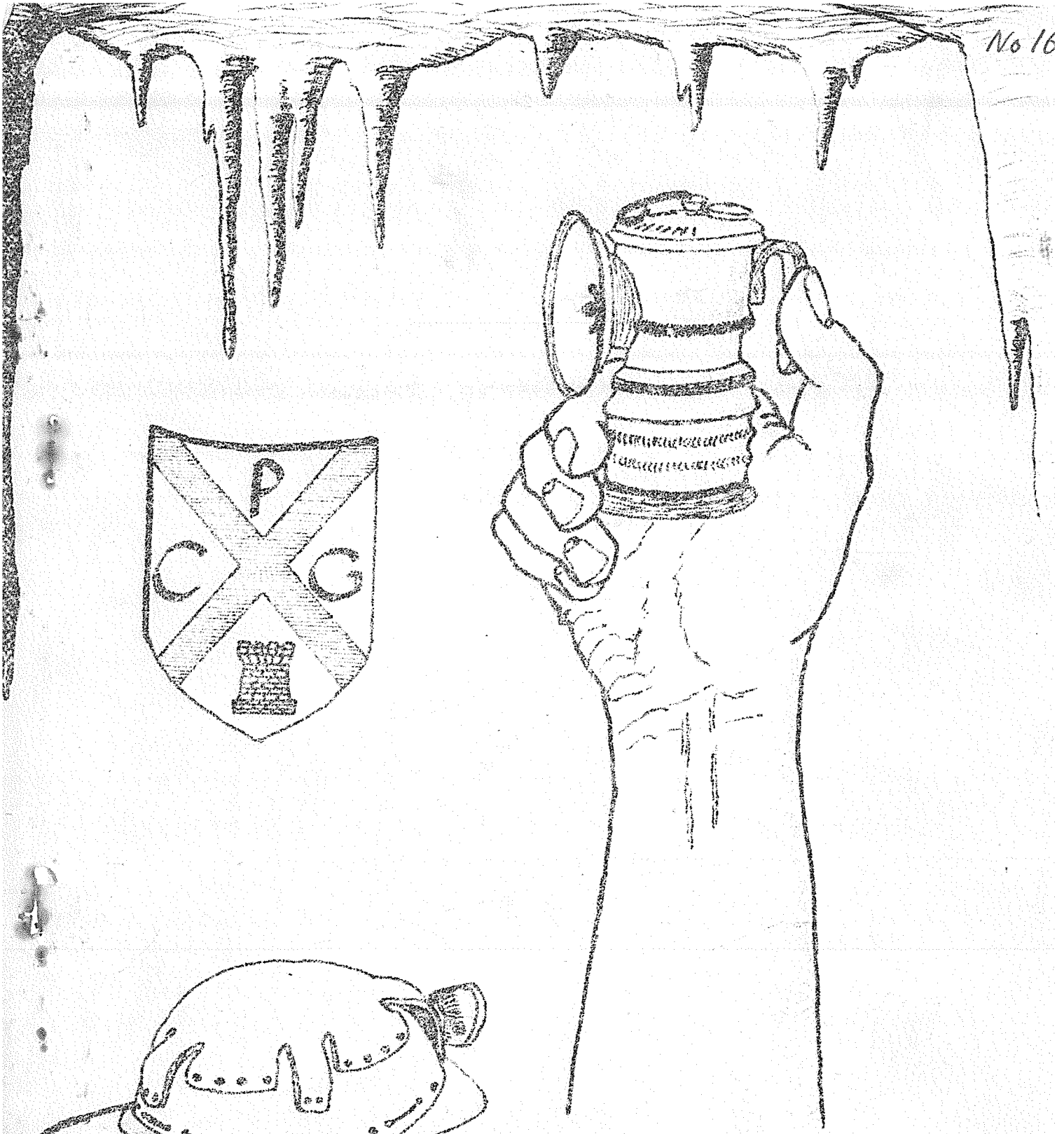
No 16



Newsletter.

PLYMOUTH CAVING GROUP.

Newsletter & Bulletin. Number Sixteen.

April 1965.

Two Years Old, and Now.....

When you receive this publication, the Plymouth Caving Group will be two years old. Many events affecting the club have occured, some pleasant, others not. Three major events are to affect the Group as from now.

The first concerns the formation of a Southern Council of Caving Clubs. We are represented on this body which has been set up to discuss matters of common interest and we hope that we will be able to support it in all its deliberations.

The second event, and in many ways the most important that has occured in the Devon caving world for many years, concerns the formation of a coordinated Devon Rescue Organisation supported by all seven caving groups in the county. No longer, as in the past, will the Plymouth Caving Group be called out to a rescue. Instead, members of two Plymouth Area Teams will assist, with other area teams.

As is so often typical of the West Country, we are the last to put our house in order, but this is no disgrace as we will be able to call upon the wealth of experience that has been accumulated by other C.R.O.s. Call-out proce dure, training programmes, team lists and general administration have still to be finalised, but I feel sure that the venture will be successful----- it is essential that it will be.

The last event is nearer home and concerns every member of the Group who lives within easy reach of the City. I refer to the Club Room, which will be renovated so that it is a fit and proper place to hold indoor meetings. I want to see this room ready for Group activities before October 1965. The work will only get done if every member gives time and energy to do his, or her , share.

IT'S UP TO YOU!!!!!!

Terry Marston,

Chairman of Plymouth
Caving Group.

Odds and .....

Membership Subscriptions.

The committee draw the attention of those who have still not settled this years subs. to a clause in the Constitution which states that their membership will be deemed cancelled if the Treasurer does not receive their money by the beginning of April.

Those persons who are guilty will have received the offical notification that their subs. are unpaid. This will be the last newsletter sent to those who have still not settled or who wish to resign from membership by not paying.

Rates.

i) Members under 15 years of age 5/-
ii) Members who are full-time students and aged between 15 & 18 years.....10/-
iii) All other members.....12/6d.

Money may be given or sent to either:-

Membership Secretary and Chairman.

Terry Marston.
3, Maple Grove,
Plympton.

Hon. Treasurer.

Bob Lake,
4, Chedworth St.,
Greenbank,
Plymouth.

.....

The Caves of Yealmpton, South Devon.

This Special Publication is now ready and will be sent out to members in the next few weeks. Members will not be charged for them but other persons and extra copies may be obtained from the Editor at 7/6d. each.

This is the biggest single publication which we have produced. It consists of 44 pages (30 of text) and 15 plans and surveys. It contains what is probably the most complete list of references to these caves that has been produced.

.....

Stop press.

Bob Jeffery and mates have added a few more feet to Torr Bridge Cave, near Yealmpton. No details as yet.

.....

Mendip.

Cave divers have successfully pushed Swildon's Hole to Sump 12, taking in on the way, Swildon's 1,2,3,4,5,6, 7,8,9,10.11,and 12. (Details in Mendip Caver No;12 in Group library.)

2

Meets.

Sunday 4th.April,1965.

Cattedown Caves, exploration and surveying.

Meet at Cattedown Roundabout at 10 am.

Leader. Peter Price.

Friday 9th. to Sunday 11th April.

Dolcoath Adit, further exploration.

Train leaves Plymouth at 6.58 pm for Camborne.

Cost, about 30/-.

Leader. Hugh Browning

This meet involves camping and if there are any queries about this or anyother aspect of the meet, contact Louis Fletcher, 88, Camden St., Greenbank, Plymouth.

Saturday 24th.April.

Clifford's Cave, Chudleigh.

129 Exeter Bus leaving Plymouth at 8am.

Fare, about 8/-.

Leader. Louis Fletcher.

Sunday 9th. May.

Radford Cave, near Plymouth.

Cost, less than 5/-.

Meet at Bus Station Viaduct at 10.45 am.

Leader. Terry Marston.

Saturday 22nd. May.

Virtuous Lady Mine, Buckland Monachorum.

8.40 am. bus for Monachorum. Cost about 4/-.

Leader. Jim Pullen.

In general, and particularly with mines, meets to new holes have been preceeded by a private trip, to ensure that a meet would not be a waste of time and money. If you fancy joining in with these trips, contact Louis, address above.

Devon Cave News - Clifford's Cave.

A dig by Exeter University Speleological Society at the upstream end of the Paradise Passage has added about 100 feet to the total length of the cave.

The dig commenced in the small chamber just upstream of the two low ducks, previously the end of the passage. In this chamber, the stream enters from a 'crack' in the middle of the right-hand wall, while a small trickle of water comes from a small tunnel on the left-hand side. This latter passage was made impassable by a mud bank on the right. E.U.S.S. enlarged this passage by digging in most uncomfortable positions and managed to penetrate into a passage about 4 ft. high and sloping at 60°.

This passage continued for 35 feet and is described as a bedding plane. It then turned sharp right and became much tighter, vertical and lined with spikes of rock. This passage has been pushed for about 60 ft. to a sump. They propose to call the passage Velvet Passage.

'The sump is only just active and has a lot of mud in it. Lowest point about 3 feet in, so probably about 6 ft. long.' They have had no success so far in passing the sump, which seems to fill fairly quickly, about 3 inches in 5 minutes. Chris Hogg considers it likely that the stream in the Paradise Passage Series is fed by a swallet in the woods at the top of the hill.

Incidently, Mike Bond has pointed out that there have been further roof falls in the Main Stream Passage and this system must be treated with EXTREME CAUTION.

Bunker's Hole, Dean Prior.

Exeter have also been busy in this cave west of Buckfastleigh, and after much digging in the stream, expect a break-through shortly.

.....

Other Regions.

Mendip.

A dive by the Independant Cave Diving Group in Stoke Lane Slocker has now enlarged the cave to Stoke Lane VII, via Stoke Lane V and VI. This adds about 1000 ft. possibly 1800 ft. to the length of the system. Sump 4 is described as 40 ft. long and awkward; sump 5 can be bypassed, but is itself impassable; sump 6 is 30 ft. long in a roomy passage except for a tight squeeze in the middle. Sump 7 is said to appear technically easy and there is every hope that Stoke Lane VIII lies beyond.

DEVON CAVE RESCUE ORGANISATION.

A meeting was held at Buckfastleigh on Saturday 13th. February 1965 to discuss the formation of a Devon Cave Rescue Organisation. The following caving bodies were represented
Plymouth Caving Group. Rodney Bray & Terry Marston.
Heles School, Exeter. J.D.Keat, R.Lancaster, J.M.Wyatt.
Seale Hayne Agricultural College Pioneer Club. A.Graham, C.Thomas
Devon Spelaeological Society. M.Bond, G.Lang, W.Joint.
Junior Leaders' Regiment, RAC. Capt. J.Bird, Sgt. Seabrook.
Exeter University Spelaeological Society. C.Hogg & M.Butterley,
who were the sponsers of the meeting.

The following constitution was created from one proposed by the sponsers after much discussion. All representitives were in favour of the formation of the organisation, although PCG. were a little doubtful as to the finacial backing of an independent body.

It was realized that the presence of the Outward Bound from Holne was desirable, and they were to be invited to attend the next meeting.

Constitution.

1) The organisation shall be known as the Devon Cave Rescue Organisation.
2) Its funds and equipment shall be by contribution.
3) It shall be a rescue organisation independent of all caving bodies.
4) There shall be a committee consisting of;
   i) A Co-ordinating Warden.
   ii) A Chairman.
   iii) A Secretary.
   iv) A Treasurer.
   v) Group Rescue Wardens.
5) A group shall consist of a suitable number of cavers with a warden. The duties of the warden and the group shall be laid down by the committee.
6) The Committee shall regulate its own business and be responsible for the appointment of officers should posts fall fall vacant or new officers be required.
7) In the event of dissolution of the organisation, all funds, equipment, etc., shall be distributed at the discretion of the dissolution meeting.
8) The Committee shall call a cave rescue conference every twelve calender months.

.....

The minutes of the meeting may be borrowed on application to the :-

Cave Rescue Warden, (PCG),
51, Dale Gdns, Mutley, Plymouth.

Second D.C.R.O. Meeting on Sat .6th. March.

Chairman - George Lang.

Bodies represented as of first meeting, plus:-

Topsham Sailing Club,
Outward Bound School, Holne.

The reprentatives re-affirmed their support for the D.C.R.O. as defined by the first meeting.

The meeting firstly discussed resources. Plymouth would donate their specially designed stretcher as well as other equipment on a permanent loan basis. This equipment would be stored at Plyouth and used by the Plymouth teams. The D.S.S. would probably donate its carry sheet and hauling gear under a similar arrangement.

A Committee was then set up. Terry Marston was proposed as Co-ordinating Warden but he was unable to accept due to work commitments. Colonel Fraser of the Outward Bound was to be invited to take the post, (he has accepted this invitation).

Capt. Bird accepted the post of Secretary.

Bill Tolfree has accepted the post of Treasurer.

Teams.

Two Plymouth teams under Phil Nottle and Rodney Bray.
One Torbay team under Les Neale.
An Exeter team, inc. Heles School and others, under Bill Watkins.
An Exeter University team under Mick Butterley.
Seale Hayne would have Tony Graham as warden.
Topsham Sailing Club, who felt that they could only form a reserve team to support others, are under R.Gardner.
An Army team under Sgt. Seabrook.
The Outward Bound team under Mr. Cornish.

The first committee meeting will be on the 28th. March at 2pm. at Crest Hill, Buckfastleigh.

.....

Access to minutes as for first meeting, see previous page.

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If members have any comments, good or bad, about the D.C.R.O. as set out above, will they please let me know.

Rodney Bray,
PCG. Warden.

DOLCOATH ONCE AGAIN.....

The second PCG. trip to the Dolcoath Adit, 19/20/21 Feb.1965.

by Hugh Browning.

Party.
Louis Fletcher, Bob Lake, Bob Jeffery, Pat Evans, Val. Yates, Rod Bray, Denny Horrell, Hugh Browning Phil Nottle and Colin Smith, a visitor.

.....

It was arranged that Lou, Bob Mark 1 and Bob Mark 2, and Denny should travel to Camborne on the Friday night, taking most of the tackle, and set up camp. The rest of us were to meet in Camborne at 7.15 am. on Saturday morning. Apart from my being late, about 3 hours, this arrangement worked quite well. I met the party near the adit portal after they had changed and split into two groups. Bob Lake, Pat, Val, Denny and Phil were to have a look at some shafts that might link with the adit, while the rest of us pushed the adit.

As we entered the adit we noticed that the water level was slightly lower than on the previous trip, a good thing! As we reached the first shaft, about 700 feet in, Rod became ill and decided to turn back. In this shaft there are fixed ladders, so we climbed up to see if this offered a quick way out for Rod. Unfortunately, there is a stout grill over the top and the ladders were not in too safe a condition, so Rod went back along the adit accompanied by Bob. Lou and I pushed on to the turning point of the last trip, about ¾ mile from the portal, and here we waited for Bob to return. To while away the time and to keep warm, we wandered along a side passage, which ends in a heap of rubble at the bottom of an inclined shaft. Beneath the rubble we could hear running water and this made us think that perhaps we were standing over a continuation of the shaft , with only a pile of deads supporting us - we moved - quickly!

After about ½ hour, Bob had still not arrived so we decided to press on. The adit continued in much the same way as before, only not quite so low. After a while the adit suddenly opened into a high, wide level running nearly at right-angles to the adit itself. We followed the level to the left for a short distance before coming to its end at the bottom of a shaft. We then turned to the right and followed the level for several hundred feet. Throughout its length, the level is about 7 feet high and 6 feet wide, with several smaller levels running off to the right-hand side. At the end of this level, which may be part of South Roskear, the adit continues from the left-hand side. In this section of the adit there are many fine azurite formations on the walls. This azurite seems to ooze out of the rock like blue candle grease, well worth a photograph! We passed through two short sections of brick archway and one of concrete, built presumably to hold up the roof, to reach yet another shaft.

This shaft also had fixed ladders and was covered by a grill. We only pushed on for a short distance beyond this shaft, about 300 feet, before we turned back and we had still not reached the end.

The journey out was uneventful and we made good time. In the last section, just before the portal, a leaf was noticed stuck on mud in the roof, confirming our previous impression that the adit flooded to the roof under certain conditions, a most unpleasant situation.

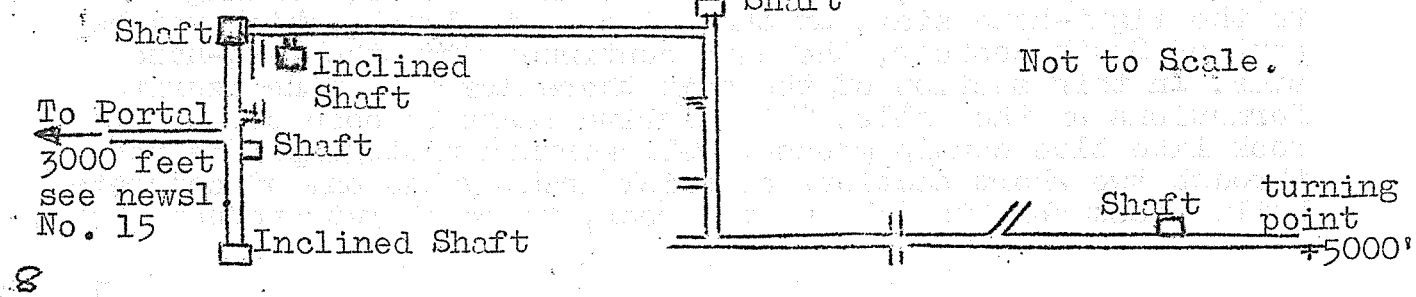
We surfaced having been underground for five hours and added another 2000 feet, making nearly a mile of passage in totum, and leaving at least ½ mile to go, perhaps more. Waiting for us at the portal were the two Bobs, and Denny, the rest have left for Plymouth. It seems that while we were in comparative warmth (??????? Ed.) underground, there had been sleet and snow outside. Not all cavers are mad!

Back in camp, Bob Lake and Denny told us about the inclined shaft they had investigated. They had descended about 250 feet using a 300 foot handline only to find the shaft choked with 50 years' accumulated rubbish.

Early on Sunday morning the shaft about 20 feet from the tents was laddered in readiness for the day's activities. At 8.15 Colin arrived from Chagford and by 10 o'clock we had finished breakfast. The first thing we had noticed about the shaft, was the rotten stink arising from it. Lou and I were the first down the ladders and we soon located the source of the smell, two dead dogs and what could have been a sheep at some time or other. This shaft links up with a tunnel, which may have been the adit from Emily Henrietta, (Dines p.287). Water flowed from a low passage on one side and out through a similar passage on the other.

The weekend was nearly over and the packing nearly complete, when Louis mentioned something about eating raw eggs, and was immediately challanged, eat three eggs for a pint, providing that he survived the journey to Plymouth. The second egg was bad....he lost.....no pint. Ah well, these little things are sent to try us.

This trip was not the success that we had hoped, but we still enjoyed ourselves and eager to push that Adit still further, we might even reach the end next time.



Local Newspaper Records.

This is the third part of an assessment of local records:

Parti) Books on Caves and caving held by City Library appeared in Newsletter 14.

Part ii) A similar list for Mines and Mining, appeared in newsletter 15.

This part consists of a list of articles on caves and caving which have appeared in the three local papers over recent years.

a) Western Morning News. (WMN)
b) Western Evening Herald (WEH) Dailys.
c) Independent. (IDT) Sunday..

I wish to thank the Editor of the Western Morning News for making the relevant files available to the Group.

Buckfastleigh discovery of another cavern. (Dart River Cave)
WEH 4 Sept. 195
Young adventurers lost in Devon Cave. (Bakers Pit Cave)
WMN 7 Jan 1954.
Cave at Yealmpton reveals remains of prehistoric Hippopotamus.
WMN 8 March 1955.
Scouts find new cave. (Hawks Hole)
WMN 6 Feb 1958.
Ash Hole. WMN 15 July 1958.
Mitnor Cave discovery. WMN 30 April 1959.
Cave discovery. (Happaway Cave).
WMN 8 May 1959.
Deep below Buckfastleigh Church lies a labyrinth of caves.
WMN 1 Aug 1960
The Lost Caverns of Stonehouse.
WMN 13 Aug 1960
12 Month search for caverns. (Stonehouse)
WMN 19 Aug 1960.
Have Stonehouse Caves been found at last.
WMN 9 Nov 1960.
Drilling attempt to uncover cavern entrance. (Stonehouse).
WMN 10 Nov 1960.
Drilling starts in search for caves. (Stonehouse)
WMN 11 Nov 1960.
18th. Century potholer tells of the Stonehouse Caves.
WMN 12 Nov 1960.
New Devon search for Ice Age Remains.(Yealmpton)
WMN 27 March 1961.
Yealmpton Cave search. WMN 13 April 1961.
Devon Cave yields bones. .. 14 .. ..
Boys lost in cave. (Bakers) WMN 13 May 1961.
More bones at Yealmpton. WMN 2 Sept.1961.
Land above Buck.caves sold. WMN 21 Oct 1961.

Quarry Appeal to be amended.(Bulleycleaves)
WMN 10 Nov 1961.
Cave Research Centre for Devon.
WMN 5 April 1962.
Exploring caves. WMN 6 April 1962.
Boys rescued from caves. (Prid).
WMN 15 May 1962.
Urgent need. (Pengelly)
WMN 12 July 1962.
Cave centre taking shape.
WMN 23 Aug. 1962.
Valuable Caves.(Pengelly)
WMN 24 Aug 1962.
Plymouth to have caving club?
WMN & WEH 12 Jan 1963.
Plymouth Caverns. WMN 12 July 1963.
Students explore Portland caves.
WMN 24 June 1963.
Caving for 6d. WMN 13 Oct.1963.
Cave find at Yealmpton.
WEH 21 Oct 1963
Rashbrook Rescue. WMN, WEH & IDT 27 & 28 Oct 1963.
Buckingham Rescue WMN & WEH 5 & 6 Nov 1963.
The dangers of caving.
WMN 6 Nov 1963.
Cave rescue thanks. WMN 15 Nov.1963.
Move to restrict use of caves.
WMN 26 Nov 1963.
What it feels like in the Buckfastleigh Caves. (Prid.)
IDT 8 Dec 1963.
Safety measures at caves.
WMN 17 Dec 1963.
Rescue experinent in Radford Cave.
WMN & WEH 23 Dec 1963.
Bone cave found at Cattedown. WMN
Reindeer skeleton in Cattedown Cave. WEH 28 Feb. 1964.
Cave discoveries. WMN 29 Feb 1964.
Cavers attend 3 day Whitsun course. (Pengelly)
WMN 19 May 1964.
Tiger in Devon Cave. (Kents Cavern)
WMN 11 June 1964.
Stalagmite vanishes from cave. (Totem pole in Prid.)
WEN 18 July 1964.
Devon may have caves never seen by man.
WMN Dec,1964.

.....

This list. of course, only covers caving topics of local interest, references to national and other non-local events have been omitted.

Bob Jeffery,
Hon. Recorder.

How not to explore mines.

On Sunday 21st February this year, a Mr. John Prust who lodges in the YMCA in Plymouth, thoughtlessly dropped down a shaft in a mine at Grenofen.

> 'A boy of 19 clung for an hour to a rope yesterday to keep his head above water at the botton of a mine-shaft.....
>
> John ...was exploring the nine... with two friends. After their paper torch went out he fell down the shaft.....'

No wonder that in circumstances such as these, people who wish to explore mines safely and sensibly are refused the necessary permission by an anxious landlord.

> ' Part of the abandoned workings of the Walkham and Poldice mine, the shaft is 318 feet deep from ground level, some 280 feet of which are flooded; the whole is inclined at an underlie of 20 degrees.
>
> The 'cave' into which Mr.Prust ventured is the former adit level, which intersects the shaft at a depth of 18 feet below surface, some 120 feet from the portal.
>
> The collar of the shaft is firmly covered and surrounded by a wall, but access to the gapingadit is completely unrestricted.
>
> Had Mr.Prust negotiated the shaft successfully he would have entered a region of rotting timbering and roof falls which become so numerous that the tunnel is finally completely impassable.
>
> Owen A. Baker '
>
> (Western Morning News
> letters to Editor
> 23rd February 1965.)

What more is there to say, irresponsible actions as demostrated by Mr.Prust give everymine 're-explorer' a bad name. We can only hope that people follow Owen Baker's plea that they should not enter old mines 'without a prior knowledge of technique and equipment'. Prime item among the equipment is good lighting not, paper torches.

The Basic Mining Geology of the Two Counties.

Part i) The Background. by Rodney Bray.

Introduction.

For any person who is exploring or studying the mines of Devon and Cornwall, it is not long before he, or indeed she, realizes that straight lines predominate, especially those trending East/West. This is no mere coincidence but is a feature inherent in the geology of the region. With some knowledge of the basic rules, both local and universal, the caver, the new explorer, will perhaps see logic emerging from chaos and reasoning developing from guesswork.

The General Geology.

The greater part of the two counties is built up of the rocks known locally as KILLAS. It is this area in which we are principally interested in these articles. The other areas are those with which we are well acquainted; the limestones of Plymouth and Torquay and the Red Sandstones of Dawlish and Teignmouth. Apart from the killas region, we are also interested in the granite spine of the South West.

The killas, mainly slaty shales and mudstones with subordinate bands of grit and conglomerate, are generally of Devonian Age, (310 to 280 million years old approx.) although a region between Launceston and Barnstaple, - the Culm Measures - are Carboniferous (280 to 220 million years ago). Distributed through the two systems are contemporaneous beds of lava and tuff, and pene-contemporaneous igneous features - sills, dykes and bosses - of basic greenstone. Around Torquay, Exeter and in the Quantocks, sandy and conglomeratic strata of Permian and Triassic age (220 to 140 million years) overlie these Palaeozoic killas.

Emplacement of Granite.

Earth movements of several different orogenies produced folding, cleavage and jointing in the Palaeozoic rocks; lines of weakness with a predominent E.N.E. trend. The injection of the granite bosses followed, probably in Triassic times. These bosses, the chief of which are the Isles of Scilly in the far west, Lands' End, Carnmenellis, St. Austell Moor, Bodmin Moor and Dartmoor in the East, with Lundy as a far flung inlier, stretch through the peninsula like a backbone for 125 miles. Associated with these centres of igneous activity are the aureoles of thermally metamorphosed killas.

Sequence of Mineralisation.

As the granite crust consolidated, fissures opened along the E.N.E. lines of weakness, which were then filled with ELVAN, a local name for a quartz porphyry.

At some later date, emanations - usually solutions of the metallic ore in free silica - from the magma, resulted in the deposition of lode minerals, especially the ores of tin and copper, in the E.N.E. fissures. At the same time a little deposition occured in E.S.E. fissures, forming what are known as CAUNTER lodes. These two series of lodes, E.N.E. and E.S.E. are referred to, for simplicity, as the East/West lodes.

The deposition of the ores of lead, zinc and iron, principally in the North/South fissures - known as CROSSCOURSES - and as deposits at the edges of the East/West lodes, represented the final stage of mineralisation.

A further 100 million years or so of erosion has laid bear the granite bosses and the mineral bearing ground of the aureole around them.

Distribution of Minerals

The minerals thus deposited were arranged in depth in definite zones within the lode. These positions were persumably dictated by the pressures and temperatures existing during the period when the mineral liquors were liberated from the magma. Thus, the least volatile, or soluble, minerals, i.e. those which would crystalize out at higher temperatures and pressures than the others, would occupy the deeper zones of the fissures, nearer the magma. The further we moved from the magma, the more volatile were the minerals, both metallic and gangue that had been deposited. The order of zoning was, indeed is, ... (after Dewey)

Gangue Mineral	Mineral Zones	Approx. Temp of formation °C	Depth Range.
QUARTZ, Fluorspar, Tourmaline, Arsenic, Barytes, Tungstate, Sulphides, Calcite	Carbonates of Iron, Manganese etc. Sulphides of Antimony	Up to 150	
	Sulphides of lead and silver sometimes carbonates when near surface. In depth these give way to zinc & lead then to zinc & copper sulphides.	400	1500 ft.
	Copper Sulphides mixed with tin and tungaten at base of zone.		2500 ft.
	Tin oxide with wolfram in upper part.	550 to 575	2500 ft.

Of course, the vertical depth range of the different zones varies from place to place, Similarly, there is considerable overlapping of adjacent zones, in the case of the lead zone and the zinc zone (the latter is the deeper,) especially, which are telescoped so as to almost coincide. The gangue minerals are similarly zoned, although here there is considerable overlapping and superimposing. For example, quartz is uniformally distributed throughout the lode and was deposited at several different stages, whereas tourmaline is largely restricted to the deeper portions of the tin zone, while chlorite occurs in the remainder of this zone and on into the overlying copper zone. 'Fine-grained masses and felted aggregates of these last two minerals in lodes are known to the Cornish miner as PEACH, blue and green respectively.' Fluorspar is present over a wide range and also occurs as filling in younger fractures that have disturbed the initial lode mineral. Although calcite is shown in the table as extending into the upper tin zone, it is most usually confined, with baryte and other carbonates, to the lead-zinc and iron zones.

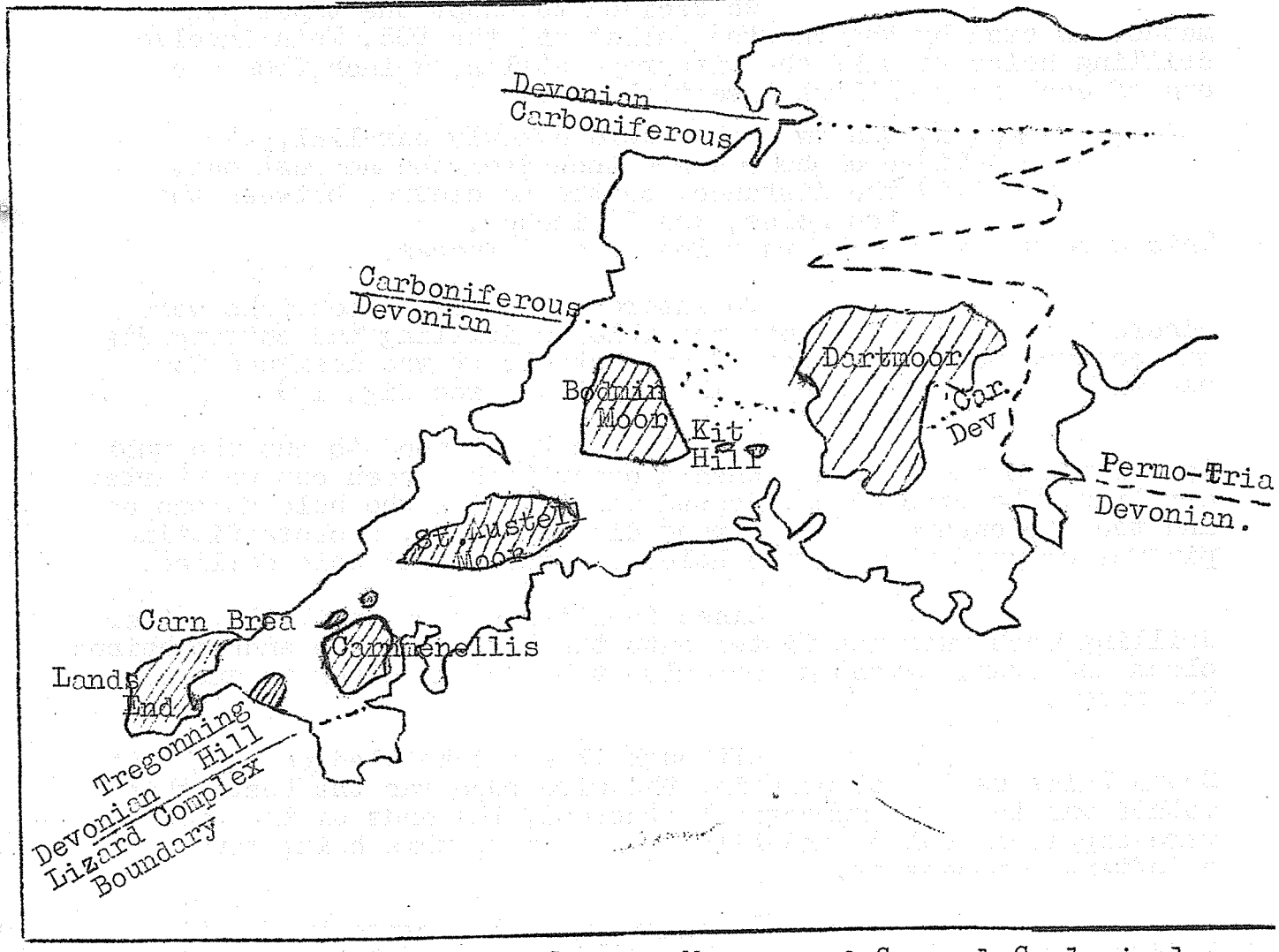
The above statement of events is that generally accepted as being the most probable theory and has been confirmed, not only in the two counties, but throughout the mining regions of the world. The arrangement of the minerals in their respective zones is also well established, but the relationship between the ore bodies and the granite masses is not so straight forward as is sometimes assumed, in fact although the mists are clearing and the theory of emanative centres is now largely accepted, there are still many unexplained problems. The Theory of EMANATIVE CENTRES is fairly straight forward, but there is no space here to discuss it as fully as is really necessary. Briefly it states that three conditions control the deposition of ore bodies:-

i) The country rock must be suitably fissured,
ii) The rock must have been at the right temperature to allow the mineral to crystalize out,
iii) The fissures must have been connected to the source of the mineral-bearing solutions.

Where this occured, and not necessarily obviously close to granite, there was an overwhelming possiblity that lodes would be deposited. Such areas as these are the emanative centres. Since the tin zone is the deepest and thus nearest the source of the mineral solutions, the positions of such centres is betrayed by the discovery of the tin zone. (Here it must be understood that since the upper mineral zones spread further than those lower in the lode, from the emanative centre, the lower zones do not necessarily underlie the higher ones, as might be suggested by the previous table, i.e. tin zone is not always present below copper zone.) Hence, future exploitation of tin must occur near emanative centres, and will not result in the haphazard opening of abandoned mines. This means that if new centres are to be discovered, drilling rigs must be used to replace the 'wild-catting' of former days. This is now occuring in the far west of

Cornwall, where several large international firms are prospecting. The drilling rig is a recent development, since before its advent the only clue to emanative centres were the records of previous mining, it is a very welcome development. In the 'old' days, to find an emanative centre was just shere luck and involved the driving of expensive adits, crosscuts and shafts.

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Map shows Principal Granite Masses and General Geological Boundaries.

Part ii), the Features, will appear in the next bulletin.

Ladders.

Since the Plymouth Caving Group was formed, the committee has been very conscious of the lack of abundant tackle. Items like rope could be, and indeed were, bought as soon as the finances, in the form of grants, improved. Ladders however, were a different proposition, for although the expense was not greater than for ropes, we had to make them ourselves and for a club such as our's , it took time.

We decided to adopt the taper pin method as used by the Shepton Mallet and the DSS. This involved drilling holes to take the wire rope styles, ⅜ inch from each end of each rung. It was essential that:

i) the two holes were exactly parallel,
ii) each hole was ⅜ inch from the nearest end,
and iii) the distance, centre to centre, between the two holes, was 5¼ inches.

This gave us an overall rung length of 6 inches.

To ensure that these essentials were adhered to a closely as was possible, a drilling and cutting jig was constructed from a bar of mild steel. It was designed for use with a large workshop pillar drill. (see fig. i)

The jig was first used to cut the tube into rungs 6 inches long. When a quantity had been cut we started drilling. The proceedure adopted was to drill the hole at one end and then to ensure that the rung did not twist, a close fitting pin was dropped through the holes and the second hole drilled.

Since facilities were available, after drilling each rung was fitted onto the lathe and the ends machined clean and even. Advantage was also taken of an offer to anodise the rungs.

Although it was acknowledged that the South Wales method of pointing the wire rope was the best, this method was thought impractical. Instead, the ends of the wire were dipped in solder and filed to a point, this being repeated as often as necessary.

To ensure that the rungs in the final ladder were evenly placed, a ladder jig was constructed as in fig. ii . The rungs were treaded on the wire and fixed in the jig. To help eliminate any tendency for curling in the ladder, the taper pins on adjacent rungs were placed on opposite sides of the wire.(fig.iii) The pins were fixed, not by hammering, but by using a sash cramp to push them in place. Further more to eliminate twist in the final ladder and any inaccuracy in the ladder jig (i.e. the rungs might not be absolutely parallel) as each section was finished it was turned over once before any more rungs were fixed. In an effort to strengthen the fixture and to minimise internal corrosion and corrasion, the ends of the rungs were filled with 'Araldite', a high stress epoxy resin adhesive.

Initially, each taper pin was cut and filed by hand, but with a production rate of only about ten per manhour this was ridiculously slow. Use of a flat bed grinder was acquired and production shot up to 100 in one hour, with one man grinding as the other cut. This is the only practical meth'd we found of mass production, and mass production is essential in this job.

To join each ladder to its neighbour, the standard method of C links was adopted. Each link was on a loop spliced by the standard Talurit method.

Specifications and dimensions.

a) The ladder.

Overall length. i) 30 feet ii) 15 feet

Rung pitch 10 inches, centre to centre.

Effective rung length 5 $\frac{3}{32}$ inches.

Overall rung length 6 inches.

b) The ladder wire rope.

Size 20 cwt. approx. $^{5}/_{32}$ inch dia.

Construction. 7x19 (12/6/1) Lay W93.

Quality. 12DG

Weight. 4½ lbs per 100 ft.

This is Improved Plough Steel Wire Aircraft Cord.

c) The ladder rungs.

Aluminium alloy tubing. Alloy HT 30WP

Outside diameter. ½ inch.

Wall thickness of tube. 16s.w.g. approx. $^{1}/_{16}$ inch.

Weight. 0.106 lbs per ft. run.

d) The belay wire.

Similar to ladder wire, except..

Size. 35 cwt. approx. $^{13}/_{64}$ inch diameter.

Lay. W952. Weight. 7 lbs per 100 ft.

e) Taper pins.

Brass rod, $^{7}/_{32}$ inch diameter, although $\frac{1}{4}$ inch would probably have been better.

Overall length. $1\frac{1}{4}$ inches.
Tapered length. $\frac{1}{2}$ inch.

Cost.

For 30 feet.of ladder.

		£		
Rung tubing	- 18 feet -	£1	2	5d.
Taper pins	- 7½ feet -		4	8d.
Wire rope	- 61 feet -	1	5	8d.
Splices	- 4 No. -		8	0d.
Thimbles	- 4 No. -		1	4d.
C links	- 4 No. -			8d.
Araldite	- ½ tube -		3	0d.
		3	5	9d.

Belays.

Talurite splices -	2/- each
35 cwt. wire rope	4/4½d. for 10 feet.
C links	2d. each
Thimbles	4d. each

Firms.

Tubing.	Aston-Stedall Aluminium Warehouses Ltd., Barton Manor, St. Philips, Bristol
Wire & Thimbles	Excelsior Ropes Ltd., Excelsior Works, Western Avenue, Cardiff.
Brass Rod	Senmore & Co. (Metals & Tools) Ltd., 35, St. Johns Road, Isleworth, Middx.
Splices & Chain	C.R.Cload, Ship Chandler, 13, The Barbican Plymouth

Care and Maintenance.

All ladders and belays should be washed and dried after use and about once a month dipped in a lanoline in white spirit solution, (1 lb in a gallon).

The ladders should be packed as loosely as possible, i.e. a large roll is better than a small one. This tends to decrease the likelyhood of metal fatigue at the rung fixtures.

There is a fairly heavy demand on these ladders and members cannot expect to borrow the ladders at 5 minutes notice. It will be a case of first come, first served.

With the increased interest in old mines, 90 feet of ladder is not going to go far. Since several members have their beady eyes on shafts exceeding 150 feet, the sooner we build more ladder the better, and since we have got the technique, it should not be difficult.

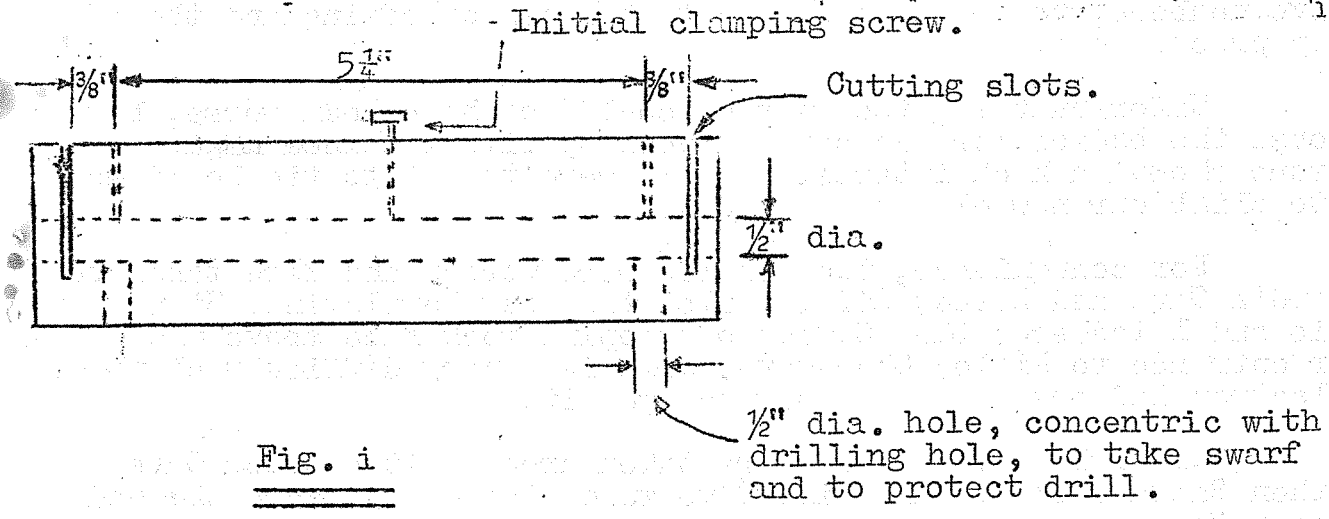


Fig. i

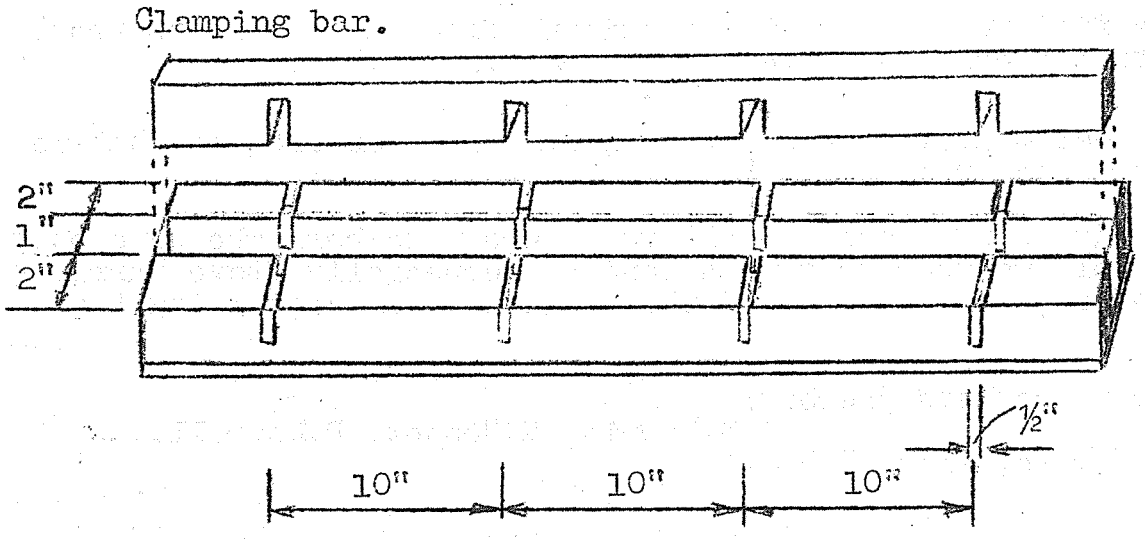


Fig.ii

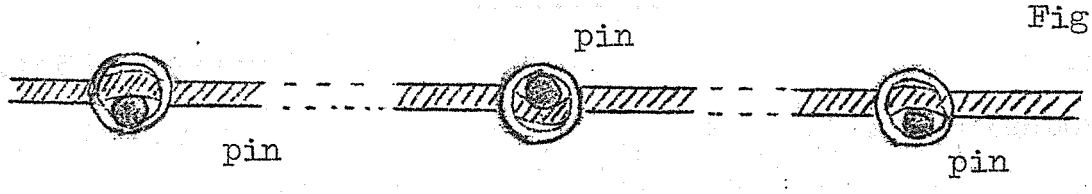


Fig.iii

Louis Fletcher,
Tackle & Meet Secretary.

Meet Reports.

'Introduction to Caving' Meet for School Leavers.

Yealmpton.

Leader. Terry Marston.

15 persons attended the meet along with a number of prospective members, to learn the basic techniques of caving and the safety precautions.

Unfortunately, the weather could not have been worse, but although the bodies were dampened, their spirits remained high. Everyone showed a keen interest and all were taught to tie bowlines and to climb our new electron ladders.

For convenience, two parties were formed and were taken to Bastard's Cave and Kitley Rift. Whilst they were exploring, Steve Harris and I laddered the 60 feet of sloping rock face above the lower entrance to Kitley Show Cave. This is a very difficult climb on electron ladders but everybody managed it.

After lunch, parties were taken around Kitley Show Cave and then Bastard's Cave and Rift Cave were visited by those who had not seen them.

We finished the day by practicing free ladder climbs from the trees strategically situated by the old lime kilns.

I feel that this was a very worthwhile venture and that we should do more such meets as this.

My grateful thanks to all those Group members who came out in such terrible weather to give a hand and especially Steve Harris and Roger Hooper, who did much of the paper work of organising the meet.

Group members present;
S.Harris, R.Hooper, D.Horrell, L.Fletcher, R.Lake, Miss. P.Harris.

Terry Marston.

.....

Moor Walk. Saturday, 23rd. Jan.

Leader. Rodney Bray.

Party.

Denny Horrell, Louis Fletcher, Bob Lake and Phil Nottle.

The party left Dousland about 9.30 and headed along the road