hours in the cafe we allowed ourselves to be taken caving, not without some apprehension though as we had converted 45 metres into feet (the depth of the entrance pitch of the cave we were going to). After the hours walk to the entrance in the blazing sun we were more or less sober and descended the pitch on a ladder made of the usual steel wire but with wooden rungs and a spacing of about 36cm. The bottom of the pitch was a large chamber which appeared rather uninteresting but after scrambling over a pile of rocks we were treated to some fantastic dripstone formations, which we all agreed were quite unlike anything we had ever seen before. Emerging late that night we had a few drinks with the Pole who belonged to Speleoklub Gliwice and agreed to cave together the next day and also we were invited to Krystof's 22nd birthday party the next day.

Next night the party started with wine we then had a meal which included venison wine, more wine, and so on. Next morning I awoke in the Transit to see Matt asleep on a pile of food, cooking pots and primuses. That day Phil, John and Matt broke camp and we left for home via Italy, Austria, Switzerland, Liechtenstein, Germany, Belgium and France arriving back on the 17th September.

Note for future expeditions,
Food on the continent is expensive. It is better to buy as much as possible in England before leaving.

Acknowledgements:-
The expedition would like to thank Chealsea College Student Union for their support and the Institute for Karst Research, Postojna for their assistance.

B.Frost.

TROU DU GLAZ

The surveys of the Trou du Glaz caves (in the Dent de Crolles, near Grenoble) included in the LUCC Journal no8 were taken from the 25 year old maps by Pierre Chevalier and his team. Since 1960 Michel Letrone and the Clan des Tritons have been working with great success in the system and the Dent de Crolles now contains over 25km of passage, though new surveys have shown that the depth is only 594 metres.

In 1960 the Guilleman Gallery was first extended after access to it had been gained by abseiling down from the P40. A series of meanders and shafts led to a pitch down from the roof of Trap Shaft - giving an easier connection to the Guiers than via the Pendulum shaft.

The following year another series of shafts from the new link led the Tritons down to the Metro - a huge tunnel over 900m long running north - south. It is situated 90m above and a short distance east of the active Guiers streamway, and it is probably the main old phreatic continuation of the Chevalier cave. Over the next few years a whole succession of discoveries were made - many from the Metro. Two links were found across to the Guiers streamway, the Moulin system was found to run north eastwards down the axis of the mountain, and the Split gallery was discovered running due east from the Metro for over 450m along the main fracture zone. Elsewhere in the system a cave high on the eastern face of the Dent de Crolles was connected to the Chevalier cave and a parallel system was explored from the P40 down to the Balcony shaft.

Discoveries are still being made and in 1969 two new series were found off the Guiers streamway, and the meanders at the bottom of the Labour Shaft were explored downwards to give yet another Glaz - Guiers link system. Undoubtedly the Dent de Crolles contains an incredible series of caves.

A.C.Waltham.

LOST JOHNS SYSTEM

Lyle Cavern High Level Series Large Aven

At varios times during the past several months an I.C.-Chelsea coglomerate have been climbing about in the terminal aven of Lyle Cavern, Lost Johns (see LUCC Journal no 10). Here is a brief report on said activities.

Why?: The hope was that this aven was once a pitch in a main stream passage. To this basic ingredient add the thought of Far Chamber Extension in Notts Pot; Correlate its bearing and phreatic nature with the Lyle Cavern High Level Series Passage to obtain sufficient motivation.

How?: A combination of maypoling and bolting. Bolts were used as belays for ladders and to hold/support maypoles which were overlong or based on ledges. Bodies fueled with baked beans and meat balls.

What?: The aven was first climbed in the east corner. The roof was attained at twenty five metres and a small inlet met. From here a traverse was made to a rock bridge (see accompanying diagram) and a ladder was hung from here. A traverse out over the aven from the rock bridge was attempted using stemples but failed. The attack shifted to the west corner and a ledge was found twelve metres up. From the ledge a boulder slope leads to an inactive vadose stream passage which can be followed for about twelve metres before choking with boulders. However, back at the ledge; to the left of the boulder slope is a mud slope. This mud fills the mouth of the main aven inlet passage, which measures about 2.4m by 4.5m. A much smaller passage enters the aven just above the mud slope. This passage was maypoled into and found to be negotiable for ten odd metres before blocking with mud (level three). Attention was then devoted to the mud slope and a dig commenced at its apex (level two). After seven metres the mud gave way to a mixture of boulders and mud, increasing the difficulty of digging. The dig at present end at a small connection through a hole in the roof of the main passage to the upper passage, but the main passage continues horozontally. Further progress would be difficult but not impossible. The question to ask oneself before working on this dig is how far to go before giving up. Only 448m to go.

Acknowledgements: For thei devotion. Apologies for any omissions. Roger Bowser (instigator), Bill Frost, Tony Gilbert, Paul Hartland, Martin Leach, John McMahon, Steve Palmer, Mike Powell, Lloyd Tunbridge, John Walkington and Tony Waltham (consultant geomorphologist).

Robin Thomson.

LOST JOHNS IN FLOOD

During a recent trip down Lost Johns, 7-11-71, an IC party found the pot in flood on the way out. The flows at Groundsheet junction were estimated as 6cusecs from Lost Johns and 2.5 cusecs from Lost passage. The passage below Last pitch was waist deep but passable. There was a lake at the bottom of Last pitch and the bottom of Wet pitch was gained by traversing; the cascades being impassable. Rough pot inlet was providing about 0.5 cusecs. Wet pitch bypass had been laddered from the new bolt and was dry, being protected from the water by a buttress. The inlet above Shistol made the pitch and passage wet but Centipede was the wettest of all. The water was thigh deep in the entrance passages though according to an other IC party it had been waist deep earlier on. It is probable that the pot is now possible under virtually any weather conditions; Wet pitch would probably not become impassable as the water ricochets off the protecting buttress. It now requires 20m of ladder from a large eyebolt by the landing below the stemples pitch. During this flood the entrance passage was taking 5 cusecs compared with a base flow of 0.1 cusec and a normal average flow of 0.75 cusec.

R.J.Bowser.

ANOTHER EPISODE IN THE LECK FELL STORY

Some years ago Leck Fell was selected as a suitable area for a comprehensive study - including survey, geomorphological examination and investigation of any leads. Leck was chosen, as opposed to any other fell, partly because it contained a large number of caves which were at that time relatively uncorrelated, but also because its exploration involved a minimal amount of crawling (a means of travel which the writer tries to avoid). Unfortunately the latter premise proved rather false as there are quite a number of low passages even in the lower reaches of Lost Johns; also Pippikin Hole turned up, but thats another story (because its just off the sacred sheet of paper known as the Leck Fell Survey). However Leck did reveal some rewards - the Lyle Cavern High Levels were discovered without any gross expenditure of effort (such as grovelling or digging). Furthermore the investigation of somewhere such as Leck is a never ending occupation so what follows is merely an up-to-date appreciation.

Although the N.P.C. found over 1000m of passage in Gavel Pot the system still has immense potential; it is a cave of beginnings only. The side passage on the right of the main streamway was connected by the CPC back to the entrance zone,

showing that it was merely a phreatic oxbow on the ancient Short Drop - Gavel drainage route. This means that the passage north - east from Glasford's chamber almost certainly connect to Deaths Head Hole (through the choke at the immediate foot of the 61.5m pitch). Digging at either end of this missing link should reveal at least 300m of abandoned phreatic trunk route.

That much was written in October 1971 and since then the prophesy nearly been brought true by the discovery of the new cave between Deaths Head and Gavel. Found by the M.U.S.S. and H.W.C.P.C. it is affectionately known as Old Meanie but its eventual name will probably be Mouth Hole. An obvious shakehole near the wall leads to a few metres of passage and a 45m pitch- which is very tight at the top. At the foot of the pitch is the old phreatic tunnel. Westwards it is choked about 60m short of Gavel, and eastwards the fault passage narrows off before it reaches the Deaths Head shaft. However a parallel passage can be entered continuing west and entering the Deaths Head main chamber 18m up in the wall.

Back in Gavel Pot the two other ways out of Glasford's chamber together with Southbound passage lead out into the unknown, but do not appear to offer easy chances of discovery, and of course the sump is by no means concluded (see below).

Lost Johns is a very pleasant pothole to work in and consequently the survey is now well out of date. There are even additions in the entrance series - about a hundred metres of passage upstream of the entrance, and a new bolt now giving an all weather descent of Wet Pitch. Outstanding work includes a couple of roof passages still not run to a conclusion, and some chemical persuation work to make the Sink Chamber to Battle Axe sumps into free dives and so making the finest stream pothole route in the Dales. In the Lyle Cavern High Levels the efforts of the Chelsea and Imperial College cavers have shown that there are no significant passages at the top of the "100 ft Aven". But 12m up on the west wall there is a large choked passage entering the aven. This has already been dug out by Imperial cavers for nearly 10m and an open passage has been found unfortunately too tight to enter. Thorough silting of the larger sections of this passage mean that future extensions will only be the result of long hard work.

The peculiar thing about Leck Fell was that until recently no successful sink - rising dye tests had been carried out. (Shorter tests had been done though - Rumbling Hole and Lost Pot had both been tested into Lost Johns.) Further there was some considerable mystery about Lost Johns as the survey puts its sump about 20m below Leck Beck Head; it was even conjectured

that the water flowed on down dip and came out in Dent Dale. Consequently one Saturday in Spring 1971 Lost Johns was tagged with fluorescein - 2½ kg of it (left over from some spectacular colouring of holy springs in India). Unfortunately there was a drought at the time and the tiny trickle of water going down Lost Johns became a stiff green syrup barely able to creep down the passage. Detectors had been placed at Leck Beck Head, Leck Mill, Barbondale and Dentdale.

But who needs detectors? Six days later there was a days heavy rain and a rather efficient flood pulse. The following day Leck Beck was a pretty shade of green where it passed under the main road at Cowan Bridge. Did the water rise unnoticed in the floor of the Beck? Drive up to the Beck Head and see - but this too was green. What did this mean? Had the Mendip gremlins installed efficient, ex-Cuthberts pumps in the Lost Johns sump to lift the water up to the rising? Had there been some contamination (but no-one can lose that amount of fluorescein)? Or was the survey wrong?

Heart-searching discussions took place among the different groups of surveyors. A likely error was found in the surface survey - always a bit suspect at sink and rising because of the lack of bench-marks. This has yet to be checked out and indeed another dye test will be done, but it appears that Lost Johns and probably all the Leck caves should be about 20m higher than shown on the survey. Joe Latham's idea that the Lost Johns water normally resurges well down Leck Beck, and only from the head in flood, recently suffered a distint blow. A visit to the Master cave in really strong flood showed that the backing up was certainly less than 7m and this range in level would hardly leave room for a "Lathamian" double resurgence.

Of course there are other problems on Leck. The Gavel Pot water disappears into a sump perched a considerable height above Leck Beck Head (and any other rising is still lower), so what manner of pitches await the diver here? Also there is an upstream passage in the Gavel sump which could conceivably pick up the waters of the Notts-Ireby system, which must at least pass near here en route to Leck Beck Head. On November 13, Phil Collett dived here for 50m and found a phreatic tunnel continuing beyond where he ran out of line, and he also noted a strong flow. The forthcoming survey checks should help us decide if this is the Notts water and dye tests in Notts and Gavel will probably explain the green colour to the beer in various Lancashire pubs in the near future.

Finally there is the problem of quantities. The Lancaster-Easegill- Bull Pot waters have been tested to Leck Beck Head,

and the Pippikin water almost certainly goes there too as its sump is exactly the same level as the rising. There just does not seem to be enough water at Leck Beck Head to account for Lancaster and Pippikin and Gavel and Lost Johns and Notts (and concurrent measurements are difficult to do). But perhaps cavers are like the proverbial anglers, and cave streams always feel like they are bigger than they really are- especially when you are halfway down a ladder and one is landing on your head.

Time (and dye) will tell.

A.C.Waltham.

IMPERIAL COLLEGE CAVING CLUB EXPEDITION TO THE HIGH ATLAS SUMMER 1971

The expedition was effectively divided into three parts, firstly the exploration of an area of the High Atlas around Midelt. The second and third parts, which consisted of exploration and sport in the well known Middle Atlas area of Taza, and a reconnoitre of the southern edge of the High Atlas will be described in later articles.

The expedition was envisaged from the very beginning as being virtually non-scientific. Its purpose was merely to discover any caves we could in the High Atlas. Hence the following article is the result of my own observations, though survey work was carried out by the expedition in general.

Our base camp was set up near the Maison de Foret at Mitkane in the Province of Tounfit. This was reached by a dirt and rock road from Midelt. We stayed in the area eleven days and spent this time in exploration. We were very grateful to the Warden of the area for guiding us to many of the known caves in the area.

The local geology of the area is a succession of shales with a thin layer of reddish (Terra Rosa) conglomeratic limestone overlying. This limestone horizon occupied the tops of hills, the valleys being generally cut down into the shale. The succession was relatively unfolded and slightly tilted, appearing similar to the Tertiary rocks of southern Spain. However the topography was very deeply dissected, with the main range of the High Atlas behind the camp rising to 3,000 metres and more. The probable maximum thickness of the limestone was

about 100 metres. Though the limestone did not appear to be typical of the cave forming limestones of areas known to members of the expedition there appeared to be a reasonable thickness for the formation of shallow cave systems.

Kahaf Umal Almanjum Althalatha. The first cave that we were guided to was on top of a small hill near a lead mine that was still being worked by three Berber miners. This consisted of an approximately vertical rift. After descending about 26 metres down a steeply inclined rift, which varied between 1 and 2 metres in width, two passages led off in opposite directions for about 50 metres in each direction. One of these passages was beautifully decorated with pure white calcite formations, but was fairly tight. The passage was generally blocked up by the flowstone formations which finally ended exploration. There were at least two levels in this end of the rift. The other end of the rift was not so well decorated. The continuation of the rift if projected cuts through a gorge and enters another hill where there was supposed to be another cave entrance, however we were unable to find this. I suspect from the linear and rift type of form that this cave had been developed along a fault. However I did not notice any obvious surface features which would suggest the presence of a fault.

Jfre ou Drasse. A large entrance in a small escarpment of thin limestone forming the top of a rather flat topped hill. This consisted of a large entrance chamber with a small passage leading off into a couple of small chambers, in one of which there was a sizeable colony of bats. The floor of these passages was generally of mud and guano. Beyond these chambers the passage continued, generally of knee crawling size. This passage though formed naturally had been enlarged by mining with either the floor or ceiling dug out. This part of the cave consisted of either a flowstone or rock floor. There were several small and muddy formations. The cave probably suffered desecration at the hands of the miners. At the end of the passage it widened out and had been filled with deads. The passage ended when the roof met a mud floor. The rock looked rather unstable at the end and we had been told that mining had ceased when one of the miners had been killed by falling rock.

Jfre ou Tagouilelt. A tight entrance halfway up the side of a fairly steep gorge. The entrance was covered by large boulders which we had great difficulty in removing. This led to a 50 metre free pitch in an L shaped passage to a sloping ledge. From here there was a further 10 metre pitch against the wall to a horizontal boulder floor. There was no horizontal development.

Apart from these three caves which we surveyed we also

found several large rock shelters which often went into the hillside for 10 metres or more.

We also visited an area around Amouguer where some caves were marked on the map. Unfortunately we were unable to find them and had to leave the area prematurely because of illness of one of the members. However we did manage to determine that the limestone occured in exactly the same way as in Mitkane. With just a thin layer of conglomeratic limestone above shale. Though we were also told of the cave's existance by one of the locals I suspect it is just a large rock shelter. There is certainly no possibility of any major systems in the thin limestone.

We were obviously rather disappointed with this region and decided to go to the Taza area, which although already well known would at least provide some decent sporting trips. Plus the opportunity ti survey some caves, which although explored had not had surveys published. The exploration of these will be reported in a later article.

Lloyd Tunbridge

GOUFFRE BERGER 1971

There is, perhaps, but one pot in the world which can rival the Gouffre Berger for its magnificent proportions and the sheer splendour of its conception, and that is the one David Yeandle uses for cooking his porage in. Last summer on the Sornin Plateau, a group of seventeen cavers from various clubs failed, but only just, to get to the bottom of either.

It is pleasant now to sit back and contemplate the Berger survey, but there we kept it folded up and I was in favour of opening it one section at a time, to avoid the rising panic I felt every time I caught a glimpse of it fully opened out. The names on it were less than encouraging, too; it seems that in France the way to get a pitch named after you is to fall down it - such at least was the fate of a certain Ruiz, after whom the entrance shaft is called (he did in fact survive, but one feels that it is largely incidental).

However, it all began on July 4th., when Roger Bowser and Keith Turnbull (ICCC) arrived at La Molière and camped in what turned out to be the territory of a local herd of cows, who a couple of days later walked around on the tent and changed the shapes of most of its contents. We therefore moved up onto a ridge above the car park and as other people arrived

they camped lower down, hopefully away from the cows and also hidden from the mayor of Engins, for whose benefit we had constructed an elaborate and possible credible story to account for the fact that our telephones were of a type which dispensed with the actual receiver, requiring only a length of wire stretching between the communicants. Fortunately he never came to see us and we did not have to demonstrate the device, which would have involved having someone just inside the entrance trying to sound as though he were speaking from camp one, with background noises of broken legs being competently encased in inflatable splints.

By the next morning Tony Waltham (HWCPC), Tony White and Dave Yeandle (UISA) had arrived and the pile of tackle had grown to such an alarming size that we decided to carry half of it over to the cave. Apart from such distractions as grykes of unknown depths in the limestone pavements, there is an entrance not far from the Berger reputably leading very rapidly to a 300 metre pitch. However we had decided that the Berger was the place to chuck the stuff, and pressed on. But in fact it was almost dark by the time we got there and we were forced to leave it all on the surface, consoling ourselves with the thought that maybe the wild boars would eat it during the night. We returned the two miles to the camp in a dismal rain, along a path which in the next ten days we were to come to know and love.

The next day we carried the rest of the stuff over and found that not only had the boars been scared off by Roger's caving boots but a large group of French schoolchildren had gathered around the cave entrance eager to watch the antics of 'les speleologues anglais'. In the circumstances, not knowing how many of them might belong to the mayor of Engins, we felt unable to do anything but go down, though our disappearance would have looked that much more professional if we had had the forethought to change back at the camp and if Dave could have found a convenient gryke to tye up his hair in red and yellow elastic bands. However, it is very easy to be wise after the event.

Tony Wa. rigged most of the pitches, attatching the ladders to little bits of bent aluminiun which were bolted into holes in the rock. I tried not to look at them after having seen the first one, but they did have the great advantage of ensuring the minimum delay on the pitches, as no-one spent longer on the ladder than was absolutely necessary. At Cairn Hall we used an ancient system of cable and telephone wire (about 50/50) for lowering the tackle. Once you've beaten this, the rest of the cave is easy. We went through the winding clefts several times, and descended Garby's, Gontard's and the Relay pitches,

which brought us to the top of Aldo's, Dave went down and the tackle was lowered to him, then we all returned to the surface.

That evening, disturbed only by the shrieks from Roger as he sewed up the hole through the cows had left the tent, an atmosphere of hushed expectancy hung over the camp. We were thinking of the perils that lurked in the depths below, the things we would learn about curselves and each other, the (as Michael Frayn would put it) cosmic splendour and yet sadness os it all? Well, maybe. But there was also a more immediate reason - we were short of crabs, and someone had recalled that, as well as many other things, he had once seen one fall into Dave's porage pot. Could it still be there? To find out we mounted an archeological operation unparalleled in the history of caving; but alas, as I mentioned earlier, our search was fruitless.

But still the rest of the expedition had to go on. And since this required our spending some nights underground (it could be hardly worse than my tent, I thought, after what the cows had left behind, or rather, what the cow's behinds had left) the next morning we packed up things like tooth-brushes in more or less waterproof bags and set off. Roger, Keith and Tony Wa. went first. At the bottom of Aldo's, at -256m., the passage passes through a small constriction, the streamway is met, and the photographs begin to fit into place and the familiar adjectives don't sound so outrageous. For about 400 m. the path follows a huge streamway, sometimes flanking pools on steep muddy banks, sometimes just disappearing amonst masses of boulders. Tony seemed to know where he was going, or maybe he was just applying the principle that in the Berger all paths lead to Lake Cadoux, for that is where we eventually arrived. It stretched out of sight round a corner. "What a terminal sump", I thought to myself, and suggested waiting for the others before we started back. That's the trouble with opening the survey one section at a time.

We had just enough rope for the dinghy to cross and be pulled back; but a day or two later, Lake Cadoux had disappeared and the dinghy was up in the roof somewhere, still attached to the rock to which we had moored it. On the far side of the lake we entered Bourgin Hall, where the stalagmites are mainly Gothic but some, unfortunately, are baroque. Bourgin Hall ends at the Little General's cascade, after which we followed the stream down a narrowing passage, trying to avoid the extremely slippery white deposits on the floor. On the Tyrolian traverse we fixed a ladder horozontally, not liking the look of the bits of wire left by previous expeditions. The stream then disappeared down to the left somewhere and we made a short ascent over huge slabs of stone, some of which looked as if

they had dropped from the roof about five minutes before we arrived. That brought us to the top of what is known as the Big Rubble Heap, though we might just as well have been standing on the top of a mountain in the middle of the night, for the ceiling and walls were inaccessible to our carbide lights and before us the boulders sloped down for as far as we could see. We started off down it and before long Tony found some crystals on the wall which started him shouting loud enough to bring the roof in. Then there groups os squat, reddish stalagmites, perched incongruously on the slabs of stone which appeared to have fallen so recently from the roof, their stalactites invisible in the darkness above. Soon we were passing through the suburbs of Camp 1, then, having left our loads at the camp, we started back to the Tyrolian traverse for the rest of the stuff. There we met Tony Wh. and Dave who returned with us down the Rubble Heap then continued with some of the tackle through the Hall of the Thirteen to the Balcony.

A caver's appetite is not easily described in words, but, like the smell of a drystone wall at three o'clock in the morning, has to be experienced to be understood. Knowing this, one might have expected that a few days earlier when we were shopping in Villard we would have troubled ourselves to find out exactly what 'fecule des pommes de terre' meant. But no, the sun was shining, we wern't very hungry then, the woman had said that you just add water and anyway what other white powder can you make from potatoes apart from instant potato ? Now, at -494 m., we were to find at least one, and those who know that 'fecule' means starch will not be surprised to hear that the Hall of the Thirteen also learnt some new words that night.

The morning no doubt, was warm and cloudless, and trying not to think about it we emerged from our sleeping bags. At least there was nothing to carry until we got to the Balcony, and we tiptoed round the edges of the gour pools in the Hall of the Thirteen and took a close look at the stalagmites which I was sure I'd heard running around on the Rubble Heap the night before. (Maybe it was the wine we had at Camp 1, Ed.) We picked up the stuff at the Balcony and continued down through St. Matthew's Hall, which terminates in a steeply descending tunnel (and so did we, nearly) with a floor of flowstone, leading to a short drop into the river. The boat was needed to negotiate the Canals, after which we followed a very active streamway containing numerous short, wet pitches with awkard to impossible take off points, discharging into deep pools which one or other of us usually managed to fall into. Things were obviously leading to some sort of climax, and they did, at Claudine's Cascade. Into the top of this 18 metre pitch, just where the water disappears, someone has wedged a three

metre length of scaffolding pole (the choice of material, suggestive of public execution, is perhaps not inappropiate). Anyway the pole juts out horozontally and if you hang a ladder on the end the descent is, of course, reasonably dry; whether that is worth the preceding gymnastics is debatable, but certainly the whole business is best transacted in a state of total sensory deprivation, and that at least we were fast approaching. After that we hardly noticed the descent of 450 feet (vertically, I mean; I'm not implying that our numbers had suddenly grown to 225) through the Grand Canyon, past Camp 2 to Gachô's Pitch. From here we returned to Camp 1, and from there the next day we surfaced. When we got back to La Molière we found Dave Headley (ULSA), who had arrived the day before and slept under a Mini - practising for cramped conditions at Camp 1, perhaps. He descended the following day with Tony Wh. and Dave Y., taking what was supposed to be enough tackle to reach the bottom. They left it at the top of Aldo's.

On the Sunday evening, July 11th, Alan and Dave Brook, Dave Omerod and Martin Taylor (all ULSA) arrived, and having spent half the night talking about the cave, all ten of us descended the next day, taking the tackle left at Aldo's to Camp 1. Lake Cadoux had by this time disappeared, which was unfortunate as we had hoped to photograph it, but we continued to the less ephemeral phenomena in Bourgin Hall, where some of us arranged ourselves to look impressively dwarfed by the stalagmites while others popped off flash bulbs. The next day, Roger, Dave O., Martin, Keith, and Tony Wh. returned to the surface. Lake Cadoux was still dry, and there had been no noticable change in the water-level, despite a three-hour downpour during the night which had provided sufficient talking material to keep Ian Plant, Blair Trewartha and John Yeadon (all Kendal) well supplied with drinks in a local bar while they regaled the other customers with progressively less well-informed guesses as to our likely fate. When we emerged we had the distinct feeling of having spoilt the ending to a good story.

Roger Graham and Chip Kitchen (both MUSS) and Malcolm Budd and Martin Rogers (both ULSA) had arrived meanwhile. On Wednesday, July 14th, Roger G., Ian, Martin R., Blair and John descended as far as the Balcony.

At the same time the party of five left Camp 1 for the surface A.B., D.B., Dave H., Tony W. and Dave Y. set off downwards, hoping to reach the bottom. At Camp 2 they left Dave H. with a sleeping bag, as he was not feeling like continuing. The rest continued downwards, pausing only to drop a food-bag in the pool at the foot of Claudine's Cascade.

However, they had too much ladder (and even more serious, not enough rope) to reach the bottom, and turned back at the top of Monkey Pitch. They returned to Camp 1, leaving the tackle at St. Matthew's Hall. The next morning all five returned to pick up the tackle and on the way back they met Roger G., Ian, Martin R., Blair and John at the Balcony. From here they returned to Camp 1 for a brew, then all ten removed all the gear to the foot of Aldo's, from whence the five who had descended on Wednesday returned to the surface, arriving at about breakfast time on Thursday. Roger B., Chip, Dave O., Martin T., Keith and Tony Wa. went in to meet the others on the way out and by Thursday evening we and all the tackle were back at La Molière.

Unfortunately there was still much in the cave that we could not bring out. The amount of rubbish that has accumulated in the last fifteen years, particularly around Camp 1, is a disgrace. There may possibly be some justification for leaving large spent batteries in the cave (but was there no alternative source of power available?) but if so surely they could be hidden somewhere, instead of just being abandoned wherever they happened to cease functioning. Certainly there is no excuse whatever for the hundreds of tins, pieces of plastic and other rubbish left there; these things were carried in full, weighing considerably more than they do empty, and the usual plea of 'saving weight' is clearly laughable, quite apart from the fact that it is urgently necessary that cavers recognise a responsibility to something other than their own personal expediency.

Keith Turnbull

GOUFFRE BERGER TACKLE

Almost the only published tackle list in English to date for the Gouffre Berger is that by P.Watkinson et al in the Pegasus Club 1967 Report. As however this contains some considerable errors, an ammended list as far as Camp 2 is included here. Only ladder lengths are given; rope lengths are easily calculated from these and a profusion of bolts means that only krabs are needed for most ladder belays. A dozen assorted wire belays will also be needed though as far as Camp 2.

Entrance	- m.	Relay 1	6 m.
Ruiz	27	Relay 2	8
Lodge	6	Relay 3	5
Cairn Hall	27	Aldo's	43
Garby's	38	Little General	9
Gontard's	26	Cascade	3

Tyrolian	8 m.	Cascade	5 m.
Balcony	14	Cascade	5
Cloakroom	19	Claudine's Cascade ..	16+8
Abelle's Cascade	6	Topographer's	6

A.C.W.

THE POLITICS OF A VISIT TO THE GOUFFRE BERGER

Over the last ten years visits to the Gouffre Berger have been a great attraction for British Cavers, and no-one denies that a big trip is very worthwhile. Without debating the merits of a visit to the sump, a trip to the region of camp two is undoubtedly one of the most enjoyable trips in the world. The 1971 visit by a small party has at least shown that the Berger is not solely the realm of the massive expeditions. Almost certainly small groups will visit the cave again and these notes are intended to assist them a little.

Permission to visit the cave must be obtained, and visits are only possible in June - September when there is no snow. To obtain a permit one should write in French, to M.Fernand Petzl - one of the original explorers who lives near the cave and whose full address is 33, St. Ismier, France. It is best to give a years notice, state just what you want to do and who you are. Fernand Petzl is a very enthusiastic caver who appreciates the courtesy of a visit by the party leader when he will offer and give considerable encouragement and help. He will allocate you a few weeks to visit the cave and invite you to write to the Maire d'Engins, who owns the cave and from whom permission must be obtained - he accepts the advice of Petzl so this is really only a formality.

Parties visiting the cave have to agree to and abide by a series of rules:-

1) All rubbish must be brought out of the cave; this is no problem with a small group visit.
2) A doctor must be in the party; required qualifications are not stated but a competent M.O. must be included.
3) Adequate rescue gear must be in the cave.
4) Equiptment must be first class; no comment.
5) All members must be fully insured against unlimited rescue costs; this is almost impossible to obtain in Britain, and the Maire waived this rule for the 1971 group on being assured that they were only going as far as the Camp 2 area, and that the group was rescue experienced.
6) Telephones must be laid down the cave (see below).
7) The official campsite must be used; this is a clearing in the forest remote from the road or water and very inconvenient. This rule is really for big expeditions and small groups can

get away with camping at the road (with adjacent spring), if discretion is used.

The rules as applied are only reasonable and will only hinder the groups who shouldn't be at the Berger anyway. The equipment needed to visit Camp 2 can easily be carried by a small party, and for short visits the need for only minimal camping gear in Camp 1 makes for easy transport through the Meanders. Telephones are the main problem. However wire is plentiful in the cave as far as Camp 1 and could easily be made to work with little in addition. Phones are essential for visits to the sump because of the danger of flooding in the Canals when on a long visit beyond them, as the weather in the region is very unpredictable. However phones are barely necessary for shorter trips; down to Camp 1 is always safe as the entrance series never floods for long spells, and short trips beyond the Canals are only a minimal risk (one would only get a cold wait beyond Claudine's at worst). In fact the 1971 party did not suffer, though we had rather inadequate communications (the telephones were left in England by mistake and the surface party went to Italy).

A rescue from the Berger would not be unusually difficult, though it would be a protracted affair - and the most serious consequences would probably be "political", for example the insurance rule could easily be enforced by the French. Consequently the utmost care should always be taken - the 1971 party lifelined every pitch, and if a double was not on then the first man up used a jumar on the single line. Though as far as Camp 2 the cave is really quite easy, it is no place for beginners or unfit cavers, who would turn a trip into a tedious and dangerous slog.

A club could hardly have a finer summer excursion than a visit to the Berger - though there are only a handfull of clubs in the country who could provide a suitable team. At present British parties will be welcomed to the cave, and let us hope that these cordial Anglo- French relations will not be damaged in the future.

A.C.Waltham.

PETERSON POT

During the last few years the HWCPC have been very active on Leck Fell. This activity which culminated in the extension of Pippikin Hole, also produced other discoveries and extensions, notably the Lost Johns Lyle Cavern High Level Series (see LUCC Journal no. 10), Big Meanie (see elsewhere in this issue) and Peterson Pot, (confused at one time with Smokey Hole). Work started on Peterson during 1969 the main result of which was the enlargement of the crawl at the bottom of the second pitch so that normal sized people could get through. The next obstacle encountered was a calcite bridge blocking part of the passage, it was about 1 m. long at the position of section h in the survey. This was passed with some difficulty by our two smallest members, Hilda and Jim Cunningham. Both took about half an hour to negotiate the squeeze, Hilda lost her light at section f in the survey (its still there jammed in the rift), turned round at this point and retreated. Jim continued to the pitch and came out backwards, again taking half an hour to pass the squeeze. The following weekend more members had a look at the place and we tried chipping the bridge away with a hammer, with no success. Not to be beaten we returned with explosives and removed the bridge for posterity. Exploration then proceeded to three short pitches, a short streamway, a few avens and an impenetrable rift about 5 cm. wide into which the water disappeared. Clearly this was the end of the cave, but maybe it was just as well considering the difficulty of the entrance passages.

The Pot was left laddered in the hope that someone would be foolish enough to want to deladder and/or survey it, and sure enough some members of the Eldon Pothole Club were conned into deladdering and after a six hour struggle, succeeded.

The next and as far as I know last people to descend were Jim Batey, Rog Bowser and Pete Lord who laddered, surveyed and deladdered the Pot one rainy day in March 1970, the whole exercise taking some nine hours. The surveyed length was 116 m. and depth 40 m.

The Pot starts easily enough with a scramble down the shakehole followed by a 4.3 m. pitch onto a scree slope. To the right is the second pitch of 4 metres followed by a steeply descending choked crawl. This is the end of the old cave. However, a crawl leads off from the bottom of the second pitch. This is a small phreatic tube along a shale bed with a couple of nasty bends leading into a small aven. The shale was dug away in the bends to make them passable. From this aven the phreatic passage continues, though it now has a vadose trench.

The crawl emergos at a fairly comfortable junction where the stream joins the passage. It is possible to climb down to the floor and follow the water upstream to a large aven; a flat out crawl downstream gets too tight below the right angle bend in the passage. Back in the roof the phreatic tube continues to an awkward right hand bend, fortunately the vadose trench is wider here and it is possible to do the corner in a 'sitting' position. Just beyond here one has to negotiate a series os S bends, the technique for these involves lying on one's back and rolling from side to side.

Elephant Walk is the next major obstacle, the rift narrows so one is forced to turn onto one's side and then suddenly to emerge head first at the top of a 2 metre climb. Fortunately there are sufficient hand holds to make it possible. This section is reminiscent of David's Traverse in Marble Sink. From here to the bottom is all easy going with 8.2, 3.7 and 5.8 m. pitches. It is essential that these pitches are lifelined, easy as they are; the slightest accident here could easily prove fatal as any form of rescue, other than by sinking a shaft would be completely impossible. The Pot ends much as it began in an impenetrable rift about one third of the size of the entrance rift with no hope of progress. The water probably comes out in the Hall of the Mountain King in Pippikin Hole. There are a series of avens at the bottom of the 8.2 m. pitch, a crawl in shale leads off from the bottom of one of them but requires some digging to make it enterable.

The Pot is interesting from the technical point of view. It is never particularly tight but always extremely awkward to make progress, especially with tackle, and requires a high standard of caving technique to successfully bottom it. The crawls take about two hours to negotiate with tackle.

Peterson Pot shows distinct phases of development. The crawls are completely phreatic with only later vadose modification. The entrance series is probably very old; the now active streamway and terminal passages are later developments, the latter probably being formed by water from the now inactive avens at the bottom of the 8.2 m. pitch.

R.J.Bowser.

REVIEW

British Karst Research Expedition to the Himalaya 1970. Report edited by A.C.Waltham. 100 pages, litho, price one pound available from: ACW, Geology Dept., Trent Polytechnic, Nottingham, also from Bernard's, Bryan Ellis and the Penyghent Cafe.

This report contains an excellent account of the activities of this expedition to the thickest limestone regions of the world. It has comprehensive scientific reports covering the geology, geomorphology and fauna of areas in Kashmir and Nepal and is well illustrated with numerous maps, diagrams, surveys and photographs.

Few caves were found, especially at high altitude, this was mainly attributed to lack of jointing in the limestone, low precipitation and dolomitic rock. However the expedition produced the longest cave in the Himalaya at Pokhara and a description and survey are included.

The report ends with a useful section on expedition logistics, this imformation would be of value to any one planning an expedition.

The quality of reproduction is good, though the photographs appear to have suffered a little and the method of binding is a little poor. Altogether the report is a valuable contribution to the science of speleology and should help to promote interest in other expeditions to speleologically unexplored areas.

L.W.T.

NOTES AND NEWS

Mendip.

Rhino Rift now about 110 m. deep almost in a single shaft.

North Hill Swallet 80 m. of banging now broken into 300 m. of passage.

Swildons sump 6 bypass now dug out by divers including Phil Collett.

Wales.

W.S.G. have got a half kilometre cave near Merthyr.

Yorkshire.

Lancaster the new EPC series is 1½km. plus and now very near Pippikin; a connection would provide a system of at least 30km. already.

White Scar some 400m. of new high level passages found by HWCPC includes some fine straws and one very large chamber nearly 60m. long.

Gaping Gill Mike Wooding extensions off Clay Cavern in Far Country are about 400m. long but get no nearer to Ingleborough Cave.

Gavel Pot On November 14th a team of southern divers went down Gavel but were detered by the rather wet state of the 25m pitch. Consequently only Phil Collett dived and was limited to 55 m. of line. He went upstream in the terminal sump and found a pleasant phreatic tunnel with a considerable flow of water. Phil intends to have a return dive at the same site, with a longer line.

Big Meanie successful dig by MUSS and HWCPC. A 45m pitch leads to an old phreatic trunk route between Death's Head and Gavel Pots.

Lost Johns an ICCC and Chelsea party maypoled into 60m of passage below Wet pitch. It drops down a couple of pitches to a mud choked passage which is currently being dug.

America

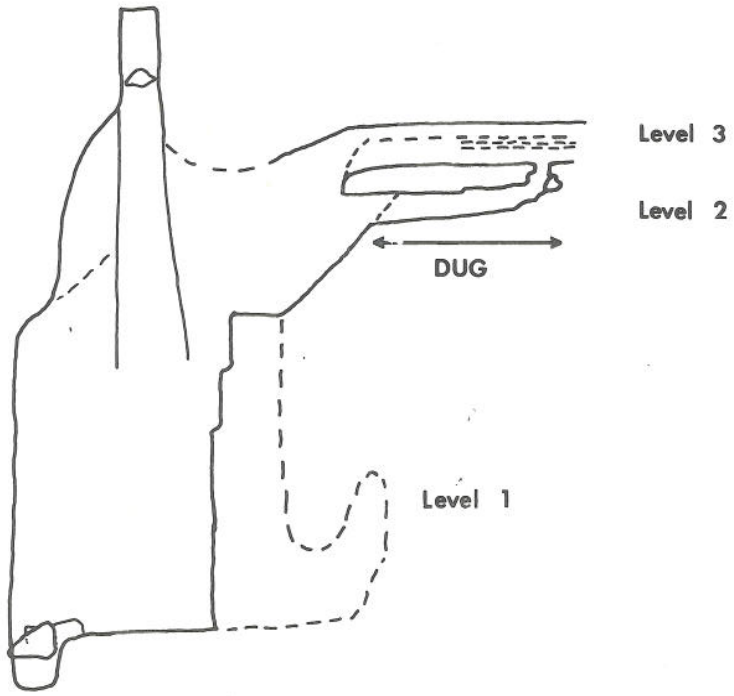
Mammoth and Flint Ridge caves can now be practically regarded as one system 225km long apprx. The connection has not been made for political reasons though all difficulties have been passed and the way on is known.

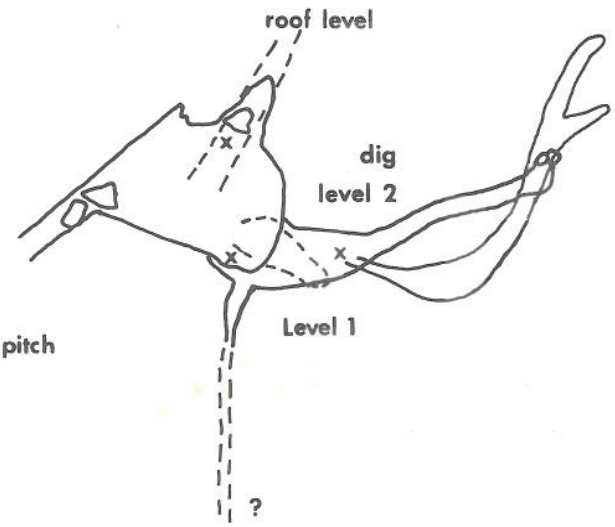
LOST JOHNS LYLE CAVERN HIGH LEVEL SERIES - LARGE AVEN

Leck Fell

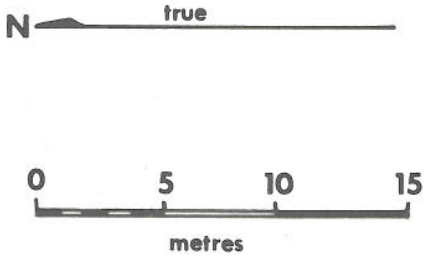
London University Caving Clubs 1971

CRG grade 2





x – maypoled pitch



JFRE OU TAGOUILELT

Mitkane Area, Morocco

Imperial College Caving Club 1971

CRG grade 4

Plans

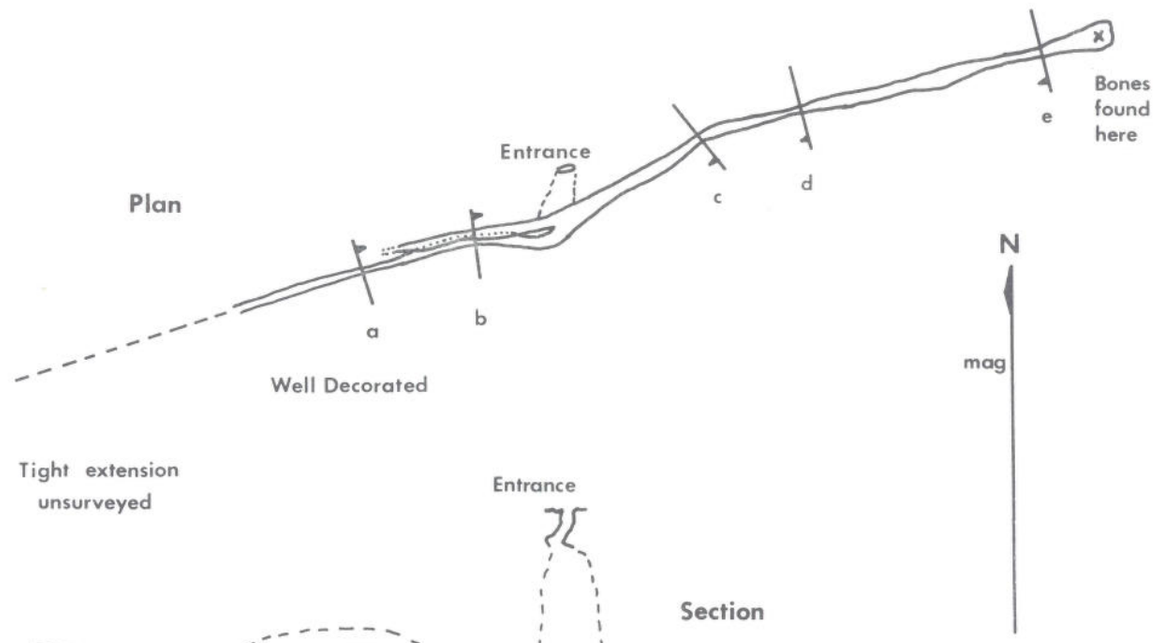
KAHAF UMAL ALMANJUM ALTHALATHA

Mitkane Area, Morocco

Imperial College Caving Club 1971

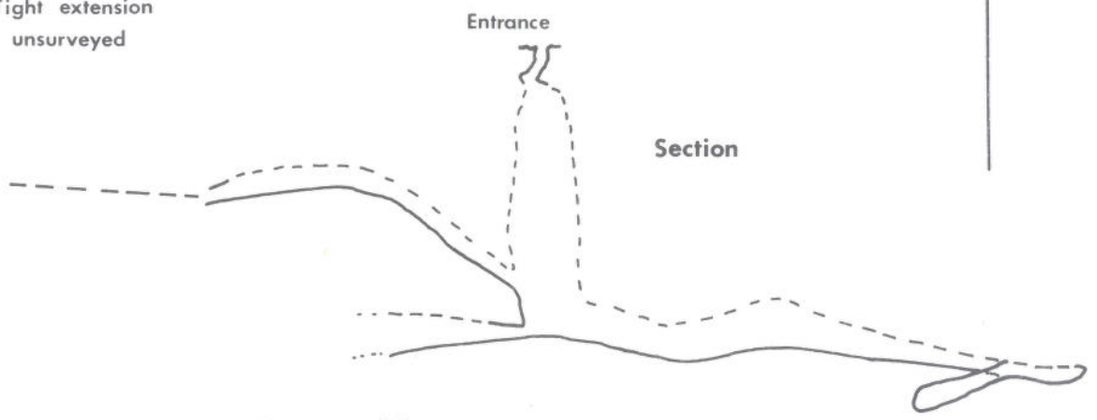
CRG grade 4

Plan



Tight extension unsurveyed

Section

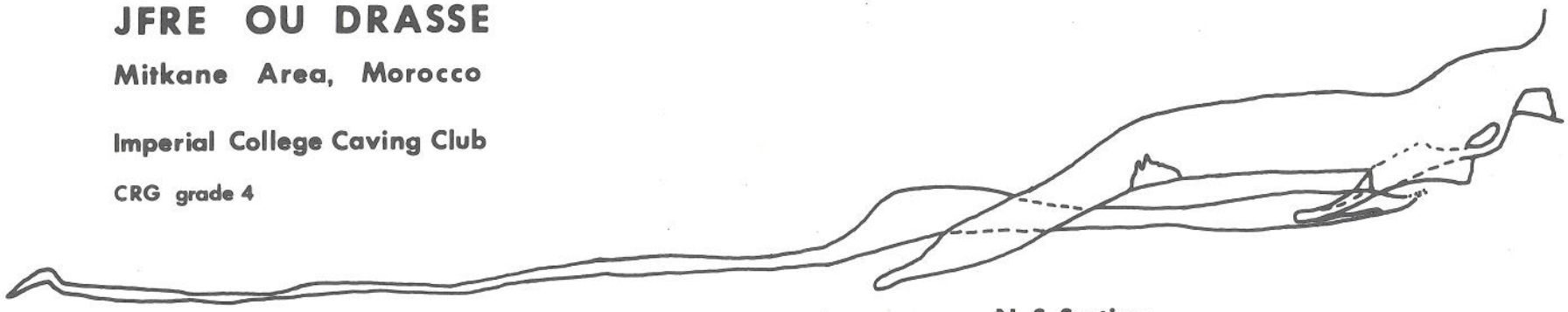


JFRE OU DRASSE

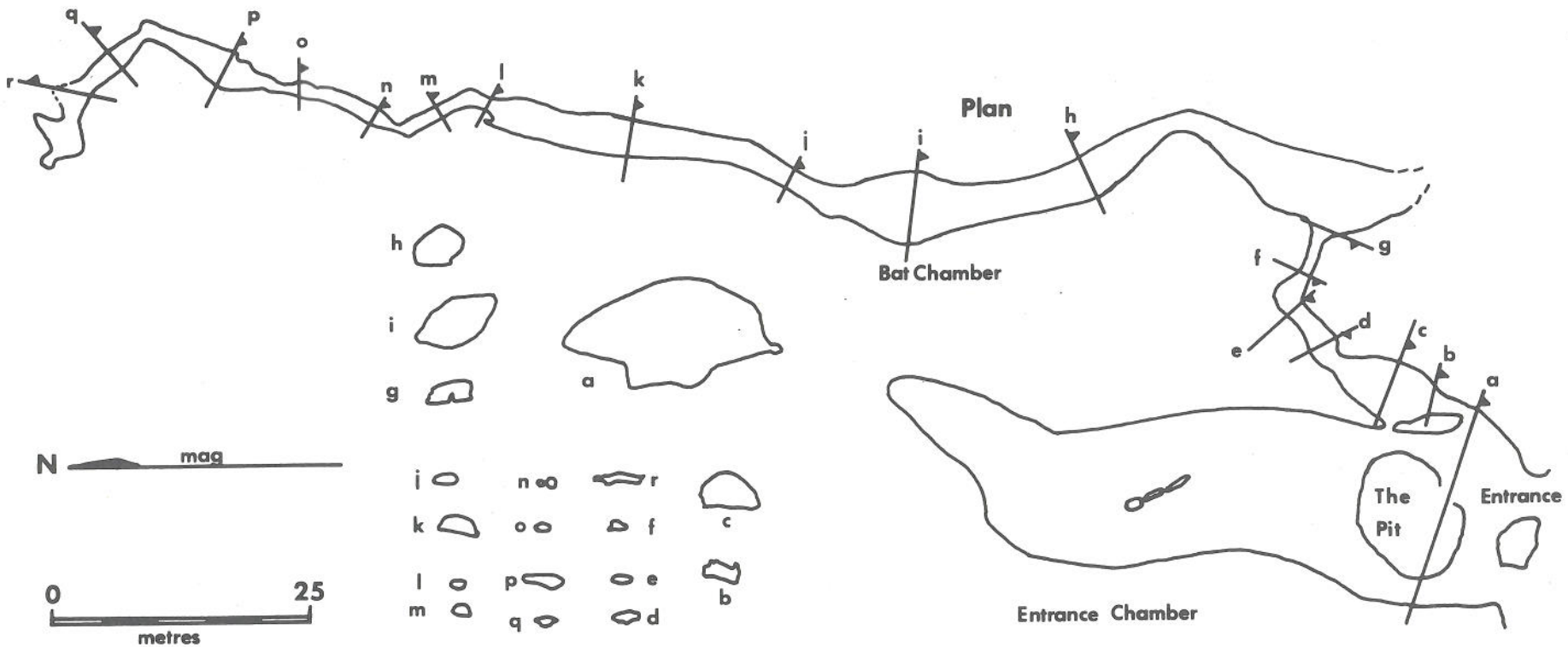
Mitkane Area, Morocco

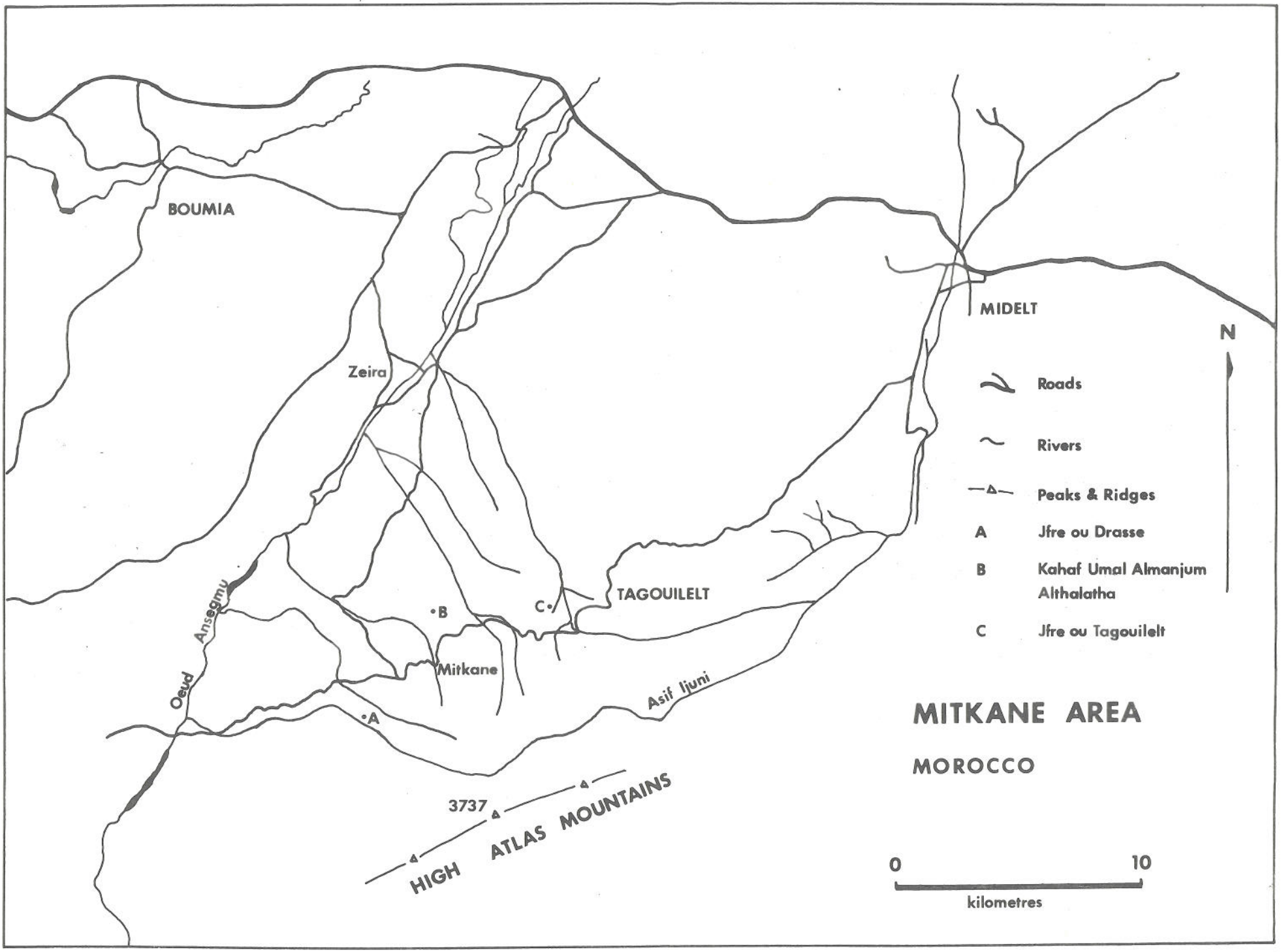
Imperial College Caving Club

CRG grade 4



N-S Section




BOUMIA
Zeira
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Peaks & Ridges
A Jfre ou Drasse
B Kahaf Umal Almanjum Althalatha
C Jfre ou Tagouilelt
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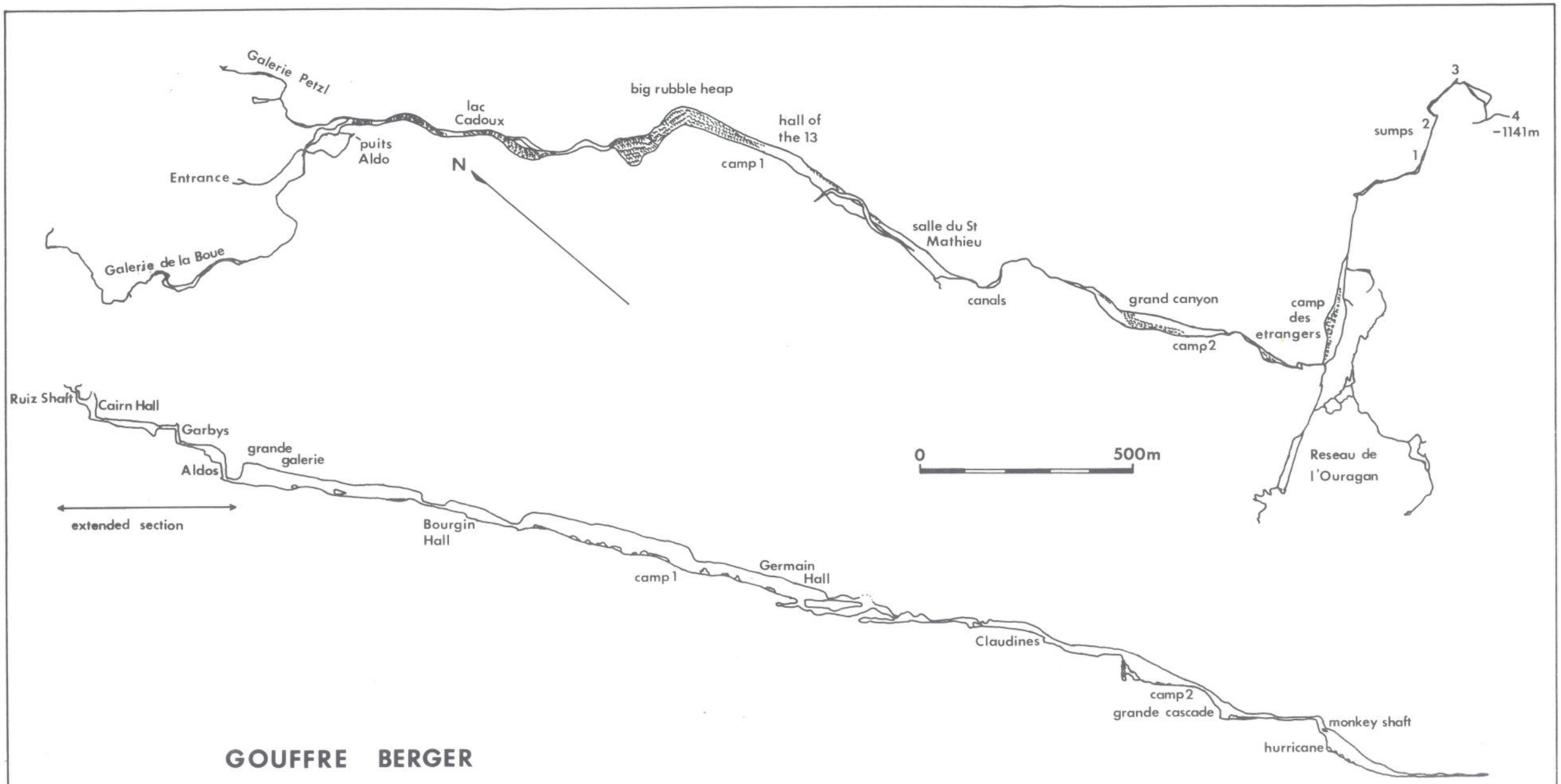
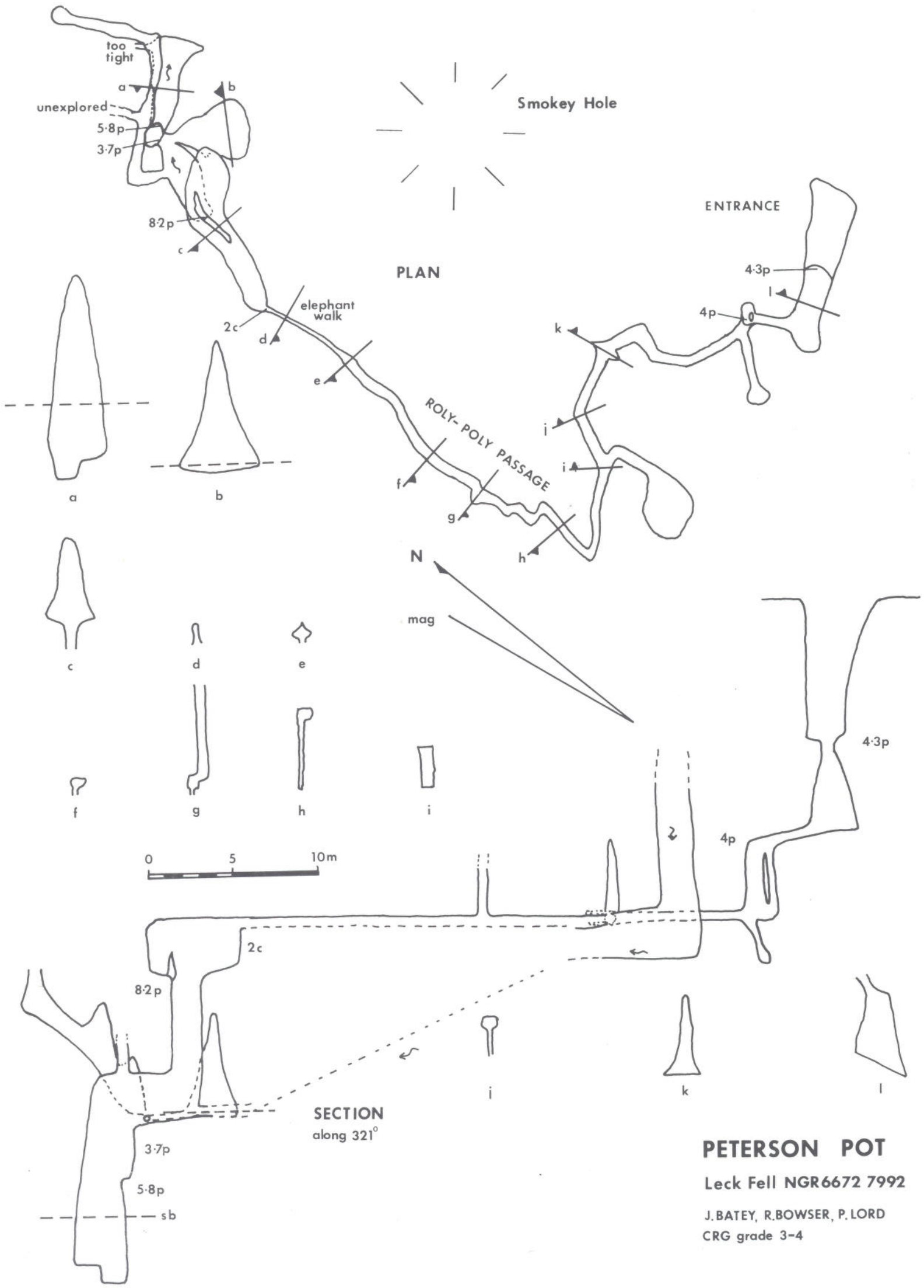


GOUFFRE BERGER

Engins – Isère

1460 m asl

J.Cadoux & others



PETERSON POT

Leck Fell NGR6672 7992

J. BATEY, R. BOWSER, P. LORD

CRG grade 3-4