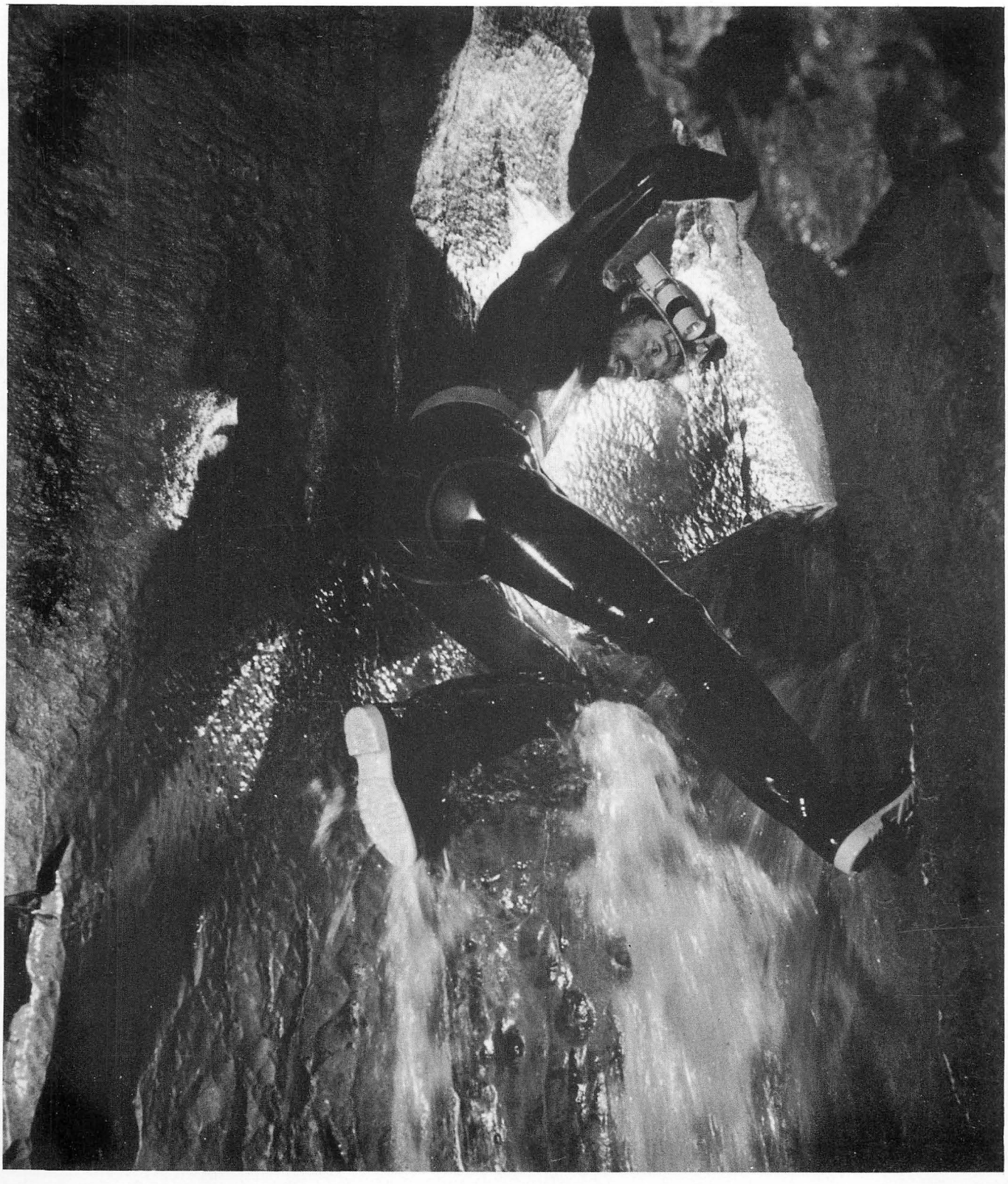
Caves & Caving

The Bulletin of the British Cave Research Association

BCRA

Number 15 Feb 1982 80p



WHERNSIDE CAVING COURSES

82

Whernside Manor
Cave and Fell
Centre

Dent
Sedbergh
Cumbria

☎ 05875-213

WRITE NOW FOR YOUR 82 PROGRAMME

CAVING COURSES — 1 day introduction £8.50 – weekend £33 – self catering weekend £22 beginners week £86 – Cavers week £86 – Cave leader training £90 Cave leader assessment £116

SPECIALIST WEEKENDS SRT £36 – SRT (self catering in the Bunkhouse) £25 – pitch rigging and self rescue £33 – Cave Survey (£33) – Cave Photography £35 expedition caving Seminar £25/£10

SPECIALIST WEEKS — Classic systems of the Dales £90 – New Year caving meet £66 – Cave Rescue Seminar £90 (ask your rescue team to sponsor you?)

OVERSEAS MEETS — *Ireland – June; Continent – Aug. Details later.*

*	***Pitch Rigging and Self Rescue***	The next step beyond basic techniques.
*	**Expedition Caving – Weekend Seminar**	How to organise your own expeditions abroad – open to non-residents (£10).
*	**Self Catering SRT or Caving & Potholing Weekends**	For your club/group – can be arranged at reduced prices based in the Statham Hut.
*	**Continental Meet – August**	For competent cavers who want to visit some of the classic caves of Europe – details available later.

☆ TACKLE HIRE ☆ LIBRARY ☆ CAVING SHOP ☆ WEATHER FORECAST

☆ EQUIPMENT TRY OUT SERVICE – Try any piece of gear before you buy

☆ ACCOMMODATION IN THE MANOR B & B £5 – 24 hours/3 meals £8·80

☆ SELF CATERING HUTS Statham hut sleeps 12 £18 per night
– bunkhouse sleeps 8-10 £16 w/end

1982 COURSE DATES

Feb.	*12-14*	Cave Surveying.
Mar.	*5-7*	Weekend caving and potholing.
	12-14	Expedition Caving Seminar.
	19-21	Cave Photography.
	19-21	SRT
Apr.	*3-10*	Cave Leader Training.
	11-17	Novice caving and potholing.
	11-17	Caving and potholing.
	23-25	Weekend caving and potholing.
May	*30-3*	4 day weekend caving and potholing.
	7-9	SRT
	14-16	Pitch rigging and self rescue
June	*19-3*	Irish Caving.
July	*24-31*	Cave leader training.
Aug.	*1-7*	Novice caving and potholing.
	7-14	Classic systems of the Dales.
	15-21	Cave rescue seminar Continental trip – details later.
	21-29	Mining course.
Sept.	*3-5*	Weekend caving and potholing.
	17-19	SRT
Oct.	*1-3*	Cave surveying.
	1-3	Weekend caving and potholing.
	10-16	Novice caving and potholing.
	16-23	Cave leader training.
	29-31	Cave photography for professional photographers.
Nov.	*5-7*	Weekend caving and potholing.
	11-14	Pitch rigging and self rescue.
	27-4	Cave leader assessment.

Caves & Caving

The Bulletin of the British Cave Research Association

Number 15 **Feb 1982**

 ISSN 0142-1832

PRICE: 80p

Issued free to members of BCRA.

Subscription: £4 for 4 copies.

Articles, news stories, photos, reviews, surveys, expedition reports and equipment tests, etc., are all welcomed for publication.

If you have something to say but can't be bothered to write, why not phone the Editor on Bacup (0706) 874669 after 6.00 p.m. or Rambottom 5215 during working hours?

COPY DEADLINES

Major articles should be submitted by the following dates:

March
June
September
December

20th

Short news items can be accepted up to a week after these dates.

Editor: Juan Corrin,
55 Osborne Terrace,
Bacup,
Lancs.,
OL13 8JY.
Tel.: Bacup 874669

Advertising Manager: Keith Plumb,
55 Firwood Avenue,
Urmston,
Manchester.
Tel.: 061-865 6726

Obtainable from: B. M. Ellis,
30 Main Road,
Westonzoyland,
Bridgwater,
Somerset.

CONTENTS

Cover photograph: *James Grossett, Cherry Tree Hole.*

Sheena Stoddard.

Irish News

NEW CAVES IN COUNTY KERRY

There are few parts of the British Isles where one can actually walk into "new" cave within a few yards of a public road - however County Kerry is one of them. A tourist brochure describing the area refers to local cave systems "not yet fully explored" and Moldywarps Speleological Group members recently proved this to be very much the case.

A party of MSG members had visited Kerry in September 1979, staying at Kenmare and exploring quite a number of caves, none more than five or six hundred feet long, to the west of the town. A brief foray was made further north to the limestone of the Muckross Peninsula at Killarney, which yielded a few small caves and the promise of more. In September 1981, on what was intended as more of a sight-seeing and walking holiday than a speleological expedition, we stayed a week at Killarney and a second week near Tralee. During the first week the Muckross Peninsula yielded a few more caves - notably 1200' (366m) of passage in Kilbeg Bay Cave, a maze system riddling the base of a limestone ridge alongside the Middle Lake, having numerous entrances to its roomy but watery galleries from both the lake and the "inland" side of the ridge. A nature trail runs past the "inland" entrances, but despite this the system seems to have not been 'published' by any caving group.

The Muckross Peninsula was interesting enough, but a much more attractive cave awaited us near Castleisland, twenty miles or so further north. A reference in Coleman's "Caves of Ireland" to a line of holes shown on the large scale O.S. map attracted us here – local enquiry soon led us to open entrances. The largest was, we were told, known as "J.K.'s" after a former landowner (a Mr. J.K. O'Connor). It had been explored for some distance by locals, and its complexities were such that we were advised to take a ball of string! – however the cave seems to have escaped the notice of any cavers proper, even a U.B.S.S. party, who apparently walked over the area some years ago.

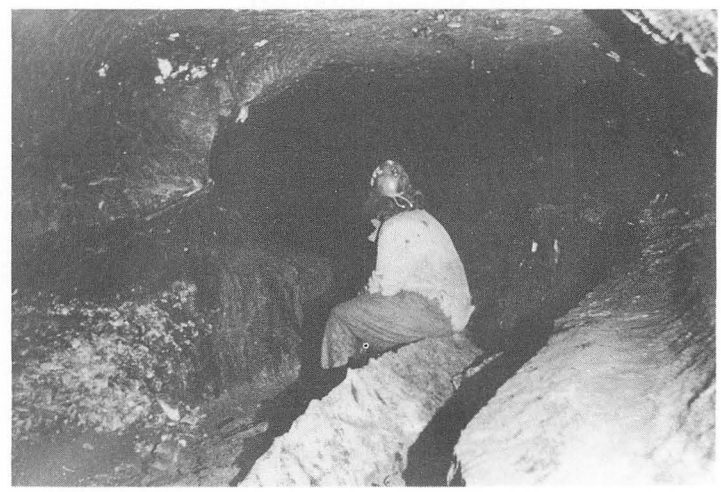
The main entrance to "J.K's" was a gaping hole at the foot of an old quarry face, just south of the grounds of Crag House, about 2 miles north-east of the market town of Castleisland. A slope of boulders and some domestic rubbish dropped away into an impressive chamber, 30' wide and 20' high, decorated with large but rather ancient stalactites. At the foot of the slope a stream crossed the chamber floor, and it became obvious that we had stumbled on a cave of some importance. Downstream the passage remained wide but soon lowered to a massive boulder choke, into which the stream gurgled away. Scrambling up through the boulders led to the remains of a long defunct horse and dim green daylight from another entrance, in a deep tree-shaded crater we termed "The Great Shakehole". Returning to the first chamber, the upstream passage was the obvious choice of route – however after 60' of wading amongst forests of stal., the roof dropped to a definite sump.

Retracing our steps again to the chamber, we found two dry tubes (each of comfortable hands-and-knees dimensions) leading off the entrance slope – the first about 8 ft. above stream level, the second about 15 ft. up. Taking the lower tube, an easy but increasingly muddy crawl led to a glutinous slide down into a wide chamber with deep water – the streamway again, on the upstream side of the sump (which can only be a few feet long). More wading, made entertaining by areas of quite deep mud beneath the water, led on upstream for about 300 ft. through forests of rather muddy stalactites in a passage up to 15 ft. high and wide. Eventually we met the second sump – a chamber where the floor dropped away and the roof suddenly came down to water level. At first glance this seemed like the end, but then we noticed a narrow rift 6 ft. above water level in the far wall – reaching this involved hauling oneself out of the water onto a sloping flake which jutted out across the chamber, and grovelling up this. On a return trip to take photographs, Jayne Elliot (on her first underground venture) made a gloriously precipitate descent on this flake to give the chamber its name, Jayne's Bath.

At the top of the flake a few feet of narrow rift, popped out to a five-way junction. The main route on, straight ahead and climbing quite steeply, was a dry tube 8 ft. in diameter leading up to another junction, then levelling out and dog-legging right to meet a small stream again. To the right the water flowed off into a crawl (later followed down to a series of sump pools, from which a dry passage led back round to the five-way junction), and to the left was a spacious gallery going upstream – this was short, running straight into a massive choke, the stream trickling in from a neat little sump pool on the right. The choke draughted quite well, but would take a lot of digging – the survey shows it to be right under a grassy shakehole beside the road just beyond the gates to the Crag House drive.

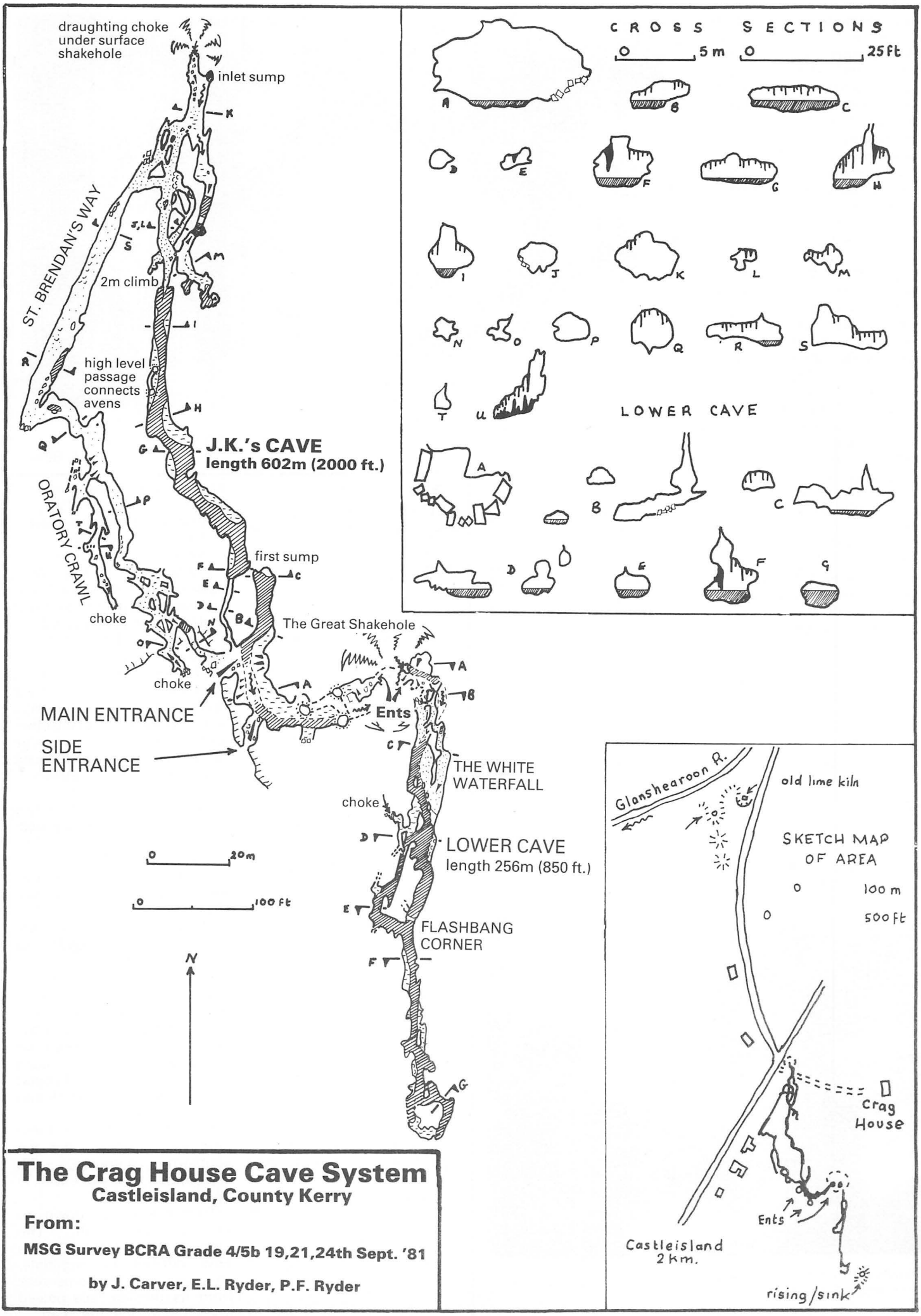
This was the end of the cave, in this direction at any rate. Fifty foot south of the final choke we took a hands-and-knees crawl to the west. After a few feet this opened into another roomy passage – on the right a route through boulders led back into the passage we had just come from, but on the left was a spacious gallery heading south. The next few hundred feet were a delight to explore and survey, with 60 ft. survey legs, and a profusion of formations – clean and white this time – gours, cascades, straws and curtains. St. Brendan's Way, as we called it, ran almost straight for over 200', following the line of a small fault, before becoming a more winding tube still of easy walking size. A stalagmite slope on the right led up into the only side passage of note in this part of the cave, Oratory Crawl, where one felt guilty of sacrilege crunching across a virgin floor of crystal pools, trying desperately to pick the least destructive route. At the Oratory itself (a small chamber) a barricade of 4 ft. high stalagmites appeared to seal off the continuation of the crawl, but by squirming round them to the right a further section of easy crawl was gained ending in a boulder collapse.

Back in St. Brendan's Way, easy passage continued southwards before lowering to a small complex of crawls. Eventually we found a short



The main way on from the five-way junction, an 8' diameter tube.

P.F. Ryder



The Crag House Cave System

Castleisland, County Kerry

From:

MSG Survey BCRA Grade 4/5b 19,21,24th Sept. '81

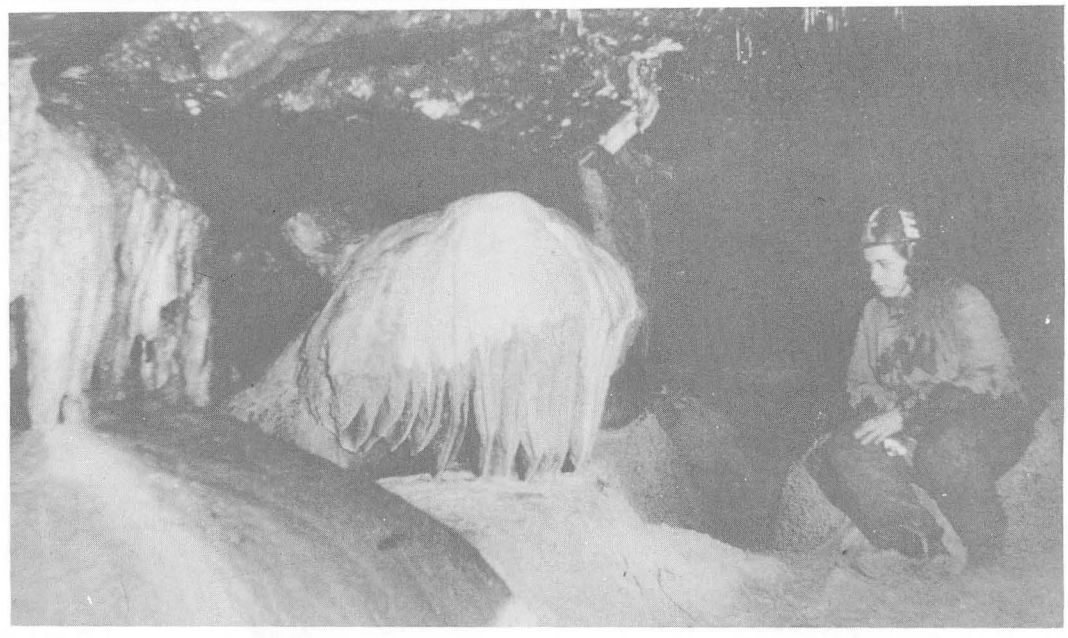
by J. Carver, E.L. Ryder, P.F. Ryder

crawl through a pool which opened into an ascending 4' diameter tube, a crawl over big gours, and then – faint daylight, and we were back in the entrance chamber, having emerged from the higher of the two crawls opening off the boulder slope.

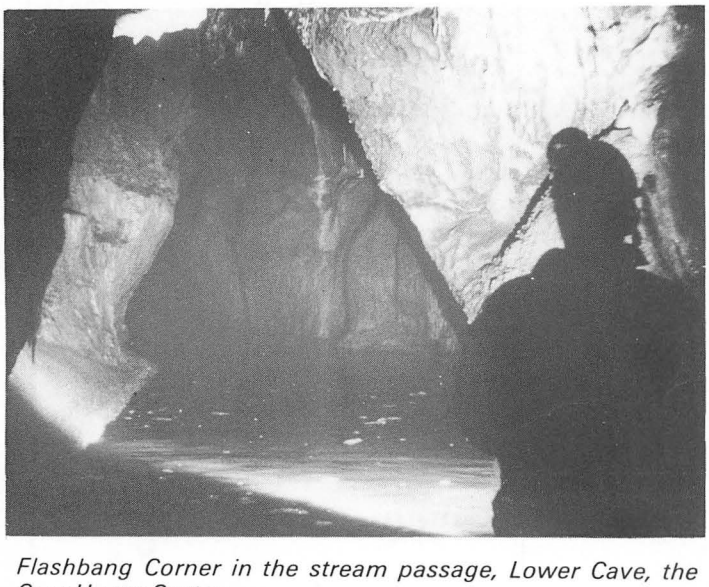
Total length of "J.K.'s" Cave came to almost exactly 2,000'. Occasional lengths of string and footprints testified to local explorers, although the lack of damage to formations suggested that they had been few and infrequent. Several parts of the cave, including Oratory Crawl, had obviously not been entered previously. A surface walk – the presence of vicious thorn hedges and over-sociable bovines making this rather more hazardous than the actual caving – revealed what was presumably the cave stream making a brief surface appearance in an open rift about 300 yards south of the Great Shakehole. Both upstream and downstream passages here sumped almost immediately. It was obvious that a reasonable length of cave remained to be found between here and the Great Shakehole collapse, so we turned our attentions to the shakehole itself. A few minutes of rearranging boulders produced the desired result – a narrow shaft dropping into spacious gloom. The thinner member of the party (John Carver) slid down and disappeared, the less thin (the writer) struggled to enlarge the orifice to more reasonable dimensions. John soon reappeared telling of roomy stream passages and to assist in widening the entrance which eventually attained the requisite size. The cave within consisted of a stream passage, generally 5-10 ft. wide and about 12 ft. high, heading south with a variety of wet and dry oxbows and short branches. It was late in the day, so on reaching a low and aqueous section which was obviously fairly close to the rising we retreated.

Two days later the new Lower Cave was surveyed and photographed by Pete and Elaine Ryder, the latter receiving a shock in more ways than one when the electronic flashgun she was firing blew up in a spectacular manner (hence the name "Flashbang Corner"). The cave totalled 850 ft. in length. The low airspace section at the end was pushed into a final rift chamber with no exit above water level.

Pete Ryder
Moldywarps Speleo. Group



Stalagmite bosses in St. Brendan's Way, J.K.'s Cave.
P.F. Ryder



Flashbang Corner in the stream passage, Lower Cave, the Crag House System.
P.F. Ryder

CAVES OPEN OR CLOSED AROUND THE NORTH POINT OF SLIEVE ELVA, Co. CLARE

Oliver Lloyd

For about five years now bulldozers have been used to close many of the entrances to caves around the north point of Slieve Elva. Some of them have reopened since then and it seems worth describing the situation in the summer of 1981. The accompanying map shows where the holes are. Reading from east to west we have:

B1h, B1a and B1b, Pollballiny and its associated swallets. These are all open but the forestry's fence has to be crossed to reach B1a, the main entrance.

Hawthorn Cave is open.

Faunarooska Cave. All six openings were closed about five years ago but after a year Faunarooska One had reopened itself and has remained open.

Faunarooska 2 and 3 are both closed.

Faunarooska 4 is closed and its considerable stream now runs along the stone wall to sink in a large impenetrable shakehole, marked 'swallet'.

Faunarooska 5 was showing considerable promise last year of opening but has since been closed again.

All the openings on the shale-limestone margin north of this have been closed, including Goat Hole, which is a feeder to Pollapooka 2 and Pollballyelly.

Pollapooka 2 contrary to previous reports has not been bulldozed. I think Pollapooka 1a was being mistaken for it.

Pollballyelly is open.

Pollapooka 1a is closed.

Pollapooka 1 has been bulldozed but not closed. The entrance is higher than it was and the north face unstable.

Pollapooka 3, the Chelsea's new cave, is open.

E1 and its associated openings have not been bulldozed. These are feeders to Pollapooka 1. All of the other sinks along the northern edge of Slieve Elva have been bulldozed, including Tobercahirnacallough, the Hag's Well. When I first saw this it was hung all over with rosaries.

EO is not open.

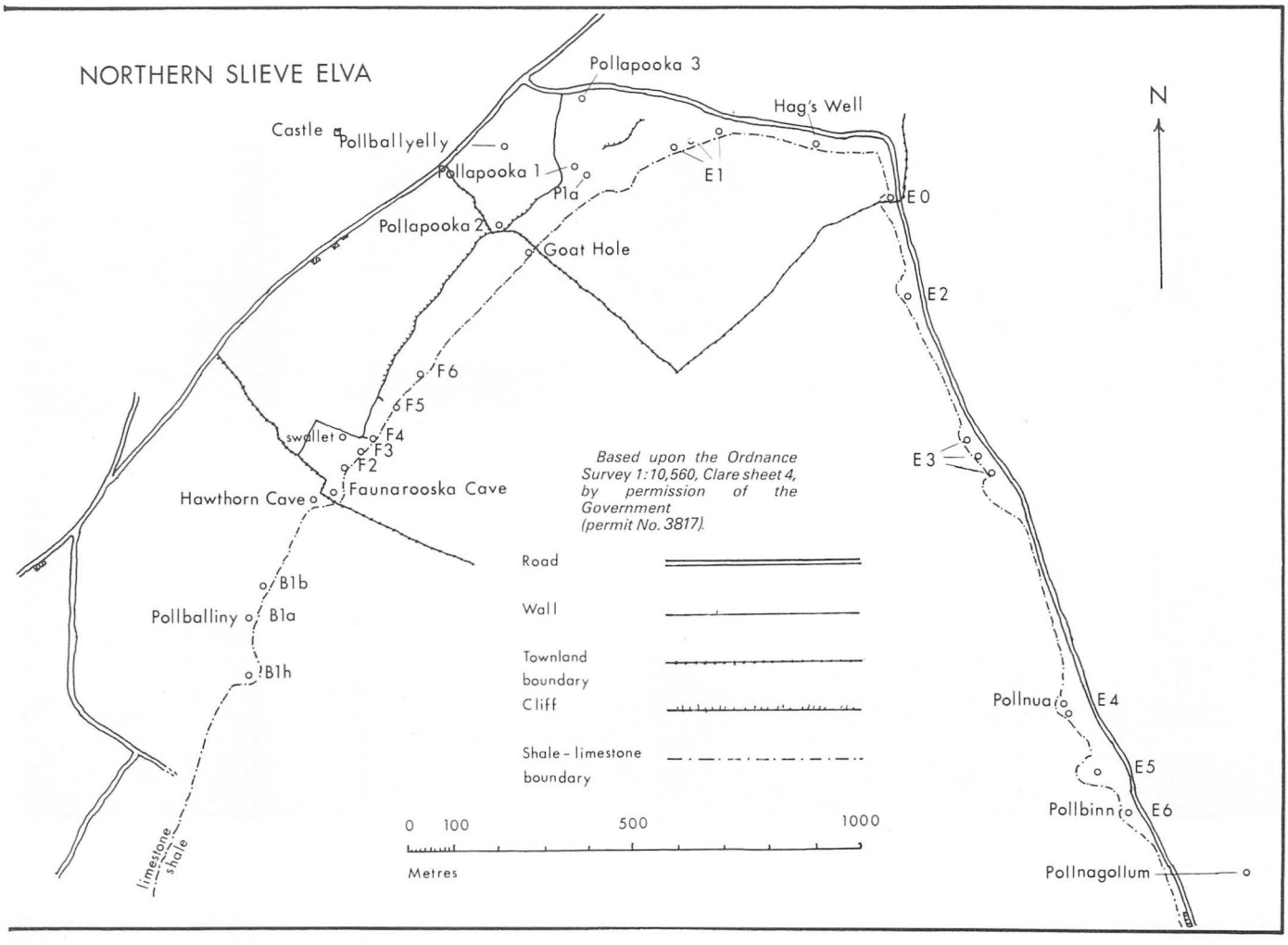
E2 has been very recently bulldozed over and the stream diverted.

E3 openings are in the forestry and are open but difficult to find.

E4 Pollnua is our greatest loss, as it was the best access to Upper Pollnagollum. In 1979 it was bulldozed. In 1980 the stream had almost reopened the cave. In 1981 they closed the cave again and diverted the stream, so that it should not be reopened.

E5 Pollbinn. The northern entrance is closed, but the southern entrance, E6, surrounded by a stone wall, is open.

That brings us down to Pollnagollum itself. The opening to the Upper Cave is now difficult to negotiate, because in 1979 some rock from its potside face peeled away and fell into the Shaft.



CAVE LIFE

Part 2: Cave Fish

by Graham Proudlove

World-wide, there are about forty species of blind, white cave fish. They are found mainly in tropical and subtropical countries and are consequently absent from Britain and Europe. We do, however, have some fish in our caves and it is the aim of this short article to give some details of what they are, how they got there, how much we know about them and what remains to be found out.

Seven species of fish have been seen in British caves, three of them quite regularly and commonly, and the other four much less so. The commonest species by far is the brown trout *Salmo trutta*, a membr of the salmon family. This has been seen in over fifty caves, in some of them regularly over periods of ten years or more. Bullheads (or Millers Thumb, *Cottus gobio* and eels *Anguilla anguilla* have also been seen quite regularly, the latter mainly in Ireland. The other four species, of which nothing more will be said here (because we know very little about them and because of lack of space), are the salmon, rainbow trout, stickleback and a goby.

Identification

Very few of the fish from our caves have been captured and properly identified but we can be fairly certain of their identity, even though they have often only been glimpsed in the gloom. How can we be so certain?

All of the fishes in our caves must have come originally from the small upland becks which flow into the caves. This type of stream usually only supports a few species of fish and they are all very different to look at, so that even a brief glimpse is often enough to tell one from another. Sometimes a salmon and a brown trout will be confused because they look superficially very similar, but so few of the former are likely to get into caves that this does not matter too much. It would be very desirable to capture the fish and identify them properly, but most often capture is not possible so a visual identification is better than none at all.

Eels are very distinctive. They have very elongated bodies with tiny front fins and a frilly fin extending all of the way round the hind end of the body. They swim by undulating the body – unmistakeable!

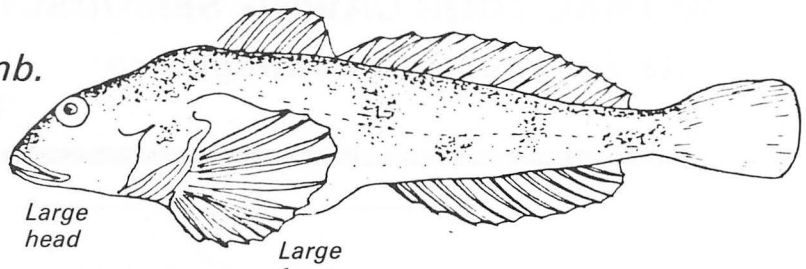
Bullheads have a very large head and enormous front fins which they use to propel themselves around (see drawing). Normally they lie on the bottom of the stream (often under a stone). They retain their green-brown colouration underground.

Trout turn white in the darkness of caves and tend to swim most of the time. The photographs show trout from caves. Photo 1 is a trout from Ingleborough Cave, Yorkshire (collected in 1974 by Dick Glover). It is very pale in colour. Notice also a distinctive feature of salmon-type fishes – the small fin just in front of the tail on the upper surface of the animal (the adipose fin). Photo 2 shows a young trout from Porth-yr-Ogof. It has several dark markings down its flank. This photo was taken by Melvin Davies of the Nature Conservancy Council, North Wales Region.

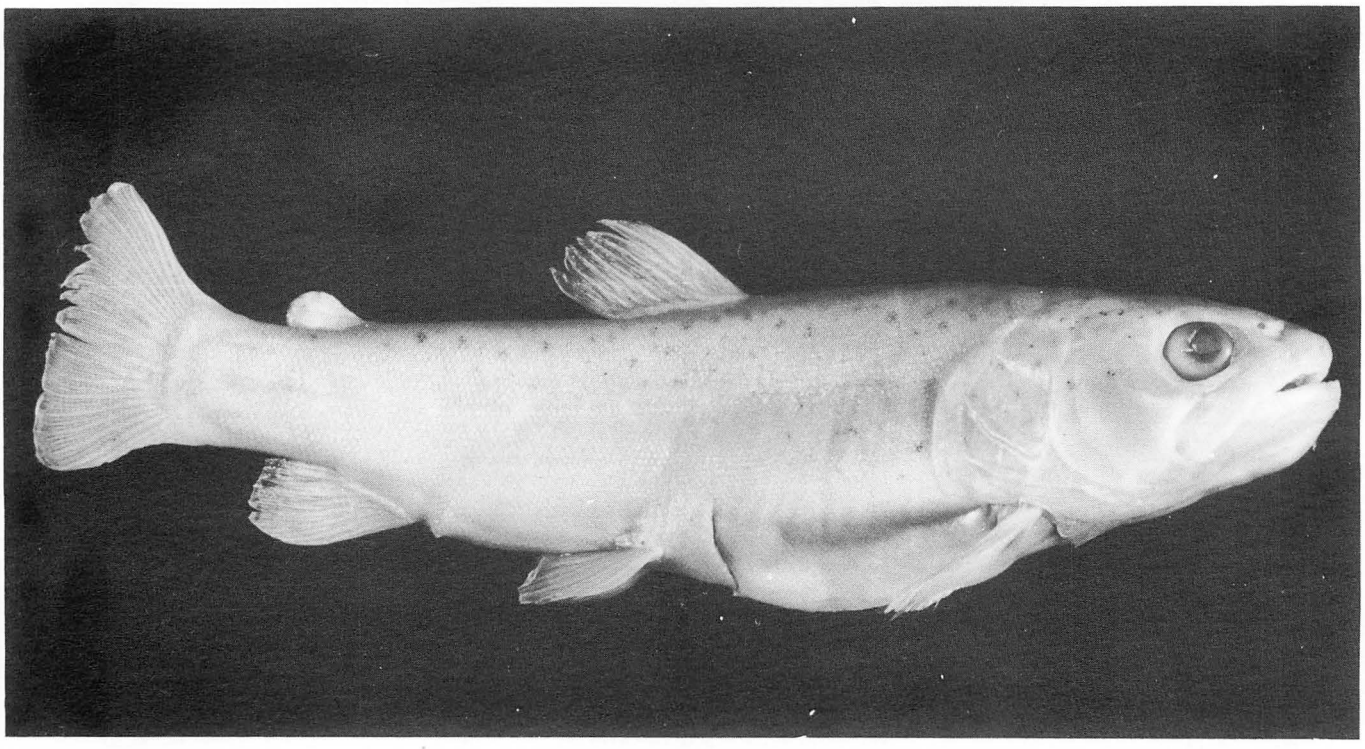
How did the fish get into the caves?

Adult eels do not breed in the streams in which they live but migrate to the Sargasso

Bullhead or Millers Thumb.



5 – 10cm



10cm

Photo 1: Trout from Ingleborough Cave

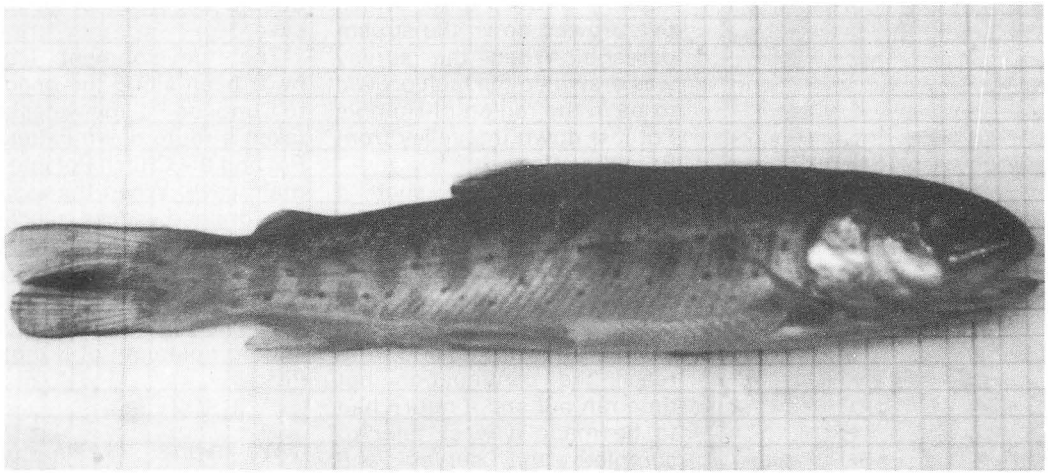


Photo 2: Young trout from Porth-yr-Ogof.

Sea to do so. The young animals migrate from the Sagrasso Sea and travel up rivers to feed. It is most likely that the eels seen in caves are on their way upstream to find a feeding ground. They may be able to feed within the cave but, as just mentioned, they could not possibly breed. No more will be said of them here.

Both bullheads and trout live permanently in upland streams. Very often they will move downstream (trout do this particularly at night) and if the stream enters a cave, so will the fish. I am often asked, "But how do they get into such as Ingleborough Cave; they couldn't possibly have come down the 340 ft. of Gaping Gill Main Shaft and survived"? It is amazing but true that trout (and bullheads probably) can survive such long drops. As far as we know at present, in all cases where fish have been seen in British caves, they have come from the streams entering the caves, even if there is a large waterfall in the way!

What do we know about their biology?

Only the trout has been studied in detail, so it will be concentrated on here.

The white colours of these fishes is not due to total lack of pigment as is the case with most true cave fishes. The pigment of trout is contained within special cells called melanophores and it is able to aggregate into the centre of the cell resulting in a light body colour, or disperse to the extremities giving a dark colour. At the extreme of aggregation the body appears white to the unaided eye. I have examined the fish in photo 1 under a microscope and it is obvious that the pigment is still present but aggregated. The fish are able to regain their normal colouration quite quickly. A few removed from Penyghent Pot became quite dark within 24 hours.

Contrary to popular opinion the trout are not blind. They have normal eyes and, in one fish tested, reasonable sight. They obviously do not use their eyes underground but rely on other senses such as touch and smell.

The fish can and do feed underground. We know this from examining the stomach contents of trout collected from caves. Unlike trout feeding in the light, which drift in mid-water and watch out for food with their eyes, cave trout feed by grubbing along the bottom of the stream. Whilst doing this they will pick up any small animals (such as freshwater shrimps and caddis fly larvae) which habitually live on the bottom of rivers, and also small stones. The trout in photo 1 had small stones in its stomach. It might be argued that the fish had fed outside of the cave before being carried in but we have evidence against this. It is known that food is removed from the stomach to the intestine of trout very quickly and it is not conceivable that the fish could have travelled the 3km from Gaping Gill in such a short time.

Problems and Mysteries

It will be apparent from the above discussion that we only know a very limited amount about these, quite common, cave inhabitants. It would be nice to know more.

The major problem with trying to study these fish is that of capturing them in sufficient quantities and with sufficient regularity. I have tried traps but they caught nothing! One method which did work and which will probably turn out to be the only feasible method is to catch them by hand whilst diving. We all know the dangers and difficulties of cave diving; add to them the task of catching a fish which does not want to be caught and you can see the problem!

Several mysteries remain to be solved. Do the trout that are seen in places such as Lake Avernus in Ingleborough Cave and Bridge Cave sump stay there for months or is the population continually replenished from outside? Do the trout manage to breed in the caves?

Answers to these questions will only come with intensive study. A great deal has been learnt so far and much more can still be learnt by observation – so I will end with a plea.

If you see a fish in a cave please remember exactly when and where and send me the details. Use this article to tentatively identify them. If you can stop and watch the fish for some time, do so and when you get outside make notes of what you saw. YOU can provide lots of valuable information of great interest and perhaps of great importance – the caves of the Glais Valley in South Wales were made a Site of Special Scientific Interest, and thus protected, because cavers saw and reported the white fish in the caves.

You can find me in the Dales (Bernies or the Heifer) at weekends or send information to: Graham S. Proudlove, Dept. of Zoology, University of Manchester, Manchester, M13 9PL.

Long Drop Cave

Humble Inlet

Burnley Caving Club nearly doubles the length of this Leck Fell pot

A recent Burnley trip into Long Drop was enlivened by attempts to look at some of the avens to be found down there. On the 14th November Pete Myers free climbed the waterfall into High Stream Chamber (an 11 m VS) to discover a short vadose passage ending at a large aven. Interest had been aroused and the following Thursday saw Geoff Barber rigging the hole on a solo trip, to start bolting the aven. A delicate 2m climb and the bolting was started. Having borrowed Dave Elliot's new bolting platform it took only 5 bolts to reach 12m and from there it was possible to see a decent passage at the top, but time called a halt.

Sunday 22nd saw the bolt route completed but having taken the direct and dry route up, a hairy pendulum was needed to gain access to the upstream passage. One hundred metres of well decorated stooping/crawling passage lead to a mineralised fault, choked above and holding a deep pool which over flowed down the stream passage. When the survey was drawn up the fault proved to be in the region of Humble Pot just down the valley from Rumbling Pot.

Returning to the shaft it could be seen that the passage continued "down stream" at the same level but loose rock defeated any attempt at traversing. Two more bolts were lopped in to reach the continuation but time ran out and a return had to be made a week later to complete the survey and explore the downstream passages. This proved to be a smaller passage with wet wallows and an awkward dropping bend, "Wellie Boot Corner", ending at a blind 18m pit, the Dungeon.

●

The whole of Long Drop is phreatic in origin with slight vadose modification. Small tube passages feed into large phreatic fault systems. By its size and position Humble Inlet was probably the main phreatic feeder into Long Drop being larger in size and further up valley than the extrance passages. Dungeon Pit ends above the complex double joints area of the main cave.

The development could have been along the bedding to Dungeon Pit, the water later taken a route down Patterson Pot and the Crutch Pot into the main cave. When the system was drained vadose trenching occured back from Patterson Pot. This simple explanation is however complicated by evidence of vadose down cutting upstream of Dungeon Pit!

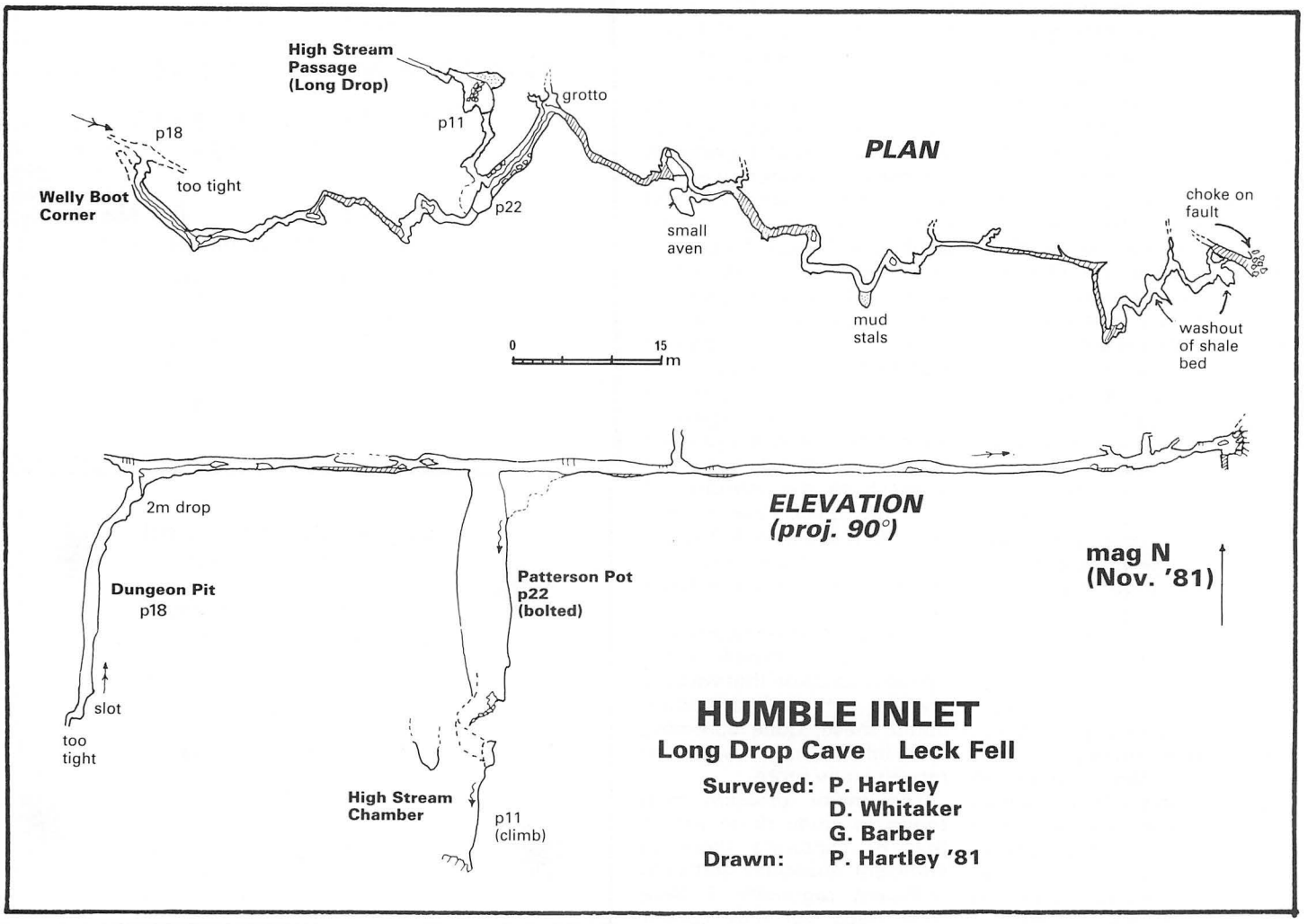
●

We would like to offer thanks to Harry Brunskill for permission to carry out the work on Leck, and thanks to Dave Elliot for use of the Bolting Platform

The bolted 22m shaft was named Patterson Pot in memory of Derek Patterson former Burnley secretary who was killed whilst rock climbing earlier in 1981.

Please note that to visit the extension, now it has been de-rigged, will involve repeating the 11m free climb and following the bolt route which requires a bolting platform as some of the bolts are over 2m apart.

Burnley Caving Club

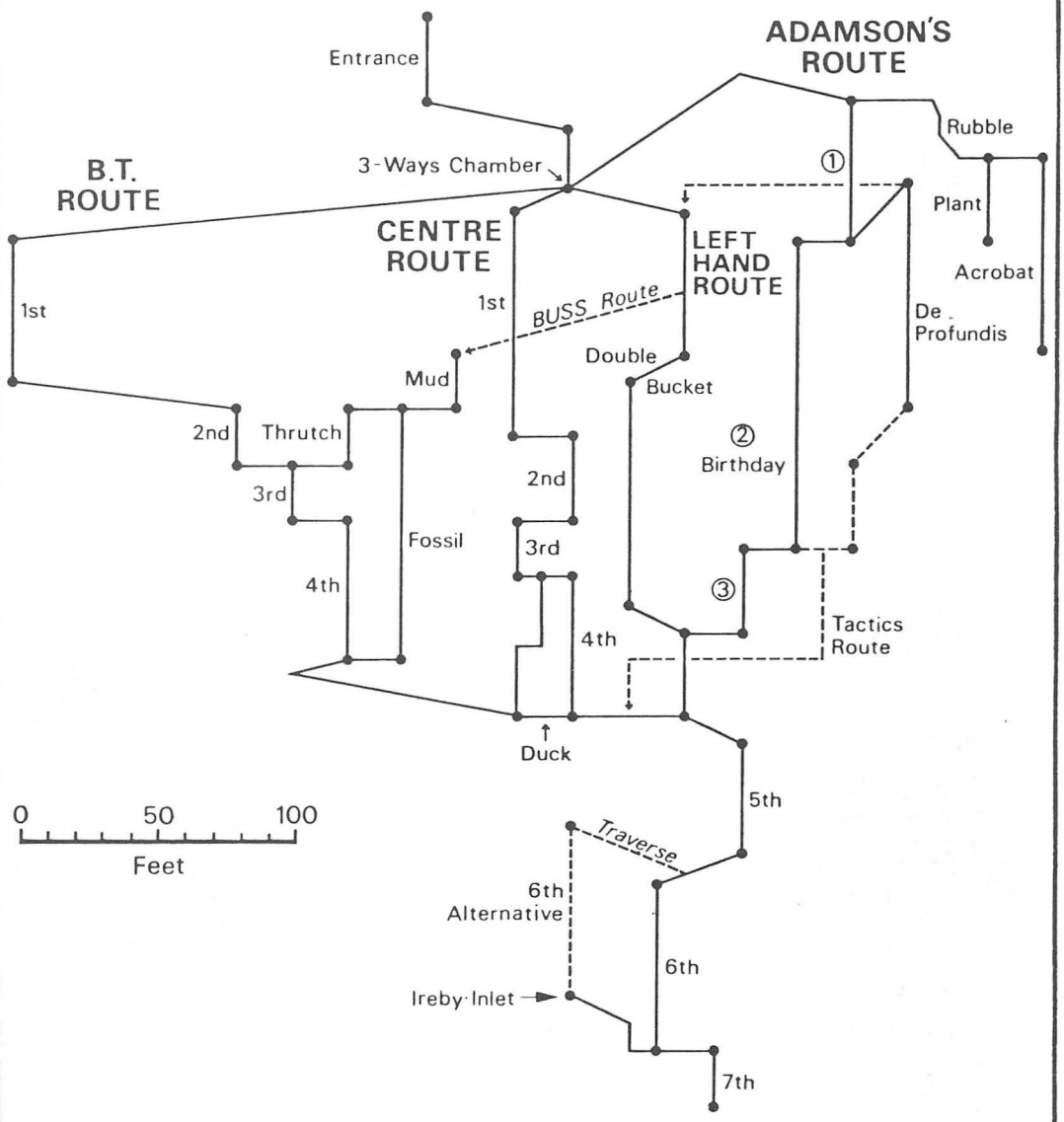


The Chapel of Rest, Lancaster Hole

Over New Year 1980-81 several members of the Craven Pothole Club began to bolt up the left hand of the two large Graveyard Avens in Lancaster Hole. In three trips about 50ft. of height was gained and several possible passages were examined; unfortunately all were blind alcoves.

A trip in March returned the route from its peregrinations around the aven onto a more direct line to top where a large passage could just be perceived through jammed boulders. The climb was then left until September when Pete Seed and Graham Proudlove returned to complete the job.

Armed to the teeth with all manner of ascending implements, the pair reclimbed to the topmost bolt and GP managed, after a struggle on slimy calcite, to free climb the final 10 ft. into an alcove surrounded by boulders. The climbing gear was abandoned and the search for passage begun. Boulders blocked the way in every direction except one and this led up into a beautifully decorated chamber which was christened "The Chapel of Rest" since it was part of the Graveyard. A hole next to the chamber looked straight down the centre of the very fine aven and provided a convenient escape route since reversal of the climb would have been impossible. The roof of the Chapel is covered with long straws and its floor with Graveyard-type stalagmites, about three to four feet high and pristine white in colour – it is a very pretty place.



There was no other way out of the chamber. A bolt was placed over the hole and all of the climbing gear and bolt plates removed during the abseil. It is a shame that no progress was made towards Pegleg Pot as was our hope, but at least one more aven can be crossed off the list of those awaiting ascent.

Graham S. Proudlove

Understanding Notts

Paul Hindle (author of *Cave Formation in Northern England)* is trying to make some sense of the 'most concentrated vertical maze in Britain' - Notts Pot. He has sorted out the Lost John's System with a useful diagrammatic section in his publication. Notts, however, is much more complicated and he would appreciate assistance from people who know of additions and alterations that could be made to the Notts Pot section shown here.

Paul can be contacted at the Department of Geography, University of Salford, Salford M5 4WT (Telephone: 061 763 5843).

BLUE HOLES

BRITISH CAVE DIVING EXPEDITION

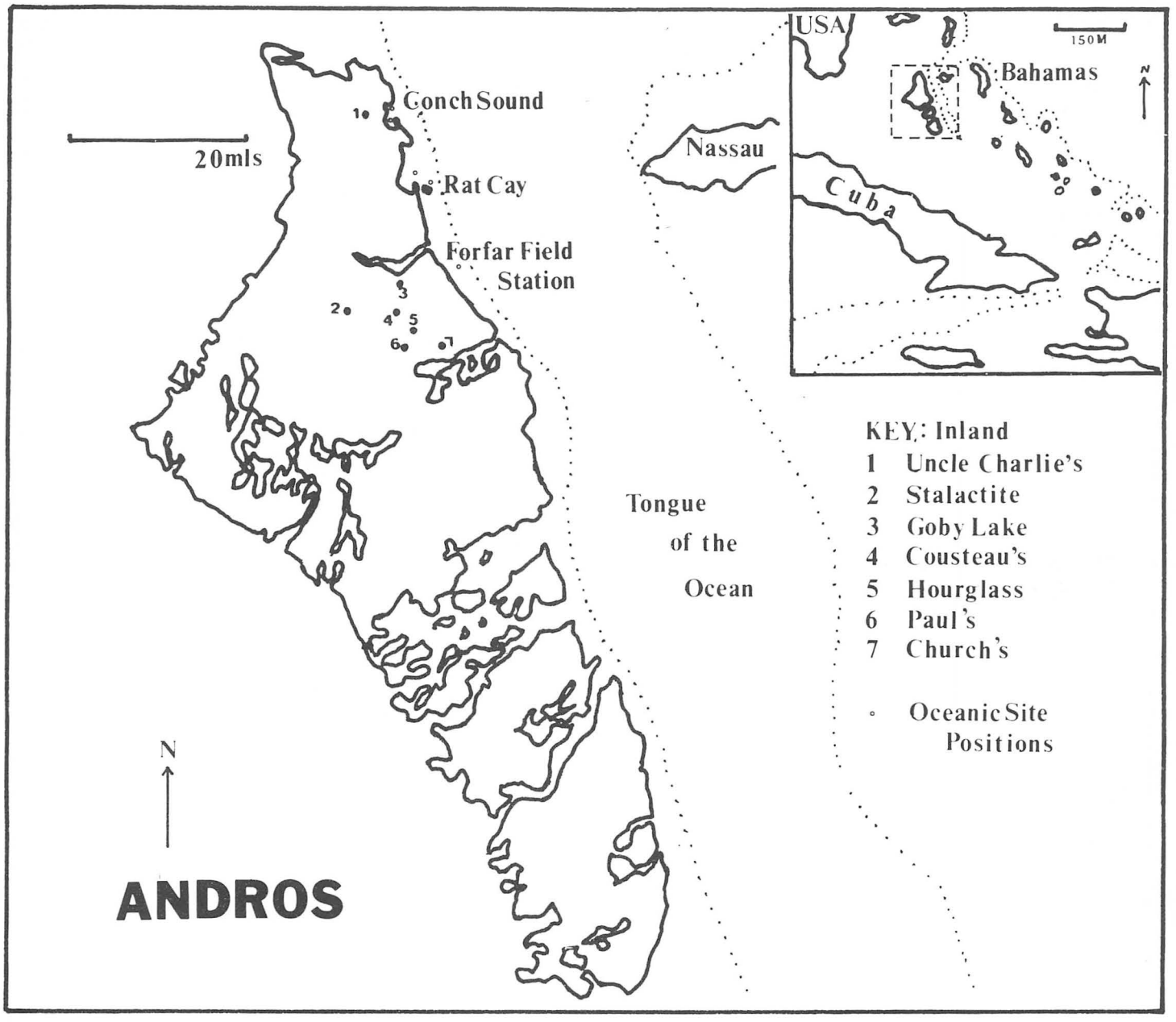
The common flood mythology of the diverse race of man could well have much of its origin in dim folk-memories of the Pleistocene, when the vast ice-sheets covering much of the now temperate areas of Earth lowered sea levels by as much as 400 feet. The resultant release of this water, over a still-uncertain time scale, would certainly and emphatically have driven our remote ancestors from their sea-shore haunts and dwellings.

In the Caribbean region, many of the great cave systems formed during the glaciations were likewise inundated. Some, like certain Florida springs, had occasionally been early cave dwellings. They and others also contained speleothems, their development arrested as they drowned, trapping in their crystalline structure an important record of environmental change during the Pleistocene.

Of the many flooded caves of the almost completely submerged limestone massif of the north Caribbean, the most dramatic and mysterious are the Blue Holes of Andros island in the Bahamas. These enigmatic openings in the bed of the world's third largest coral reef descend in some cases to depths of 400 feet and more beneath the coral floor. They contain a complex ecology of adapted species in their cool dark depths, life dependant for food on the twice daily tidal influx of reef water, carrying with it a variety of organic material which enters, but does not leave, the caves. Black corals, sea fans, anemones and a bewildering variety of other marine life (including the odd shark) dwell in the inner reaches of these caverns, often several hundred feet and more from daylight. So too, as local legend would have it, does the Lusca, "him of hands", a tentacled monster whose long arms would reach out to pull many a fisherman and his boat to a sudden and watery end. A slightly less dramatic, if similarily lethal, natural phenomenon accounts for this myth; the tidal whirlpools caused by rapid inflow and outflow of water from the caves can be amazingly fierce, strong enough in certain cases to suck small boats and their occupants beneath the waves.

As well as the wide variety of marine life, these caves contain features of a more familiar form. Stalagmites, stalactites, columns and the like grace the innermost passages of a few systems, the formations of their youth, whose development was arrested as the waters rose. Accurate scientific dating techniques can pinpoint the time of their formation, and by applying such techniques to samples from differing depths much can be discovered about the formation of these caves in relation to the rise and fall of Pleistocene sea-levels, and of climatic change during the glacial epochs.

The Bahamas are the highest points of the Grand Bahama Bank, a 750 mile long arc of shallow underwater plateau running south-east of the Florida peninsula. The Blue Holes drained this



plateau during the Pleistocene, much of the water probably resurging along the spectacular cliffs that now form the underwater 'drop-off' into the Tongue of the Ocean. Here, along the eastern seaboard of Andros, the seafloor drops in a few horizontal feet from 100 to over 5,000 feet. Caves have been seen several hundred feet down this by remote controlled and man-powered submersibles, and one on the very edge of the drop-off has been explored to a depth of 200 feet.

The 1981 British Cave Diving Expedition went to Andros to continue work begun in the '60's by the explorer of this hole in the wall, George Benjamin, a colourful and extrovert character who spent over twenty years amassing information about the Blue Holes, and exploring and cataloguing the major entrances. Few were explored for any great distance, but one system, in South Bight, produced over a mile of inter-connected passages, in which deep shafts plunged to depths of over 300 feet. These explorations were not without cost, and Benjamin lost more than one friend and colleague in the depths of the Blue Holes. It was in South Bight that Benjamin came across the halls of stalagmite and stalactite hundreds of feet into the submarine cave.

At the north end of the island, 70 miles away, he looked at several sites, large and small, from Conch Sound in the extreme north to Stafford Creek, halfway down the eastern coast of the main north island.

The British Expedition, based in the simple accommodation of the Forfar Field Centre at Stafford Creek, named after one of Benjamin's late diving friends, spent its time working some of the major sites in this area, using Benjamin's notes for reference. Unlike George, we were concerned with much more than the simple exploration of the cave, and their photography. Another George, George Warner our biologist, was there to study the marine flora and fauna of the Holes, where the unusual environment created artificial deep water conditions as well as some strange effects of its own. The caves were submarine tidal 'creeks', flushed by reversing currents twice daily, and these currents, which carried nutrient-rich reefwater into the systems, also physically affected the growth of some of the more static life attached to the walls. Mel Gascoyne,and his new wife Simcha, were studying the chemistry of the water, both inflowing and outflowing, and carrying out a dating programme on the speleothems recovered during the work of the Expedition. The actual exploration of the various sites, and their survey, was done by Martyn Farr and the author, with the technical assistance and support of Rod Beaumont who, with Geoff Attwood back in the U.K., had built the specialised lighting units we used and the underwater flash and slave units used by Martyn as photographer.

Our visits to the oceanic sites were dependant on time and tide, and we visited sites in turn when conditions at each Hole allowed. One very close to our base, off a small island called Blue Hole Cay, was descended early on in our stay for 140 feet before a constriction prevented progress. The charm and content of this cave, dismissed by Benjamin as too tight to enter, set much of the

Mel Gascoyne and Rob Palmer with samples of stalagmite

tone for our other sites.

A few miles further north, our pontoon craft took us to another island with the salubrious name of Rat Cay. Off the north shore of this small shrub-covered platform a wide cleft in the seabed was the entrance to Rat Cay Blue Hole, a cave set in a beautiful coral reef which proved to be one of our major sites. Previous attempts at exploration here had been foiled by a low and sharp bedding, 150 feet into the cave, at a depth of 45 feet. Our side-mounted harnesses saw us through it with ease and in a series of dives we explored 2000 feet of large and open passage, in visibility far in excess of the British norm, until both branches of the cave became choked or too constricted. A nearby Blue Hole, at the entrance to South Mastic Bay provided a beautifully photogenic entrance shaft of some sixty feet in depth, but only a small remnant of a once large passage at its foot, now sadly completely choked with sand.

Beyond South Mastic Bay lay Conch Sound, and here perhaps the most dramatic diving of the Expedition took place. The smaller of the two Blue Holes in this bay, which was called with all due imagination Conch Sound Two, was notably different from the others in that it was an active sulphur spring. Here the mineral content of the water gave a pallid off-white coating to the algae and anemones growing on its walls, and this gave the cave an eerie and oppressive atmosphere. The entrance, an 8 foot diameter tube, soon gave way to a steep descending rift, which we wended our way down to a depth of 140 feet, where cold clear water emerged in a strong flow from a low and impassable bedding over the broken skeletal remains of a huge turtle. The rift continued beyond, but we turned back 500 feet from the entrance before all the line had run out, made uneasy by the character of the place, the strong currents and the poor visibility and constriction. Ascending the rift, I became horribly stuck in a constriction off the main line, 100 feet down, taking several heart-stopping moments to force myself free.

Conch Sound one, on the other side of the bay, was a vastly different proposition. It lay close inshore, barely one hundred yards from the beach, near the small native community of Nicholl's Town, whose children derived hours of pleasure watching us clank sweatily off into the sea from our open air-changing rooms under the Bahamian pine.

The entrance to the Blue Hole itself was a huge collapsed chamber, where several passages met in a rotunda now open to the sky. Most of the passages took a strong flow, though they soon became impassable due to collapse or to simple constriction preventing further progress. There were two exceptions. On the north side, a complex series of small tunnels were explored, and a deep but too narrow rift found, all taking and giving a strong current. Directly opposite, down a steep and dramatic slope, a large and clean-washed passage enticed us into the darkness beyond. Even before we left the light of day, it had reached a depth of eighty feet. On our first dive, Martyn and I laid 600 feet of line along it, past curiously shaped pendants on the roof, before coming to a barrier of broken rock across the floor. Rising up over this, we emerged in the first of a series of beautiful and spectactular chambers, deep beneath the waves, but full of the stalagmites we had been seeking, dissappearing in serried rows into the distance.

As Martyn and I continued our dives into the chambers beyond, George and Rod were examining the entrances. George, with almost no previous cave diving experience though an extremely capable diver, was happily making forays up to the first chamber, photographing and collecting samples of the colourful and varied life on the walls of the cave. A profusion of anemones, corals, sponges, hydroids and fan worms grew or were anchored to the walls in intermingled harmony, with several species sharing the same few square inches. Some of these were deep water organisms lured into the cave at some time in the past by the cool dark environment of its interior, while others were part of the more common ecology of the surrounding reef and sea. George, Mel and Simcha sampled the inflowing and outflowing water, discovering a considerable difference in the material content of each. The inflow was heavy with plankton and other organic matter from the surrounding sea, all of which provided nourishment for the life inside. The outflow contained sands and silts from the interior, some of this no doubt stirred up by the passage of Martyn and myself, together with small organisms from deep inside the cave, some showing typical signs of cave adaption. By the end of the outflow, the material content virtually dropped to nil, and the water took on an astounding clarity, and visibility could be measured in hundreds of feet.

Beyond the first stalagmite chamber, Martyn and I swam on into a splendid series of grottoes, leapfrogging our way into long passages full of huge depositional dunes of sand and silt, underwater Saharas in the distant regions of the cave. Even at the most distant points we reached, over two thousand feet from day and ninety feet down, life was still actively existing. Blue and white sponges graced the walls, and clung to those stalagmites that emerged from the dunes. White snake-eels undulated across the sand, burrowing in at astonishing speed when approached, while crabs scuttled across the floor, in company with small shrimps and lobsters, or swam free in

Divers prepare to place the current meter in CS1, seen as an area of still water behind the left hand diver.

elusive flight in the passage itself. These we collected on our way out, taking them to George for identification. We also brought out already-broken stalagmites for Mel to date back in Canada, noting first their position and depth. Sectioning one, we already have evidence of at least two marine inundations of this Blue Hole.

On the far dives into this cave we were using vast amounts of air to cope with depth, distance and decompression. We dived each with twin eighty-cu.ft. tanks on our Troll side-harnesses, and a back mounted seventy-two cu.ft. tank. By hand, we took one or more seventy-two cu.ft. tanks, to leave several hundred feet into the cave as staging units. At the depth and duration we worked here, decompression times sometimes became as long as the dive itself, lasting up to an hour or more when multiple dives were made on the same day. These spells of enforced submergence were made more bearable by the surroundings of the open entrance complex, with its colourful busy community of fish and crustaceans. Occasionally a stingray or barracuda drifted into view, though at Conch Sound at least we saw no evidence of the sharks that occasionally bask in the cool of the cave mouths.

Inland, Blue Holes were also found, though these are generally beautifully circular shafts that pierce the island karst, reputedly for depths of up to 400 feet. Though undoubtedly linked hydrologically to oceanic Holes, evident by a tidal rise and fall of varying magnitude, we found only one with passages, though we descended others to depths of 180 feet. 'Uncle Charlie's Blue Hole', near San Andros was 50 feet deep, with the usual circular entrance and funnel shaped floor. It differed in that at the base of the funnel, an unpleasant descent through a shaft lined with banks of decaying organic material, at the same time in the equally unpleasant sulphurous layer that seperates the layer of fresher water from pure saltwater in inland holes, could be made into passages beneath. Early in the expedition, we made a gruesome discovery here, when the badly decomposed remains of an American diver were found wedged in a rift in the roof, eighty feet down, and only one hundred feet in. He had no line, in conditions where perfect visibility deteriorated with swift certainty to an absolute silt-out, and can have stood little chance of survival once beyond the light of day. In this line of diving, there are no short-cuts to experience and the rewards of failure are brutal.

The Expedition was a complete departure from previous British cave diving ventures. It went out as a well organised and well supported scientific expedition, albeit with a very high adventure content, and proved highly successful in the field. The Andros Blue Holes, however, will still provide one of the most complex and interesting challenges to cave divers for a long time yet, both as exploratory sites, and as biological storehouses of marine life, existing in controlled conditions in an environment as yet little affected by man. The structure of the Androsian karst makes the island itself a perfect site for the study of marine and freshwater solutional effect on such a limestone platform, and the 1982 Expedition will have many new fields to work in. Andros will provide a fascination for the curious for many years to come.

Rob Palmer

The 1981 British Cave Diving Expedition, under the Patronage of H.R.H. The Duke of Kent, was financially supported by The Royal Geographical Society, Comex-Houlder Diving Ltd., The Sports Council and the Ghar Parau Foundation. A considerable amount of equipment and support came from companies, organisations and individuals at home and abroad, to whom we express our sincerest thanks. The Preliminary Report of the Expedition is available from Rob Palmer, at a cost of 50p from 22 Whittucks Road, Hanham, Bristol.

CUCC/UBSS in Austria

A joint Cambridge University/University of Bristol expedition continued exploration of the Stellerweghöhle System to -680m, with a through trip at -400m. The system is still wide open for pushing.

●

For the sixth year running, Cambridge University Caving Club visited the Totes Gebirge, Austria. This year there were an equal number of cavers from the University of Bristol Spelaeological Society, making up a strong team of 20. We spent the first three weeks of August 1981 camping at Altaussee, a small village below the Loser Plateau, and 55km SE of Salzburg. As in 1980, we were looking at the Stöger Weg area, which is reached by a drive up a toll road and an hours walk in.

The 1980 expedition (1,2) left two pots unfinished. Schnellzughöhle (AKA Gemsescheissehöhle) - 1623/115 in the Austrian catalogue - had a railway tunnel-like entrance, leading via the 20m Bell Pitch to a narrow rift which broke out into a large phreatic tube; the descent which followed led to an undescended pitch down the 'Ramp'. Stellerweghöhle (1623/41) had originally been entered by some Germans, but their way petered out at -160m. The 1980 route led via phreatic passages developed along inclined bedding planes to a superb 100m pitch, followed by a series of smaller wet pitches (at first tight) then breaking out into a large rift. Exploration had ceased at -350m due to lack of time.

●

The 1981 expedition soon rigged Schnellzughöhle and carried on down The Ramp, a series of pitches following the bedding down at 45°, making for awkward prusiking. From here, there follows a sequence of more vertical pitches in a large rift - these normally only carry a small stream, but this rises rapidly in flood. The last pitch drops into a spacious chamber and a stream heads down a narrow vadose canyon - Pete's Purgatory. This resembles a slim version of the Crabwalk in Giants and is hard work with much tackle. After about 850m, the passage widens at an inlet and a short pitch brings one to a sump. Our hopes of the cave coming to an end were dashed by a short climb to the left which led to an easy bypass - this shows that the sump cannot be more than 10m long. Downstream, the passage enlarges and drops in a series of cascades and short, wet pitches. The final limit of exploration is an undescended 10m pitch.

Meanwhile, Stellerweghöhle took about a week to rig to the previous years limit because of the arduous nature of the cave. It was on the next pushing trip that the connection to 115 was made. This came as a complete surprise - not least to the party down 115 at the time. The final pitch drops 15m into Junction Chamber. Following the stream becomes too narrow and traversing above leads to a series of large phreatic tubes. One of these may be followed until traversing over a vadose stream canyon below becomes a mite tricky. The route to 115 lies through a phreatic maze where route finding consists of following the draught (and now the footprints). From Connection Cairn the way lies uphill until the passage pops out at roof level in Pete's Purgatory, about 50m downstream from the last pitch in 115.

The linking up of the two caves has produced a magnificent through trip of 400m depth and a system with a total depth of 680m (±40m) which is still wide open. The quoted depth is not very accurate because of the lack of time (and volunteers) to survey through Purgatory, and it is here that much easy depth is gained.

On the ramp in Schnellzughöhle *Dave Brindle*

It is generally assumed that the water resurges in the Altausseer See, giving a potential of 900m from the 41 entrance. Some draughting entrances were noted above, giving the possibility of adding another 50m to the depth. As shown on the survey, 32 is a hole on the Stöger Weg with a powerful draught which presumably connects, but it is too tight and is probably not worth pushing.

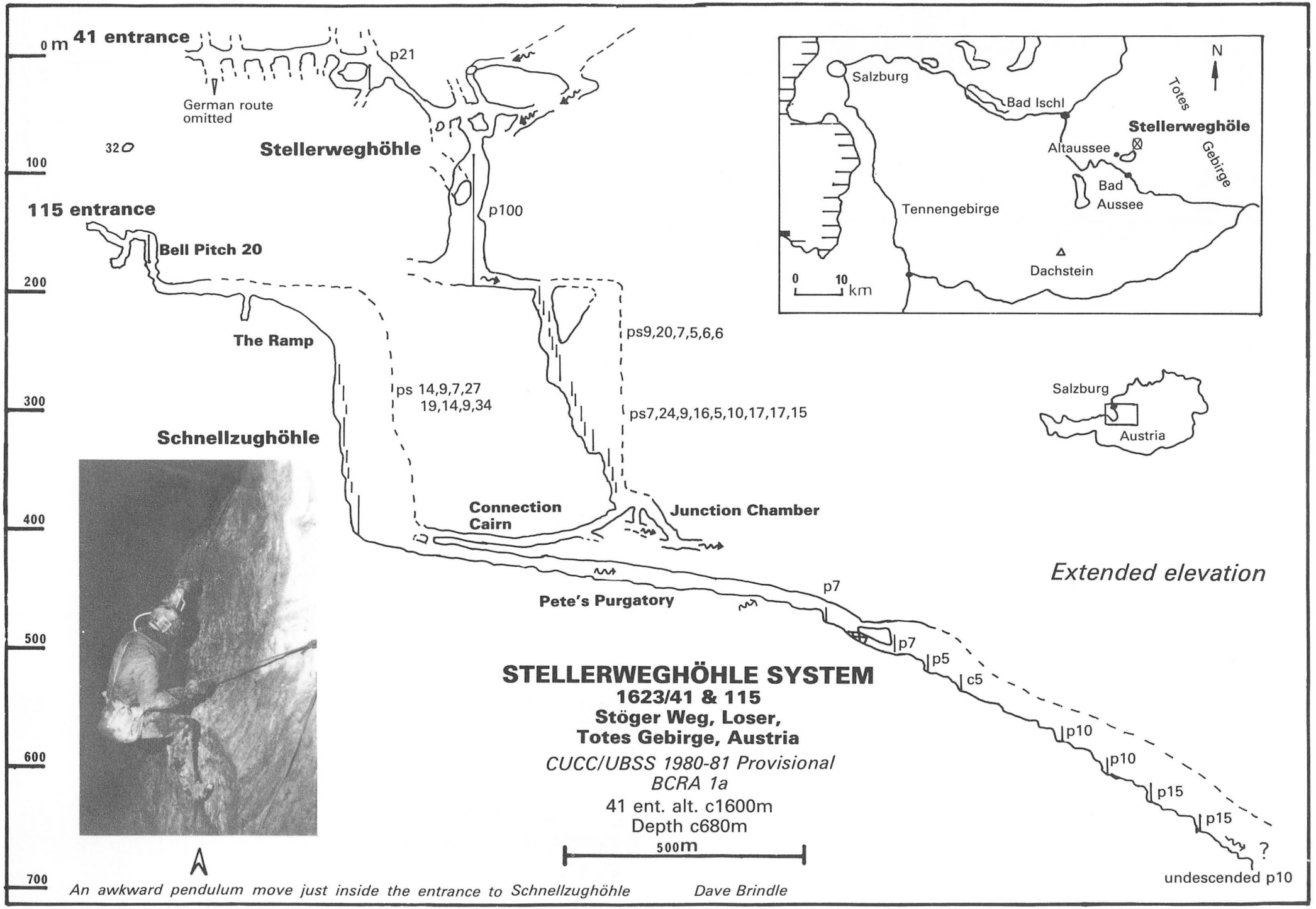
Other caves in this area are basically vertical shaft systems which close down before they reach active streamway of any size; the Stellerweghöhle System is quite unlike this. Exploration of the streamway beyond the sump demands rather more thought as it is difficult to predict when the next thunderstorm will unleash itself. The phreatic levels at -400m are seen at similar altitudes in the other caves of the area, and may be connected with a late Tertiary S-N drainage system - a closer look at these will be high on our list of priorities for next year. It is hoped to find a bypass to Purgatory, giving easier caving and a more

cont inside back cover

●●●●● ●●●●●

The expedition was hit by a viral stomach bug which was going around the village; it came on suddenly and victims were laid low for 3 days. In the end, all but three of the team had been struck down, but cases were staggered and caving continued most of the time. The worst attack came underground, just after the sump bypass was discovered, with a sudden fit of diarrhoea and vomiting. The victim was helped to the surface by the other member of the team, where he was found to have extensive nappy rash and 2 missing finger nails. The Purgatory was named after this trip.

The only other mishap was a mini rescue when one of the Stellerweg team became seperated and lost near the entrance of 115, but he was located very quickly. These two incidents highlight the dangers of caving in two man teams but, in explorations like these, it is undoubtably the most satisfactory method.



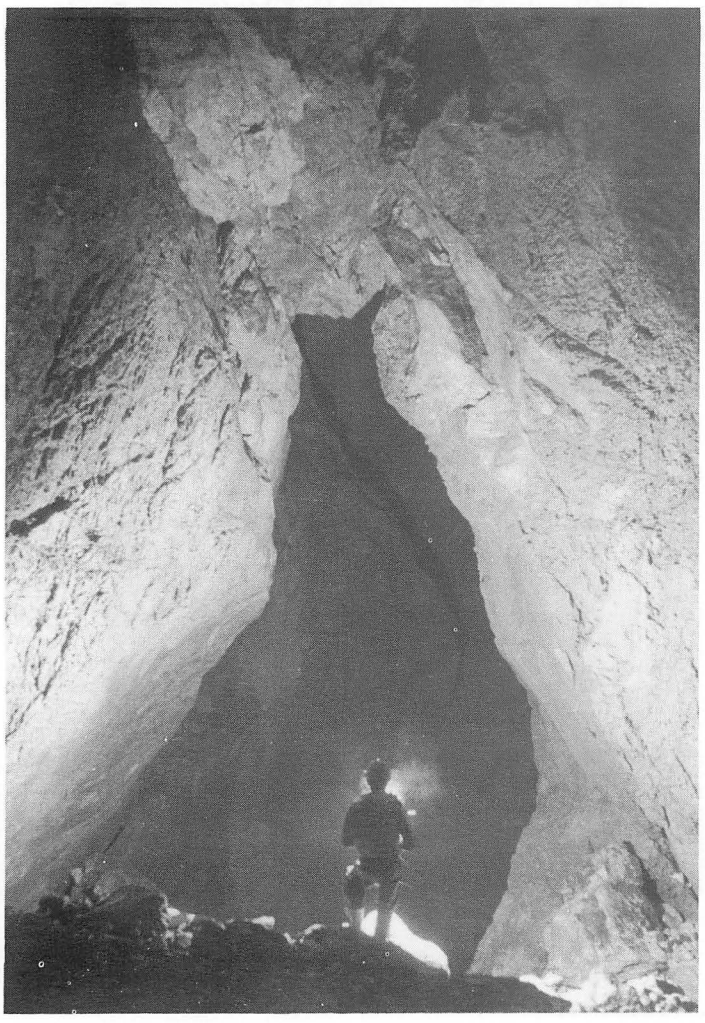
An awkward pendulum move just inside the entrance to Schnellzughöhle *Dave Brindle*

TRESVISO '81

This year's expedition, by members of LUSS, ULSA, and others, to the Tresviso area was based in the high mountain region of Andara. From here a number of deep shaft systems are known to drain to the resurgence cave, LA CUEVA DEL AGUA, 1400 metres below and 6 kilometres distant.

Initially we concentrated on the system TERE, where exploration terminated in 1980, with the next two pitches tantalisingly in sight, at minus 520 metres. The cave went easily at first, down a series of vertical shafts and then into a rift where it became very tight. Work with a lump hammer and chisel enlarged the passage so that someone could squeeze through. Disappointment waited on the other side. After a 30 metre freeclimb the cave closed down once more - this time for good. At a depth of 670 metres the stream flowed away in a rabbit-hole sized passage. In the meantime however, another route had been opened up. This descended 50 metres in well proportioned shafts to a long crawl in glutinous mud and water, aptly named The Sewer. The Sewer led to an inclined shaft, The Septic Tank, over 100 metres deep. Enthusiasm mounted and we began to talk of bivouacing near the bottom. The cave continued to descend rapidly, down more shafts and into a muddy area. The usual suspicions were aroused. . . and confirmed. The next pitch finished after 40 metres as a flooded shaft. Not even anywhere to get off the rope! The depth was 792 metres. Although pleased to explore such a deep cave we were bitterly disappointed at it finishing so short of the 1400 metres potential.

Tere entrance (Colin Boothroyd)



Passage below the 'Stone eater' in Flower Pot. (Colin Boothroyd)

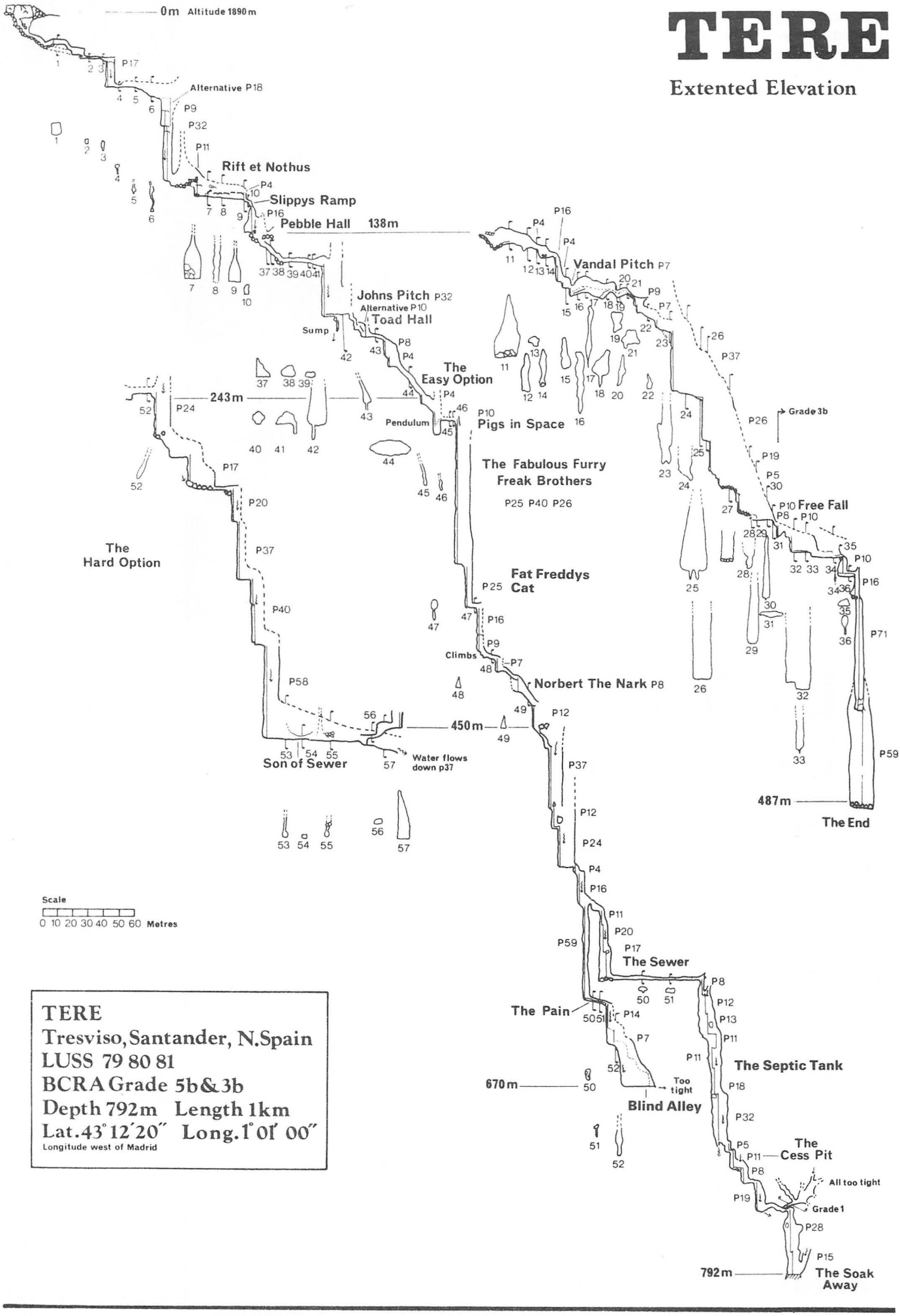
Whilst exploration of Tere had been drawing to a close, lovers of large dry shafts had tackled up a 1980 discovery, T173, later called Dossers Delight due to it's rather pleasant nature. Exploration proceeded rapidly with no shortage of people willing to go down. Many shafts of large dimensions connected by small, awkward but short rifts made it quite a pleasant experience. The cave came to an end at minus 300 metres, where a 25 metre climb up a massive calcite formation led to a draughting fissure, which was too tight for anyone to penetrate.

During this time a number of draughting entrances had been revealed to us by the local people in an area around the Monte de Valdediezma. The Monte de Valdediezma is a heavily wooded area half way between Andara and the resurgence. These were enthusiastically explored along with many more, which we found ourselves, in the hope of dropping into the Cueva del Agua labyrinth beyond the known end of the cave. Unfortunately they all came to an end within a depth of 100 metres, mostly choked by calcite.

After we had been in Andara a few weeks we were joined by a small group of Spanish cavers from SEII Madrid. They set about exploring FLOWERPOT, a high altitude natural entrance, discovered in 1980 and explored in that year to a depth of 230 metres. They pushed on through several meanders inter-connected by pitches to a very tight section above a sump, the Autopista Sangrienta (Bloody Highway). This crawl, constricted for 20 or 30 metres, has a very tight section at the end which had to be enlarged with a hammer before anyone could pass. Beyond at minus 350 metres, they came to an enormous shaft, but ran out of rope. At this stage they had to leave as they were due to move to the western Picos to explore another cave system named Cembaviella. (Two of our members made the trip over and joined in the

TERE

Extented Elevation



TERE
Tresviso, Santander, N.Spain
LUSS 79 80 81
BCRA Grade 5b&3b
Depth 792m Length 1km
Lat. 43° 12′ 20″ Long. 1° 01′ 00″
Longitude west of Madrid

exploration with them).

Cursing as we forced our large tackle bags through the Autopista we wondered what might be waiting beyond. The large shaft named The Stone-eater by the Spaniards, turned out to be a spectacular 50 metre pitch onto a huge sloping ramp, over 15 metres wide. The amount of blackness around was awe inspiring. The ramp rapidly became a boulder slope, but still so steep that ropes had to be used. Puzzlingly, at the bottom only a small passage led off. This brought us to a 40 metre shaft and then quite quickly to a shaft of 114 metres with convenient ledges enabling us to keep clear of the water. The cave was getting quite deep and people were once again queuing to go down. Bivouacs were planned and dreams of great depth flourished. The cave continued with a pleasant stream down three more pitches and then sumped. Minus 720 metres - we were all shattered - once again our hopes had been dashed. Available side passages were checked out and found to be alternative routes to the same place.

After detackling Flowerpot very little time was left before we were due to sail for home. We therefore decided not to detackle system No. 56 which we had left uncompleted the previous year, knowing that we had a lot of work to do down there. Instead we concentrated on surface work, looking for and descending new shafts, hoping to find a new system for next year. Unfortunately all the shafts we descended came to a conclusion one way or another. However we feel that our work in the area is far from finished.

●

Despite several disappointments, as we packed and headed for home we were pleased with our achievements. Two systems over 700 metres deep, one of these nearly 800 and a third at 300 metres plus another summer spent reinforcing friendships with the people of Tresviso and SEII Madrid.

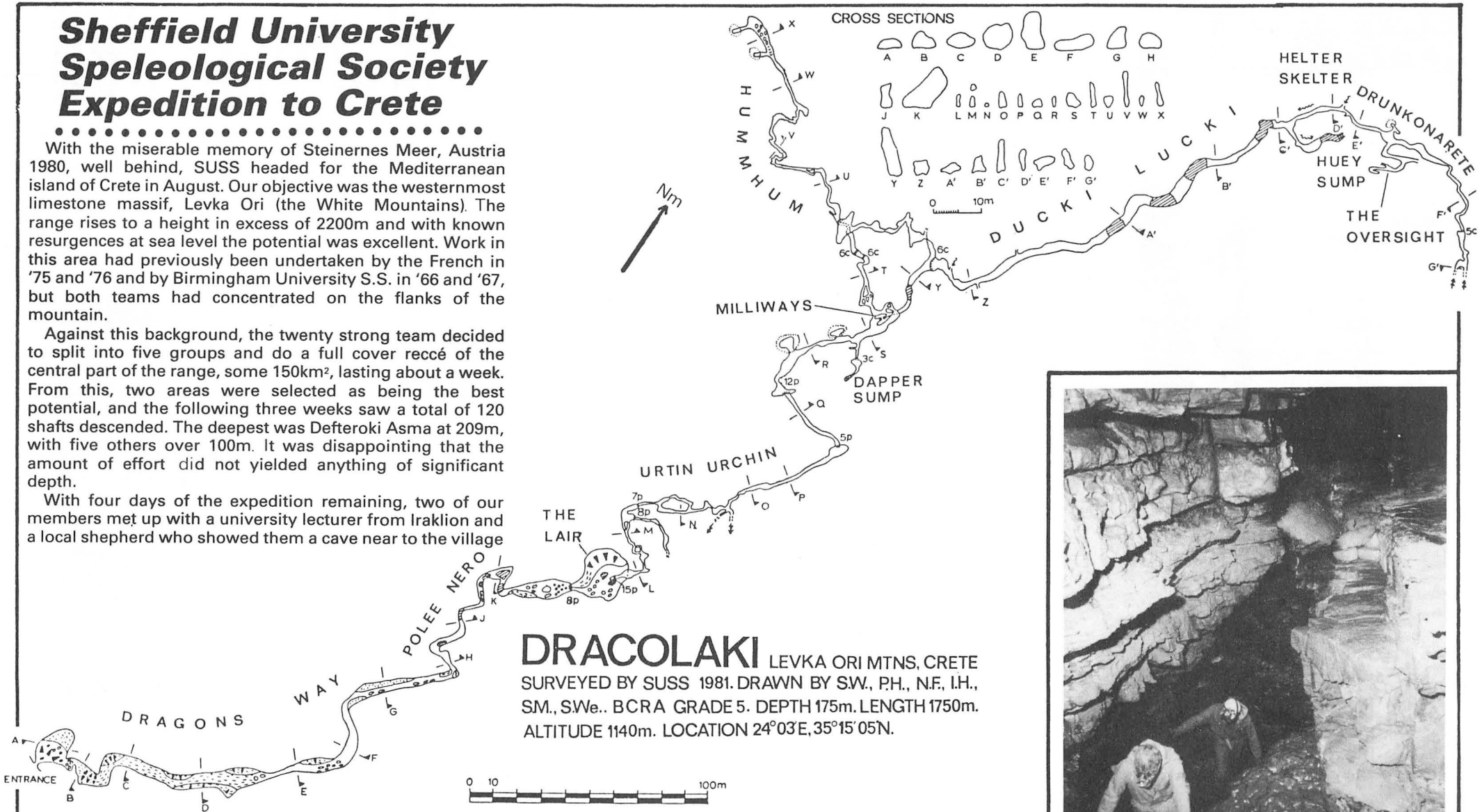
Ken Daykin.

Sheffield University Speleological Society Expedition to Crete

With the miserable memory of Steinernes Meer, Austria 1980, well behind, SUSS headed for the Mediterranean island of Crete in August. Our objective was the westernmost limestone massif, Levka Ori (the White Mountains). The range rises to a height in excess of 2200m and with known resurgences at sea level the potential was excellent. Work in this area had previously been undertaken by the French in '75 and '76 and by Birmingham University S.S. in '66 and '67, but both teams had concentrated on the flanks of the mountain.

Against this background, the twenty strong team decided to split into five groups and do a full cover reccé of the central part of the range, some 150km², lasting about a week. From this, two areas were selected as being the best potential, and the following three weeks saw a total of 120 shafts descended. The deepest was Defteroki Asma at 209m, with five others over 100m. It was disappointing that the amount of effort did not yielded anything of significant depth.

With four days of the expedition remaining, two of our members met up with a university lecturer from Iraklion and a local shepherd who showed them a cave near to the village of Anopolis called Draco Laki. The cave had been known for some time and even appeared in the local tourist guide. However, the 'end' of the cave after 400m of walking size passage proved to be an 8m climb into a large chamber with no obvious way on. More people came off the mountain with climbing gear and the chamber was climbed to a roof passage leading to a narrow jagged rift. During the final two days Draco Laki was extended by 1.3km with a vertical range of 175m.



DRACOLAKI LEVKA ORI MTNS, CRETE
SURVEYED BY SUSS 1981. DRAWN BY S.W., P.H., N.F., I.H., S.M., S.We.. BCRA GRADE 5. DEPTH 175m. LENGTH 1750m. ALTITUDE 1140m. LOCATION 24°03'E, 35°15'05"N.

Unfortunately time ran out and the far end of the cave, notably 'The Oversight', is still wide open with an enticingly strong draught. With 1100m of limestone above the end of the cave to the plateau level, and the same again to the resurgences below, the cave still offers a lot of potential. We plan to return there next year to continue the exploration at the far end of the cave and to dive the two existing sumps. A full report of this expedition will be available in February in SUSS Journal.3 (2).

Steve Grundy.

The entrance passage in Draco Laki.

SEA CAVES OF THE ISLE OF WIGHT

It was the words 'caves in flinty chalk' printed on an old Geological Survey map that first attracted my attention to the possibility of finding caves on this island. Visits to the island revealed numerous caves formed in the chalk by marine erosion, none of which had ever received more than a passing comment in any of the relevant literature. Although none of these caves were very extensive, they still exceeded all expectations; they were very distinctive and the size of some of the chambers was astonishing. If nothing else, they certainly made a nonsense of the popular belief that the chalk is too unstable for cave development.

Watcomb Bay Caves at low tide. *Terry Reeve*

On my initial visit, in June'77, atrocious weather and rough seas effectively limited my activities to surveying the more easily accessible caves that could be entered at low tide. These included the 'Nostrils' sea caves (two large caverns in the south east point of Culver Cliff at the eastern end of the island) and a number of caves in the Freshwater area at the beginning of Tennyson Downs in the West.

Freshwater Cave, situated on the west side of Freshwater Bay, is the island's best-known cave. It has been described by Tennyson and others and is the subject of several drawings and water colours dating from the early 19th century. The name Freshwater Cave actually refers to a group of five caves close together, totalling 300ft. in length, but connected only by overhangs.

On the other side of the bay there are three isolated stacks -the Stag, the Arched Stack and the recently formed Mermaid. In the cliff directly behind the Arched Stack, the two entrances to Arch Cave converge in a roomy chamber containing a shingle beach. This cave is particularly interesting because it appears to have enroached upon some pre-existing phreatic cavities, in the form of two large domes in the roof. Beyond the Mermaid are the entrances to another cave system, since named Mermaid Cave, which can only be entered by swimming.

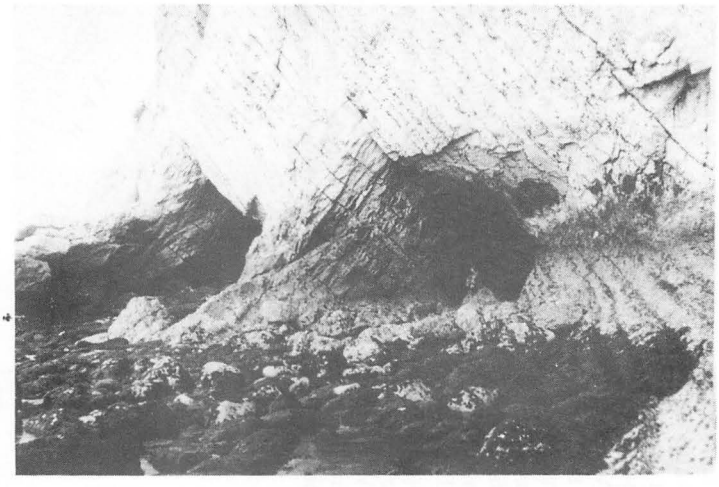
More caves can be entered at low tide in another small bay to the west of Freshwater Cave. Known as Watcomb Bay, this is a small beach enclosed by vertical cliffs about 60ft. high. It is best approached by means of a man-made tunnel which descends from a small brick building beside the cliff top path. Both ends of the bay are honeycombed with picturesque caverns containing a wide variety of marine fauna and flora, including numerous red sea anemones. Anemone Cave, at the eastern end of the bay has a total length of 200ft. The larger caverns at the other end of the bay (Watcomb Bay Caves) include what is probably the longest cave on the island - a system consisting of roomy passages and large interconnecting chambers totalling 380ft. in length. (Its size is perhaps better expressed in terms of area - 8020sq.ft.). Particularly impressive is the enormous 'Boulder Chamber', 80ft. long and 43ft. wide at its minimum dimensions. Just beyond this chamber but completely separate from the main cave is another large cavern which can sometimes be entered by wading in chest deep water at low tide, provided the sea is reasonably calm. Any further exploration beyond this cave involves swimming because the sea permanently washes the base of the cliff.

Another visit to this area in August '77 coincided with exceptionally calm seas, providing the ideal conditions for the long swim to Neptunes Caves and Bar Cave, situated some 300 and 400 yards respectively, west of Watcomb Bay. This solo exploration was accomplished with the absolute minimum of caving gear - swimming trunks and bare feet! Consequently the surveys leave much to be desired, although some estimate of size was obtained by body length and pacing methods. The caves were all very impressive - opening out beyond the low entrance arches into immense white chambers with deep marine lakes - not unlike the caverns of Nullabor Plain in Australia, albeit on a smaller scale.

A third visit to the island in September '79 also provided an opportunity for explorations by swimming. This time, the previously mentioned Mermaids Cave, east of the stacks in Freshwater Bay was explored. This turned out to be an extremely interesting cave with two large chambers, a blow hole, a tidal sump and a curious high level side passage which ascends to an opening on a ledge 20ft. above sea level. Like the roof domes in Arch Cave, this high level passage appears to be a fossil karst feature which has been invaded by the sea - a conclusion which is borne out by the existance of clay filled cavities sectioned in the cliffe face nearby.

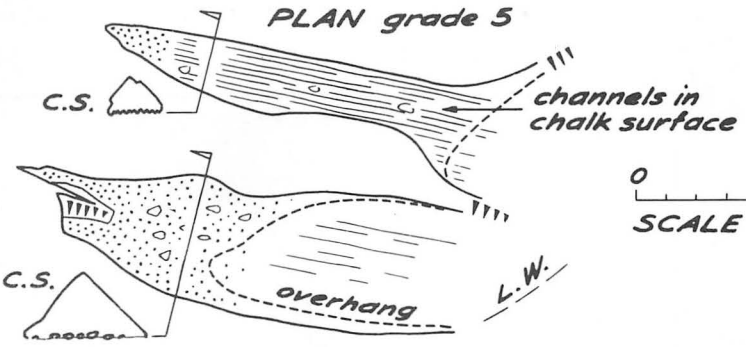
An attempt was also made to reach two large caverns in Alum Bay (near the well known Needles Rock and lighthouse) which had previously been seen from a boat. I managed to reach one of these by traversing along ledges at the base of the cliff and in the process discovered two more caves running parallel to the cliff, which provided a convenient means of bypassing two rock buttresses which jut out into the sea. The main cave was not entered due to a deep sea inlet at the entrance, but viewed from an adjacent ledge it appeared to be a single large chamber some 50 to 60ft. in diameter with a small shingle beach at the rear.

Obviously, there is still plenty of scope for further exploration and survey work, particularly in the Needles Headland. Needles Cave, on the south side of Scratchells Bay, is another obvious

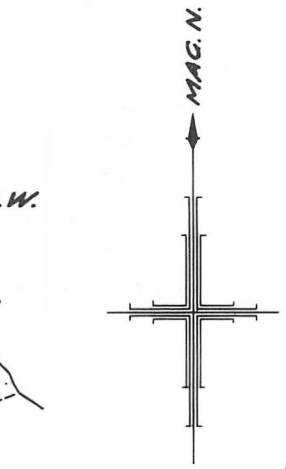


The Nostrils. *Terry Reeve*

ISLE OF WIGHT SEA CAVES

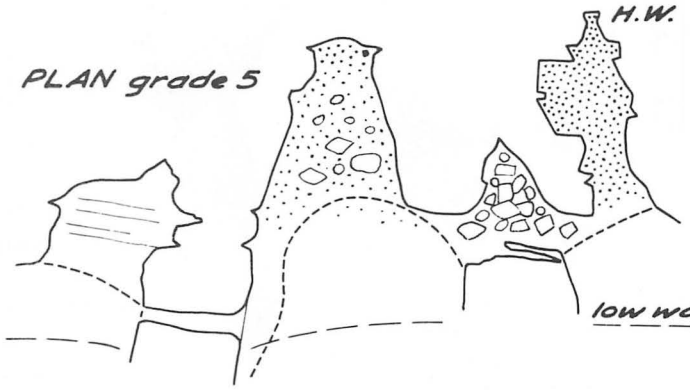


THE NOSTRILS

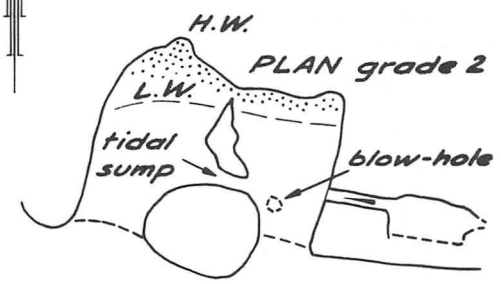


0 100 200 Ft.
SCALE

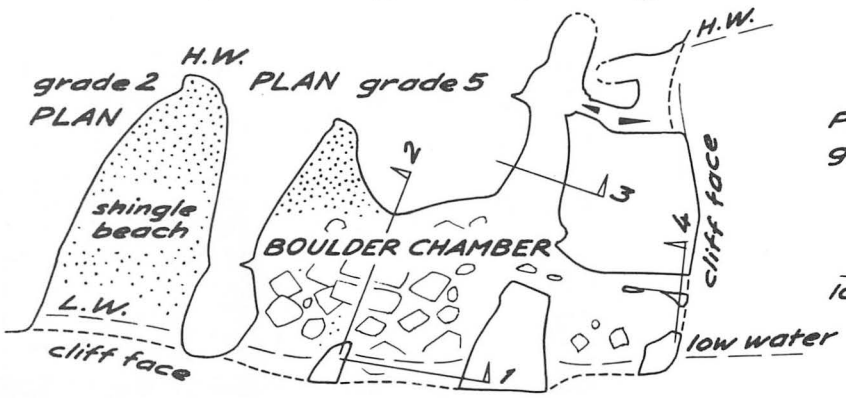
ARCH CAVE



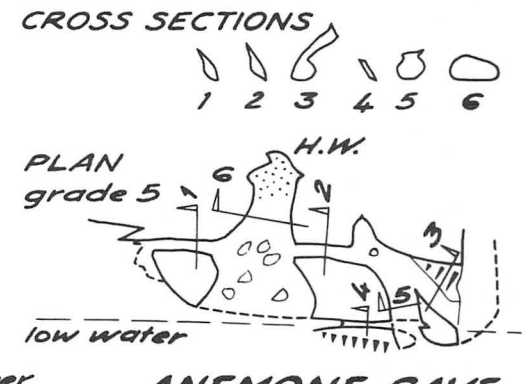
FRESHWATER CAVE



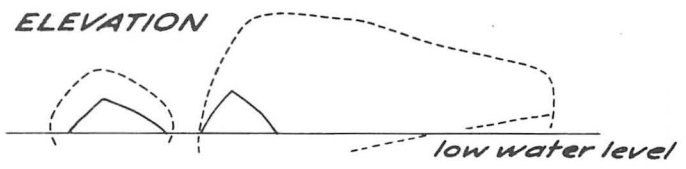
MERMAID CAVE



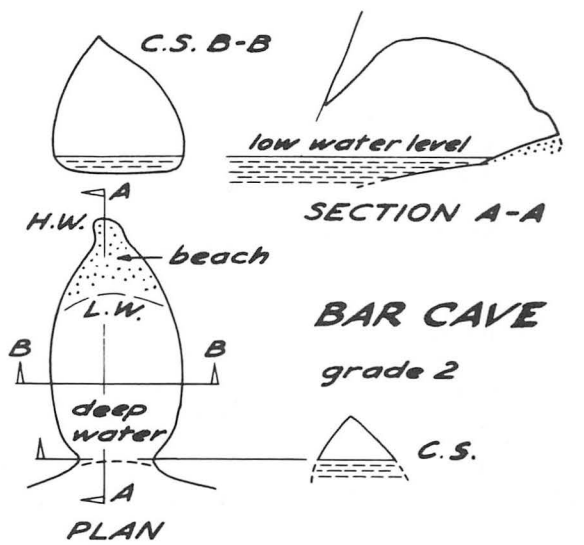
WATCOMB BAY CAVES



ANEMONE CAVE

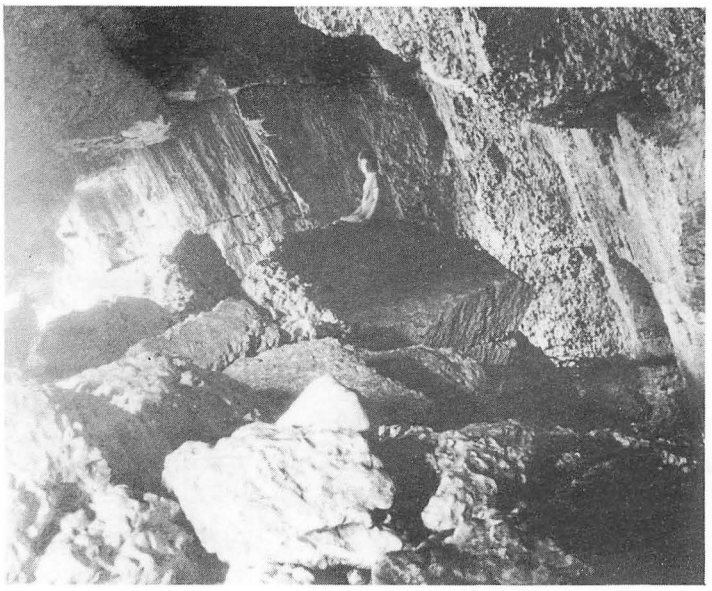


NEPTUNES CAVES



BAR CAVE
grade 2

TJR



The Boulder Chamber, Watcomb Bay Caves. *Terry Reeve*

entrance that was seen from a boat. Another interesting feature of this area is the Grand Arch - an enormous overhung recess undercutting the south east corner of this bay. At least two more caves - Frenchmans Hole and Lord Holm's Parlour - occur in a particularly inaccessible location at the bottom of the 350ft. high Highdown Cliffs, approximately midway between the Needles and Freshwater.

This area certainly presents an interesting challenge to the coastal explorer, in the form of a sea level traverse around the head land from Alum Bay to Freshwater, a distance of about 4 miles. Any such expedition would obviously need careful planning with regard to weather and tides, and would involve a lot of swimming. Alternatively a boat could be used - a small outboard-powered inflatable would probably be the best bet.

In all, fourteen of the twenty-one known caves have been surveyed to either BCRA Grade 2 or 5d standard depending on their accessibility. The total length of surveyed passages is about 1750ft. and the actual length of all the caves on the island must be well in excess of 2000ft.

ORIGINS

There may be a lot more to their origin than marine erosion - phreatic caves invaded by the sea perhaps? Indeed it is just conceivable that there is a system of phreatic caves extending the full 23 mile length of the island's central downland ridge! The theory behind this involved the sheets of tabular flint which are particularly well developed in the massive 'Chalk Rock' beds near the base of the upper chalk. Due to the steep dip in the strata (anything up to 85°) these impervious flint seams may trap water causing considerable local variations in the level of the water table. Water held between two steeply inclined flint seams would escape into the adjoining unsaturated rock wherever the continuity of the flint is interrupted by faults or major joints. There is also a significant movement of water in the direction of the strike. As a result of these water movements, a phreatic cave, consisting of strike orientated bedding plane passages intersected by large joint or fault controlled chambers, may have developed.

It is tempting to think that the sea caves are in fact remnants of such a cave system, perhaps only slightly modified by the effects of marine erosion. But although the form of these caves seems to tie in with the theory - Anemone Cave, in particular, looks like a 'classic phreatic' - it is equally possible that it is nothing more than an illusion.

Terry Reeve
Chelsea Speleological Society

Cave Diving News

Oliver Lloyd

The second half of the year showed a burst of activity among our cave divers, such that the Cave Diving Group's Newsletter, No.62, for January of 1982 has reached an almost unprecedented size. In the Lofthouse area of Nidderdale there has for years been a steady push maintained by our divers, ever since 1972, when Alf Latham began work on downstream Goyden Pot, to be followed the next year by upstream New Goyden. By all accounts these sumps are very difficult to negotiate and route finding is hard, but in September 1981 our members at last made the connection. The entire system, including Manchester Pot, extends to about 8km. of passages and 34 sumps. On the main streamway alone there are 20.

□

Another recently solved problem is the connection between Red Moss Pot and Old Ing Cave. There were two difficulties. First, John Parker reported in 1975 a downstream dive from Red Moss of 120 metres, which takes one well north of the sump areas in Old Ing Cave. Second, there was no known inlet in Old Ing Cave which might have been carrying the waters of Red Moss Pot. The problem was solved in August, when one of our parties put fluorescein into the downstream sump of Red Moss Pot and turned Sump 1 in Old Ing Cave a brilliant green. After a little trouble the way through was found and on 13.9.81 the connecting sump was passed at 65 metres. Where Parker went to is anyone's guess.

□

Some quite exciting developments are also taking place in Dub Cote Cave, where a dry extension to Dub Cote 3 was found on 17.10.81. This runs for some 270m. in a westerly direction. The great unknown Penyghent Master Cave cannot be far off

□

One of our members assisted at a great dye test in Kingsdale Master Cave on 4.10.81, when it was shown that water from Yordas Cave entered by Frakes' Passage and not by the Mud River Series, as had hitherto been thought.

□

In Peak Cavern (Speedwell) the Whirlpool Rising has been passed to an extension of 90m. including two sumps: H.M.S. Belfast and H.M.S. Edinburgh. The former has been connected with Whirlpool Rising and the latter probably belongs to the same submerged system.

□

We have lost another of our members, Keith Potter, who was drowned in Wookey Hole on 14.11.81. There is nothing to account for his accident. The dive was well planned and he was following a route that he knew well enough. He had been training with us for over a year, having started caving while still at school. "Why is it", one hears people ask, "that it is always the really nice young men that we lose, people that we cannot do without?" The plain answer is that this description fits nearly all of our members. When Fate strikes it cannot miss.

□

Decompression is becoming an important subject for us. Since June, when one of our members got bent down Giant's Hole, we have been doing our sums very carefully, making allowance for altitude. Nearly all of the Sardinian and Bahama dives had to be followed by decompression stops, and many of those done in Hurtle Pot too. But what a difference! A long decompression in Hurtle Pot leads to cold and misery, while a longer one in the Bahamas in warm sea with pretty fishes to look at can be a real pleasure.

□

Our members have run no less than four foreign expeditions this summer: to Greece, Morocco, Sardinia and the Bahamas. Of these the Greek trip was the most original, as no planned cave diving has hitherto been carried out in that country by our members. Certainly there promises to be a lot more to do there next year. The Moroccan and Sardinian expeditions were continuations of work begun by us last year; in Sardinia they have massive resurgences from deep down; in Morocco some of the sumps are free-diveable. But the Bahamas trip was for us something new. We had never done this sort of diving before. The Blue Holes are extraordinary: Pleistocene caves which have become flooded since the melting of the ice in the last ice age, and which blow in and out with each tide. The currents so produced are dangerous and the penetrations need careful timing. The Expedition has already produced a short preliminary report, which may be had from Rob Palmer. They logged 77 man-dives in 11 sites during August. (See account in this issue - Ed.).

□

Treasure hunting is a pursuit not unknown to cave divers. I myself have retrieved pennies from the River Axe. Three of our members have reported even greater successes. Caving tackle in good condition has been recovered from Simpson's Pot and from downstream Kingsdale Master Cave, while in Sardinia, diving in a holy well, thousands of lire worth about £4 were picked up.

□

Recent C.D.G. Publications

Cave Diving Group Newsletter No. 62, January 1982, price 60p.

'Line Laying and Following' by Geoff Yeadon, price 50p. Both from Oliver Lloyd, Withey House, Withey Close West, Bristol, BS9 3SX. Cash with order, please.

Bermudas Cave Diving Expedition, 1981, Preliminary Report, from R.J. Palmer, 22 Whittuck's Rd., Hanham, Bristol. Send 50p. for postage plus donation, if you can afford it.

Keith Potter

Keith Potter, 22, died on November 14th 1981, whilst diving in Wookey Hole.

To us in the Oxford University Cave Club & others who knew him, his death remains almost incomprehensible. Not even his funeral, held near his parent's home at Wedmore, really brought home the fact that we would never again see him bounding into the bar during a midweek club meeting, or share his limitless enthusiasm for future trips, be they to Mendip, Yorkshire or Spain.

Keith's contribution to caving, especially in OUCC, was enormous. During the 1980 expedition to Pozu Del Xitu, he took part in many vital pushing trips, offering his companions encouragement and showing determination to continue where others were prepared to turn back. In even the most difficult circumstances, he retained his humour whilst remaining absolutely reliable: witness his amusing write-up of a trip in 1981, including in the tackle list his recommendation for spare crotches & limbs - this written after emerging from a 35 hour pushing trip into severe passage in which he sustained a knee injury & suffered agonising friction sores in his groin. Fittingly Keith was the first to reach Xitu's terminal sump & even here despite being tired & thoroughly wet, he showed his character typically, by spending hours searching for a by-pass.

Yet whilst without Keith OUCC might still be trying to bottom Xitu, he never took unneccessary risks: indeed his thoroughness & caution in unexplored passage could frustrate those less experienced team members, carried away with exploration fever.

No amount of fatalistic philosophising can begin to compensate for Keith's death. He was also a man of many talents outside caving: his Scholarship in medicine at Exeter College, Oxford was surely the first step towards realising his ambition to become a consultant physician.

Above all he was a tremendous colleague, a companion who will be mourned & missed by his many friends: left only with memories, they can only continue to extend their condolences to his family, & bid Keith 'Hail and Farewell'.

Dave Rose

Equipment Column

Dave Elliot

Work: Whernside Manor,
Dent,
Sedbergh,
Cumbria.
Tel: 05875 213

Home: 1 Millthrop
Sedbergh
Cumbria
Tel: Sedbergh 20878

Hiatt Karabiner Failure

Alan Tate reports a fairly serious failure occurring with a Hiatt 12mm D-shaped krab, where the pin securing the gate hinge almost dropped out. In this case the krab was being used as the main load-bearing link of a sit-harness and it is extremely fortunate that it was spotted just *before* setting off down the pitch.

The first thing we might learn from this, is that a karabiner is insufficiently safe as the main harness attachment. The gated side of a krab is always comparatively weak and only a 9 or 10mm Maillon Rapide is safe where other than major-axis loading might be anticipated.

This particular failure looks very much like a throwback to an identical problem of a couple of years ago, which in fact was fairly common knowledge at the time, but perhaps it won't do any harm to air the matter again. Briefly the background to the incident is that these karabiners are made with a countersunk rivet as the hinge pin which, even when later ground off flush, still retains enough of the rivet head to secure the pin in place. For one reason or another a small batch were made using non-countersunk rivets and due to an operator error the heads were also ground off these, consequently the hinge pins fell out at the slightest provocation. This fault was found to be limited to a single batch of krabs (about 30) and as far as could be determined at the time, these were all recalled from retailers and cavers were warned to check their existing krabs.

It occurs to me that the current failure might well be an individual "rogue" krab from the original faulty batch, either not returned by a retailer or kept by a caver who hadn't heard of the problem.

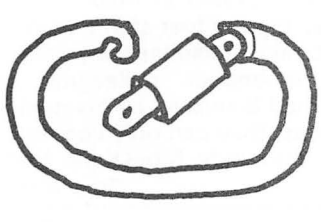
So if you happen to have any Hiatt D's it wouldn't do any harm to check them over just in case . . . .

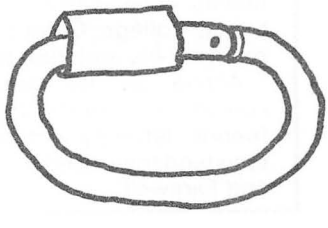
Karabiner Sleeve.

Still on the subject of karabiners - many cavers prefer to use snaplinks (non-screwgate krabs) on their cows-tails rather than screwgate karabiners. The idea being that because such krabs are often only attached momentarily, a screw-sleeve would rarely be used, and provided that the krab is of a "pin & slot" design (see - *Caves & Caving* No.11, pp20-21) there is no loss of strength involved.

I don't see a great deal of sense in this myself, if you have screwgated krabs (which again ought to be of "pin & slot" design) then you can either screw them up or not and you've at least got the option.

However, there is a cheap, practical alternative for those too mean to discard their trusty (?) old snaplinks, consisting of no more than a couple of centimetres of plastic or rubber tubing (i.e., hosepipe). The short section of tubing is just shoved up over the latch as required - simple, effective and costs nowt . . . you won't see this in the shops . . .





Lightweight Bolting Platform.

Elsewhere in this issue is an account of a small extension to Long-Drop Cave (Leck Fell) made by Geoff Barber and other members of Burnley Caving Club, by bolting up an aven.

The technique used a collapsible bolting platform which I knocked together quite easily in a couple of hours following a description by Marbach & Rocourt in their book "Techniques de la Spelelogie Alpine".

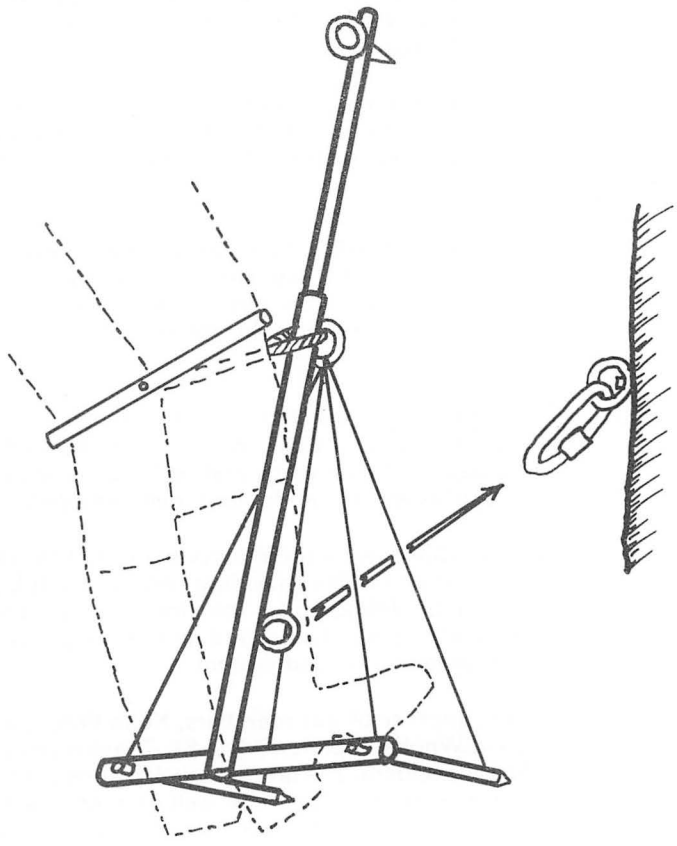
Bolting has many advantages over alternative scaling techniques such as high-grade free-climbing or use of a scaling pole. For example:-

1) Bolting requires little skill - almost anyone can do it with practice.

2) The equipment is compact and manageable - no need to lug unwieldy poles through difficult sections of cave. The platform itself packs up to the size of a photographers tripod and probaby weights about the same.

3) One or two people are all that is necessary - slightly modified it is also a perfectly feasible solo technique. So you don't need lots of spare people stood around freezing while one bloke is doing all the work.

4) Most important of all - when compared with other methods, it is particularly safe.



Conventional bolt-climbing techniques, using etriers for instance, have the disadvantage that they are generally extremely tedious, requiring a bolt to be placed about every metre. Use of a platform increases this distance to around two metres, halving the number of bolts and consequently the time and energy spent placing them.

There are various designs of platform possible and the climbing technique also varies slightly with each of them. The technique described by Marbach & Rocourt in their book (in French) is a particularly sound one and should be fairly easy to follow by anyone with a reasonable grasp of the language and/or the use of a good dictionary. If you can't get it together - then get in touch with me. If sufficient people are interested I'll publish an account of this platform and how it's used in the next edition of *Caves & Caving.*

Excessive Descender wear

During the BCRA National Conference at Nottingham earlier this year, a meeting of several members from various caving clubs returning from expeditions, discussed a common problem associated with the descent of deep cave systems. That is, excessive wear of descenders caused by dirty ropes (one group reckoned to wear out a set of rack-bars on each trip)

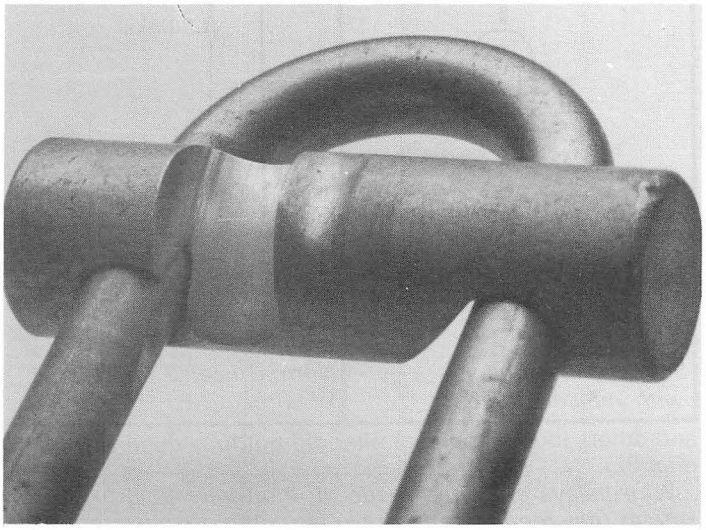


Photo by Steve Foster

Unlike the comparatively modest systems in the U.K., where ropes are generally removed and washed free of mud after each trip (also very often during it), in the deeper continental systems, rope might be rigged in a pitch for several weeks, with large numbers of cavers climbing up and down it as the cave is progressively tackled. Inevitably the rope gets muddied in the process, and this is the heart of the problem. Let us here make it perfectly clear that wear of a descender is caused not by the rope itself, but by the fine particles of sand and silt adhering to it. Even soft aluminium is harder than nylon rope, and a clean rope causes very little wear. A dirty rope however acts as a very effective abradant and will eventually wear away the hardest metals. There are certain considerations bearing this in mind:-

1) Every care must be taken to ensure that ropes stay as clean as possible. *Always* carry ropes in a tackle-sack, with an additional watertight liner (a plastic bag closed with a rubber band) where the sacks are carried through sand or muddy water. Any mud picked up during transportation will be further ground into the rope during each descent, and become impossible to remove subsequently.

2) Meticulous rigging is necessary to ensure the best possible path is taken by the rope (and cavers), well away from muddy walls, ledges and floors. If the rope describes a free route through thin air, there is less likelyhood of it becoming very muddy, (and incidently - no likelyhood at all of it getting abraded).

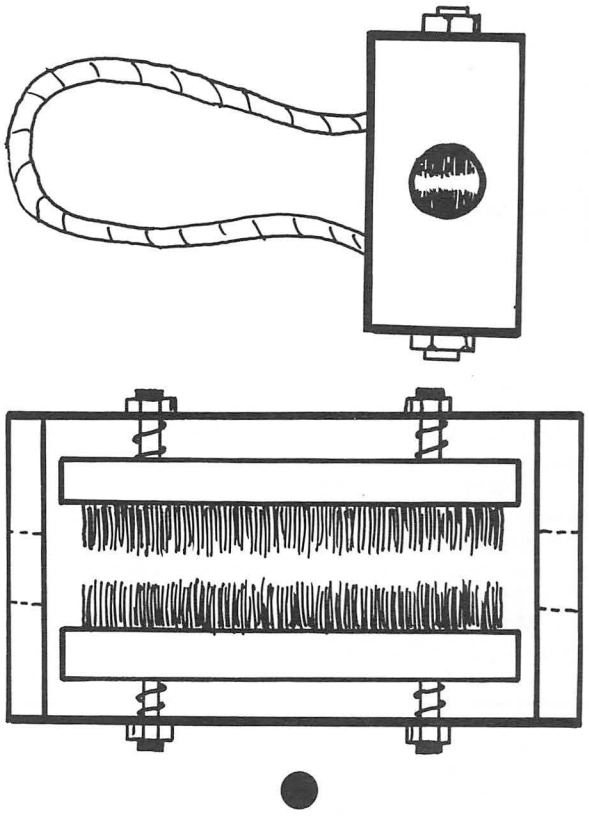
3) Certain descenders are more prone to wear than others. Of the two most popular types, racks tend to wear the first couple of bars fairly rapidly, whereas Petzl descenders are much better in this respect. In both cases, provided a spanner is available, it is possible to compensate for wear by either, swapping bars around or reversing the lower bollard, respectively.

4) Another possibility is the use of harder metals, such as steel bars on a rack. Where dirty ropes are *absolutely unavoidable* (and here it must be realised that wear to descenders is not the only criteria - ultimately wear of the rope itself is likely to be far more important) substitute steel bars, or perhaps hollow bars of mild steel conduit, might be the only answer. Such bars will still wear of course (look at the steel frame at the entrance to Lancaster Hole) but much more slowly. Commonly held fears of heat dissipation becoming a problem with steel bars are, in my opinion, for the most part completely groundless. Such desperate precautions as painting rack-bars matt-black in order to aid radiation, are just plain bloody silly . . .

Handy Rope-Washer.

Washing ropes adequately after a muddy trip is often a problem for those with limited space at home, and not everyone is equally tolerant of cavers filthy habits in the bath (?).

Sloshing the rope around in a stream by the cave removes the worst surface mud, but is insufficient to get the rope really clean. The little gadget shown here is taken from an old issue of "Spelunca" (no. 2. 1979) and consists simply of two spring-loaded scrubbing brushes in a box. The washer is just dragged up and down the rope, under water, a metre or so at a time, until the mud stops coming out of it. Looks to me like the sort of thing some handy lad could knock up in his spare time and earn himself some beer-money. (I'll have a couple . . .).



Improvised tests.

Because of its practical value, a large section of this column is given to an excellent article by Paul Ramsden, describing a series of tests using a simple, improvised rig to determine the approximate strengths of various bits of equipment - in this case, the ladder system.

As evidenced by the mail I receive on equipment topics, cavers in general are very much at a loss regarding the relative strengths and weaknesses of the equipment they ultimately trust their lives to. Such ignorance is regrettable, but not entirely the result of disinterest on the caver's part, for much of this vital information is not readily available and such references as there are, are for the most part vague and ambiguous. Commercial manufacturers sometimes provide test results for their products, but often (either by chance or design) these are misleading and in any case only apply to new equipment. Unfortunately maufacturers don't test used equipment and none of it gets any stronger with wear. Only an extensive programme of carefully controlled scientific testing of all commonly used equipment will provide the information we need. This, however, is extremely unlikely in the case of caving equipment. On the other hand, simple, practical tests such as those outlined here and the "Drop-test rig" described in the last issue (*Caves & Caving No.14 p23,*) could at least serve to give cavers a rough working knowledge of the strengths of their gear. Tempered with a little common sense, this information indicates how gear might be used safely, and also provides the basis for making a reasonable decision as to when to scrap it - before it scraps you . . .

The strength of wire belays and ladders

Paul Ramsden

This series of tests was prompted by enquiries on components of the ladder system (e.g. links). which focussed attention on the fact that there is nowhere currently in print where this kind of information can be obtained. This lack of knowledge regularly shows itself in the way people rig pitches and unwittingly put themselves at great risk.

●

Many people have heard of parts of the ladder system failing at incredibly low loads, especially on ladders made by inexperienced people. The tests below were an attempt to get a rough idea of the strengths of the various components, particularly the weakest parts, using commercially made ladders.

A simple test rig was made of scaffolding poles, (Fig. 2) something similar could be made by anyone who wants to know approximate strengths of gear. The lever principle allows easy calculation of the forces involved. *(Fig. 1).*

By having a long distance (B) on the right hand side with a small weight (W_2) [e.g. body weight] and a short distance (A) on the left hand side of the pivot a large force can be produced at (W_2). If W_2 and distance A are constant, the force W_1 can be increased by increasing distance B.

Ladders are normally only required to take relatively small loads (say 2 times bodyweight) any extra being safety factor or to cover for deterioration over time. Ladder wires are generally 3mm or 4mm in diameter, with a strength of 650kgf to 1000kgf depending on size, construction etc. The commonest end fastenings are either (1). A Talurit ferrule commercially pressed on, or (2). a Flemish splice which has a ferrule solely to secure the ends of the splice. Talurits or Flemish splices should be as strong as the wire if made correctly. Most ladders and wire belays have C-links to join them, this is generally a very weak link in the system. The strength is quite low, but variable. Some opened at 200kgf and others looking quite similar did not fully open at 500kgf *(Fig. 3).*

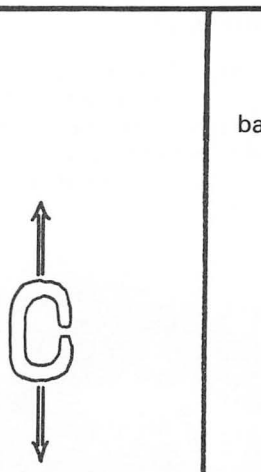


Fig 3

Single C-link pulled with maillon rapides

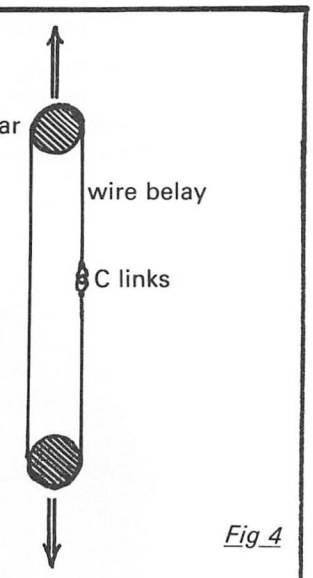


Fig 4

Normal use: 2 strands of wire.

Wire belays are often made of 4mm wire (approx. 1000 kgf), as they tend to get rougher treatment than ladders, but the C-links are probably only 1/4 to 1/3 of this strength. The normal use of ladders or wire belays involves loading two strands of wire more or less equally, so that half the load is taken on each wire (Fig. 4). Thus a wire sling, in which individual C-links opened at 250 kgf would be expected to open at approx. 500 kgf.

The important point is that if you want to get the maximum strength out of the wires (e.g. for SRT intermediate belay over a sharp edge) do not use C-links, but fasten directly into the thimble with a karabiner or maillon. A common but unwise use of wire belays with C-links is to hold a pulley taking a safety rope. The safety rope could be subjected to a large shock load in the event of a fall. *(Fig. 5).*

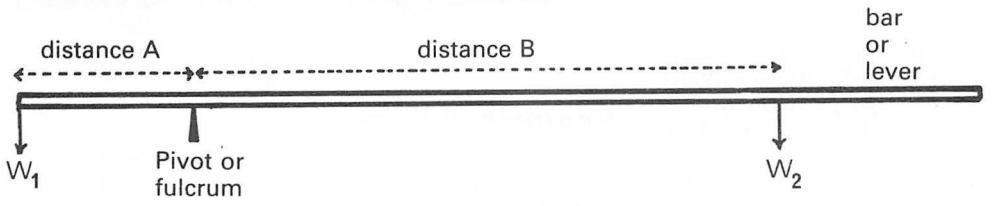


Fig 1

Distance A x W_1 = Distance B x W_2

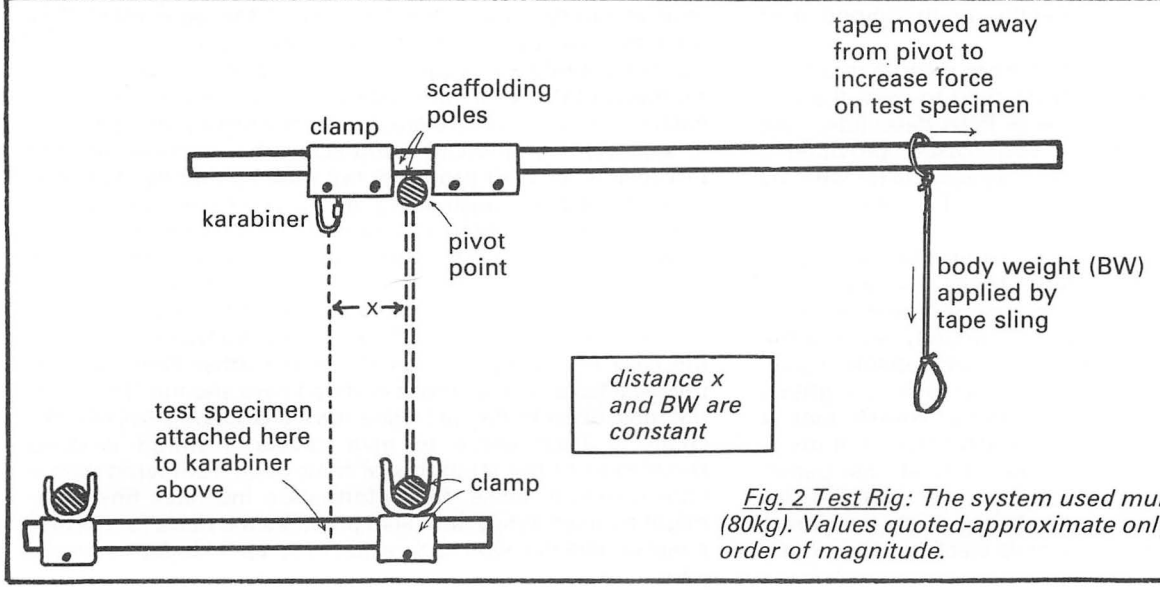


Fig. 2 Test Rig: The system used multiples of body weight (80kg). Values quoted-approximate only, but give the correct order of magnitude.

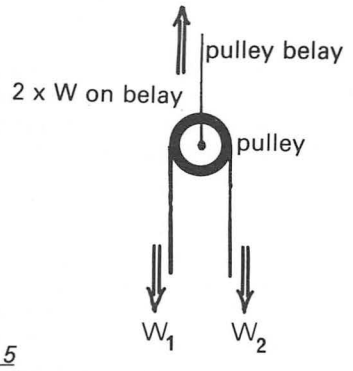


Fig 5
Loading on a pulley

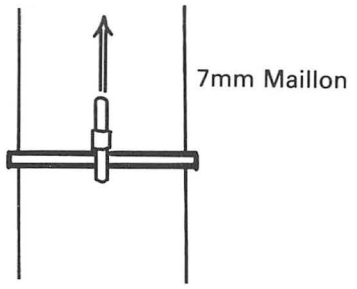


Fig 6a
Loading Centre of rung with maillon

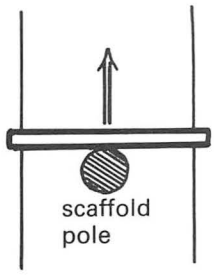


Fig 6b
Loading Centre of rung with scaffold pole

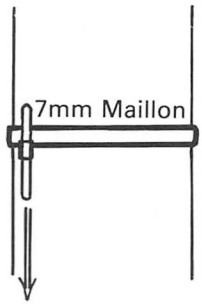


Fig 7

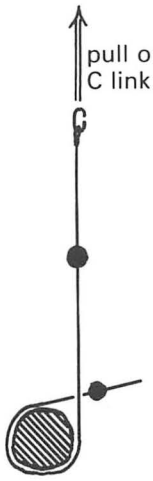


Fig 8a

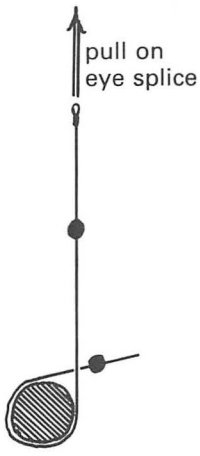


Fig 8b

Test Description	Test Load Body weight (BW)[1BW=80kg]	Comment
Rung point loaded with pole *Fig. 6b*	2 BW (160 kgf) 3 BW (240 kgf)	Bent Broke
Ring point loaded with 7mm maillon *Fig. 6a*	1.5 BW (120 kgf) 2 BW (160 kgf)	Bent Broke
Rung point loaded with 7mm maillon *Fig. 6a*	2 BW (160 kgf) 3 BW (240 kgf)	Bending Broke
C-links *Fig. 8a*	3-4 BW (240-320 kgf)	Opened at 4 BW
C-links *Fig. 3* new 5/16"	3-4 BW (240-320 kgf)	Opened at 4 BW
C-links *Fig. 8a* 5/16" old	3-4 BW (240-320 kgf) 7 BW (560 kgf)	Slightly opening Wire broke at top rung
Talurited ladder end *Fig. 8(b)*	8 BW (640 kgf)	3mm wire broke half way between rungs
FlemishSpliced ladder end. *Fig. 8b*	6 BW (480 kgf)	No visible damage
Talurited ladder end *Fig. 8b*. 3mm wire pressure bonded rungs	8 BW (640 kgf)	3mm wire broke next to pressure bonded rung.
Rung loaded in corner 7mm maillon *Fig. 7* pressure bonded rung fixing	3-4 BW 5 BW (400 kgf)	Slight movement Rung slip
As above	7 BW (560 kgf)	3mm wire broke next to rung
Rung loaded in corner with 7mm maillon *Fig. 7* pin and resin rung fixing	6 BW (480 kgf)	Pin broke inside wire, rung slipped, several strands wire broken
Wire Sling with talurited ends fastened with C-links *Fig. 4*	6 BW (480 kgf)	C-links damaged by hacksaw cuts - but no visible effect

In order to hold the fall (of force W_1) an equal force has to be applied (W_2) this puts twice the load (2W) on the pulley and belay. Dangerous situations arise on rescues where a large number of people are pulling a stretcher (which may be jammed) with the rope again over a pulley held by a wire. The best solution is to anchor the pulley by a rope or tape sling which is probably more than four times as strong as the wire belay with C-links.

Rungs themselves and rung fixings, in normal use (with a boot applied over a large area of the rung) do not have to take more than say two times body weight (e.g. someone jumping on it). Probably the most dangerous way to use a ladder is to point load a rung by hanging a karabiner on it (e.g. for a pulley, for back up ladder belay, or to abseil from). Using a 7mm maillon rapide in the centre, the rungs bent at 1.5 body weights and broke at 2 body weights.

A karabiner on the centre of a rung will often slip so that it is pulling at one end of the rung, *(Fig. 7)* , this may cause rung slip instead of the rung breaking. Depending on the construction, rungs may slip along the wire at quite variable figures. Some homemade ladders have had rung slip at just over body weight, but in other cases the fixing is so strong that the wire can break first. There was quite a variation even with 3 samples. If you *must* fasten onto a rung (not advisable) it is safer to fasten around the wire and load the end of the rung. Even if the rung slips you should still be attached to the wire, which you wouldn't be if the rung broke!

The commonest wear point on most ladders is where the wire leaves the top rung. On most ladders the wire is rigidly held in the rung. If the wire is pulled outwards or inwards at a sharp angle the load is taken by the strands on one side only and large stresses are built up. The wire belay should be attached as near in line with the side wires as possible to minimise this effect. Alternatively, a spreader should be used to lessen the angle the tails are bent through. The other reason for wear at the top rung joint is metal fatigue caused by constant flexing of the wire at one point, unfortunately this is difficult to avoid altogether.

cont p31

Caves, Mud & Magnetism

Mark Noel

In the study of past environments cave sediments are of particular value since they retain evidence which may have been destroyed by erosion at ground level. Palaeomagnetism, or the study of the magnetism of geological deposits, is a technique beginning to be applied to cave sediments in Britain. Despite its apparent lack of magnetic (or indeed any other) attraction cave mud has considerable palaeomagnetic potential, particularly since these sediments are often so well preserved. Using palaeomagnetism, we can derive relative and absolute dates for passage fills, determine rates of sedimentation and even estimate the strength and direction of water currents in caves which were once flooded. This article outlines, with some examples, the theory and methods behind this relatively new technique.

Cave mud seldom inspires the enthusiastic admiration aroused by impressive stal formations; however, from a scientific viewpoint a humble mudbank is of equal value. Both mud and stal features take thousands of years to develop and contain in their layered structures records of subtle environmental changes. Sediments are carried into the cave by flowing water and settle out when the current slackens, as, for example, where a passage widens. Although streams may actively erode and re-deposit this material, later stream abandonment often causes thick mud banks to be preserved intact under ideal conditions of constant temperature and high humidity. A prepared section through such a deposit may immediately reveal much about the changing conditions which have affected a cave but more information is retained by the mud in the form of an invisible permanent magnetisation which dates from the time it was laid down. This "remanent" or palaeo-magnetism is extremely weak; only about one millionth of the strength of a toy magnet but, nevertheless, it can be detected using sensitive instruments. The sediment magnetism is due to the presence of a small proportion of particles composed of minerals which are themselves naturally magnetic. One of these is the familiar red iron oxide haematite but usually, of more importance, is the black iron oxide magnetite, commonly known as lodestone and largely derived from the break-down of igneous rocks suck as granite. Because magnetite is strongly influenced by the earth's magnetic field it has the remarkable property of indicating the direction of magnetic north when freely suspended. A similar phenomenon occurs when microscopic magnetite grains settle slowly through water, as shown in Figure 1. When muddy water is flushed into an underground passage the initial random orientations of the magnetic grains are lost as they become aligned by the earth's magnetic field. This new ordered orientation is then largely maintained as the particles slowly settle and become incorporated into a deposit which will mainly comprise grains of non-magnetic minerals such as quartz and feldspar. In this way, a particular sediment layer will record the horizontal direction and dip of the field at the moment of deposition. By measuring the magnetisation of successive sediment layers we can thus discover how the field once varied and apply this information to date the sediment sequence.

Because sediment palaeo-magnetism can only be measured in a laboratory instrument it is essential to remove samples from the cave using a method which records their in-situ orientation. This is shown in Figure 2. A 5 x 5 cm plastic cylinder is pressed vertically into the sediment using a strong plate fitted with an accurate bullseye spirit level. A plastic disc is then glued to the open end of the cylinder and the direction of magnetic north marked on it together with a code number. The cylinder is then lifted, together with the sediment it contains and the lower end also sealed with a disc. This method fixes the sample's original orientation with respect to north and the horizontal. If a single sediment layer is being studied then a minimum of six samples will be collected in this way, in order that the average of their results will minimise various sources of error. If a thick bed is being examined then cylinders would be inserted at 5 cm vertical intervals on carved steps so that the final collection is effectively equivalent to a continuous core. In this case the consistency of results between adjacent specimens is used as a rough check on the errors since it would be laborious to obtain six samples at each level.

In the laboratory an initial measurement is made of the magnetisation of each sample in an instrument called a spinner magnetometer. The sample is rotated within a sensor which detects the weak magnetic field from the sediment and passes this information to a minicomputer which calculates the direction of magnetisation with reference to the specimen's orientation. The data is expressed in terms of the horizontal angle of *declination* in degrees from the north arrow and the angle of *inclination* measured down from the horizontal plane of the end cap. To obtain values with reference to true north the declinations are corrected for present-day compass error, which, for example, in S. Wales is 7.9°W. The direction of samples from a given sediment layer are then averaged to yield a mean 'natural remanent magnetisation'.

Measuring the natural remanent magnetisation is only the first step in the analysis procedure. The magnetisation originally acquired by the sediment rarely survives unchanged and will usually contain some weaker additional components which originate in atomic processes within the magnetic minerals. The effect of these secondary components is to deflect the magnetisation slightly away from the original direction but this effect can be much reduced by a technique known as *partial demagnetisation* . In this process the sample is placed inside a coil which generates a rapidly alternating

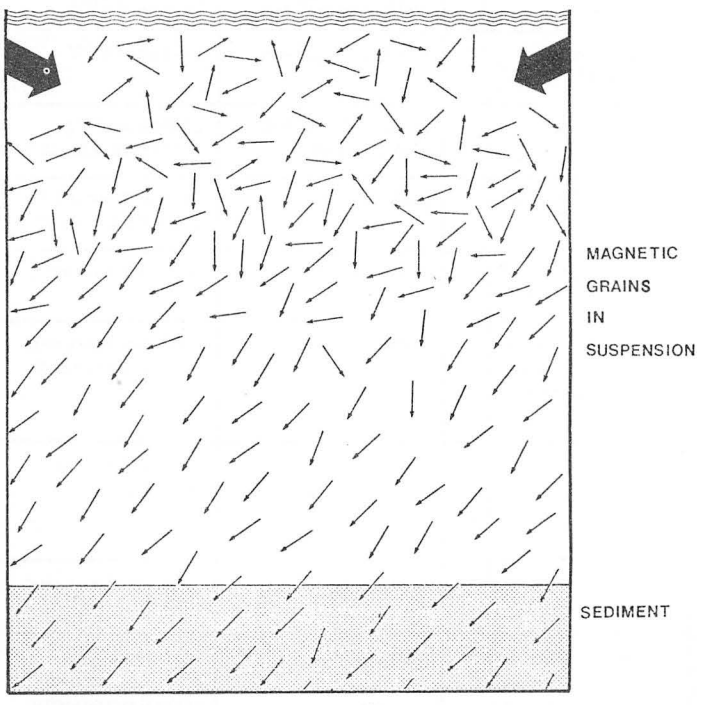
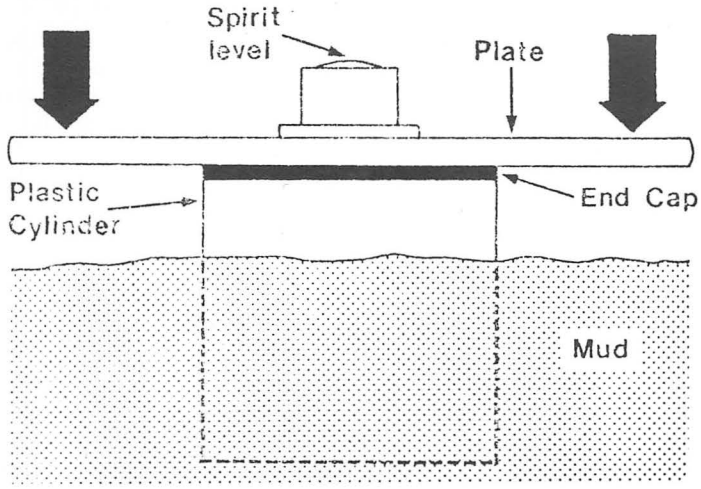
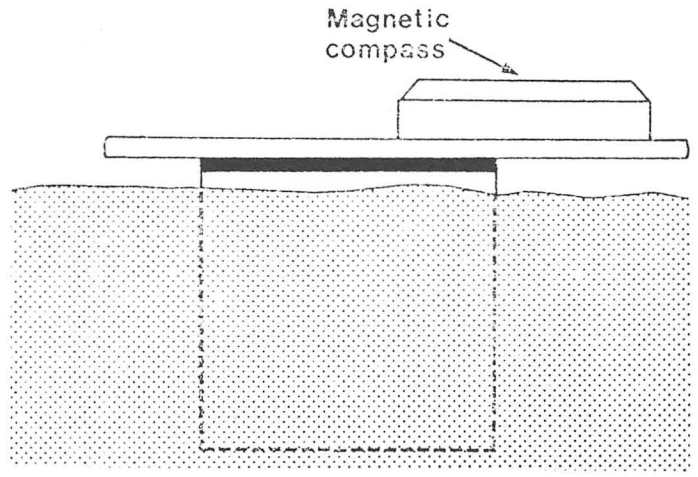


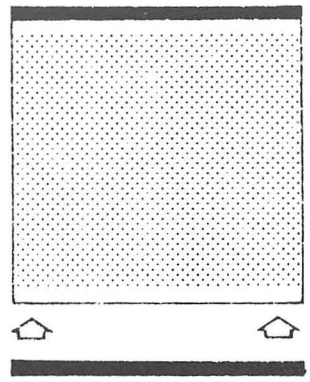
Figure 1.
Mechanism by which sediments become magnetised during deposition. Initial random orientations of magnetic grains become lost as they are aligned by the earth's magnetic field and later become incorporated into the sediment.



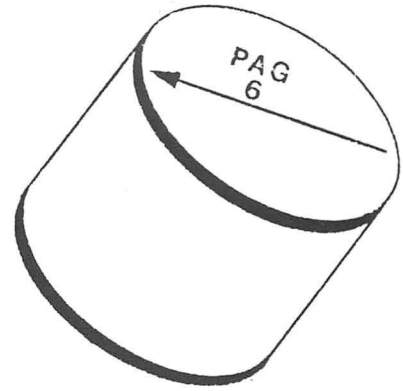
1. CYLINDER INSERTED



2. SAMPLE ORIENTED



3. SAMPLE REMOVED AND SEALED



4. FINAL SAMPLE

Figure 2.
The sampling scheme employed for cave sediments using 5 cm plastic cylinders.

magnetic field. This destroys perhaps 20% of the sediments magnetism but the majority of this will comprise the unwanted secondary components. Thus when the samples are re-measured in the spinner magnetometer and the data averaged as before, a much improved estimate is obtained of the ancient field direction.

As an example of palaeomagnetic data, Figure 3 shows results from 21 samples of laminated mud from the Clearwater Cave, Mulu. Declination and inclination vary considerably through the 1 metre section implying large changes in field direction over the period represented by the deposit. These changes are known from direct observations and palaeomagnetic studies of archaeological material to occur on a time-scale of about 600 years. Although there is no clear pattern in the declination record we can tentatively suggest from the number of cycles in the inclination plot that the period of deposition of these laminated sediments lasted for about 1500 years.

The earth's magnetic field is thought to be produced by

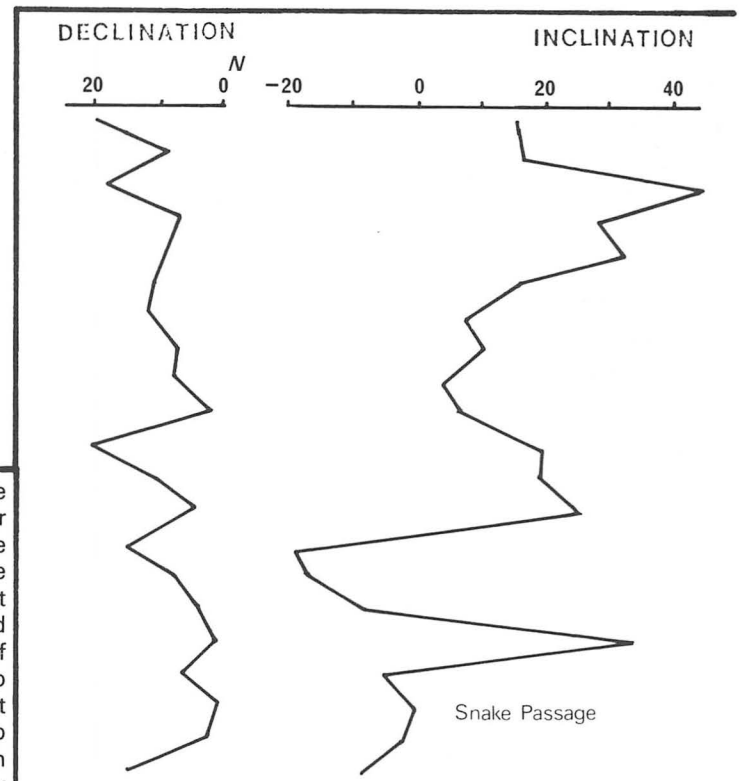
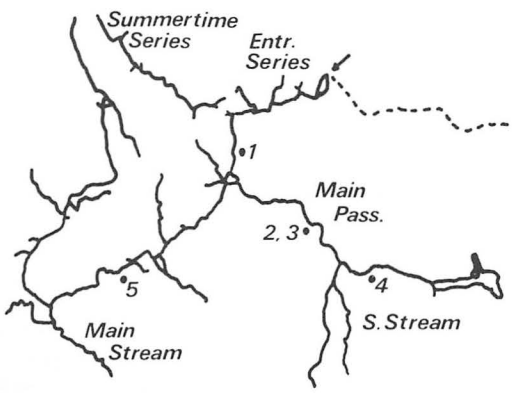


Figure 3.
Palaeomagnetic results from the Clearwater Cave, Mulu presented as separate declination and inclination plots after partial demagnetisation.



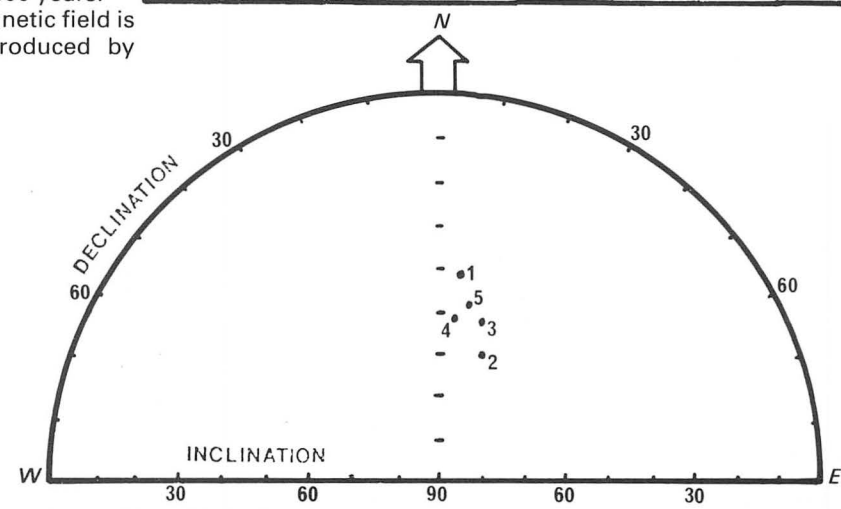


Figure 4
Palaeomagnetic results from five sites within Agen Allwedd. Each point represents the average of 8 or 10 samples of cap silt plotted on a stereogram in which inclination varies with radius and declination varies around the circumference.

fluid movements within its molten iron core. Eddies within this liquid movement probably cause the slow changes in declination and inclination at the surface. Because the eddies are of such vast proportions the patterns of change with time are found to be similar over large areas. This is fortunate because it enables direct comparison of the magnetic 'signatures' in different sediments, not only within a single cave system but also between caves separated by hundreds of kilometres. Hence it is possible using palaeomagnetism to compare the relative ages of mud deposits from, say, a cave in Yorkshire with one in South Wales or even Ireland. Subsequently, when a representative sequence has been absolutely dated by an independent technique such as radiocarbon it becomes feasible to assign absolute dates to cave sediments whose 'signatures' can be identified. As an example of comparative dating, Figure 4 shows the directions of magnetisation in five sets of samples of laminated mud from different parts of Ogof Agen Allwedd. The results coincide, (within measurement error), indicating simultaneous deposition of this unit throughout the cave.

A second magnetic technique can be applied to the analysis of cave sediments to estimate the strength and direction of any currents which once flowed in a flooded passage. When sediment settles from running water the mud develops a texture because of the force exerted by the moving liquid on elongated grains. Such a texture can be seen among grains on a shingle beach but an electron microscope is needed to recognise it in a typical cave silt. However, this texture can be measured indirectly and more rapidly using another type of spinner magnetometer which probes the specimen with magnetic fields in a special sensor. In effect, this instrument searches for a preferred physical alignment of any elongated magnetic grains which in water will have behaved in a similar mechanical way to the non-magnetic particles. This technique is known as 'magnetic susceptibility anisotropy analysis' and the results can be interpreted in terms of flow directions and approximate velocities. Such information can be of use to geomorphologists calculating past rates of limestone solution and to hydrologists mapping changes in underground drainage.

The application of palaeomagnetism to cave sediments is still at an early stage but the results obtained so far certainly encourage further developments despite the obvious logistic difficulties associated with sampling underground. The author would welcome assistance with this project from fellow B.C.R.A. members. All new results will be submitted to the Transactions.

INTERNATIONAL NEWS

News from foreign journals

John Middleton

Members may refer to, or borrow the publications mentioned by contacting the B.C.R.A. library direct.

●

MAGYARORSZAG BARLANGTERKEPEI No. 1 is a new glossy Hungarian publication in which this first edition is a 21 page monograph on Cserzegtomaji-Kutbarlang. This system is a veritable labyrinth totalling around 1,340m of passage within an area roughly 100m by 100m.

N.S.S. Bulletin Vol. 42 No. 4. Articles on bats predominate in this issue followed by abstracts of papers read at the 1980 Convention.

MEMOIRS DE BIOSPELOGIE Vol. VII is the publication from an "International Conference" held at Moulis (France) on the "Evolution of the Underground Coleopteres". In some 373 pages, 31 papers are presented (many original) the majority with quite lengthy abstracts in English.

SPEOLOGIE Vol. 19. This journal from Romania is one which is always rich in original biospeleological work. The latter part is lightened by more general caving articles of which one, on the incredible karst orifice of Cetatile Ponorlui, is particularly absorbing.

SPELEO FLASH No. 126 is a special edition devoted to the most important Belgian explorations between 1978 and 1981. These, impressively, include the Lamprechtsofen, Schneeloch, Mexico (1980/81), Siebenhengste, and Algeria 1978/79.

NSS Bulletin Vol. 43 No. 2 has a particularly interesting, and new to me, article on "Cavern Development by Thermal Waters", apparently a relatively rare but not unknown phenomena recently studied in the Rocky Mountains.

MITTEILUNGEN Vol. 27 No. 2 from Germany details the 1980 explorations in the Geburtstagsschacht (Hoher Goll) where a depth of 500m was reached by the Munich cavers.

SCIALET. This organ of the Comite Departmental de Speleologie de L'Isere, one of the finest to come out of France, has been mentioned several times in "News from the Foreign Journals" but unfortunately we have never actually had copies in our library. With thanks to Claud Chabert we now have, and listed below are the major articles in each copy.

No.5. 1976. Scialet du Grand Corbeau (-315m), Le Reseau Gathier (9km), Grotte de la Diau and other caves of that massif, Tanne Cassina (-400m), Gouffre Ambroise (-479m), and Krakoukes (-657m).

No.6. 1977. Grottes des Deux Soeurs (-315), Dent de Crolles, Gouffre Marco Polo (-296m), Reseau de la Pointe de Sans-Bet (-515m), Grotte de St. Marcel D'Ardeche (22km).

No. 7. 1978. Golin de Tabouret (another connection to the Biolet/Tamborin system at -300m), Gouffre de Grand Marchet (through trip, -63m), La Tanne du Tordu (an 83m higher entrance to Diau) and Gouffre de Consolation (-580m).

No. 8. 1979. Gouffre de la Fromagere (-902m), parallel to the Berger, Gouffre Marco Polo (-492m), Gouffre de Characou (-270m), Gouffre de Consolation (-711m), Gouffre de la Tasque (-384m), Systema Cueto-Coventosa (-773m – an account of the first through trip).

No. 9. 1980. Puits de Rododendrons (-250m), Gouffre P11 (-276m) and many cave diving articles.

●

Batmanhole

Partly explored in 1979 and 1980, this cave system in Austria's Tennengebirge has been pushed by the S.C. Marseille to a depth of 1150 metres. Their 1981 explorations took them beyond the entrance shafts and previously known large chambers into a series of descending meander passages broken by a series of large shafts.

Ian Thrussel

Divers in the "Fontaine de Vaucluse" are breaking some incredible new ground. In September, Jochen Hasenmayer, alone, reached a depth of -145m underwater. On October 11th Claude Touloumdjian, supported by a team and a diver at -90m, reached -153m, a world record! (After Claude Chabert).

●

MALAYSIA

The Batu Caves, found in the most southerly limestone outcrop in West Malaysia, the Silurian Kuala Lumpur Limestone, are perhaps the best-known cave systems in the whole country (Crowther, 1978). Bukit Batu, the karst tower in which the caves are found, has recently been reprieved from destruction by quarrying. This is fortunate, for immediately to the west of the main cave area have been found important new systems with considerable potential for further discovery. The main find is Gua Ganesha in which over 450 m of new passage have so far been surveyed (Gale and Ibrahim, in prep). This cave connects with the already known Gua Muzium (Museum Cave) at the base of the hill and extends for almost 130 m to the top of the karst tower, making it the deepest cave known at present in mainland Southeast Asia. Evidence in the cave suggests that the first discoveries were made by local guano diggers. It was rediscovered, however,

by members of the Malaysian Nature Society, who have also found several other caves elsewhere in the hill. The prospects for further extensions therefore appear excellent.

Stephen Gale.

References

Crowther, J. 1978. Karst regions and caves of the Malay Peninsula, west of the Main Range. *Trans. Br. Cave Res. Assoc.* 5, 199-214.

Gale, S.J. and Ibrahim, Z.Z. in prep. The Hydrological and geomorphological development of Bukit Batu, Selangor, West Malaysia.

Georgi Antonov

"George" Antonov died of heart failure on 11th July, 1981 whilst cave diving in his native Bulgaria. he was a member of the Akademic caving club of Sofia and he had maintained links with British cavers for many years.

George had been an active caver in Bulgaria for over 20 years and had taken part in explorations in all the main areas of Bulgaria. He was a prime mover in organising visits to Bulgaria by university groups from Leeds and Sheffield, and he joined these groups in expeditions to the Krushuna, Kotel and Pirin areas. These visits are still continuing and most of the main Bulgarian caving areas have now been visited by British teams.

George had visited both Russia and Britain on caving expeditions. He was in Britain in October, 1980 as part of the exchange organised by Sheffield University. His group visited all four main areas and caved with great enthusiasm, managing up to three trips a day. He was looking forward to a return visit, having got used to the normal British weather for changing (pouring rain and gales).

He had a special interest in anthropology and, in particular, mans use of caves in Bulgaria, both for shelter and for religious rites. His one published paper in English was included in the 1977 International Congress at Sheffield. The paper dealt with the two remains that he had found in caves in the Stranja district, near the Turkish border.

George had great enthusiasm for all his interests and he always ensured that British social customs were followed on Saturday nights! His self-taught spoken English was unique and he had a good sense of humour under his serious exterior. He will be greatly missed.

We send our sympathy to both his mother and son and to all his friends in the Akademic Club.

D. Tringham

MEXICO '82

Preparations for one of the major speleological expeditions to leave Britain this year are now well advanced. The members have organised many fund raising events and due to these, a large number of people have been contributing to the expeditions coffers. Bob Cockeram outlines the aims and results so far . . .

We intend to locate and explore new cave systems and it soon became obvious that we were going to require far more detailed information than was available from the usual sources and contacts in Canada and the U.S.A. So during October 1981 part of the expedition funds was used to send two of its 'between jobs' members to do a reconnaissance of the proposed area. This was complimented by Terry Whittaker who managed to take a detour to the region whilst on his annual pilgrimage to the Antartic. This visit was invaluable - the base area we chose in the U.K. was completely unsuitable and a new base was selected by the team on the spot. All the necessary local permits were obtained for camping and cave exploration and we now have detailed information of costs, transport, medical facilities and availability of local food produce etc.

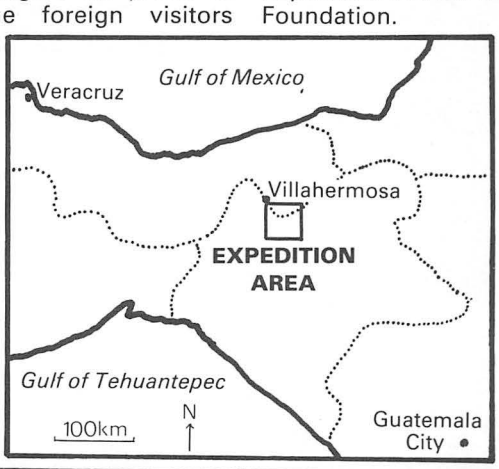
Our base camp will be centred on San Cristobel de las Casas in the Chiapas highlands, about 200km from Guatemala City. The great advantage of this site is the tolerable humidity due to its 2000m altitude. Canadian cavers have been active near San Cristobel and have found a number of long and deep river caves with much much potential remaining in the area.

With specially purchased 4-wheel drive pick-up vehicles, small groups will be transported on mini-expeditions throughout the region. The lower jungle areas will also be explored. Surrounding mountains contain an Indian population who are direct descendants of the Maya. These people can be extremely friendly but some villagers do prefer to discourage foreign visitors and keep to their own customs and culture.

As with all large expeditions the costs will be high and each member will be contributing a substantial amount. We are very grateful to the large number of people who have already shown their support by attending events around the U.K.

●

The proceeds from their next fund-raiser are to be split between the Mexico '82 Expedition and the Ghar Parau Foundation.

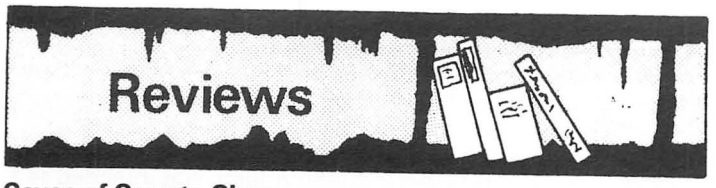


cont. from p.27

I have never advocated attaching a ladder to a beam by threading it through itself *(Fig. 8[a] and 8[b])* but the test result seems to show this to be quite strong, unless the rung slips.

The final point to bear in mind with all gear – BEWARE if you use anything in a way other than for which it was designed.

General advice for wire ropes:- Clean after use, regularly inspect particularly those points which are most susceptible to wear or damage. As a general guide one manufacturer suggests taking a wire out of service when the number of broken wires over a length of ten times the diameter of the rope exceeds 5% of the total number of wires in the rope. Most wires in caving use have 7 strands with either 7 wires (7 x 7 construction) or 19 wires in each strand (7 x 19 construction). Thus for a 4mm diameter wire of 7 x 7 construction (= 49 wire filaments) 10 x 4 = 40mm length, there should be no more than 5% (roughly 2) broken filaments, (although for 7 x 19 construction wire 5% = 6). This is probably more than most people would tolerate before becoming worried about their ladders.



Caves of County Clare

compiled by C.A. Self, 1981. Published by the University of Bristol Speleological Society, Somerset. 225ppPrice £9.50 (+ £1.50 p&p in UK) from the Sales Manager, University of Bristol Spelaeological Society, University Road, Bristol BS8 1SP

Christmas came early in Dublin in 1981, when BCRA sent me a copy of "Caves of Clare" to review. What a delight to get a well produced book, full of clear maps and diagrams with both an accurate and readable description.

This magnificent tome is presented as a tribute to Trat - E.K. Tratman, Professor of Dentistry at Bristol University. He edited the original "Caves of North-West Clare, Ireland" and provided the inspiration and guidance to the UBSS in its work in Clare for nearly 30 years. It is a fitting memento. Nineteen authors and 4 editors have contributed their knowledge towards the production of what is temporarily a definitive guide. The 251 caves with 77km of passages are described with the aid of 28 area maps and 31 surveys, whilst 5 sketches and 10 plates put a little icing on the cake.

The "Caves of North-West Clare, Ireland" was a complete study of that area, in that it covered both the scientific and sporting aspects of the caves. This book however is restricted to being a guidebook. It must be hoped that the UBSS will follow Trat's wishes and produce a second volume – as good as this one – dealing with the karst science of this county.

The Introduction to Co. Clare, does give us a setting for the region – covering the Geology and Geomorphology, the cave sign-posting willow (the Spelaeodendron), the history of exploration and an essential assessment of the high floodability of the caves. The latter includes the famous description of the "Flood in the Coolagh River Cave, August 1950". This contains that passage which strikes a chord in the heart of any caver who has been on the wrong end of a cave rescue. The two heroes are preparing themselves to attempt to sit out the flood: "Then the draught stopped. It stopped suddenly as though someone had shut the door. We didn't need to discuss it; we knew what it meant. The cave was sealed. The bedding plane had filled with water to the roof and all connection with the surface was cut off".

The main bulk of the book thereafter is in three parts: The Western Burren, The High Burren, and Outlying Areas – all subdivided into concise areas each with its own cave site map. The Western Burren is essentially an enlarged and updated version of the guide section of the "Caves of North-West Clare, Ireland" Due to the immaturity of most of these caves, with their entrances located near to a shale/limestone boundary, the actual and potential cave entrances are accurately identified and treated systematically. These are the sporting caves of Clare so well known to us all, ranging from the magnificent and classic through trips of St. Catherine's/ Doolin and Poulnagollum/Pouleva (the longest system in Ireland at over 12 km), to the popular caves of Faunarooska, Coolagh River, Pol-an-Ionain (with the longest (?) free-hanging stalactite in the world), Cullaun I and V, etc. Then there are the teeth-gritters like Pol-Cahercloggaun West-One, Poulawillin (with its leeches, odours, flood-warning and nstructions to wash all cuts afterwards), Cullaun III and Pollcahermacnaughton ("Rescue of an injured caver from beyond the entrance passage would not be possible"). For all these caves (many accompanied by a fold out survey), there is temporarily an up-to-date record of all known passages – the gaps are obvious and available to the dedicated.

The next part deals with the High Burren – here most of the caves are "relatively short lengths of fossil passages – often truncated fragments" BUT: "it is likely that the High Burren will provide the major cave discoveries in the future". This promise is shown by the history of Aillwee Cave. Discovered by a local farmer and extended by D. Drew to over a kilometre in length, it is now a fascinating show cave of considerable interest to the geomorphologist. The history of these caves is far more complex than that of their young neighbours in the Western Burren. Thus their discovery and exploration will depend on a combination of luck, intuitive reasoning and patient excavation. This section of the guide then provides a tantalising glimpse of great possibilities, and should lead to a rash of new discoveries.

Outlying Areas includes the 2.3 km long Fergus River Cave which is an old resurgence cave – sporadically active; there are also nearly fifty small caves in this section to give a hint of the extensive karst development around the edges of the main caving areas. They include a few sites on the Aran Islands – what an excellent excuse for getting over to see these famous isolated outposts of Europe.

So here is a guidebook which allows you to plan a holiday, during which you can mix classic caving, a few hard trips, lots of virgin ground, one or two pints in Gus's at Doolin with some of the best Irish traditional music, and lazy days on the beach at Fanore.

I know a reviewer is supposed to critise a book as well as praise its good points, but any flaws that I have discovered have been so niggly that it just wasn't worthwhile.

Gareth Ll. Jones

Cave Diving Group Newsletter, No. 61

October 1981, 39pp, 60p from Oliver Lloyd, Withey House, Withey Close West, Bristol BS9 3SX.

A review of a CDG Newsletter always seems a little like a report on half the recent explorations and discoveries in Britain's caves – merely because the success stories are still running in favour of the divers. Number 61 is a fairly typical mixture of hot news and good reading; what follows is just a comment on the main items.

Hurtle Pot continues to yield underwater galleries, but without progress to dry cave. Futile dives in Old Ing are described; they were looking for the Red Moss link – though this has since been made (see p.23 – Ed). There is a heart-breaking story of a day's digging-out of the Malham Cove flood rising, followed by a return the next day to find all the rocks removed had been thrown back in by the splash-happy tourists! The dives in the Goyden to New Goyden link make excellent reading, as do the dives in Nidd head – though not reported is the latest success story in Nidd Head where at long last a main-line tunnel has been found. From south of Skipton, the main features are the dive to 215m in Agen Allwedd Sump 4, and a 46m deep dive in Giant's Hole East Canal where Jerry Murland got his decompression calculations wrong and gave himself the bends.

It may be regarded as too specialised for many caver-readers, but any club who does not subscribe to the CDG Newsletter is in danger of becoming very much behind the times.

Tony Waltham

Cambridge Underground 1981

70p including p&p from CUCC, c/o Dr. J.C.D. Hickson, Pembroke College, Cambridge.

At fifty pence in the shops it is a very cheap buy for a club journal – indeed my copy had four pages 29 and 30 which is an interesting way of giving value for money. It is, however, of limited interest to those outside the club.

The editor admits to the boring nature of the editorial and I must agree with him. The "Presidents Bit" does contain a couple of interesting points: the unsuitability of stainless steel wire for ladder making which deserves a wider circulation, and the ineligability of students for EEC reciprocal health agreements – this deserves fuller investigation since other groups such as the self employed may not be covered.

The Austrian expedition report is difficult to follow with no maps, introduction to the area or even photographs. I'd rather have seen a few area or cave photographs than a few mug shots of a bunch of club members.

Surveying seems to be a weak point with only two surveys – one hardly worth printing and the other of undefined grade. Even one 350m deep system has no survey. This seems very strange since it is stated that the German survey

that they had was very inaccurate. The write-up makes reference to the expedition log at one point – this is, I'm sure, in wide circulation! It's a pity that this years report is so poor since over the last five years they seem to have done some good expedition work.

The article on caving in Belgium could be of use with addresses and references. The English discoveries are of interest although not as clear as they could be, and the style is not exactly gripping. Minor finds in Link Pot and Hell Hole are described, whilst diving in Goyden and New Goyden seems to have produced some exciting discoveries.

The holy art of cave squeezing in 622A.D., as performed by the followers of Muhammed, made entertaining reading.

This publication is great for club members, but if they seriously want to sell it to other cavers then it needs some major modifications.

Dave Checkley

MUSS Journal No.10.

Manchester University Speleological Society, September 1981. 36 pages plus 15 pages A4 surveys, 3 A3 pull-outs and 3 pages photos. Available from A.V. Fifield, 103 Ashgrove, Killay, Swansea, Price £1.50.

After a silence of three years, the presses have rolled again to produce yet another high class publication from Manchester University. It is, perhaps, inevitable that nearly 75% of the contents concern various MUSS expeditions on the Continent, although the remaining space is taken up with, albeit brief, accounts of new discoveries in the Yorkshire Dales.

The mainstay of the overseas work is the continuing saga of Matienzo, and recent work, with surveys and photos of a high standard, is outlined in a lengthy article and an appendix. Succinct writing leaves one with a feeling that hundreds of metres of virgin 10m x 10m passage is nothing to get excited about, but perhaps in an area with more length of known cave than has the comparable Ingleborough area of Northern Caves Vol. 2 this is not too surprising. Unfortunately, despite discovering a further 5 kilometres of passages in 1981, the hoped–for connections in the Four Valleys System remain elusive.

The other European wanderings of MUSS are covered in an interesting account of descents in the Pyrenees; of the Gouffre D'Aphanicé (-504m) with its 328 metre big pitch, and the Gouffre André - Touya (-937m) with its great ramp features. A more light hearted article tells one what not to do in Austria!

Of the home grown activities, short but adequate descriptions with surveys cover the latest crop of Penyghent Gill "Sn" holes (so beloved by MUSS) - this time Snatcher Pot, and Snuffit Pots 1 and 2, whilst a brief account of Resurrection Pot on Ingleborough proves that they do go somewhere else at times!

Taken all round an excellent publication, although the price may deter other than people with a thirst for knowledge about current goings-on at Matienzo.

Harry Long.

Southampton University Ecuador Expedition 1979, Expedition Report.

A4; typewritten; 212 pages plus photos and surveys. Available from P. Brown, 2 Greenbank Crescent, Basset, Southampton. £3.

A large report from a small expedition to the Oriente - the tropical rain forest of Ecuador. Only 5 students took part but three distinct research projects were successfully carried through - ecology of the Jumandi Cave, agricultural and ornithological surveys. About 60% of the report deals with speleological studies and expedition planning and logistics.

Although the expedition was seriously debilitated by transport problems, proving that with small expeditions all members should travel together, sufficient was salvaged to produce a thorough ecological study of the Jumandi Cave System. The whole life of the cave is minutely inspected, from spider to cricket, and from blind fish to vampire bat!

D.M. Judson.

Cave Formation in Northern England

by Brian Paul Hindle. 1980. Published by Lyon Ladders, Dent. 36pp, 23 figs. Price £1·50

With a publisher not too far removed from Whernside Manor, one can guess that this little volume was intended as a handbook/guide for the relative beginner who wants to know a little more about cave geomorphology. As such it will be very popular. Indeed it has no real competition and fills a literature gap which has been open for some years. Furthermore it is well written, well presented, reasonably comprehensive and tells the beginner basically what he needs. Consequently Messrs. Hindle and Lyon deserve congratulations for fulfilling a need, and the sales will probably provide their own reward.

The immediate impression which the booklet gave your reviewer was good. Obviously the author and the reviewer are never going to agree on details of style, emphasis, examples etc. - and this is not intended to be a nit-picking review. But unfortunately there are problems which go further - and, because this book through its lack of competition is probably going to gain a very wide distribution among people who know a little but not enough, these problems become very important. There really are too many straightforward errors and conceptual inadequacies.

The errors include: caves in volcanic ash (so rare they can be ignored); the Nick Pot water diverted to Crummack by an unconformity ridge (very dubious - the known ridge is further west); Meregill as the deepest cave (it is 4th after Gaping Gill, Penyghent Pot and Lost Johns - Gavel); vadose caves being horizontal (they are always inclined); phreatic tubes partly filled by glacial rubble (no ice underground, it is all stream debris except at the entrances); isotope dating of stalactites (only stalagmites are used for dating), and a confusion of Pleistocene dates culminating in a non-existant 45,000 year old interglacial.

Such errors could be dismissed as trivia - though that would be impractically over-generous. More important therefore are the misleading or incorrect concepts which are fundamental to the whole publication. Abrasion and collapse are given scant mention as cave erosion processes. Ice meltwater is made responsible for large dolines such as Gavel and Hull Pots, and also for the many shafts of Newby Moss - and while this origin is worthy of mention it is by no means adequately demonstrated to be taken as fact. The introduction of erosion surfaces as the 'Plateau and Dales Stages' in figure 9 represents thought which is 30 years out of date, and only confuses the issue unless presented as part of a broader consideration - which it does not receive here. A confusion of time scales, and the repeated references to the Ice Age as a single event, obscures the story of Leck Fell and its patchy treatment wastes the evidence which is there. The description of phreatic caves makes no mention of phreatic lifts, and the significance of cave rejuvenation in sympathy with valley lowering is barely developed even though it is one of the key factors behind the complexity and variety of the Dales caves. Anastomoses are very inadequately described and their progression to cave passages is incorrectly ascribed to coalescence.

The conclusion on page 32 looks like it was thrown in at the last minute, and it really has minimal value. Appended to it is a series of captionless diagrams, which are clearly based on Kingsdale, and show again the lack of thought in their preparation by placing the Kingsdale lake in an Interglacial (it was late Devensian). The same diagrams have a serious omission in not showing any phreatic cave development beneath contemporary valley floor levels - a process responsible for most of the old phreatic trunk caves in the Dales.

The booklet cannot therefore be described as authoritative. It is weak in its sequence, muddled in parts and with too many significant errors. The reviewer would not be happy to recommend it to a beginner caver who 'wanted to know more' - although admittedly there is nothing else to recommend. The acknowledgements make no mention of any of the available Dales geomorphologists having read the manuscript - why not when they could have so easily

eliminated so many niggling errors? The reviewer hopes that a Second Edition with the errors removed and perhaps an expanded conclusion will eventually appear - because that will be a valuable addition to the Dales literature. The idea, the format and the basic structure are already there, and they are good. But as yet the contents do not live up to the idea, and the discerning caver will have to wait, hopefully for the second edition, before he is happy with a nutshell description of cave formation in the Dales.

Tony Waltham

EL TOPO LOCO: Grandes Cavidades Espanolas
by Carlos Puch (In Spanish) Available from El Topo Loco, Plaza de las Tenerias, 6-7-8, Zaragoza 02, SPAIN.

This 226 page special edition of a well known Spanish caving magazine marks the culmination of two years of hard work on the part of Carlos Puch, the author, who has listed with surveys, short histories and references the caves in Spain over 300m deep or 3km long. For the "Big Shaft Man" there is also a section on the forty one deepest shafts in Spain including Pozu Tras la Jayada with its 306.5m of pitch broken only by an occasional ledge.

Some would criticise Sr. Puch for only labelling the longer pitches on the otherwise very well reproduced surveys and for not giving tackle lists for most of the caves. However, it must be remembered that the book is intended to be used primarily as a cave atlas and not as a complete guide. In other words, you use "Grandes Cavidades Espanolas" to locate the particular cave that you're interested in and then write off for the maps and journals mentioned as references.

This brings me on to the most important criticism of the book: it doesn't give any addresses from which the references can be obtained. This means that potential users will probably have to write to the BCRA for more information on such strange publications as "Act. 1 Cong. Nac. Espel. Barcelona 1970" before they can get any further. The photographs aren't much either: in my opinion the best one is a caving shop advert on the back page.

In spite of these failings, the book will be very useful as a first step if you're planning a sporting trip to Spain and it does represent a positive step towards co-ordinating the many clubs working in the country: all credit to Carlos Puch for attempting this. What's more, it's a good book to pass around the pub so that your mates can drool over 188m free hanging pitches, 1800m depth potentials and mammoth epic through trips. Mine has already been round the Club so many times that it's falling to bits!

John Singleton
OUCC

The Underground World of Caves
Phil Chapman, pp797-800 in The Living Countryside *vol 4 issue 40, Nov. 1981, 60p from newsagents or back numbers from Orbis Publishing, 20 Bedfordbury, London WC2N 4BT.*

The Living Countryside is a "popular" weekly part-work on the nature and wildlife of Britain. Each issue contains half a dozen well illustrated (in colour) articles on specific subjects and number 40 contained a review of Britain's cave life by Phil Chapman.

The article specifically describes the rather minimal life in British caves, without slipping into the more spectacular life of the tropical caves. Being written by a knowledgable cave biologist and not by a generalising professional writer, the article has the benefit of accuracy, authority and meaningful description. Yet it is well written and not just aimed at the experts. It is in the reviewers opinion the best concise description there is of Britain's cave biology. It follows the author's philosophy in approaching cave life through environmental zonation and energy budgets as opposed to the boring tedium of genetic classification. But this gives it a readable structure. Bats, moths, spiders, gnats and shrimps all appear in their cave niches, and there can be few cavers in this country who could not be fascinated by, and learn from, reading this excellent review article.

Tony Waltham

BCRA

A Cave Conservation Fund

It has been apparent for some years that a central fund to promote and assist cave conservation projects would greatly assist those working to retain our caves in the condition we found them. There is however a wide spectrum of views as to what projects should (or should not!) qualify for support from such a fund. Ideas range from the building of 'secure' entrances for some caves, to the actual purchase of a show cave by cavers. A middle ground suggests support for conservation publicity - e.g. the recent conservation film and perhaps a conservation calendar.

In reality all projects must be judged on their merits according to the appropriate regional or national context. My approach is therefore to allow most projects to qualify for consideration, but to allow the fund managers wide powers to use their discretion and good sense according to the mood of the age.

The attached draft describes such a fund, under the overall trusteeship of B.C.R.A. The powers given to the management committee have been drafted widely, but with limitations to safeguard the future of the fund. It is hoped that these powers will enable the fund to support projects both large and small, without imposing crippling interest payments where there is no ability to pay. Should such a fund be created it is possible that a substantial sum of money will be donated soon after it becomes operational, and hopefully further donations can be attracted to enable the fund to grow.

The Council of B.C.R.A. are in favour of setting up such a fund, and invite comments on the draft (below) which it is hoped to submit to the 1982 A.G.M. for approval.

Peter Cousins.

BRITISH CAVE CONSERVATION FUND

1. Definition

The British Cave Conservation Fund, hereinafter called the fund, shall be a charitable fund administered by the British Cave Research Association (B.C.R.A.) and under the general guidance of the National Caving Association (N.C.A.) of which the B.C.R.A. is a constituent member.

2. Objectives

The objectives of the fund shall be to support by loan or grant projects which further the conservation of caves and cave features, as set out in detail below, wherein all references to a cave, or cave feature, are intended to include historic mines, caves, and other places of spelaeological interest within the British Isles.

a) To assist in the publication of material intended to promote the conservation of caves and features therein, or the conservation of a specific site or group of caves.

b) To assist with the physical protection of features within a specific cave or group of caves.

c) To assist in works designed to maintain access to a cave, or part of a cave, but not solely to assist exploration.

d) To assist in the purchase of land or property where such purchase is intended to ensure the protection of and maintenance of access to a cave or caves.

3. Administration

The fund shall be administered by a committee of five and a Treasurer.

a) Vacancies on the committee shall be advertised to the membership of BCRA, and to other constituent bodies of N.C.A.

b) The treasurer and committee members shall be appointed by the council of BCRA, having due regard to the balance of the committee so formed.

c) The members shall normally serve for a period of three years and be eligible for re-appointment.

d) The Committee shall meet at least once a year, and shall nominate one of its number to act as secretary.

e) Except where used in accordance with the powers of clause 4 of these rules, the capital of the fund shall only be invested in such securities as are authorised by law for the investment of trust funds.

f) The treasurer shall present an annual account to the Council of B.C.R.A. within three months of the close of the financial year. Such accounts shall be open to inspection by any constituent member of N.C.A.

4. Grants and Loans

Subject to the conditions below the committee may at any time grant loans or other payments out of the fund to projects falling within the objectives set out in para 2.

a) The committee may at any time sanction loans up to an individual value equalling 15% of the capital of the fund, providing the total of such loans does not exceed 50% of the capital of the fund at any one time.

b) The committee may at any time sanction an award not exceeding 10% of the capital of the fund, providing not more than two such awards are made in any one year.

c) With the prior consent of a majority of the council of B.C.R.A. the committee may sanction a loan or award exceeding the limits set out above.

d) The committee may at any time vary the limits set for repayment of loans, and the rate of interest thereon according to the circumstances of the individual case.

e) The committee may at their discretion accept or reject further donation to the capital of the fund.

5. Amendments and Winding Up

a) Amendments to this constitution may only be made by a postal ballot of all voting members of B.C.R.A. council, a two-thirds majority of those voting being required to pass such amendment(s). All members of B.C.R.A. and constitutent bodies of N.C.A. must be notified of such changes.

b) The fund may be wound up only by resolution of the council of B.C.R.A., a four-fifths majority of those present at a properly convened and quorate meeting being required to pass such motion. The remaining funds shall be distributed amongst all consitituent bodies of N.C.A. in proportion to their voting powers, with a request that these monies be used for a similar purpose to that defined in this constitution.

c) In the event of B.C.R.A. being wound up, or going into liquidation, the fund may continue to be administered by a successor organisation, or may be wound up by that organisation acting under clause 5b.

Revised 15th Dec. 1981.
P.R. Cousins.

BCRA COUNCIL MEMBERS FOR 1982

President:	Dr. G. T. Jefferson, Zoology Dept., University College, P.O. Box 78, Cardiff. CF1 1XL
Chairman:	J. J. Rowland, Llywn yr Eos, Capel, Bangor, Aberystwyth, Dyfed. SY23 3LR
Deputy Chairman:	J. R. Wooldridge, 129a Park Hill Road, Harborne, Birmingham. B17 9HH
Secretary:	Ian G. Penny, 9 Grandview Road, Thundersley, Essex. SS7 3JZ
Membership Secretary:	David R. Stoddard, 23 Claremont Ave., Bishopston, Bristol. BS7 8JD
Treasurer:	Joseph W. Dey, 2 Wyatt Avenue, Sheffield. S11 9FN
Editor:	Dr. T. D. Ford, Geology Dept., The University, Leicester. LE1 7RH
Bulletin Editor:	Juan S. Corrin, 55 Osborne Terrace, Bacup, Lancs. OL13 8JY
Librarian:	Roy Poulson, 26 Ashley Road, Keyworth, Nottingham
Foreign Secretary:	J. R. Middleton, 2 Broad Elms Close, Sheffield. S11 9ST
Conservation Officer:	D. M. Judson, Rowlands House, Summerseat, Bury, Lancs. BL9 5NF
Sales Officer:	B. M. Ellis, 30 Main Road, Weston-zoyland, Bridgwater, Somerset
Biological Recorder	M. C. Day, 118 Whitmore Road, Harrow, HA1 4AQ
Mining Recorder:	P.B. Smith, 21 Lees Hall Road, Sheffield. S8 9JH
Archaeological Recorder:	Dr. J. D. Wilcock, 22 Kingsley Close, Stafford. ST17 9BT
Bookings Manager:	Dr. R. G. Picknett, 28 Potters Way, Laverstock, Salisbury, Wilts. SP1 1PX
Distribution Manager:	P. R. Cousins, 8 Giffords Croft, Lichfield, Staffs.
Insurance Manager:	Geoff Wells, 39 Linden Road, Redland, Bristol, BS6
Advertising Manager:	Keith Plumb, 55 Firwood Avenue, Urmston, Manchester
Club Representatives:	Dr. Chris Wood, (Shepton Mallet C.C.), 11 Millstream Close, Axbridge, Somerset Peter Robertson (IBMCC), 36 Tadfield Road, Romsey, Hants. SO5 8AJ Pat Devine, (Manchester Univ. S.S.), 47 Furness Grove, Heaton Norris, Stockport, Cheshire

Address Changes

J. E. Smith	250 Wolverhampton Road, Sedgley, Dudley, West Midlands. DY3 1RD
K. R. Solman	5 Priory Road, Higher Compton, Plymouth, Devon. PL3 5EN
K. J. Senior	39 Rockleigh Road, Bassett, Southampton. SO1 7AG
A. B. Wilson	8 Victoria Terrace, Bradley, Nr. Skipton, Yorkshire
N. K. Bergin	7 Wain End, Horsham, W. Sussex RH12 4QT
C. Boothroyd	Bank House, Main Street, Dent, Sedbergh, Cumbria
S. Crabtree	58 Etheldene Avenue, Muswell Hill, London. N10 3BQ
H. Friedrich	11 Vyvyan Terrace, Clifton, Bristol 8
M. E. Glover	168 Roils Head Road, Norton Towerm, Halifax. HX2 0NQ
H. J. Hobson	28 Shearman Road, Pensby, Wirral, Merseyside
S. R. Kelly	11 Linden Crescent, Lower West Wood, Bradford-on-Avon, Wilts. BA15 2AN
A. Ockenden	c/o Mott Hay & Anderson, Far East Sun Hung Kai Centre, 30 Harbour Road, Wanchai, Hongkong.
D. J. Shepherd	7 Smithwell Lane, Heptonstall, Hebden Bridge, West Yorks.
D. Taylor	Snippits, Brookhill Road, Copthorne, West Sussex

New Member

P. W. Rose	43 Welch House, Beaconsfield Road, Enfield, Middlesex. EN13 6UX

Report of BCRA Council for 1981

A successful year in which the new-look Caves & Caving has become firmly established with greatly increased circulation and advertising revenue. The BCRA Insurance Scheme is also now very firmly established and the travel policy has proved particularly popular.

Financially, the Association has again kept its head above water and, in spite of greatly increased costs, it has been decided to avoid any increase in subscription for 1982. Instead, additional income will be sought by encouraging members to covenant their subscriptions so that BCRA can reclaim the income tax paid on the subscription by the members concerned. By this means BCRA could substantially increase its income without cost to members. The task of administering the covenants will fall to David Stoddard (with specialist assistance from Chris Wood). David steps into the post vacated by Jerry Wooldridge and Council wishes to thank Jerry for all the work he has done during his eight years of membership administration. Jerry has now been elected Deputy Chairman.

"Transactions" has again carried papers of major importance to speleology and a complete issue was devoted to a comprehensive treatment of the Matienzo area in Northern Spain. The Association's latest book "Limestones and Caves of South Wales" is to be published in two volumes, the first of which is now with the printers and will be available shortly.

Publication sales have continued steadily and arrangements have been completed to enable BCRA to accept Barclaycard in payment for publications. This facility may also be extended to cover subscription payments.

The BCRA library has increased its collection during the year, particularly in the area of foreign publications, which give support to the services of the Foreign Secretary who continues to handle a large number of enquiries of caving abroad.

Meetings have been well attended and well received. The spring meeting was held at Ingleton and took the form of a one-day symposium on "Exploration Medicine". The summer meeting at Cheddar was a full day's programme devoted to conservation topics and featured a showing of the newly completed Nature Conservancy/NCA conservation film. The highly successful MULU '80 Expedition provided the theme for the BCRA winter meeting which was held at UMIST in Manchester.

This year the National Conference was again held at Nottingham University and featured for the first time a series of seminars on specialist scientific topics. This innovation has coincided with the inception of a research sub-committee within BCRA to actively promote various aspects of speleological research.

The Association's relationship with NCA during 1981 has been reasonably constructive, although currently factions within NCA are attempting to change the present system by which applications for Sports Council Grants are vetted by BCRA's Ghar Parau Foundation, a system which has operated smoothly and satisfactorily for several years. If any changes are brought about in relation to the Sports Council grants there is unlikely to be any change in the present arrangements in respect of the awards from the Ghar Parau Foundation itself, which continues to support caving expeditions travelling abroad and to receive donations, including those from expeditions which have been financially profitable.

Finally we must thank our members whose support makes BCRA such an active and successful organisation.

J.J. Rowland (Hon. Chairman)

Systematic Hydrological Records and Computer Analysis

Members who read BCRA Transactions will of course be aware that hydrology forms a main string in British speleological research. However, workers have tended to be individuals working alone, and records of chemical analysis of limestone groundwaters, although published in many cases in Transactions, have sometimes only appeared in PhD theses and are thus less well known. Further it is evident that different parameters have been investigated to differing degrees of reliability, so that the comparison of readings by different workers even from the same British karst region, let alone from other regions, becomes difficult, if not impossible.

BCRA has kept hydrological records on a computer for some years now, but inter-regional comparisons have not been possible because of the differing reliabilities mentioned above. Similarity measures generally require that parameters are recorded to the same reliability, and any missing parameters either severely hamper comparisons or make them impossible.

Cluster analysis of readings within a region has produced interesting results (e.g. Geochemical controls on the composition of limestone ground waters with special reference to Derbyshire, Christopher N.S.J. and Wilcock, J.D., Trans. BCRA Vol. 8, No. 3, pp 135-158, September 1981). It is planned to carry out similar studies for other British caving regions and finally to compare regions. It is suggested that the following parameters of ground waters need to be studied: Calcium, magnesium, sodium, potassium, total hardness, bicarbonate, chloride, sulphate, nitrate, saturation index, partial pressure of carbon dioxide, relative entropy (a measure of the degree of mixing) and ionic ratio (e.g. [Ca + Mg]/

Values should be long term medians of several readings of the same source taken under differing weather conditions, except where flood conditions produce such wide differences that separate values should be produced for low flow and flood conditions. Single spot readings are of little use for comparitive studies. Ideally the programme of readings should extend over two or three years at least.

It is clear that analysis to this complexity is greatly aided by the use of computers, for the storing of readings, statistical analysis and presentation of results. Results can be presented in tabular form, using the computer as a word processor, or in diagrammatic form using computer graphics. It is not necessary for large mainframe computers to be employed, for many microcomputers are now capable of handling moderate amounts of data at a reasonable speed.

Hydrologists who have suitable readings for the central BCRA hydrological records are invited to contact the Hon. Hydrological Recorder, Dr. J.D. Wilcock, at 22 Kingsley Close, Stafford ST17 9BT (Telephone: 0785 58979). Permission to reproduce and record readings from theses will be especially welcomed, and of course all contributions will be acknowledged in any published compilations of data.

J.D Wilcock

BCRA Summer Meeting — *Advance Notice*

What promises to be a most interesting and informative 2 day meeting is being held at Whernside Cave & Fell Centre on Saturday and Sunday, 12th/13th June. Under the title of "British Caving Techniques" the demonstrations, talks, trips, etc., will cover all aspects of laddering, lining, SRT, bolting, climbing, belaying, rigging, etc.

Offers of lecturers would be most welcome, and should be made to the Organiser, Dave Elliot at Whernside Cave & Fell Centre, Dent, Sedbergh, Cumbria. (Tel: 05875 213).

THANKS

. . . . from Andy Eavis, joint leader of the hugely successful Mulu 80 Expedition:

On behalf of the Mulu 80 Expedition, I would like to express sincere thanks to BCRA for allowing us to take over their winter meeting as the Expedition Symposium. Several members of the BCRA Council gave a lot of help with the organisation, particularly Jem Rowland and Keith Plumb. We are very grateful.

BCRA Spring Meeting

"BLUE HOLES OF THE BAHAMAS"

Saturday, March 6th, 1982 at the Kings of Wessex School, Cheddar, Somerset, from 2 - 6 p.m.

Programme (provisional)

2.00 - 2.30 "15,000 Years beneath the Sea", – film
2.35 - 3.15 Blue Holes '81 - introduction with slides.
3.20 - 4.00 Blue Holes – Biology.
4.00 - 4.30 Tea.
4.30 - 5.15 Equipment and Technique.
5.20 - 6.00 Logistics of '82 and special problems in the future

Admission: 70p to BCRA members, £1.40 to non-members. Members of BCRA member-clubs can obtain the reduced rate by quoting their club membership number at the door.

EVENING DINNER: an informal 3 course meal has been arranged at the Penscot Farm House Hotel, Shipham (2½ miles north of Cheddar) at 7.30 for 8.00 p.m. Price £5 excl. wine. Accommodation is available in the many caving club huts on Mendip.

The meal must be booked in advance by sending name, address, and number of meals required, accompanied by a cheque or P.O. made out to "BCRA Conference Account", to Dr. R. G. Picknett, 28 Potters Way, Laverstock, Salisbury, Wilts., SP1 1PX, by Monday, March 1st.

Leicestershire Speleological Association
35 Logan Street, Market Harborough,
Leicester, LE16 9AW
Telephone: 0858-62961

We urgently require any item of caving equipment, e.g. ladders (or part of), ropes, lamps, helmets, krabs and SRT hardware that is totally unfit for use due to faulty manufacture, mishandling and abuse or excessive wear and tear.

The above items will form the nucleus of a travelling exhibition – "A Caving Chamber of Horrors" – which will be on display at Conventions, Symposia and Congresses during the next few years. Any items donated will be fully labelled as to the source or donor and it is hoped that perhaps we may be instrumental in saving life.

Please reply (postage refunded) to Ron "Spud" Murphy at the above address.

THE CAVES OF BORNEO

A film/slide/sound/lecture extravaganza by members of the Mulu '80 Expedition

To be held at the Town Hall, Leeds
on Friday, 5th March at 7.30 p.m.
Doors open at 7.00 p.m.

Tickets can be bought from Alpine Sports or Blacks Camping Centre in Leeds, or at the door on the night.

Price £1.50

Tickets can be reserved by phoning Bob Cockeram on Pudsey (0532) 551687

20% discount for groups of 10 or more!

Annual General meeting

The BCRA AGM is to be held on the afternoon of Saturday, June 12th, at Whernside Cave & Fell Centre, Dent, as part of the BCRA Summer Meeting.

Motions for consideration at the AGM should be made in writing to the Hon. Sec. and signed by the proposer and seconder and should reach him not later than 31st March, 1982. Further information will be given in the next *Caves & Caving.*

BRITISH CAVE RESEARCH ASSOCIATION

Are you a member?

The Association exists to encourage cave research, conservation and the development of caving technology in the broadest possible way. If you are not already a member of BCRA, just look at the following advantages of membership :

1. CAVES & CAVING – our quarterly magazine. Up to date and probably the best value "read" in British Caving. It is fully illustrated and has the latest news and views on the British caving scene. POSTED FREE TO MEMBERS.

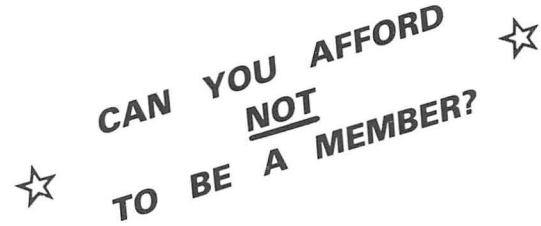
2. TRANSACTIONS – published quarterly this contains original papers on all aspects of cave science including descriptions of caves and expedition reports with full size surveys. POSTED FREE TO MEMBERS.

3. MEETINGS – members are entitled to reduced entry rates to the National Caving Conference and other general meetings of the Association (see the "Diary" in Caves & Caving).

4. LIBRARY – members are entitled to use of the Association's extensive library in Matlock, Derbyshire.

5. FOREIGN – we maintain contact with cavers in most areas of the world and our Foreign Secretary will do his best to assist members with enquiries about particular areas overseas.

6. INSURANCE – The BCRA insurance scheme offers public liability insurance and expedition insurance for members and member clubs at extremely competitive rates.



Subscription rates for 1982 are:
Full Member £8.50
Joint Members £10.00
(i.e. only one set of publications)
Member Club £10.00

Don't delay – complete the membership application form in this issue of Caves & Caving *or* write enclosing an SAE for any further details you may require regarding the advantages of membership to:

DAVE STODDARD,
23 CLAREMONT AVENUE,
BISHOPSTON,
BRISTOL, BS7 8JD

Do your bit for British caving and join BCRA now! Don't forget that by completing the enclosed covenant form you can increase the value of your membership to BCRA by 30% at no extra cost to yourself.

Mulu '80

The one day symposium held at UMIST last November proved to one and all that the ballyhoo surrounding the results of the expedition was completely justified! Organisational ability was stretched to the limit with a very full programme detailing the magnificent finds, and cavers packing the two lecture rooms were enthralled with accounts of miles of new passage and the largest chamber in the world. Those who found it all rather too much will be pleased to know that full details of the explorations and scientific results are to be published shortly as a full BCRA Transactions. General release date for Trans. Vol. 9 No. 2 is early May.

Dick Willis has kindly supplied the following information about the contents of the issue. It will be complementary to 'Caves of Mulu 80', with as little overlap as possible. The contents will, broadly speaking, fall into two parts: firstly papers of general expeditionary interest and secondly, the scientific reports based on the results available to date. (Some results from the analysis of biological, sediment and stal. dating samples are not yet ready). The various articles are: Introduction (Ben Lyon), Underground Equipment (Mike Meredith), Expedition Logistics and Surface Equipment (Andy Eavis), Photography (Jerry Wooldridge), Surveying (Colin Boothroyd), Food (Dave Checkley), Medical Report (Jon Buchan), Caves of Bau (Steve Crabtree), The Geology of the Limestone of the Gunong Mulu National Park (Barry Webb), Hydrology (Hans Friederich), Present Rates of Erosion (Pete Smart and Henry Osmaston), Surface Sediments and Terraces (Jim Rose), Surface and Cave Geomorphology (Pete Smart), Cave Sediments (Pete Bull with Mark Noel), Cave Minerals (Martin Laverty) and Biospeleology (Phil Chapman).

Caving Fellow

Congratulations to Chris Howes who was recently awarded a Fellowship of the Royal Photographic Society on the basis of a portfolio of caving shots.

Peak Cavern Access

Access to Peak Cavern is granted during the winter months, when the tourist cave is closed, by the Duchy of Lancaster. Clubs wishing to visit Peak should contact *John Beck, Glebe Cottage, The Hillock, Eyam, Derbyshire.* Trips are organised every Sunday from October to March (flooding permitting).

The Duchy of Lancaster Estate Office require that clubs should be BCRA affiliated, or the trip should be organised by a BCRA member. Visitors must also be over 18 years of age. People have been turning up 'on spec', and towards the end of last season trips became unmanageable to the point where one had to queue for climbs and squeezes, and the streamway looked like a carnival. This must stop, and unbooked groups will be turned away. Book in advance unless you are engaged on a specific project (digging, surveying, diving, or acting as sherpa for the increasing number of diving projects).

The other problem has been caused by people parking by the bridge over the stream near the cave, or on the steep hill above; this causes local complaints. Visitors must park in one of the car parks or in the square, and cart their gear up to change in the cave entrance, having called at the TSG Headquarters to sign an indemnity chit and recruit a leader if required. Please stick to the booking system, and access will continue to run smoothly. Also no-one will get locked in or lost!

Pain in the neck

Eight Croyden Caving Club cavers were led to safety from Simpson's Pot, Kingsdale after spending 24 hours underground. The eight, two women and six men, entered Simpson's at about mid-day on Saturday, 2nd January in mild, wet conditions with snow on the fells and with more rain forecast. Torrential rain fell and they were cut off at the top of Slit Pot.

Rescue started at about seven in the evening and eventually, after repeated attempts in water that was lapping the top of the pitch inside Valley Entrance, one CRO member managed to ascertain that they were not in the Master Cave.

A party in Simpson's had forced their way through very wet passages and found the duck to be sumped. A team of divers got through and found the eight sitting it out above Slit Pot. They were then brought out of Valley Entrance, past an ITN camera team, at about mid-day Sunday. Rain had been falling for most of the time they had been underground.

Jack Pickup, chief controller of the Cave Rescue Organisation hit out at the stupidity of the cavers: "A lot of people put their own lives on the line to get the potholers out of a situation which they couldn't get out of themselves. Quite frankly, potholers like these are a pain in the neck. Most sensible cavers would not have risked going in".

LAST PAGE

Expedition Caving

A special seminar on expedition caving is being organised by Whernside Cave & Fell Centre on Saturday, March 13th.

Caving abroad is becoming an ever-increasing part of the speleological scene. For those wanting to join this trend the right information is vital – where to go; how to get permission; how to get information on foreign caves; equipment; transport; grants and sponsorship and insurance. If you want hard information on these and other matters, this is the time when a panel of leading exponents will be giving the answers. There will be a formal programme from 10 a.m. to 5 p.m., with an informal evening of slide talks on caving in many countries of the world.

For a detailed programme write to Ben Lyon at Whernside Manor, Dent, Sedbergh, Cumbria – or phone 05875 213.

cont. from p.14

accurate survey. The 1982 expedition should see Stellerweg taking its place as one of the most important systems in the area.

Thanks

. . . . to local cavers Karl Gaisberger and Gunter Graf, campsite owner Fritz Madlmaier and also to the University of Bristol and the Tratman Fund.

Pete Lancaster

References

1. Thorne N. Descent No. 49 p46
2. Cambridge Underground 1981

The volumes of Cambridge Underground from 1977 onward provide details of all our explorations on the Loser. Back issues are available at 70p each (includes p & p) from: CUCC, c/o Dr. J.C.D. Hickson, Pembroke College, Cambridge.
Full details and survey of this years expedition will appear in Cambridge Underground 1982 (to be published Spring '82) and in the next UBSS Proceedings.

LAST WORD

The following people have sent in articles/ letters/ photographs. Their contributions will be published at a later date:
Mike Boase, John Cordingley, David & Shirley St Pierre, Jim Wilcock, John Wilcock, Jane Wilson, Mary Wilson, Clive Westlake.

Juan Corrin 21.1.82.

DIARY

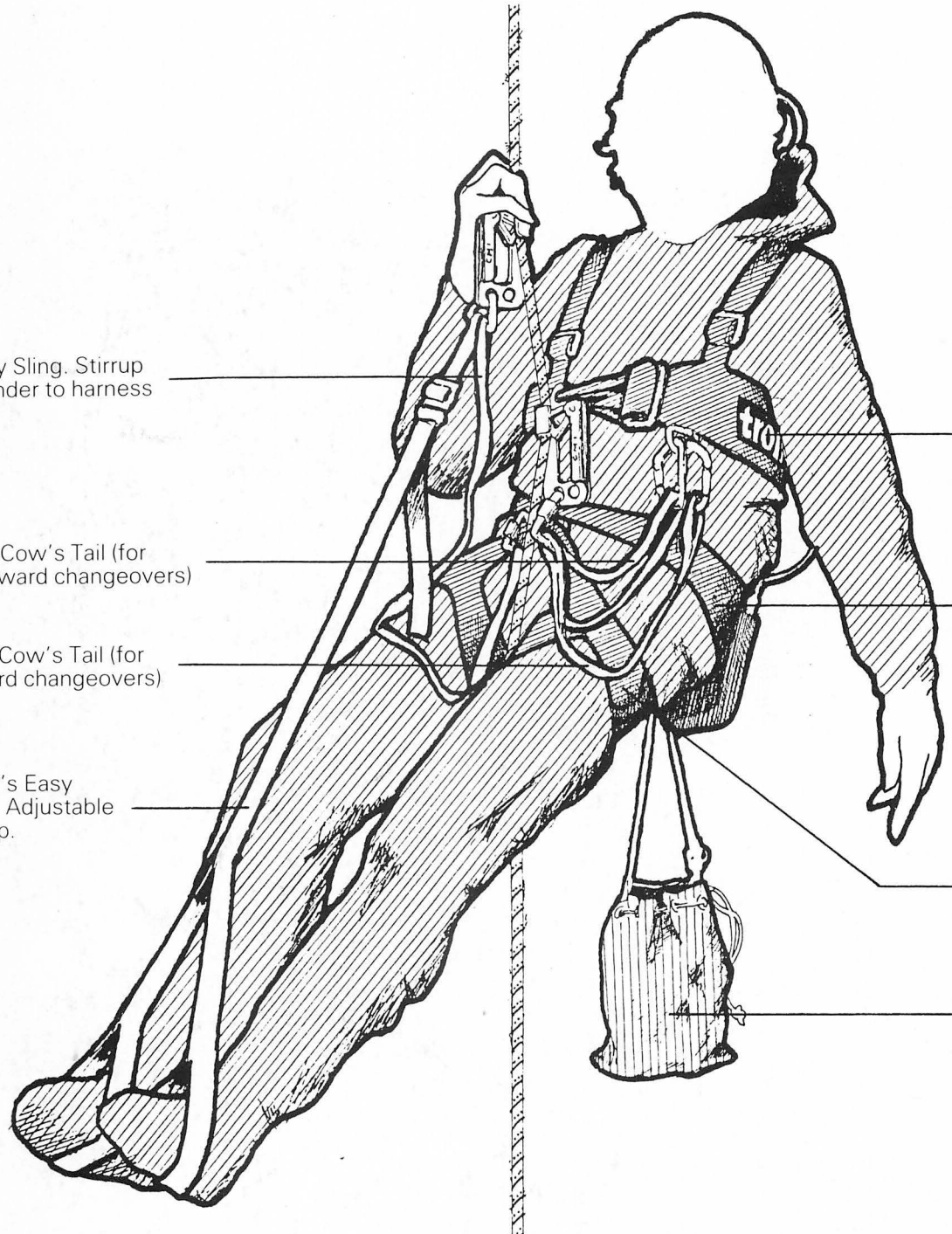
March 6th	**BCRA Spring Meeting.** **"Blue Holes of the Bahamas". Kings of Wessex School, Cheddar, from 2-6 p.m.** **Organiser: Rob Palmer.** *Details: see Association News.*
June 12/13th	**BCRA Summer Meeting and AGM.** **"British Caving Techniques".** **Whernside Cave and Fell Centre, Dent.** **Organiser: Dave Elliot.** *Details: see Association News.*
Sept. 11/12th	**BCRA National Caving Conference.** **University of Bristol.** **Organiser: Dr. Chris Wood.** **Lecture Secretary: Graham Proudlove.**
Nov. 27th	**BCRA Winter Meeting.** **"Derbyshire Hydrology".** **The Crown, Matlock, in the afternoon.** **Organiser: Jenny Potts.**

Secretaries of caving clubs and organisations are invited to send in details of their forthcoming events. This will assist in preventing clashes of meetings. Please send this information to me. — Ed.

troll

COMPLETE SIT STAND SRT HARNESS SYSTEM

Developed in France over many years, this method is very well proven, and is strongly recommended for U.K. and continental caving. The Troll harness system is manufactured to the highest standards and from the best materials. It is extremely comfortable, versatile and where necessary fully adjustable to suit all sizes of Caver. Utilizes readily available metal components.



Full details of this system, and our ropewalking harness system are available on request. These include retail prices, and a list of metal components required.

troll **safety equipment ltd**

Spring Mill, Upper Mill, Nr. Oldham, 0L3 6AA, England. Tel. (04577) 2120.