

Mendip Caving Group
Nordrach Cottage
Charterhouse-on-Mendip
Blagdon
Bristol BS40 7XW
LIBRARY COPY

THIS ITEM CAN BE BORROWED
FOR A SHORT TIME

JOURN 7

Journal 1982

Mendip Caving Group

Mendip Caving Group

JOURNAL NO 7 DECEMBER 1982

Contents

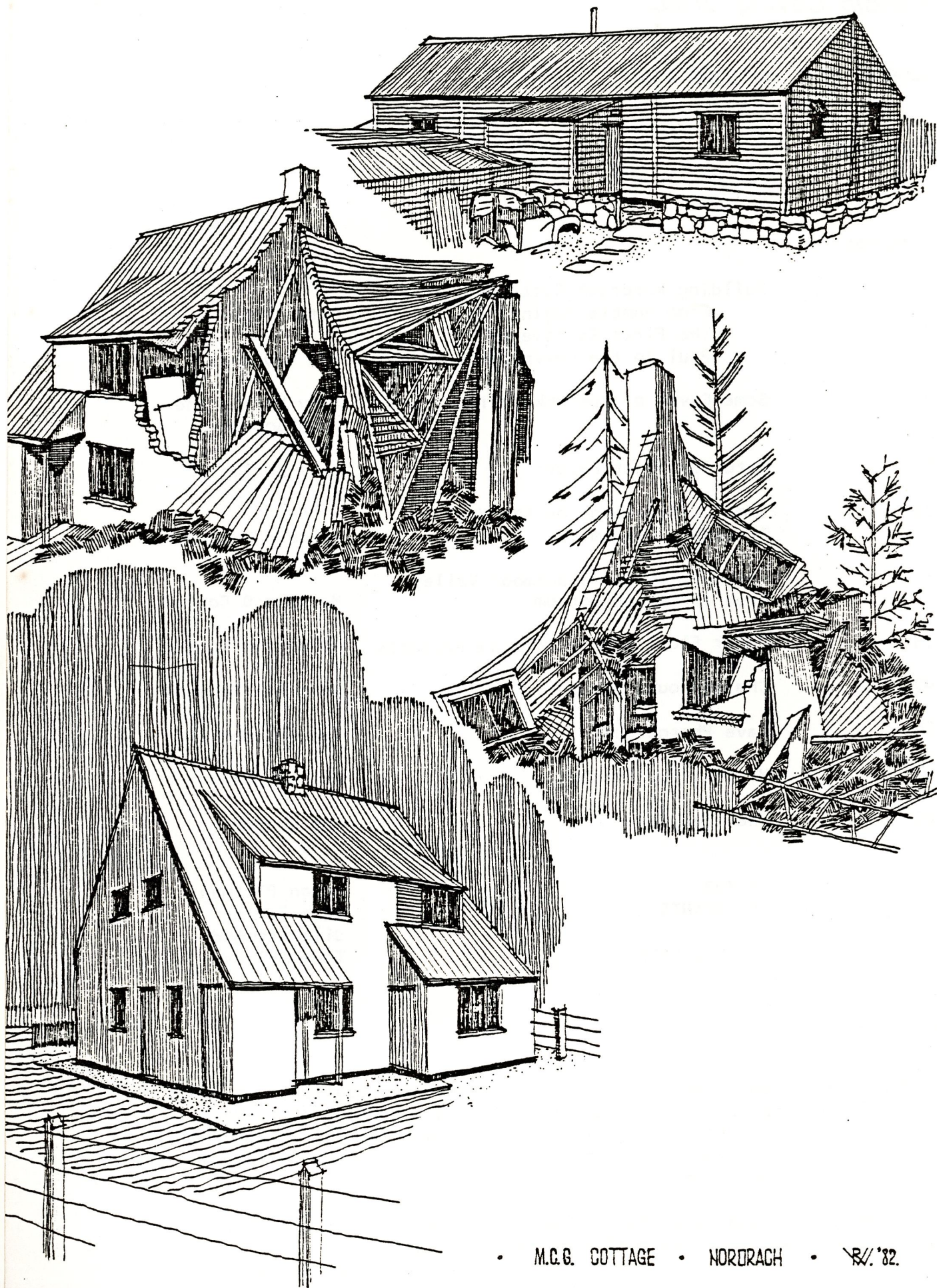
| Page nos | | |
|----------|---|---------------------------------|
| 1 | Building Nordrach Cottage: From Humble Beginnings | Peter Mathews |
| 3 | The First Epistle of Paul to the Corinthians | Ron Saunders |
| 9 | Some Caves of Pembrokeshire | Tony Knibbs and Joan Goddard |
| 29 | Saturday Night Fever | Inky Scribbler |
| 33 | Some Observations on the West Kingsdale System | Malcolm O Cotter |
| 37 | Progress in the Blackmoor Valley Area of Velvet Bottom | Malcolm O Cotter |
| 39 | Upper Flood Swallet Future Projects | Malcolm O Cotter |
| 40 | Charterhouse Rakes | Jonathan Roberts |
| 54 | Cave Photography | Ian McKechnie |
| 57 | Hitches for Pitches | Arthur Spain |
| 65 | The Lone Caver | Bob Speleo |
| | EDITOR | Bryan Pittman |
| | ASSISTANTS | Kate Taylor Jill Attwood |
| | COVER DESIGN | Tony Knibbs |

Forward

It has been a long time since our last Journal was published in 1976, much of which has been spent cottage building and rebuilding. We have been in our new cottage for over a year now, and the MCG is turning its attention more and more to caving which is reflected in the contents of this, our 1982 Journal.

Thankyou to all who have contributed, and especially to Kate Taylor and Jill Attwood who spent so much time typing it all.

Bryan Pittman.



• M.C.G. COTTAGE • NORDRACH • R.'82.

From Humble Beginings

By Peter Mathews

Rolling back from a cold muddy trip down one of the popular digs on a cold winter evening, peeling off wet suits and a hot shower later - it is difficult to believe how the cottage ever came into being

Once upon a time before wet suits were invented, 1965 it were, and the finishing touches were just being made to the old cottage. A group of very wet and extremely cold caving types sat huddled around the fire talking and dreaming about the next cottage - hot showers, central heating. From such ideals the Land Purchase Fund came into being. I don't know how many years it took to pass £100, but the prospects of our present headquarters did not seem remotely possible.

During the early '70 s the search for a site to build a permanent base was the then popular excuse for getting out of a caving trip. Land on Mendip itself proved very difficult to come by. Landowners were either hostile to the idea of caving or else were reluctant to sell even a fraction of an acre. At agricultural values, the transaction showed no profit, and at development prices we could not afford it. Fortunately, our old friend and neighbour Jim Fry agreed to our taking over the old Axbridge site, which had recently been vacated. This was eventually purchased for the sum of £900 in the July of 1974, although the conveyance was not completed until 18 months later.

Approaches were made to the local authorities for outline planning permission. Clearly, the land would have been of little value to us without it. At this point, it is worth mentioning that a few years earlier the Mendip Hills had been listed as a S.S.S.I. which is only slightly down from being a national park. This change worked very much in our favour, for under its terms it became almost impossible to build a private or even a farm building; hostels and other recreational centres on the other hand, were encouraged. This offers the latter users the opportunity of purchasing land at agricultural prices for subsequent development. Our first application was for outline planning and was made in 1973, but was rejected. The authorities would only consider a detailed plan for full planning permission. This was eventually granted in the January of 1975.

The delays in obtaining planning permission were just as well, for it took an equally long time negotiating a grant from the Sports Council. This came through in November 1975. We then realised with some horror that what, up until now, had been a paper exercise was for real and we were committed. Thereafter correspondence with the Sports Council seems to have consisted of a long string of letters explaining why the building was not finished.

In those days the budget for building the cottage was £6,300 total land and materials costs of which 50% would be met by grant aid. This was later revised by £500 to cover costs of electricity and fire precautions. Costs quickly soared through a period of inflation, but the terms of the grant could not take account of this. Cash flow took on a real meaning. Being a self-help group we could register and reclaim V.A.T. which amounted to more than £700, but not until we had finished. Similarly, the Sports Council withheld the final grant payment of £350.

Two sponsored walks organised in 1977 brought in a quick £1,000, but it soon went. Emergency loans brought in more, but we were still in trouble.

Perhaps the most shrewd move the Group ever made was gaining registration as a charity in August 1975. Registration has since protected our assets, and especially the insurance payment, from the ravages of Corporation Tax, helped recover Income Tax on members' subscriptions and has given us mandatory rate relief ever since. The most crucial benefit, however, was that it enabled us to obtain a £1,000 loan over 3 years at 1% interest from the National Playing Fields Association. Loans of this type cannot be made to clubs, only to charities such as leagues, national bodies, etc.

By the end of 1979 when finances were not such a brilliant shade of red and members were beginning to move in . . . well you know the rest! Fortunately, the Group came out on top, repaid all its loans to members and breathed a long sigh of relief. It was all over, and with it the best excuse for avoiding caving trips.

Somehow, in spite of the enormous individual efforts put in by Wayne, Roger and Ron, I don't think anyone thought it would ever come to completion. The problems involved in plans, money, cash flow, labour and technical skills all seemed too great to individual members of the team. The most remarkable thing about the cottage is that it combined the very best in skills from a small group of people. Perhaps the cottage is not all our own work, although every brick below ground merits that description, but the efforts of members through the 70's have given the Group a fine headquarters, with a market value of £60,000. It certainly did not even seem possible as a dream all those years ago.

Now, as new generations of members enjoy a hot shower and recover around a blazing fire . . . I wonder what their dreams are? If the efforts made underground match up to those of cottage building, then the next journal should well be worth looking forward to!

" but the greatest of these is charity"

The First Epistle of Paul to the Corinthians

By Ron Saunders

It might also have been the first minute of the M.C.G. cottage building sub-committee when it was convened on 4th October, 1973; indeed we had need of all three virtues - "and now abideth faith, hope, charity these three". How fortunate it was that we did not know what tricks fate would play upon us during the ensuing seven years!

Instead the minute read:-

- " 1. This Sub-Committee will advise the Committee on land purchase, planning application, building design and construction and legal matters.
2. It will act as an agent of the Committee to purchase the land, obtain planning permission, design and construct the building, complete legal requirements, purchase materials, and hire services of contractors."

It could not be said that, at least on paper, the Sub-Committee lacked in confidence - and who, you may well enquire, were these audacious individuals bent on achieving so much?

- " 6. Members of the Sub-Committee will act in the following capacities within the Sub-Committee:

| | | |
|---------------|---|------------------------------------|
| R.J. Saunders | - | Legal and Financial Adviser |
| A.J. Knibbs | - | Co ordinator and Secretary |
| R. Wallington | - | Planning and Architectural Adviser |
| W. Hiscox | - | Site Manager |

What genius conceived the idea of appointing Wayne Hiscox Site Manager? He lead us all by his own good example and tireless exertions.

The Sub-Committee also authorised the Treasurer to spend up to £50 without reference to either Committee!

The minute concluded:

- " 9. It was found impractical to approach the questions of building materials and costs since the nature of these would be largely dependant on architectural requirements. On the costing issue it was generally agreed that any estimate calculated should be regarded as arbitrary due to the continual fluctuations in materials prices and labour rates.

Antony J. Knibbs
Secretary to Sub-Committee"

On 31st December 1974, our Land Purchase Fund was in credit £1,026.91½ and the interest earned on our National Savings Deposit Account was 1973 - £62.60, 1974 - £81.63.

Faith and hope played their part in fulfilling our ambitions.

" Minutes of Meeting held Saturday 6th July, 1974.

10. A.J.K. - Reported discussion with J. Fry on 30th June, during which the land sale was negotiated as

(a) To comprise an area shown on the attached plan.

(b) Priced at £900 cash plus existing Group Hut (less beds and moveable fittings to be agreed)."

We were reminded not to squander the Club's funds on luxuries like new beds.

" (c) Group to pay transfer fees.

(d) Group to assist J. Fry to move Axbridge Hut."

The Axbridge hut stood roughly on the site of our present car park, it was pretty delapidated and just about fell down when we fulfilled our commitment to help Jim Fry move it. Dear Jim, he derived a lot of fun out of watching the antics of our members in their, for the most part, amateurish adventures into the construction industry. He was always kindly disposed towards us and after a particularly rowdy night in the old hut, he remarked to me, "We were all young once" at which date I was only aged about - well never mind!

The minute continues:-

" 13. Building Costs. For budgeting purposes only an estimate of the costs was made"

wait for it . . .!

| | |
|--|-----------------|
| " Walls (internal and external) | 250.00 |
| Roof (timber and tiles) | 1500.00 |
| Foundations and ground floor | 1000.00 |
| Windows and external doors | 150.00 |
| Plumbing, septic tank and drains | 800.00 |
| Electric fittings and wiring | 50.00 |
| Floor boards, partition walls & stairs | 600.00 |
| Total | <u>£4350.00</u> |

No account was taken of current inflation trends but all figures were estimated to allow for contingencies".

[Not, may I say, for blowing it all up!]

" This estimate was rounded up to £4,500 for budgeting use.

14. Finance. Group funds were slated by R.J.S. to consist of

| | |
|----------------------|---------|
| Land Purchase Fund | 922.31 |
| General Purpose Fund | 282.50 |
| | <hr/> |
| | 1204.81 |
| | <hr/> |

The relationship of funding available to project costs was summed up as

| | |
|-----------------------------|---------|
| Funding at start of project | |
| existing Group Funds | 1204.81 |
| Loans and gifts (promised) | 1117.00 |
| | <hr/> |
| | 2321.81 |
| | <hr/> |

| | |
|-------------------|---------|
| Cost of Project | |
| Purchase of land | 1000.00 |
| Cost of building | 4500.00 |
| | <hr/> |
| | 5500.00 |
| Less grant at 50% | 2750.00 |
| | <hr/> |
| | 2750.00 |
| | <hr/> |

These estimates show a shortfall in funding of £428.19. However, it was agreed that the project should go ahead on condition that a suitable grant be obtained. It was noted that expenditure would spread over the two-year construction period envisaged."

What were we thinking of?

Incidentally, Pete Mathews was at that meeting - it is not recorded how he came to be there, but at any rate he agreed to pursue the South East Sports Council to obtain a grant and what a drubbing he gave them!

On the 8th August, 1975, the Sports Council wrote to Pete:

" I am pleased to inform you that on the recommendation of the Greater London and South East Sports Council it has been decided, provisionally, to offer a grant of £3162 to your organisation towards an estimated expenditure of £6325 on the purchase of a freehold site at Nordrach-on-Mendip, Blagdon, Somerset (£900), erection of the field centre (£5100), fencing and landscaping (£200) and professional fees (£125)."

Well done, Pete.

In that Area of Outstanding Natural Beauty known as Fry's Yard, it would

have been difficult to match Jim's individualistic style of landscaping - 2 old sheds, a caravan, a pig sty, a pisshouse, a midden heap and a midden hole and a couple of broken down wagons. Pete, you deserve a medal for getting a grant for that item of expenditure.

Anyway, where does the charity come in? Well, once upon a time, the Group became liable to pay Corporation Tax when its bank deposit account earned more than £15 per year interest, and it was therefore proposed and eventually agreed, though not after misgivings on the part of some of our members that we might lose some of our independence (a polite reference to those frolics in the old hut on a Saturday night after the Hunters has closed), that we should seek registration as a charity and thereby avoid liability for the said tax. So, we applied - and again thanks to Pete's nimble mind being applied to the vital objects clause -

" The object of the Group is for the benefit of the public, the furtherance of all aspects of the scientific study and conservation of caves."

So now you know how that clause came to be in, and must be kept in, our constitution - the Inspector of Taxes was persuaded that we had an object which would benefit the public and we were accordingly registered and never again paid Corporation Tax - end of fairy tale.

The bonuses were, however, twofold - we moved out of the discretionary class for rate relief and into the mandatory class and then John Miriam came forward with the vital information that there was a little publicised scheme with VATMAN whereby a charitable organisation indulging in a self-help self-build scheme could claim not exemption from VAT but a repayment of VAT when the project was completed.

Our enquiry of H.M. Customs and Excise at Maidenhead (the venue for the Treasurer) elicited the response that not only were they pleased to help, but were delighted to know that someone had actually discovered that the scheme existed - they had had no other enquiry - maybe this confirmed what we already knew, namely that M.C.G. was unique, perhaps it still is - whoever heard of any other caving club being a registered charity?

We entered the self-build scheme and from that time, 7th April 1976, every purchase of materials required a VAT invoice to support it for the eventual day of reckoning with H.M. Customs and Excise, and there were quite a lot of pieces of paper of varying sizes. All our purchasing members played their part and got the invoices; there was something peculiarly gratifying in knowing that we should eventually extract money from H.M. Inspector of Taxes - it always seemed to work the other way.

Is the following entry sinister, significant, or the start of a lucky break?

" Minutes of meeting held at Ron Saunders' home on 22nd July 1976.

Those present (hooded figures in half-light)

Ron Saunders
Wayne Hiscox

Bruce Dean
Roger Wallington

Heating

Method of water heating still in abeyance; traditional open fuel definite, but unsure over practicality of back boiler. R.W. said he had assumed a large hot water cylinder well lagged in cupboard under stairs with possibly two immersion heaters backed up by back boiler.

W.H. thought this expensive and proposed a calor gas instant water heater system - possibly using a bulk gas container"

(the underlining is mine)

Oh Hell, remember, remember the 5th November, gunpowder, treason and plot - and in more recent history, New Year's Eve 1979, and Calor gas!

Even more sinister, or were we just being careful?

" 6. Other Business

Insurance - estimated goods on site up to £1500 - and building as work proceeds up to £5000 - action R.S."

It is easy to forget that, for all the hard work which members did on-site building the new cottage, there was also a lot of help given behind the scenes. In the same minute:

" 3. Purchasing Procedure

We buy materials through Perkins and Dean Limited by courtesy of B.D. to gain benefits of trade discount. Two suppliers are available to us; Sankey (Wessex) Limited and U.B.M. (MAC) Limited and with each Perkins and Dean Limited on our behalf, have credit ratings for £500."

It was only to be expected that we should never have enough funds but always we got by - 29 members made loans to the Group, some of them two, three and four times, totalling just over £2200. Tony Knibbs organised two sponsored walks on Mendips, each about 33 miles which were real money spinners -

| | | |
|---------|-------------|---------|
| 11.9.76 | First Walk | £467.74 |
| 7.5.77 | Second Walk | £442.60 |

There are also these interesting items of income:

| | | |
|--------------------|----------------------------|-------|
| 30th May 1977 | T-Shirts and hats | 6.90 |
| | Y.H.A. dance band | 12.00 |
| 25th July 1977 | Sponsored walk and hats | 2.20 |
| 9th September 1977 | Speleo Stomp | 13.02 |
| 29th November 1977 | Reading Diving Group Dance | 20.60 |
| | Y.H.A. Dance | 24.25 |

| | | |
|----------------|---------------------|--------|
| 1st April 1978 | Jumble | 67.16 |
| | Grand National (!?) | 1.35 |
| 11th November | Jumble sale | 54.57½ |
| 5th April 1979 | Brewery a/c | 7.38 |
| 7th June | Brewers a/c | 7.41 |
| 25th June | Caving shop | 100.00 |

The plot thickens.

9th Sept. 1976

" 5. Insurance

R.S. received letter from Eagle Star - they advise as follows:

- ii) Insurance against fire, aircraft, explosion and impact for a minimum of £4 per annum.

The amount of this insurance was discussed, £6000 for the next 12 months was thought to be adequate, to be revised after this time. "

The Eagle Star wanted information about our members skills and we provided this:

- " Several members have general home improvement skills - Rob Penn, Pete Goddard, Wayne Hiscox, skilled persons Pat Walsh and Bruce Dean.

Overall supervision

| | | |
|------------------|---|------------------------------------|
| Roger Wallington | - | Architect |
| Wayne Hiscox | - | Clerk of Works |
| Pat Walsh | - | Bricklaying and general organising |
| Bruce Dean | - | Mechanical fitting" |

Pete Mathews in a draft report (updated, but it must have been early 1978) was recommending insurance cover of the structure valued at £30,000.

By New Year's Day 1980 all our cares and anxieties, affections, hopes and griefs which were an integral part of our proudly built new cottage, had been blown asunder.

Newsletter 129 - 3rd January 1980

- " Gas explosion hits cottage - a severe explosion caused by leaking propane gas has severely damaged the new cottage which will probably have to be demolished."

Cheque - "Eagle Star Group, 12th February 1980

"Pay Mendip Caving Group £30,000".

Some Caves of Pembrokeshire

By Antony J Knibbs and Joan C Goddard

The coastline of Pembrokeshire is approximately 170 miles long and offers some of the finest cliff scenery in Britain. Holiday-makers tend to concentrate on the Tenby area, in the south eastern corner of the county, where extensive sandy beaches and the more usual seaside attractions proliferate. Consequently, the rest of the coastal area remains relatively quiet and unspoilt, with the notable exception of Milford Haven where much of the nation's supply of crude oil comes ashore to be refined and temporarily stored.

As part of combined family summer holidays in 1981 and 1982, we decided to examine some of the caves within easy reach of the campsite at Porthstinan, two miles west of St David's. Many of the caves visited were easily accessible from sandy beaches (chiefly at low tide); others entailed some cliff scrambling or, in several instances, the use of an outboard engine powered inflatable dinghy.

By comparison with caves in limestone areas, these caves are quite small. However, they are interesting and most have imposing entrance arches which seemed to demand exploration. A torch is all the equipment usually required, but helmet, caplamp and wetsuits were occasionally found useful.

The most comprehensive publication dealing with this area is 'The Caves of South West Wales' by Tony Oldham. Having read this work, it became apparent that only a very small percentage of the caves to be found in the north western coastal areas was mentioned, and these described with considerable brevity. In view of the poor representation we decided to pay most attention to those caves which were not already in Oldham's compilation, or to which scant reference was made.

Surveys

Ordnance Survey 1:25000 scale maps were employed in conjunction with the explorations, and all grid references given were obtained from these using an appropriate map roamer.

The map sheets used were:

SM62 Bishops and Clerks
SM72 St David's
SM82 Newgale
SM81/91 Haverfordwest

Surveys were carried out using a Brunton transit. This is an induction-damped compass graduated in one-degree intervals, combining a clinometer; only the azimuth function was used. Distances were measured by pacing or by a tape graduated in feet and inches. The tape is now residing in about 20 feet of sea water on the north side of St David's Head!

Scenery

The most obvious feature of coastal Pembrokeshire is a slightly undulating plateau at about 200 feet (60 metres) above sea level, which cuts across a great variety of rock types and geological structures. The plateau is generally assumed to be a wave-cut surface formed when sea level was higher (in late Tertiary times - no more than a few million years ago). Jutting above the plateau are relict 'islands' (monadnocks) which may themselves be smaller remnants of older wave-cut platforms at 400 feet and 600 feet. Carn Llidi and Carn Lleithr are examples of such 'islands'.

As the sea retreated, streams and rivers cut down into the plateau to produce deeply incised valleys. More recently, at the close of the ice age when the ice masses melted and returned their water to the oceans, there was a rise in sea level which drowned the lower parts of valleys to form rias; for example, Milford Haven and Solva Harbour.

The cliff scenery is more closely related to the solid geology than are inland areas. Bays have been excavated in softer sediments (shales) while headlands are generally of hard igneous rocks or grits.

Geology

The complex geology is simplified in a sketch plan and cross section compiled using the 1:25000 geological map of St David's (Institute of Geological Sciences) and JFN Green 1911 (Proceedings of the Geological Association Vol 22).

The oldest rocks occur in the core of the WSW-ENE trending St David's anticline, and are Precambrian igneous intrusions and volcanic sediments. They are overlain by Cambrian conglomerates, grits and shales (containing graptolites and trilobites). The marked angular discordancy between the Precambrian tuffs and basal Cambrian conglomerate is easily seen in the cliffs at the south end of Whitesand Bay, near Ogof Golchfa. At the northern end of the bay Ordovician strata unconformably overlies Cambrian shales. These dark grey and black Ordovician shales were later intruded by the St David's Head and Carn Llidi quartz gabbros.

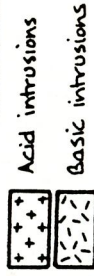
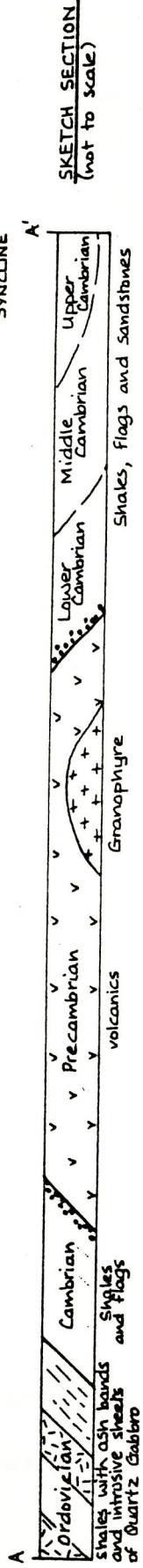
Caves are influenced by geology in that they are generally in shaley sequences and controlled in most instances by faults; this is well seen in the Porth Melgan caves. When caves are in more competent rocks, then structural control is even more marked, for example Ogof Crisial, which has formed along a quartz vein.

CARN
LLIN

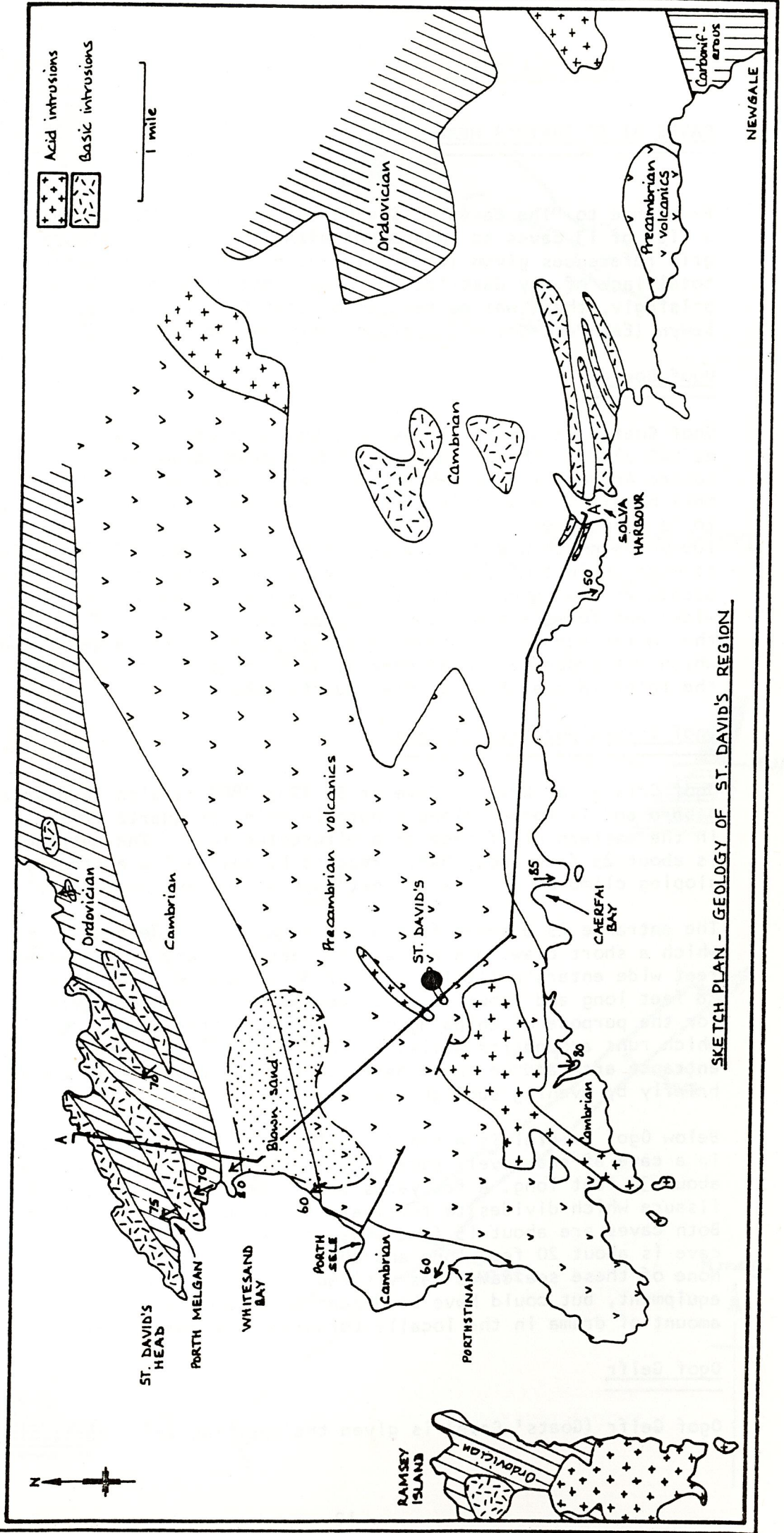
WHITESAND BAY

ST. DAVID'S ANTICLINE

SOLVA
SYNCLINE



1 mile



SKETCH PLAN - GEOLOGY OF ST. DAVID'S REGION

CAVES AT ST DAVID'S HEAD

Reference to 'The Caves of South West Wales' (CSWW) provided a list of 13 caves to locate and examine. The four-figure grid references given (or a six-figure in one case), and the total lack of any descriptions, were not of much help. Surprisingly, there was no mention of Ogof Crisial and Cwter Sewyn (Eel Passage) which are clearly marked on sheet SM72.

Ogof Coetan

Ogof Coetan (misspelt in CSWW as 'Goetan') was listed as being at NGR 72.28. The Stone Age burial chamber cromlech called Coetan Arthur is a well-known and easily located feature on this headland, and it is safe to assume that the cave referred to is associated with a narrow inlet in the sea cliffs about 100 yards north west of the cromlech at SM 7246.2812. The inlet terminates in two fissures: the easternmost fissure has a slight alcove at sea level, the other is narrower (about two feet wide) and forms a short cave. A rope would be required to reach the latter safely. The cave name may refer to the larger fissure which was probably roofed over at some stage in the erosion of the inlet in coarse Ordovician quartz gabbro.

Ogof Crisial or Crystal Cave

Ogof Crisial or Crystal Cave at SM 7233.2800 is also in quartz gabbro and is formed along a notable vein of quartz crystals in the eastern cliff face of a bifurcated inlet. The entrance is about 25 feet above HWM, reached by descending a steeply sloping climb on which a 30 feet rope would have been useful.

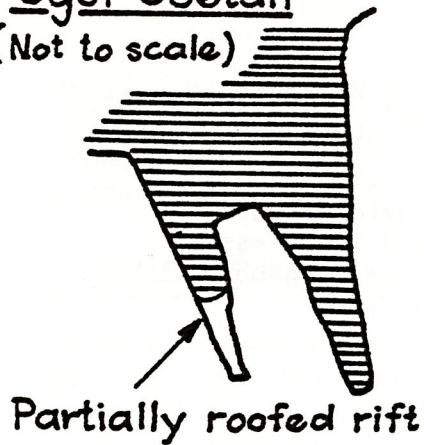
The entrance is a seven feet high, seven feet wide arch from which a short crawl one and a half feet high and two and a half feet wide enters a little, sandy floored chamber. The cave is 28 feet long and shows signs of having been frequently visited for the purpose of chipping crystals out of the quartz vein which runs around its walls. An unidentified plant grows in the entrance arch and on those parts of the inner cave wall touched briefly by evening sunlight in summer.

Below Ogof Crisial is a ten feet wide fissure which terminates in a cave at sea level, some 20 feet high at the entrance and about 30 feet long. A few yards to the west is another, wider, fissure which divides to terminate in two caves at sea level. Both caves are about 15 feet wide at the entrance; the larger cave is about 20 feet long and 20 feet high at the entrance. None of these sea caves was visited due to lack of suitable equipment, but could have been reached by boat with a certain amount of drama in the locally turbulent sea conditions.

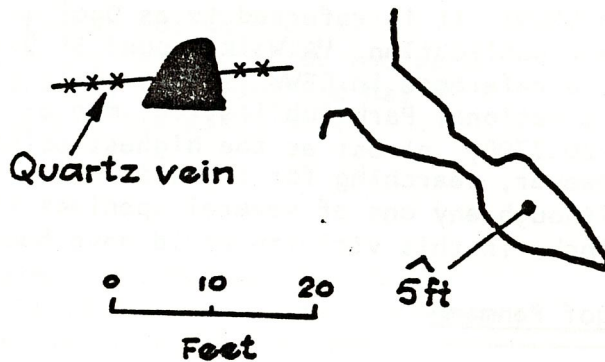
Ogof Geifr

Ogof Geifr (Goats' Cave) is given the spelling Gafr (goat, singular)

Ogof Coetan
(Not to scale)

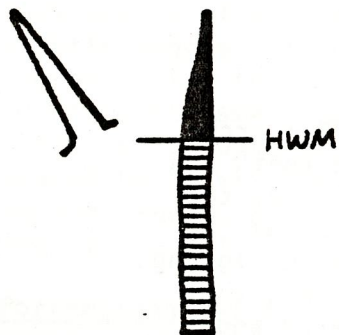


Ogof Crisial

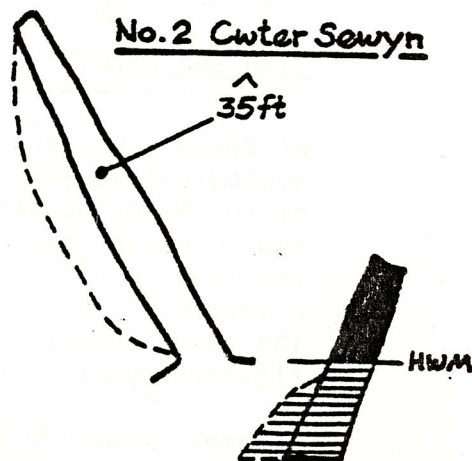


St. David's Head Caves

No.1



No.2 Cwter Sewyn



No.3

40ft

5ft

0 20 40
Feet

No.4

7ft

10ft

N mag.



in CSWW; it is referred to as Ogof Geifre in the National Park publication, 'A Walk Around St David's Head'. The grid reference in CSWW is generously given as SM 72.28, but the National Park Publication map places it at about 7220.2790, almost at the highest point on St David's Head. However, searching for a positive location proved fruitless, although any one of several openings in the shattered gabbro blocks in this vicinity could have been Ogof Geifr.

Ogof Penmaen

Ogof Penmaen is not mentioned in CSWW or on Ordnance Survey sheet SM72, but does appear as a named feature in the National Park publication mentioned above. It is located at SM 7216.2785 and is a small cave about 15 feet long, at sea level, at the end of a narrow sea inlet on the western side of St David's Head.

'Ten sea caves'

St David's Caves are mentioned in CSWW as being 'Ten archaeological sea caves, the longest of which is ten feet' and given the grid reference SM 7208.2778, placing them at the south western tip of the headland. The idea that caves at sea level could contain archaeological deposits is intriguing. A search by boat revealed no caves and it was assumed that the caves referred to are higher up on the weathered and fissured quartz gabbro headland.

However, four sea caves were found in the dark grey/black Ordovician shales which continue from the gabbro of St David's Head towards Porthmelgan.

St David's Head Cave - No 1

The first cave, at SM 7239.2785 is the most westerly of this group. It is a narrow fissure 12 feet high and 15 feet long with over 20 feet depth of water at high tide.

St David's Head Cave - No 2

This is probably the Cwter Sewyn (Eel Passage) marked on the map at SM 7241.2787. The inclined entrance is eight feet wide and 20 feet high; at high tide there is 20 feet depth of water at the entrance and throughout most of the cave's 75 feet length. The west wall of the cave is deeply undercut and provided sanctuary for an adult grey seal which caused some excitement, surfacing a few yards behind the inflatable dinghy as we made our way out.

St David's Head Cave - No 3

This is at SM 7248.2786 and has an imposing 15 feet wide, 35 feet high entrance arch. This cave has approximately

20 feet depth of water at the entrance during high tide, becoming shallow enough to wade among large rounded boulders about 100 feet inside. The cave is 210 feet long and has a second entrance as a narrow fissure a few yards east.

St David's Head Cave - No 4

St David's Head Cave - No 4 is almost in Porthmelgan at SM 7255.2787. The entrance arch is 25 feet wide and 15 feet high with some ten feet of water over a boulder-strewn seabed at high tide. The cave is 200 feet long and has a short beach of pebbles at its extremity.

Penlledwen Cave

Penlledwen Cave is something of a mystery. It is listed in CSWW and is given the grid reference SM 727.276 which Oldham rightly suggests should be about 7278.2762. The altitude is quoted as 120 feet, which places it at about the highest point on the small headland of Penlledwen. The length is given as 20 feet, with a six foot wide entrance, and it is stated to be visible from the footpath from Whitesand Bay to Penlledwen. A search by AJK and son failed to locate it, and we can only echo Oldham's own comment, "not located, Ed."

Porthmelgan Caves

Porthmelgan caves are a remarkable omission from CSWW. Porthmelgan is a charming sandy bay between St David's Head and Penlledwen, easily reached by footpath or by boat from Whitesand Bay. There are five caves, all with impressive entrance arches, which we have simply numbered sequentially from north to south. All occur in dark grey/black Ordovician shales dipping at 75° to 80° NNW.

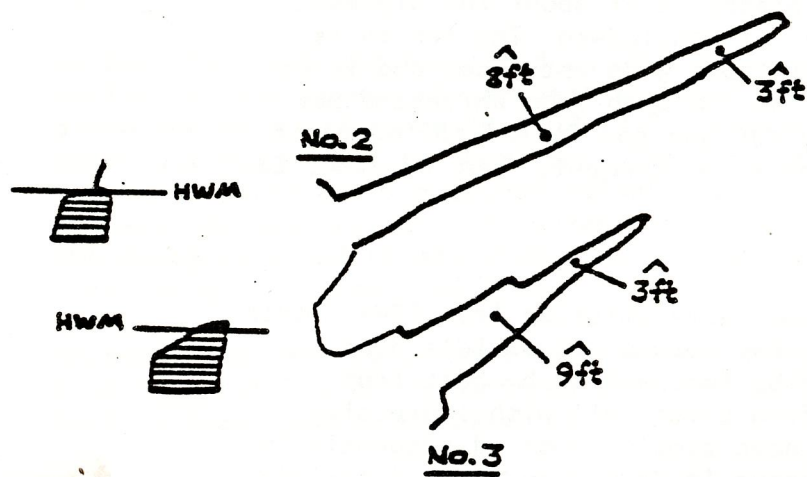
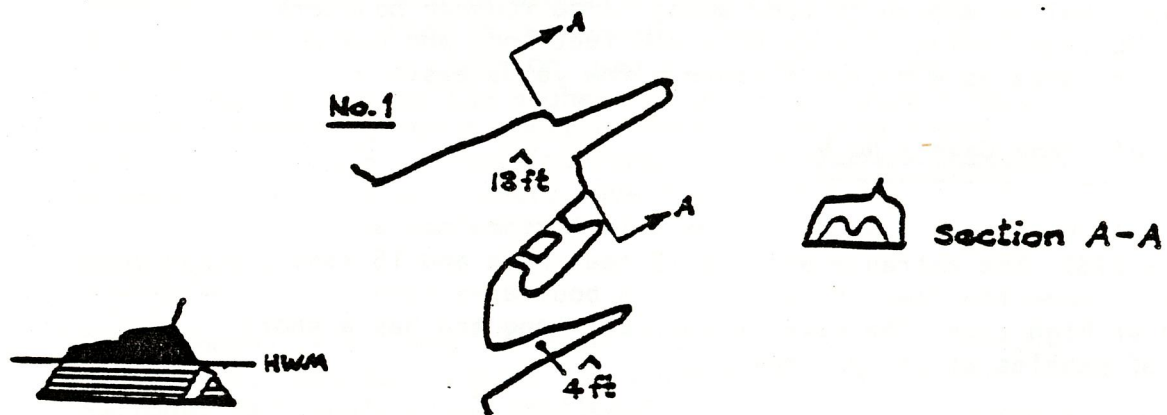
Porthmelgan Cave - No 1

This is located at the north west end of the bay at SM 7272.2797. The impressive entrance arch is 39 feet wide and 14 feet high with a sloping sandy floor throughout. HWM is approximately eight feet above the floor at the entrance which is a veritable sun-trap from midday onwards in summer when the tide is out! Total length is 62 feet.

Porthmelgan Cave - No 2

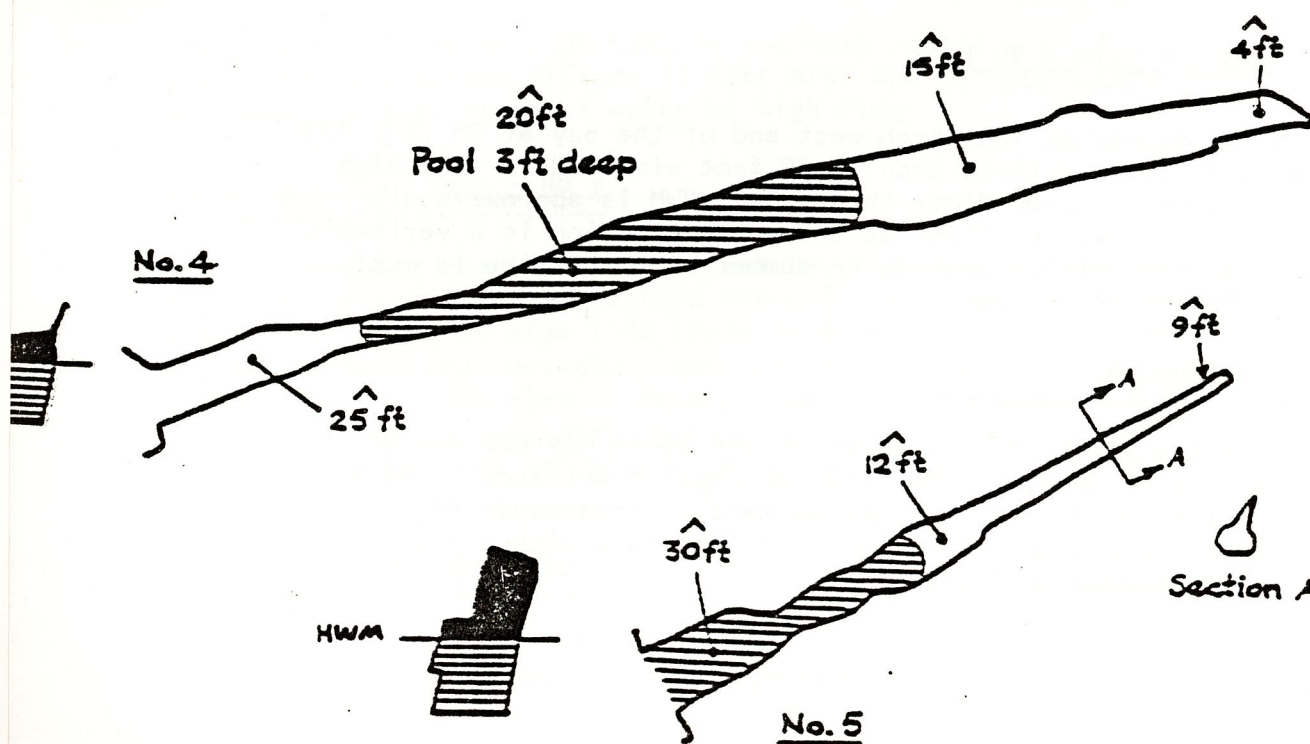
This is the first of four caves at the south eastern end of the bay and is at SM 7283.2788. The rectangular entrance is 12 feet wide and 11 feet high. HWM approximately corresponds to roof height at the entrance, and the cave is 99 feet long with a floor of sand and rounded boulders.

Porthmelgan Caves



0 20 40
Feet

N mag.



Porthmelgan Cave - No 3

This is located at SM 7284.2788. It has a triangular shaped entrance 13 feet wide and 13 feet high. Cave length is 57 feet with a floor of sand throughout, and HWM is approximately 12 feet at the entrance.

Porthmelgan Cave - No 4

The fourth cave is at SM 7285.2787. The rectangular entrance is nine feet wide and 18 feet high, and the cave is 246 feet long. A stretch of sandy floor reaches a long pool after 40 feet; beyond which it continues with scattered patches of pebbles. HWM is approximately 12 feet high at the entrance. Slickensides were noted on the lower cliff face, to the south of the entrance.

Porthmelgan Cave - No 5

This is located at SM 7286.2786. The impressive rectangular entrance is 12 feet wide and 35 feet high. The cave is 134 feet long and a pool extends from the sea for 60 feet into the cave at low water. This pool has a sandy floor which gives way to bare rock at its inner end, continuing to a final 20 foot stretch covered with rounded boulders.

Pwlluoq Bay

Pwlluoq is a tiny bay immediately north of Whitesand Bay and separated from it by the miniature peninsula of Ram's Nose. The bay is flanked on the northern side by high cliffs, running out to Penlledwen, in which two caves were explored. The possibility of finding one or two more was noted but not pursued.

Pwlluoq Cave - No 1

Pwlluoq Cave - No 1 is located at SM7290.2762. It occurs at sea level in dark grey shales dipping at 70° to 80° NNW and is only accessible by boat. The cave runs at a sharp angle to the cliff face and is approached along a channel of deep water; it was visited two hours after low tide and the water was eight feet deep at the entrance. The entrance is rectangular, 30 feet wide and 30 feet high, from which a pool from the sea was negotiated by swimming and wading for 150 feet to a narrower section of passage with a final beach of sand and pebbles. Large submerged boulders made wading difficult. HWM is approximately 23 feet above the submerged floor at the entrance, and the cave is 192 feet long.

Pwlluoq Cave - No 2

This cave is at SM7319.2748 and located a few yards to the north of the sandy beach. The entrance is roughly triangular in shape, 35 feet wide and 25 feet high. The cave is 107 feet long and has

Porthmelgan Cave - No 3

This is located at SM 7284.2788. It has a triangular shaped entrance 13 feet wide and 13 feet high. Cave length is 57 feet with a floor of sand throughout, and HWM is approximately 12 feet at the entrance.

Porthmelgan Cave - No 4

The fourth cave is at SM 7285.2787. The rectangular entrance is nine feet wide and 18 feet high, and the cave is 246 feet long. A stretch of sandy floor reaches a long pool after 40 feet; beyond which it continues with scattered patches of pebbles. HWM is approximately 12 feet high at the entrance. Slickensides were noted on the lower cliff face, to the south of the entrance.

Porthmelgan Cave - No 5

This is located at SM 7286.2786. The impressive rectangular entrance is 12 feet wide and 35 feet high. The cave is 134 feet long and a pool extends from the sea for 60 feet into the cave at low water. This pool has a sandy floor which gives way to bare rock at its inner end, continuing to a final 20 foot stretch covered with rounded boulders.

Pwlluog Bay

Pwlluog is a tiny bay immediately north of Whitesand Bay and separated from it by the miniature peninsula of Ram's Nose. The bay is flanked on the northern side by high cliffs, running out to Penlledwen, in which two caves were explored. The possibility of finding one or two more was noted but not pursued.

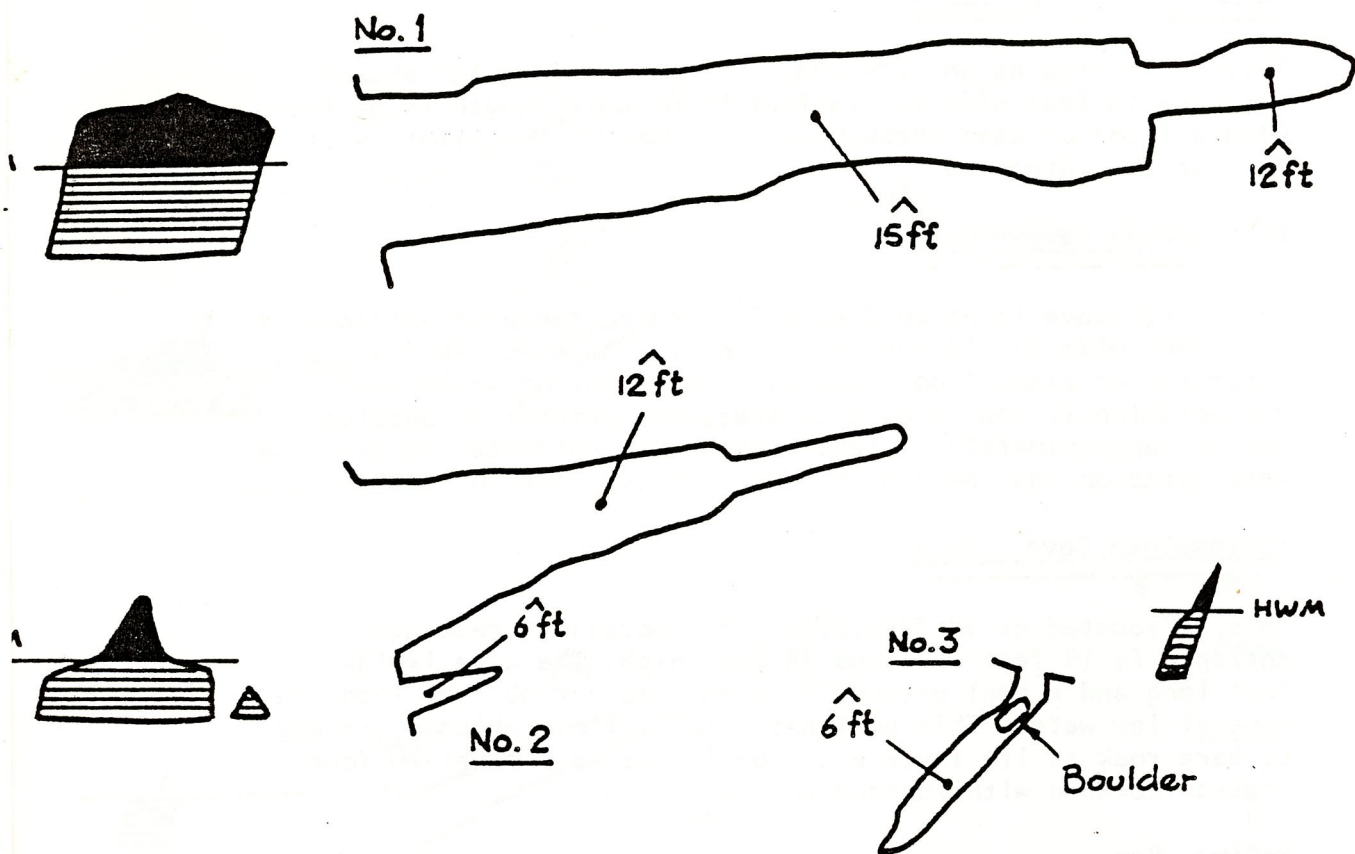
Pwlluog Cave - No 1

Pwlluog Cave - No 1 is located at SM7290.2762. It occurs at sea level in dark grey shales dipping at 70° to 80° NNW and is only accessible by boat. The cave runs at a sharp angle to the cliff face and is approached along a channel of deep water; it was visited two hours after low tide and the water was eight feet deep at the entrance. The entrance is rectangular, 30 feet wide and 30 feet high, from which a pool from the sea was negotiated by swimming and wading for 150 feet to a narrower section of passage with a final beach of sand and pebbles. Large submerged boulders made wading difficult. HWM is approximately 23 feet above the submerged floor at the entrance, and the cave is 192 feet long.

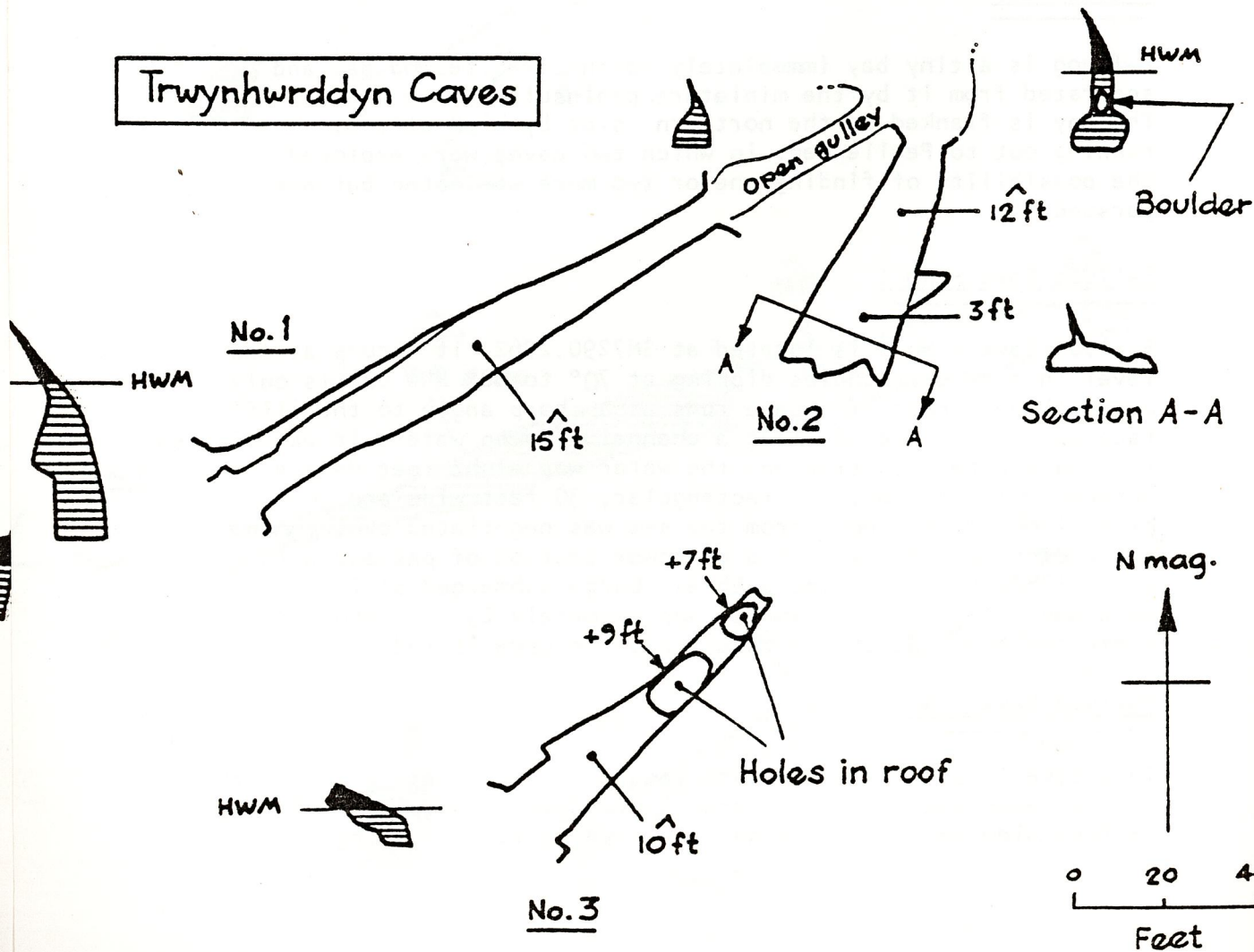
Pwlluog Cave - No 2

This cave is at SM7319.2748 and located a few yards to the north of the sandy beach. The entrance is roughly triangular in shape, 35 feet wide and 25 feet high. The cave is 107 feet long and has

Pwlluog Caves



Trwynhwrddyn Caves



a flat rock floor which is initially thinly covered with sand and rounded boulders, giving way to a mixture of pebbles and shingle. There is a tiny cave, 18 feet long, a few feet south of the main entrance arch. HWM is approximately seven feet above the floor at the entrance.

In the cliffs behind the sandy beach is a remnant of a sea cave and, in the southern corner, an alcove about ten feet in length has been eroded.

Pwlluog Cave - No 3

Pwlluog Cave - No 3 is at SM 7322.2737 and is located at the southern end of the bay, approximately 150 yards west of the cliffs behind the beach and situated in a low cliff face which runs out to a small peninsula. The inclined entrance fissure achieves a maximum width of three feet and is 20 feet high. A large jammed boulder at floor level almost blocks the entrance. The cave is 48 feet long and has a sand floor with a few pebbles. HWM is approximately 13 feet above the floor at the entrance.

Trwynhwrddyn Peninsula

Trwynhwrddyn, also called the Ram's Nose, is the tiny peninsula of almost bare rock which divides Pwlluog from Whitesand Bay. Despite its small size, it has three caves, one of which is a through trip!

Trwynhwrddyn Cave - No 1

This is at SM 7307.2730 and has two entrances, one at the seaward tip of the peninsula, the other on the northern flank. The seaward entrance is irregular in shape, eight feet wide and about 20 feet high, and is only negotiable at low tide when the depth of water in the entrance is about three feet. The cave runs in a straight line for 117 feet to the second entrance; the first 25 feet is normally occupied by a pool from the sea and the bare rock floor is deeply grooved by tidal flow. HWM is about 22 feet above the underwater boulders at the seaward entrance and the entire cave is submerged at high tide.

Trwynhwrddyn Cave - No 2

The second cave is at SM 7311.2734 and opens from a sea inlet pool in the gully which runs north east from the northern entrance to Trwynhwrddyn Cave - No 1. The almost flask-shaped entrance is elliptical at the base - ten feet wide and six feet high - the two feet six inch wide 'neck' extending vertically upwards (and containing a jammed boulder) for a further 20 feet. The cave extends for 54 feet as a wide, low chamber with a bare rock floor with tidal grooving, covered with small rounded boulders for the inner 30 feet. HWM is approximately 17 feet above the floor at the entrance. The whole cave has unusually smooth walls and roof.

Trwynhwrddyn Cave - No 3

This is at SM 7312.2729 and located about half way along the southern flank of the peninsula. The entrance is a 15 feet wide fissure inclined at about 30° to the horizontal and six feet high at the bottom end. There are only a few feet of rock roofing the cave, and two holes in this roof provide alternative entrances. The cave is 70 feet long and its bare rock floor is notably grooved and a few pebbles are scattered about. HWM is approximately ten feet above the floor at the entrance. A 60 feet long gulley runs seawards from the entrance; it has a 50 feet long, four feet deep tidal pool and a final eight feet drop to the sandy beach of Whitesand Bay.

Caerfai Bay

Caerfai Bay is about a mile south east of St David's and has, at low tide, a wide sandy beach enclosed by high cliffs of Cambrian sedimentary rocks.

Caerfai Cave - No 1

This cave is at SM 7593.2432 in the cliffs on the western side of the bay. The impressive, roughly rectangular entrance is 15 feet wide and 25 feet high with a thin curtain of fresh water dripping from the rocks above. A shallow tidal pool extends across the entrance and the cave takes the form of a 51 feet long chamber with a floor of rounded boulders and pebbles. HWM is approximately 12 feet above the floor at the entrance.

Caerfai Cave - No 2

This is located at SM 7601.2435 and has an upright rectangular entrance four feet wide and 12 feet high above a six feet high pile of large, angular blocks which mask a downward extension of the cave to beach level. The cave is all of eight feet long! HWM is approximately seven feet above the boulders at the entrance.

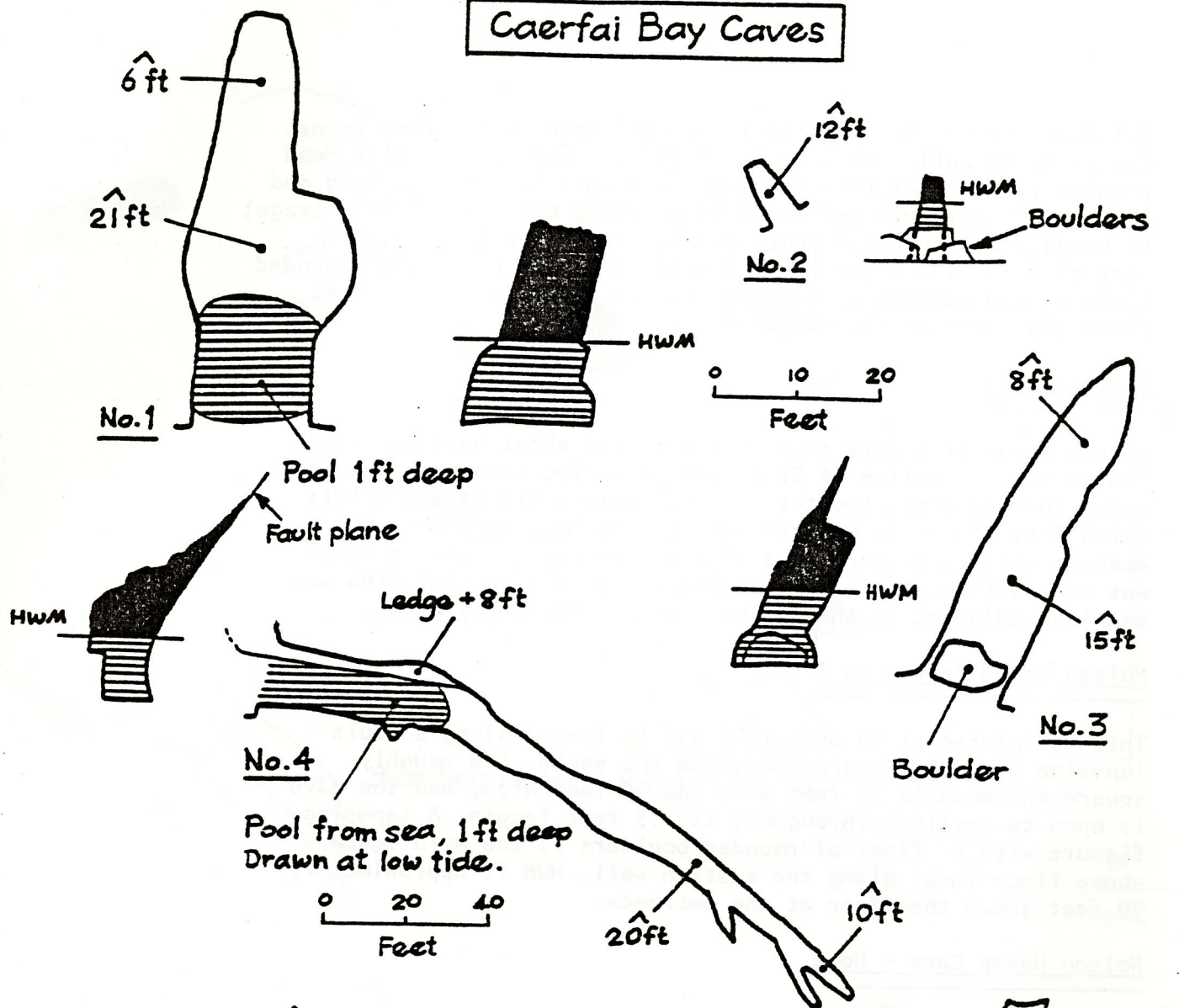
Caerfai Cave - No 3

Caerfai Cave - No 3 is at SM 7618.2436 about half way along the south east face of a spur of rock on the eastern side of the bay. The irregular, inclined entrance fissure is about ten feet wide and 20 feet high with a large boulder in the sand floor. The cave is 45 feet long and the sandy floor gives way to rounded boulders and pebbles. HWM is approximately nine feet above the floor at the entrance.

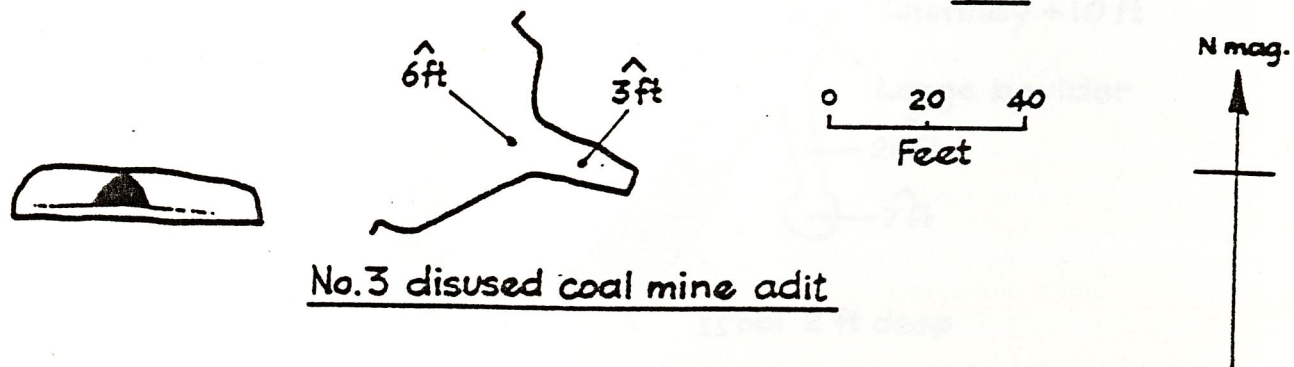
Caerfai Cave - No 4

The fourth cave, at SM 7617.2420, is further seaward along the high cliffs at the south east side of the bay. It has an imposing entrance reaching a width of about 30 feet and a height of 35 feet, strongly developed along a fault inclined at about

Caerfai Bay Caves



Nolton Haven Caves



30° from the vertical. A sea inlet pool extends ten feet across the entrance gulley at a depth of about a foot at low tide, and running for 40 feet into the cave. The cave is 186 feet long and is the only cave visited which is anything but a straight passage; it bends gently to the south and has two minor bifurcations near the end. The floor is of coarse sand with occasional rounded boulders and patches of pebbles. HWM is approximately 13 feet above the floor at the entrance.

Nolton Haven

Nolton Haven is a very small bay situated about half way along the eastern coastline of St Bride's Bay. Two caves were visited here, located close together at the western tip of the cliffs which form the north western wall of the bay. In the south eastern wall, a fissure cave with a deep pool at the entrance was seen but not explored, and the entrance to a coal mine was examined adjacent to the southern end of the sandy beach.

Nolton Haven Cave - No 1

This is located at SM 8564.1845 and is formed along a fault junction of Coal Measure sandstone and shale. The roughly square entrance is 30 feet wide and 30 feet high, and the cave is open to daylight throughout its 55 feet length. A tapering fissure with a floor of rounded boulders is the main feature above floor level along the eastern wall. HWM is approximately 20 feet above the floor at the entrance.

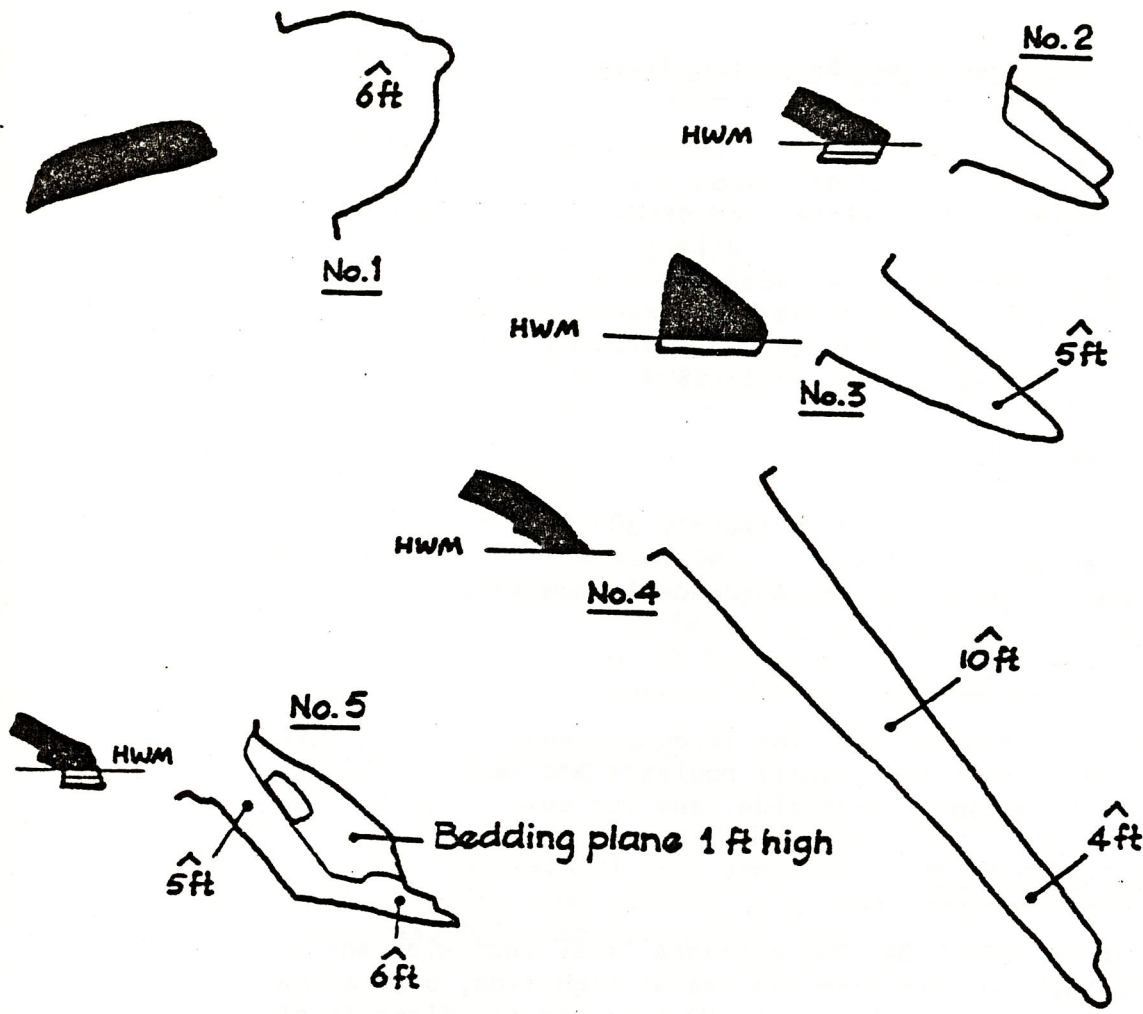
Nolton Haven Cave - No 2

The second cave is at SM 8565.1845, a few yards east of the first cave. It has a rectangular entrance five feet wide and eight feet high. Beyond a boulder-floored pool at the entrance, the cave widens out to almost 20 feet with a 12 feet high roof and continues with a floor of shingle and shell debris; total length is 90 feet. HWM is approximately 15 feet above the pool at the entrance.

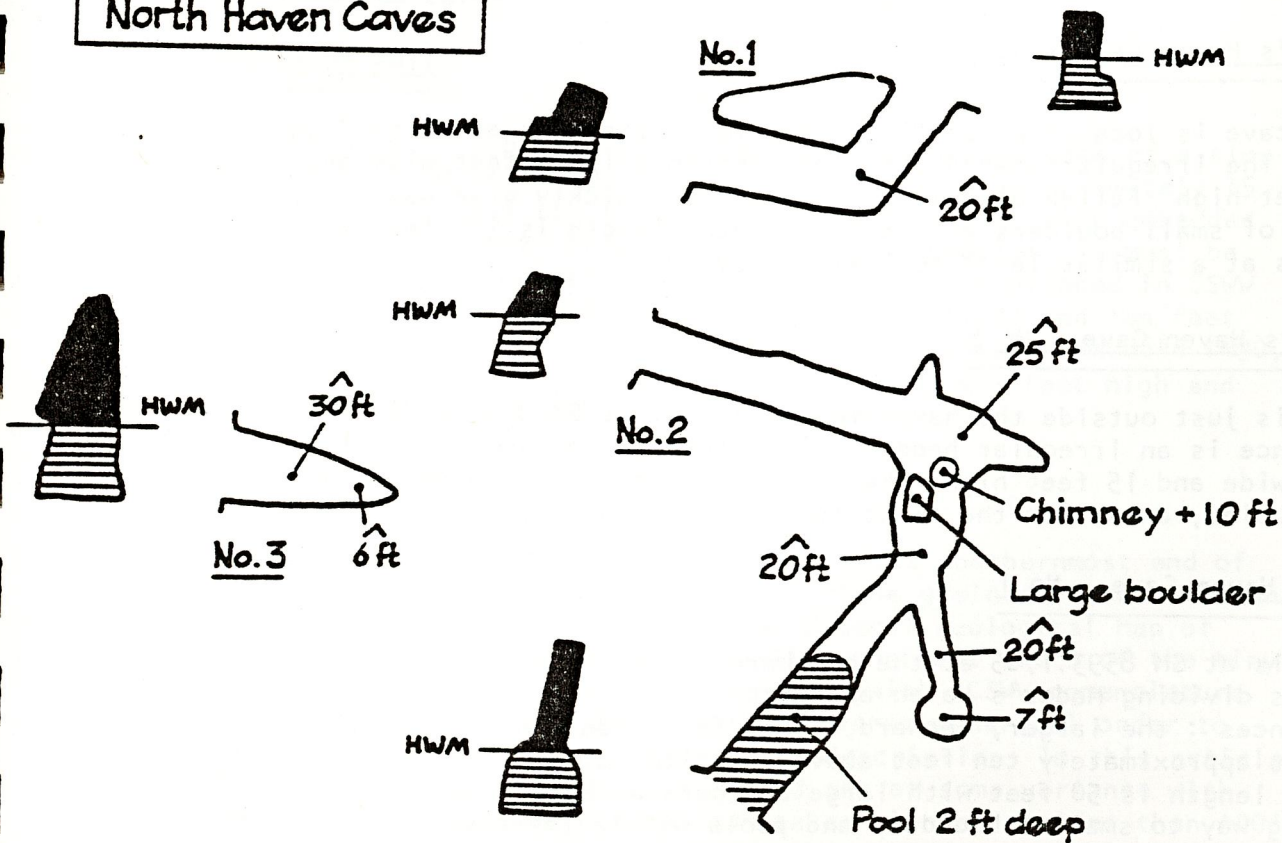
Nolton Haven Coal Mine

The mine is at SM 8593.1850 where an obvious 50 feet wide, 15 feet high arch shelters the entrance to a low passage which is choked with stormborne pebbles after 20 feet. The entrance floor is approximately ten feet above HWM.

Madoc's Haven Caves



North Haven Caves



Madoc's Haven, North Haven and Druidston Haven

Within a mile south of the seaward entrance to Nolton Haven are Madoc's Haven, North Haven and Druidston Haven. The first two are minor embayments in the cliffs, and credited with 'natural arches' on the map. Druidston Haven is larger and has a wide sandy beach; CSWW mentions a mine adit and five caves here. Caves were explored in all three havens (except the adit at Druidston) and all are described below, including those at Druidston Haven which are mentioned in CSWW.

Madoc's Haven Cave - No 1

This is a low opening in the approximately 30° inclined coal measures sandstone at SM 8577.1805. It is 40 feet wide, five feet high, 30 feet long and the floor at the entrance is ten feet above HWM.

Madoc's Haven Cave - No 2

This is located at SM 8595.1790. The irregular-shaped entrance is 20 feet wide and 15 feet high. Small boulders and pebbles cover the floor which is awash at high tide, and the cave is 30 feet long.

Madoc's Haven Cave - No 3

Cave No 3 is at SM 8593.1789. The entrance is 20 feet wide and 20 feet high, set back 30 feet from the sea at high tide, over a low pile of fallen blocks. Cave length is 50 feet and the floor is of small boulders and pebbles. HWM is approximately at entrance floor level.

Madoc's Haven Cave - No 4

This cave is located at SM 8592.1788, immediately adjacent to Cave No 3. The irregular-shaped, inclined entrance is 25 feet wide and 15 feet high. Fallen blocks at the entrance quickly give way to a floor of small boulders and pebbles. Total length is 130 feet and HWM is at a similar level to that of Cave No 3.

Madoc's Haven Cave - No 5

This is just outside the haven to the south, at SM 8593.1781. The entrance is an irregular bedding plane inclined at about 20°, 15 feet wide and 15 feet high. The cave is 60 feet long with a floor of pebbles, awash for the first few feet at high tide.

North Haven Cave - No 1

This is at SM 8593.1765 at the northern corner of a buttress of cliffs dividing Madoc's Haven and North Haven. The cave has two entrances : the larger, seaward, is 15 feet wide and 20 feet high; HWM is approximately ten feet above the floor at this entrance. Total length is 50 feet with large boulders at both entrances giving way to smaller boulders and pools within the cave.

giving way to smaller boulders and pools within the cave.

North Haven Cave - No 2

This occurs at SM8595.1761. It has two entrances: the northernmost is ten feet wide and 20 feet high with large boulders quickly leading to a pool and bare rock floor with scattered small boulders, the southern entrance is 15 feet wide and 35 feet high with a two foot deep pool across. At 217 feet it is the longest cave in this stretch of coastline. HWM is approximately 12 feet above floor level at both entrances.

North Haven Cave - No 3

The third cave is at SM 8595.1760, adjacent to the southern entrance of Cave No 2. The cave is really a rather grandiose alcove, 35 feet long and 15 feet wide and 40 feet high at the entrance. HWM is about six feet above a pile of large boulders at the entrance, beyond which the cave terminates with a floor of sand and pebbles.

Druidston Haven - Priest's Vault

Moving south into Druidston Haven, the map shows Priest's Vault against a small buttress of rock immediately north of the pebbly beach above HWM. The name applies to a small alcove at the foot of the buttress, only about ten feet long and submerged at high tide.

Footpaths and a stream join the pebbly strand at its southern end, and it is to the south of this point that CSWW mentions a mine adit and five sea caves.

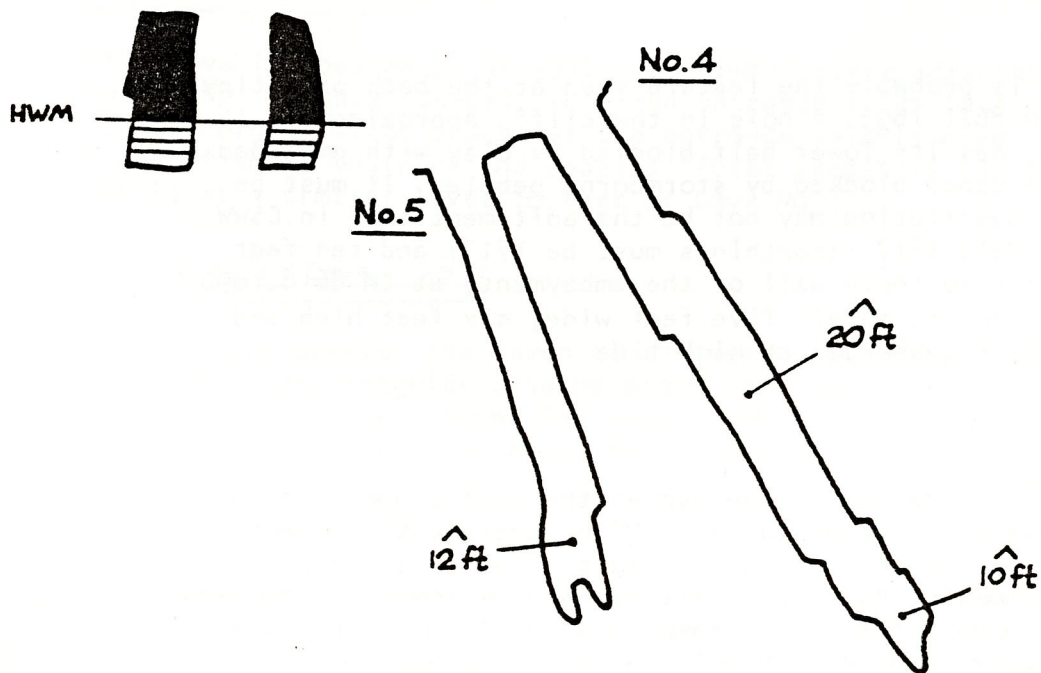
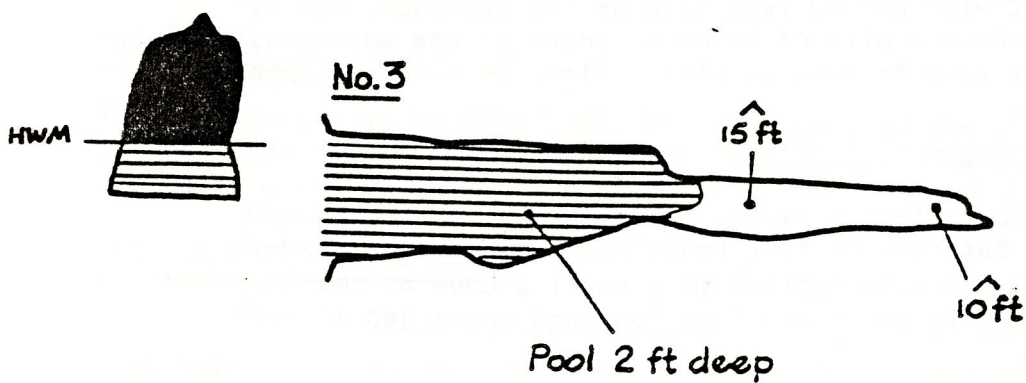
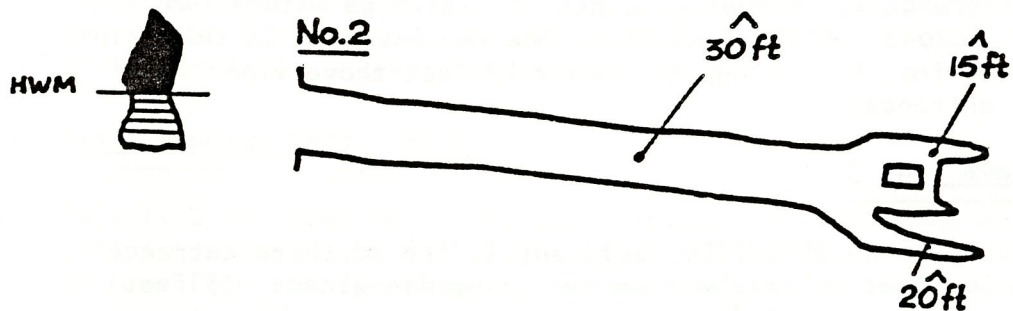
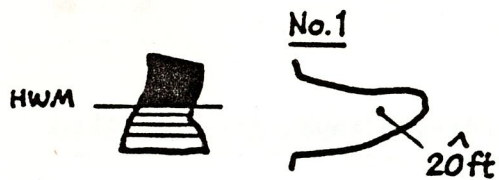
Druidston Adit

Druidston Adit is probably the feature seen at the back of a tiny embayment at SM 8621.1693. A hole in the cliff, approximately 15 feet above HWM, has its lower half blocked by clay with embedded pebbles and the upper blocked by stormborne pebbles. It must be said that this description may not be the adit mentioned in CSWW as being at SM 8619.1817 (northings must be 1717) and ten feet above HWM. In the southern wall of the embayment, at SM 8616.1690, is a small cave approximately five feet wide, six feet high and 15 feet long, half submerged at high tide.

Druidston Caves

Druidston Caves are marked on the map at the southernmost end of the haven. These are claimed to be in "fine grained black cambrian rock" in CSWW, but the Field Studies Council Geological Map of Pembrokeshire shows carboniferous millstone grit south of the tiny embayment mentioned above. To correspond with CSWW nomenclature the following caves are described in reverse numerical order to maintain the southerly progression of descriptions in this article. Distances were obtained by pacing and are at some variance with lengths given in CSWW; perhaps AJK takes longer strides than ADO!

Druidston Haven Caves



N mag.



0 20 40
Feet

Druidston Cave - No 5

Druidston Cave No 5 is at SM 8609.1681 and takes the form of a large alcove 25 feet long from a 15 feet wide, 20 feet high entrance arch at which HWM is approximately ten feet above the sand floor.

Druidston Cave - No 4

Cave No 4 is located at SM 8610.1675. The entrance is ten feet wide and 25 feet high, from which a roomy passage initially has a floor of rounded boulders soon giving way to shingle and pebbles. At its extremity, the passage divides along three bedding planes, leaving a pillar of rock between two of them. Total length is 180 feet and HWM is about ten feet above the floor at the entrance.

Druidston Cave - No 3

Druidston Cave No 3 is at SM 8611.1672. It has an impressive 25 feet wide, 35 feet high entrance arch from which a two feet deep pool, with scattered boulders, continues for about 50 feet. The remainder of the cave has a floor of pebbles and sand; total length is 130 feet. HWM is approximately ten feet above floor level at the entrance.

Druidstone Caves - No 2 and No 1

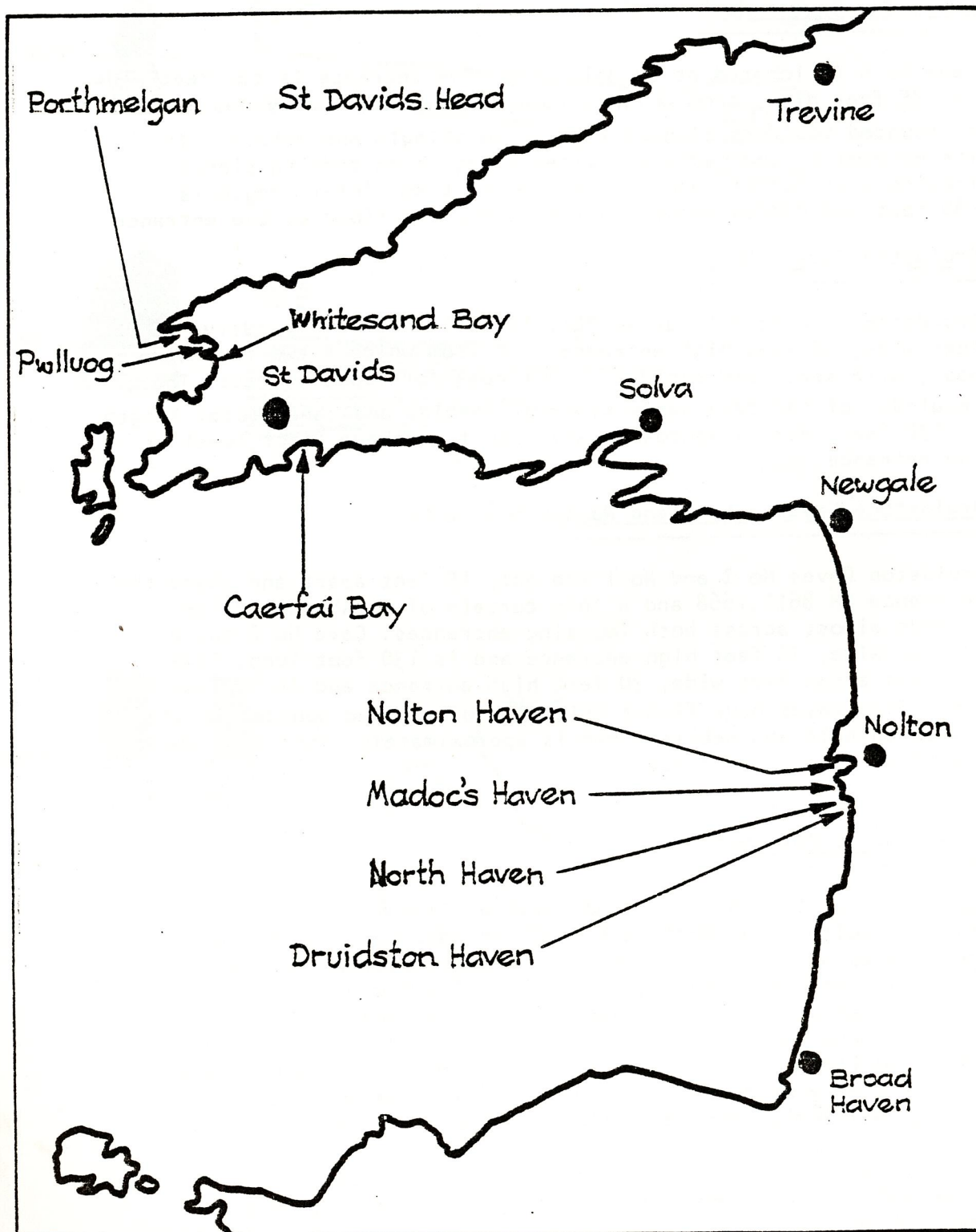
Druidston Caves No 2 and No 1 are only 15 feet apart and share the reference SM 8611.1668 and a thin curtain of freshwater drips extends almost across both imposing entrances. Cave No 2 has a 12 feet wide, 30 feet high entrance and is 130 feet long. Cave No 1 has a ten feet wide, 30 feet high entrance and is 90 feet long. Both caves have floors initially of rounded boulders giving way to shingle and pebbles. HWM is approximately eight feet above the floor at each entrance.

Some General Observations

The sum total length of all the caves visited is almost 3500 feet which is quite a respectable footage of what were, as far as we know, caves previously undescribed in speleological literature. Along the coast between St David's Head and Druidston Haven, the 1:25000 sheets indicate 42 caves on the mainland and ten on Ramsey Island which, to date, have not been described in any caving publication. And that is only the number of marked caves; there are many others which have been seen from the sea during various boat trips and from walks along the coastal footpath.

To visit most of the sea caves of the northern coastline of St Bride's Bay and Ramsey Island, a boat is the only feasible means of access. Traversing sea cliffs without a convenient strip of beach below them would be arduous and time-consuming. Our

limited experience of using a 12-foot inflatable with a five horse power outboard motor in good weather around the Pembrokeshire coastline provided some salutary lessons concerning boat handling through surf and manoeuvring close to the cliffs and offshore rocks. There is usually plenty of movement in the sea hereabouts - notably a nine knot tiderace between Ramsey Island and the mainland. To approach most caves from the sea requires relatively calm weather and a serviceable anchor. It also requires recognition of the changeable nature of sea conditions and the need to use lifejackets and to carry suitable distress signals.



Saturday Night Fever

(Or Silly Games Night)

By Inky Scribbler

In the short year that I have been travelling to and fro between sanity and Nordrach Cottage, I have seen a strange alcohol-assisted phenomenon, in the form of post-drinking-hours hyperactivity. The Ed said, "Why don't you..?" So here is what I saw.

It seems that those who survive the road from Hunter's Inn to the cottage, celebrate by indulging in a series of stunts. The object being, presumably, to break the GBH barrier.

First there's Martin's regular attempt to mate with a broom.

As Bryan is the only person I've seen do this trick with all his arms and legs still attached, I suspect foul play. Anyway, it's beyond description.



A game which appeals to my dislocated mind consists of two contestants and a short length of hose filled with water. The idea is to blow down the tube and force the water out of your opponent's ears, via his Eustachian tubes. Obstacles to concentration such as Brasso down the trousers and removal of contestant's chairs, are encouraged.

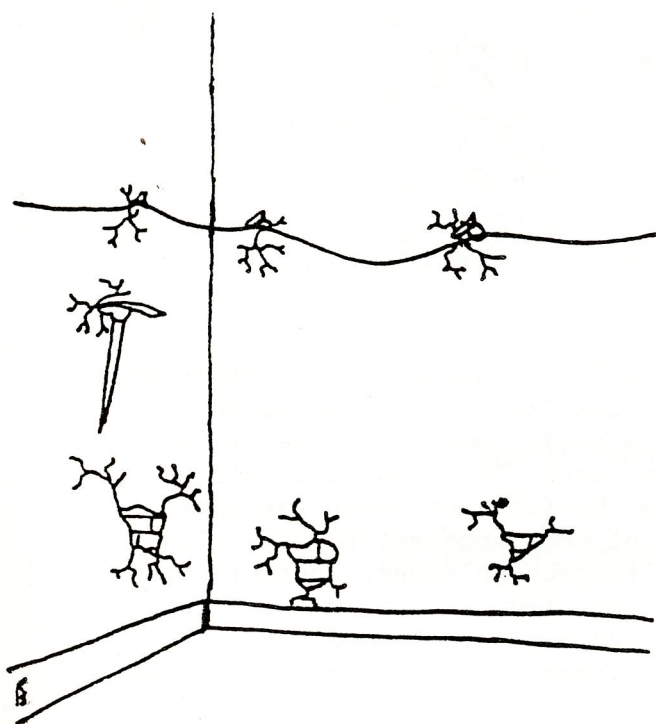
High on the list of priorities for any sporting ladies and gentlemen will be the table traverse, a demanding and technically difficult exercise in destroying furniture. The traverser lays on the table and attempts to pass underneath and back onto the top without touching the ground.



Crampons and ice-axes are not normally permitted except on polished surfaces.

A close relative of the above (but not one I'd want in my family) is the cottage traverse.

This is a test involving attempts to walk, climb or otherwise progress round one or more rooms in the cottage without touching the floor.



Full and free use is made of skirting-board, picture nails and raised patterns in the wallpaper, plus normal surface irregularities. If pieces of plaster can be persuaded off the wall and bricks loosened, additional legitimate hand holds will be available.

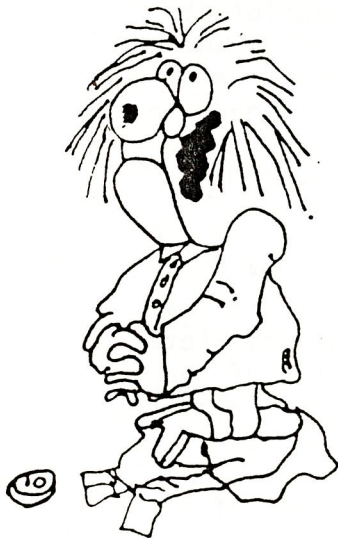
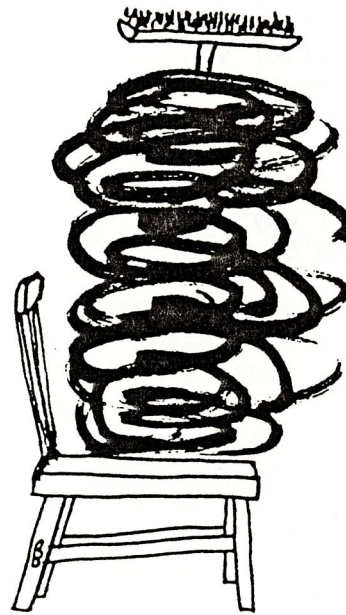
The sense of balance (or degree of inebriation) can be checked in the following manner.

Place a chair in the middle of the room.

Take a broom and, resting the forehead on the handle, run round the broom three times, jump over the chair and run round the broom as before.

If you can still stand up after that, have several more drinks.

Provision should be made for large falling objects and if game is to continue on an elimination basis, a mop and bucket should be kept handy.



Various people in the last few months have been practising a curious method of transporting coins, gripped in parts of the anatomy other than the hands.

The object being to carry the coin across the room and drop it in a bucket at the far side.

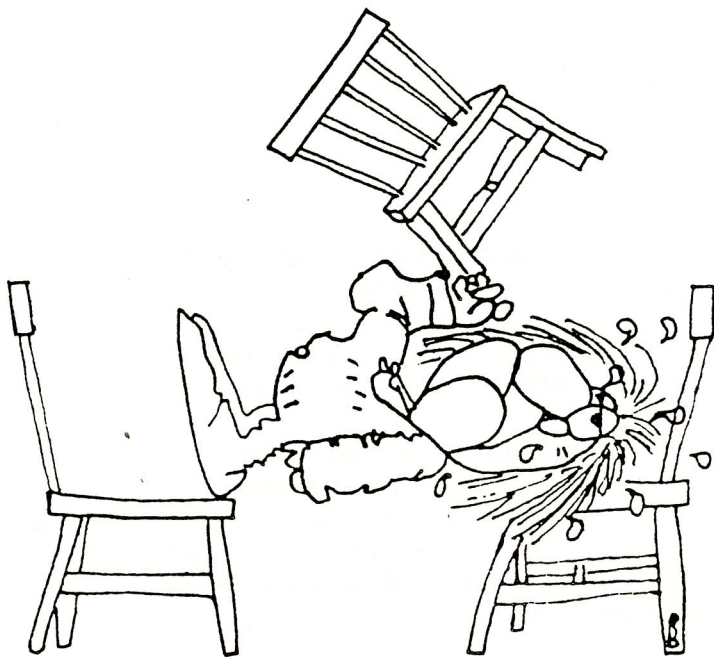
The mode of carriage and dress is optional.

History has shown that ladies (?) have an unfair advantage in this game. When a certain lady (?) displayed an immodest amount of her unfair advantages in an attempt to grip the coin, a longstanding male member had to regain his clothing.

Another hydraulic torture
is to drink a pint
while wearing a diver's
face mask. This pastime
tends to develop
initiative and resource.
And wet shirts.
Probably the best way
would be to stand on your
head in a corner.



I did see, one weekend,
a novel way to obtain
a simultaneous double
hernia and assorted
dislocated vertebrae.



The method, without
benefit of further
anaesthetic, is to
lay with feet on one
chair and head on
another, taking care
not to damage the
ankles (the heads of
most MCG members are
not susceptible to
concussive damage and
so may be ignored in
favour of other, less
solid, organs), and to
pass a third chair
round the body.

The winner of this
competition is the
person who completes
most passes of the
chair before reaching
100% disability.

In the event of a tie,
the largest strangulated
hernia wins.

Some Observations on The West Kingsdale System

By M. O. Cotter

When I went underground in Kingsdale in the early 1950's the existence of a Master Cave and the form that such a cave would take were wholly speculative. It was obvious that the main outlet for water was at Keld Head, but it was not known whether the feeders to it split off separately a little way in or not. It was generally thought that there was, in fact a Main Drain or Master Cave, since this seemed to be the pattern of the area, and the line of the active sinks would easily be accommodated by such a cave. It was, however, thought following diving at Keld Head, and from the presence of the sumps in some of the deeper pots, that any Master Cave would be (mostly) flooded. Floodpulse research by K. Ashton revealed the likelihood of a section of free air space before Keld Head, just before the discovery of the Master Cave in 1966. This having a streamway containing a good section with free air space, and in line with the other Main Drains in the area.

When going in by the valley entrance, one is immediately impressed with the rounded form of passage which is indicative of a phreatic origin - that is, it has formed while completely filled with water.

One may also observe inward flow of a small trickle of water. Inspection of the U.L.S.A. Survey shows that current markings in the entrance passage indicate outward water flow and, in very wet conditions water still flows out this way. A small channel also leads from the hole. The sediments in the entrance passage consist of a thin layer of mud laying on about 2 cm of rather soft calcite. This calcite in turn rests on a loose conglomerate of mud and limestone fragments. These sediments form a floor deposit which has a channel cut in it - making the section described readily visible. The channel must have been cut by water flowing from the direction of the entrance. The form of this channel in the sediments suggests that the volume of water was small but fast flowing. This could probably be accounted for by underground collection in very wet conditions.

The use of the valley entrance as a swallet would raise interesting questions. The 'U' shaped profile and the lack of spurs in the Kingsdale valley is indicative of glacial action. If the valley cave existed prior to the last glaciation, it is likely that source of it has been removed by ice. The possibility of ice entering this passage must also be considered. One wonders why the glacier failed to remove evidence of the small valley at the mouth of the cave, and this leads to the conclusion that:

- 1) The spring must have been active after the disappearance of the ice,

2) and possibly the lake formed by a moraine barrier at Raven Ray in the Kingsdale Valley. This lake has a level of 282 m (910 feet). It has been suggested that the valley entrance acted as an underwater spring (ULSA Journal 1969). The presence of a lake level above the valley entrance raises other interesting possibilities and questions. Could the valley entrance, and indeed Keld Head itself ever have acted as a swallet? If it did, where did the water go to? The most likely point of outlet would surely have been Leck Beck Head! This rising lies some 40 m (130 feet) lower than Keld Head so there is at present a gradient of 1:124 between them.

| | |
|---------------------|--------------------|
| Keld Head | 253m (830 feet) |
| Leck Beck Head | 213m (700 feet) |
| Altitude difference | 40m (130 feet) |
| Distance | 4.98 km (3 miles) |

With a lake level at 282m, the gradient between lake surface and Leck Beck Head would be 1:72.

A possible connection between the Kingsdale system and the Easegill system has been postulated.

If there was a link between the two systems in the past, it should have been at its maximum, i.e. when Kingsdale Lake was present. At some stage the lake surface should have been graded to the valley entrance. The volume of water involved would have scoured sediments from the passage and produced inward-pointing scallop markings.

This argument does not rule out a connection between the systems, but points to it being higher up in the caves. A possibility may exist whereby capture has occurred, so that the route joining the two systems may be steep and relatively restricted. Since Marble Steps drains to Keld Head and Lost Johns to Leck Beck Head, the key lies in the possibility of a capture of Ireby Cavern water, by Leck Beck Head from Keld Head.

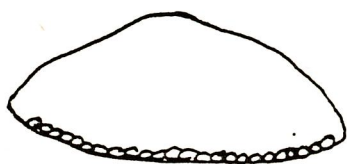
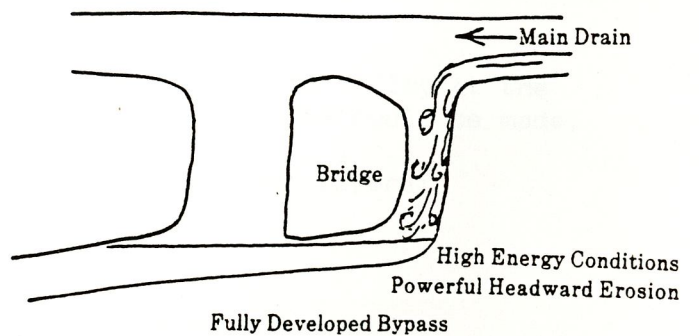
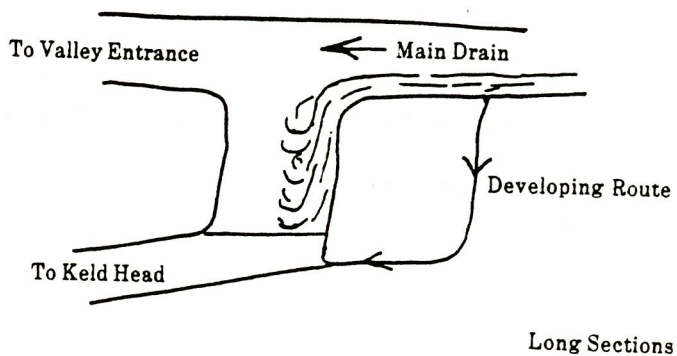
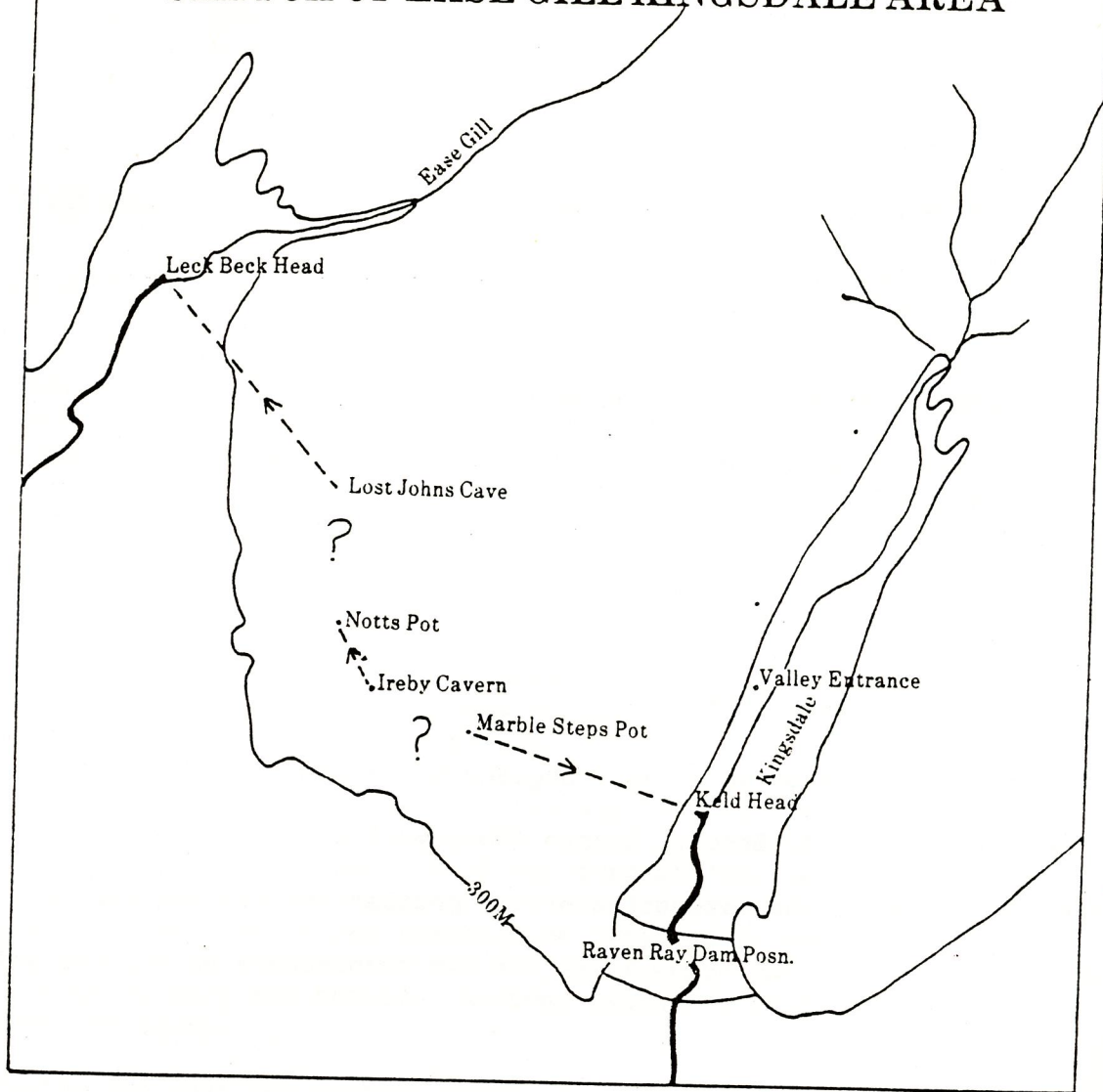
Now to return to the cave. At the place where the valley entrance passage meets the Master Cave, there is a fine bridge of rock. It has been postulated that this was formed by the mechanism depicted in the diagrams following. These diagrams also show how the present Master Cave developed.

The Headward erosion has reached to just below the master junction where there are some fine rapids with clean well-scalloped bedrock floor. The rapids represent the present day knick point where there are high energy conditions. Above the knick point, and in certain parts below, are masses of sediment (cobbles, pebbles and sand).

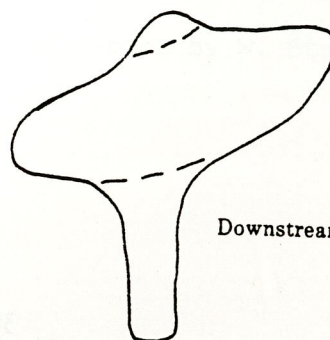
The cross-section of the cave above the knick point is oval, while below one may note that a canyon has formed in the floor of the oval section.

If one observes the roof of the oval section there is a further channel to be seen. This channel is another small oval-sectioned portion which

SKETCH OF EASE GILL KINGSDALE AREA



Upstream Section



Downstream Section

meanders in the roof of the larger passage.

Three stages of formation may thus be clearly seen.

Stage 1: Represented by a meandering phreatic passage about half a metre in diameter.

Stage 2: Represented by a large oval passage about three metres in diameter, larger volume than Stage 1.

Stage 3: Represented by an entrenchment in the floor of the large oval passage of Stage 2.

References

- 1) CRG Newsletter 98 p.2. 1965
- 2) Limestones and Caves of North West England by Waltham (David & Charles)
- 3) Northern Caves, Vol. 4, Brook & Others (Dalesman)

Thanks to S. Thorpe for discussion of the problems of Keld Water.

Progress in the Blackmoor Valley Area of Velvet Bottom

By M. O. Cotter

Upper Flood Entrance Swallet. During 1976 blasting and clearing operations continued. Half way through the year we encountered a mass of black mud (tailings from lead working) blocking the upper half of the passage. Expectations rose when a probe hit a free space on the far side. As usual our feverish digging gave way to disappointment when the cavity came to an end after about one metre. Digging downwards revealed that the stream was in a water filled cavity on the left side which shelved sideways about 1 metre.

Very little done in the cave between 1976 and 1981 since all our efforts were directed to cottage building. In 1981 work was resumed in earnest, aided by fresh helpers.

The initial task was to tidy up the approach to the face which took several sessions. Blasting and clearing of the calcite obstruction was then continued. About half way through 1982 we found for the first time that the calcite blockage projected below water level and this gave us hope that we had reached the final spoil dam. On breaching the calcite we encountered mud and water which can be probed to $1\frac{1}{2}$ metres without finding the bottom. Another calcite barrier lies ahead and work continues.

During the last two winters water levels have frequently been high in the cave. Flow away at the end has never been impeded.

The latest system of spoil removal, dragging fully loaded skips from the face right out of the cave is proving far superior to the old method using poly bags.

Bank Subsidence: several digging sessions were made up the valley at the bank subsidence, but work ceased before any firm conclusions could be made.

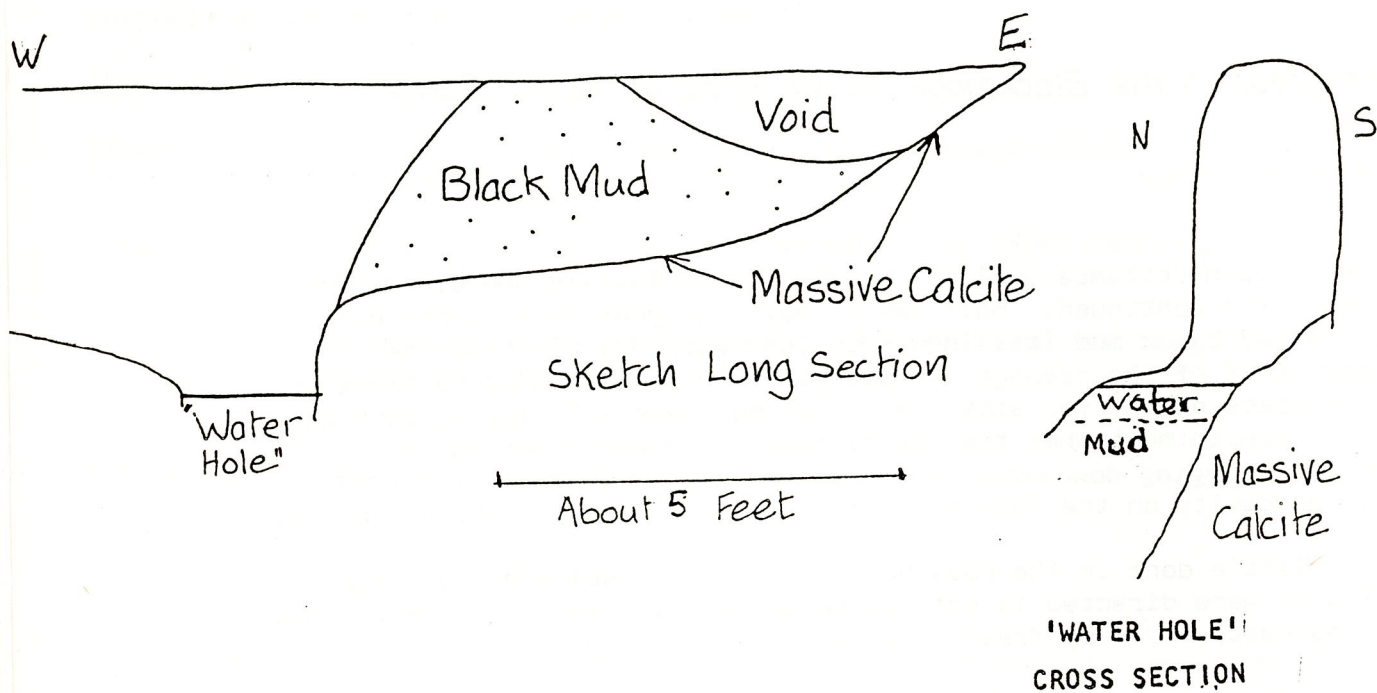
Blackmoor Swallet: Interest has returned to this cave and several inspections and probings have been made.

Other Organised Activities:

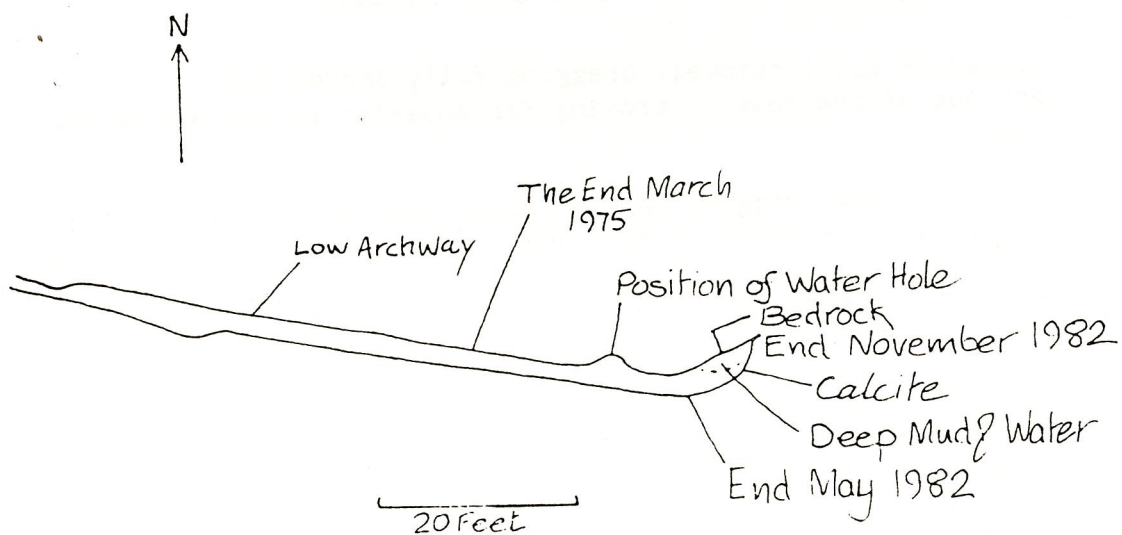
Middle Flood (Waterwheel Swallet): Work by W. Stanton above the bank containing the Middle Flood entrance revealed evidence of mining activity. He discovered remains of a large waterwheel. The Middle Flood cave was entered and a length of passage dug out, details of which have not been disclosed yet.

Grebe Swallet: This cave has been re-opened and capped by W. Stanton.

Upper Flood Swallet



END OF UPPER FLOOD 1976



END OF UPPER FLOOD 1982

Upper Flood Swallet Future Projects

By M. O. Cotter

A steady advance of the face at Upper Flood will continue. In the same cave an investigation will be made of the recently infilled passages behind the first flight of steps. It is likely that the continuation of this passage discovered in 1968, could lead out to the valley at stream level or below. Since miners' props were observed, it is probable that the cave extended in that direction in the past. In Swildons Hole water drops down vertically into the Wet Way a very short way in, leaving dry ways above - a similar situation may have existed at Upper Flood. Another good reason for reaching the stream would be to flush out the presently known system.

The search for the Post Glacial Swallet will continue in the valley. An investigation is to be made at the point where water vanishes on the left (east) side of the valley. Here, an arm of the stream used to enter a covered leat. Over the past 20 years or so the stones covering the leat have collapsed and the bank subsided. This process has been speeded up over the last few years and a clay face has been revealed. Before the Great Flood of 1968, water was only observed entering the left bank in exceptionally wet conditions or following blockage of the mainstream which also enters a covered leat. Impedance of the flow since 1968 has meant that the left branch of the stream has become increasingly active, and probably accounts for the subsidence.

An interesting feature now revealed is that the left distributory is joined at the bank by a large volume of water flowing from the right (south). The enlarged volume then appears to sink vertically. The site is to be investigated as soon as conditions allow.

Another change to water flow since 1968 has also been observed. Water has not been seen at the lower swallets at all. Before 1968 the lower swallets were active after Blackmoor Swallet. Blackmoor Swallet is occasionally active after very wet weather, but in reduced volume. Before 1968 it generally took water continuously between October and March.

Charterhouse Rakes

By Jonathan Roberts

Charterhouse, at the northern end of Velvet Bottom valley, saw mining and smelting from pre-Roman days until the end of the last century. The tailings, the waste from the processes, and spoil have been dumped in vast quantities along the length of Velvet Bottom, spread by human and natural processes. The 1968 flood redistributed some valley floor material, for example.

With, say, a three metre cover of mining deposits along Velvet Bottom, and an average valley floor width of over 60 metres along the two-and-three-quarter km from Nether Wood at Blackmoor to Timber Hole near the junction with the Longwood Valley, this would total almost 500,000 cubic metres of material - over 17½ million cubic feet! The deposits are much thicker in places. Nor does this include the minerals extracted to good purpose, principally lead.

Even this conservative figure would require the removal of a one-and-a-half metre depth of material from the entire area visible as gruffy ground above Blackmoor, east of the Charterhouse to Priddy road. This area is about a third of a square kilometre in size. The most intensively mined section, near the ruins of Bleak House, is known as Charterhouse Rakes. Here the results of human burrowing are spectacular, featuring 'mini gorges' five metres deep following mineralised veins, and many depressions, each possibly hiding a forgotten mining shaft.

The Rakes are an obvious candidate for exploration, being only 15 minutes' walk from the Mendip Caving Group cottage. However they have received only sporadic attention in the past from the MCG. A reconnaissance with Pete Bulling on July 4 1982 confirmed that at least 14 shafts were still open, including six covered by grilles that can be squeezed through by those intent on penetrating underground. As local topography is very complex - shafts are sometimes difficult to locate and can be confused one with another - any serious attempt to record the rakes and shafts clearly required a detailed survey of the surface.

Existing caving records were searched, revealing the following items (reproduced as Appendices A to E):

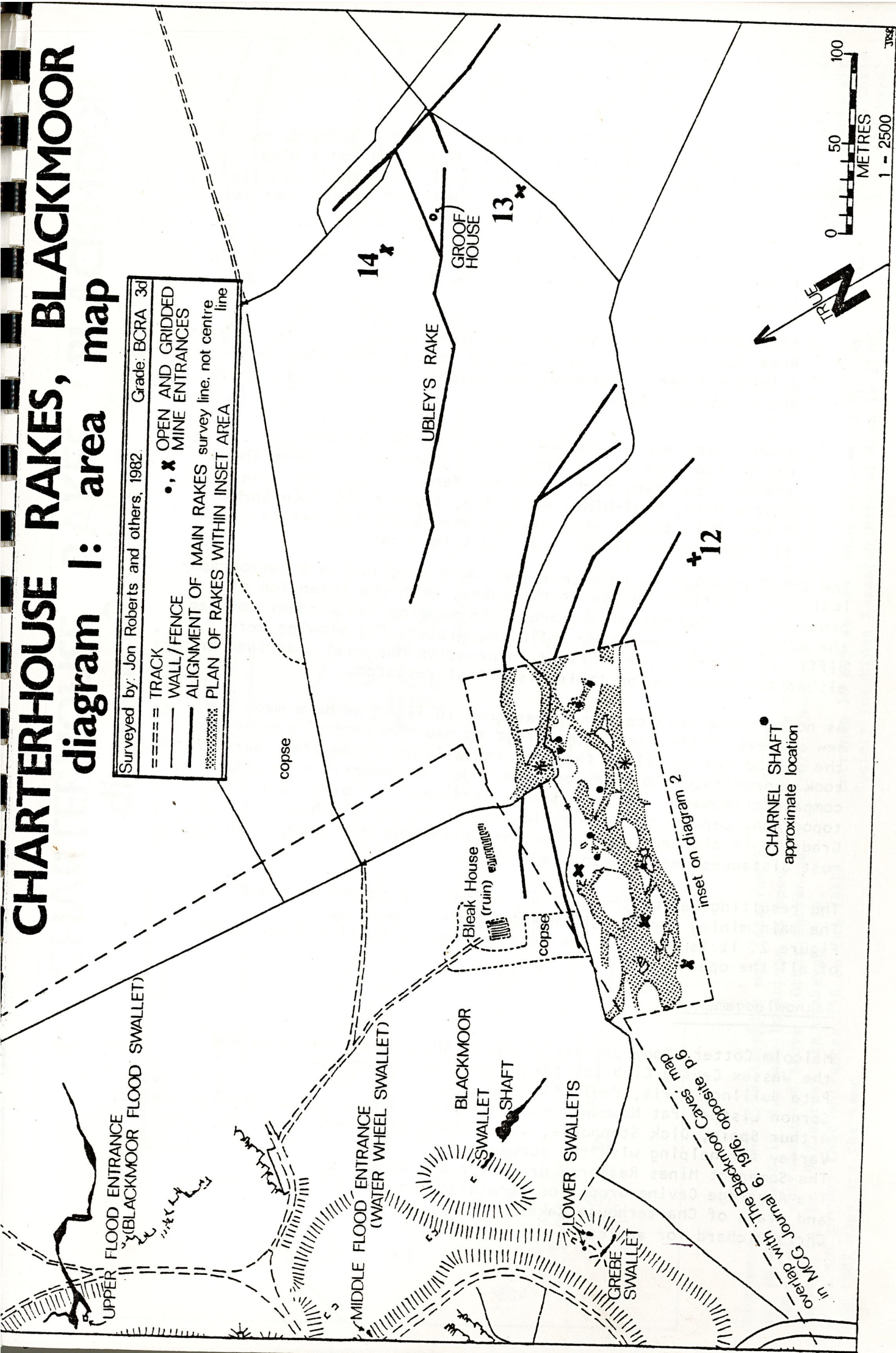
- A MCG cottage log report and January 1963 sketch plan (not published until now) of Charnel Shaft, by Tony Knibbs. The shaft was discovered because of a blowhole evident in the snow covering that winter. It was subsequently lost and has not yet been positively relocated, though the grid reference (ST55/5066.5528) gives an approximate position.

CHARTERHOUSE RAKES, BLACKMOOR

diagram 1: area map

Surveyed by: Jon Roberts and others, 1982. Grade: BCRA 3d

| | |
|-------|--|
| ===== | TRACK |
| --- | WALL/FENCE |
| --- | ALIGNMENT OF MAIN RAKES survey line, not centre line |
| ---- | PLAN OF RAKES WITHIN INSET AREA |
| ••x | OPEN AND GRIDDED MINE ENTRANCES |



overlap with The Blackmoor Caves map
in MCG Journal 6, 1976, opposite p.6

- B January 1968 ACG newsletter report by Chris Richard, on Boulder Mine, Calcite Mine, Rift Mine, and Small Mine. The mines could not be located clearly from their descriptions until the 1968 sketch map (mentioned below) came to light, thanks to the efforts of Tony Jarratt.
- C June 1968 ACG newsletter report by Brian Waite on 'Thatch's Bomb Mine'. This may be the same as Bomb Mine in the 1968 sketch map.
- D. 1970 Journal of the Society for Mines Research in the Bristol Area (SMRBA), which describes and locates 'MM' Mine; also a former miner's rock dwelling (groof house) at the eastern end of Ubley's Rake.
- E 1968 sketch map of the main rakes, by Bob Burgess and C Priest of the Axbridge Caving Group. This locates and names eight shafts then open: Bomb Mine, Boulder Mine, Calcite Mine, Castle Mine, Mini-Mine, Rift Mine, Small Mine, Twin-Fork Mines. This sketch also has not been published before. Its North point is 30° - 45° East in error.

The SMRBA remarked in 1970 that they were undertaking a cartographical and historical survey of the rakes, with the intention of producing a 1:200 map of the area. The mapping had already covered the major rakes, they said, while the history "is proving very difficult to trace". No further information has been unearthed on either the SMRBA map or their historical research.

As no detailed surface survey has come to light, we have made two new surveys of the rakes, the first to map the general layout and the second the detail of the most intensively mined area. Surveying took approximately 40 hours on site (96 man hours). A Brunton compass/clinometer and tripod were used, and a fibron tape. The topography permits many loop closures to be established. BCRA Grade 3D is claimed for the surveys, with horizontal angles and most distances measured to Grade 5D.

The resulting map of the general layout is attached as Figure 1. The main mining area is shown separately in more detail, as Figure 2. It is hoped in the next Journal to publish descriptions of all the open shafts.

Acknowledgements

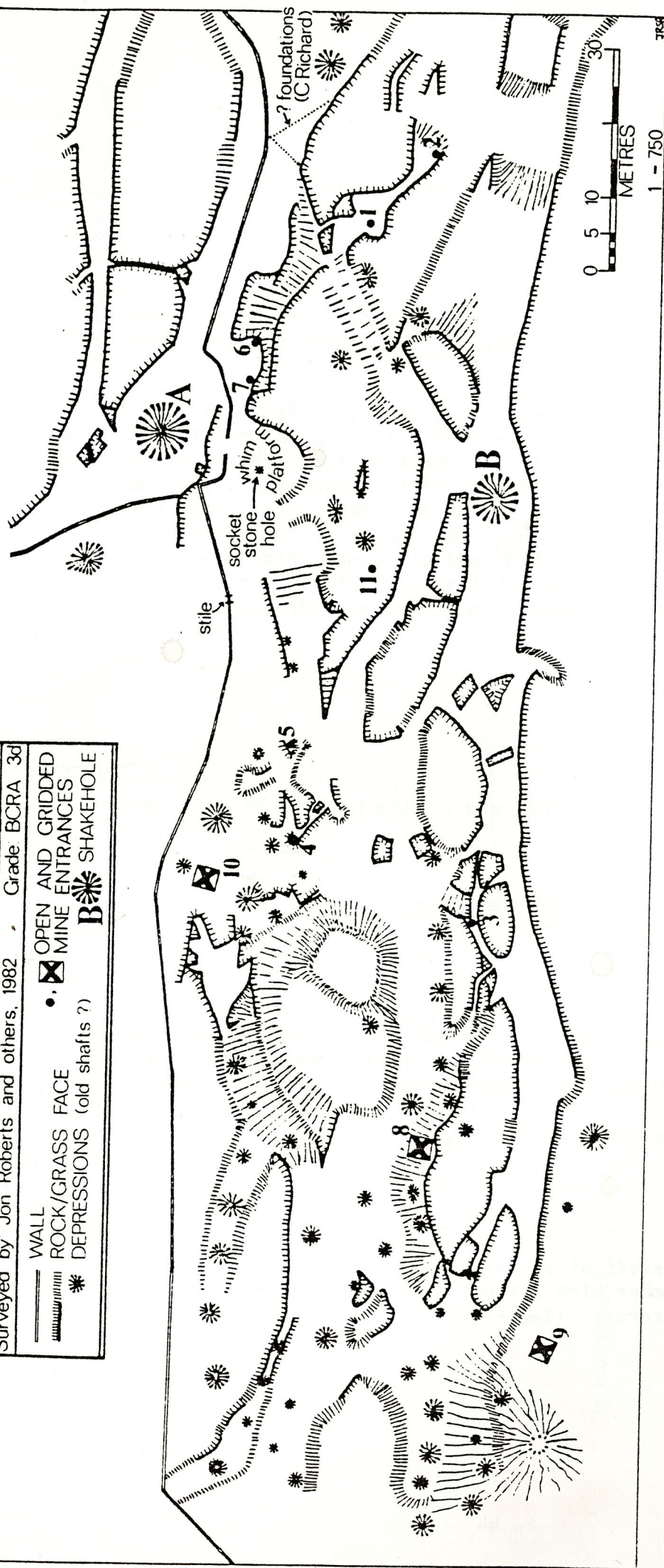
Malcolm Cotter, Tony Jarratt, Tony Knibbs, Stuart MacManus and the Wessex Caving Club for the loan of surveying gear.
 Pete Bulling, Chris, Paul, Richard Dewdney, Roy Kempston, Tony Knibbs, Gordon Lister, Pat Newman, Jenny Phillips, John Pudduck, Bernard Reeves, Arthur Spain, Dick Stenhouse, Steve Thompson, Steve Taylor and Bob Varley for helping with the survey.
 The Somerset Mines Research Group for advice.
 The Axbridge Caving Group for permission to publish their reports and plans of Charterhouse Rakes.
 Chris Richard for advice.

CHARTERHOUSE RAKES, BLACKMOOR

diagram 2: inset map

Surveyed by Jon Roberts and others, 1982 - Grade: BCRA 3d

| | |
|---|---------------------------------|
| — | WALL |
| | ROCK/GRASS FACE |
| * | DEPRESSIONS (old shafts ?) |
| • | OPEN AND GRIDDED MINE ENTRANCES |
| ✱ | SHAKEHOLE |



Entrances 1-8 on the 1968 Axbridge map (diagram 3) are in approximately the same locations as open and gridded entrances 1-8 above. Other entrances defined in the 1982 survey are numbered 9-14. It is *not proven* that entrances 1-8 on the 1968 and 1982 maps are the same.

Entrance 7, which may be 'Twin Fork Mine' on the Axbridge map, is believed to be 'Halfpenny Hole' (refs: Complete Caves of Mendip, Wessex Journal 108).

Entrance 10 may be 'MM' Mine discovered by the Society for Mines Research Bristol Area in 1970.



Shakehole A is a run-in shaft (info & whim site from Chris Richard).

Appendix A

From MCG Cottage Log, weekend February 23/24 1963

Sunday

Tony Knibbs, Pauline, Geoff and Anne went up beyond Bleak House to probe blowholes in the snow over the clints. Tony laddered Charnel Shaft, just north west of the clints and described it as follows:

Forty foot pitch to charnel slope in high rift, Many animals litter the floor and care is needed in stepping off ladder. The delineation of the rift is north to south. Passage goes for 20 feet south to another rising rift. Passage here goes west and downwards for 15 feet to mud and rock choke. Below ladder landing a small hole descends for some five to six feet to choke of mud and rocks with some old fence posts. Northern extension of rift chokes up after 12 feet or so but an air current can be felt coming from somewhere here.

Antony J Knibbs

Appendix B

From Axbridge Caving Group and Archaeological Society Newsletter January 1963

Four Blackmoor Mines (Charterhouse)

By Chris Richard

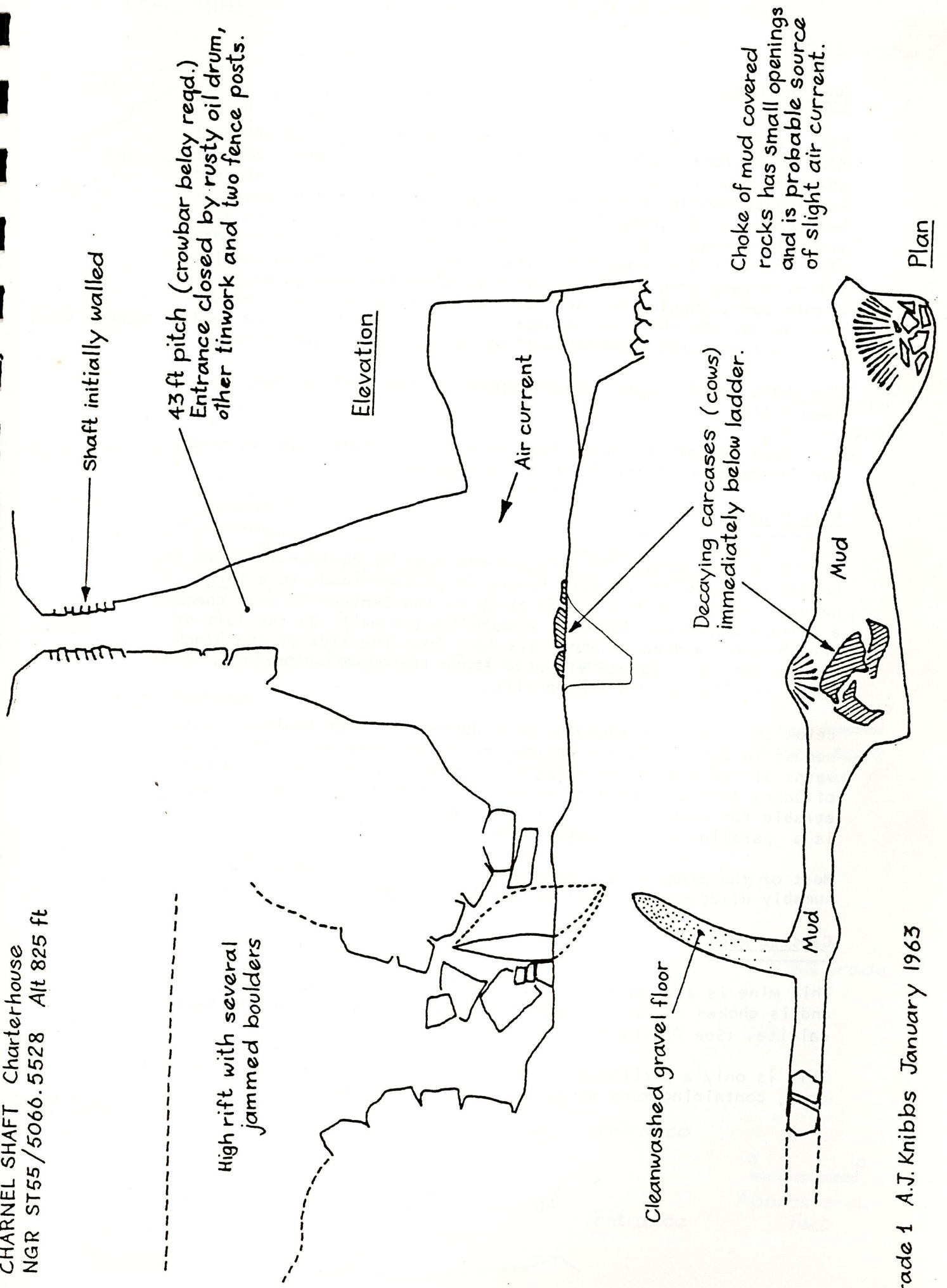
About 300 yards to the south of Blackmoor Swallet there exists a tract of land as a series of low cliffs, much resembling Karst scenery. There has been much mining in and around these cliffs.

Recently, some friends and I visited four out of probably many mines

Small Mine

This mine consists of an earthy six-foot shaft which leads to a rift-like chamber with a loose earth floor deposit. It contains nothing of interest. (See Figure 4.)

Fig.3 CHARNEL SHAFT Charterhouse
NGR ST55/5066.5528 Alt 825 ft



Boulder Mine

This rather dangerous mine lies a few feet to the east of Small Mine. A 23 foot shaft through loose boulders to a small boulder chamber, and at the bottom of this an impenetrable natural rift leading downwards. I cleared out some boulders from a space between other dangerously-poised boulders, and crawled via a terrible squeeze into a small chamber, and emerged at the foot of a shaft leading upwards to the surface. I did not remain in the mine very long as I did not think that the squeeze would remain open, judging by the loose boulders above. A boulder did fall out of the shaft as we were hauling up the ladder, as well as a fall of earth - probably blocking up the squeeze below.

The shaft leading upwards was located on the surface, but had been filled in.

A 25 foot ladder and eight foot belay (or 30 foot rope) is needed for the descent of the shaft. (see diagram)

Rift Mine

This mine lies about 100 yards to the east of Boulder Mine, in the bottom of a ravine. A short length of passage leads to a large natural chamber with a fallen block in the centre. In this chamber a flint scraper was found in a niche in the wall. On the left of the chamber, a drop of about six feet down the side of the block brings one to a squeeze elevated above the approach passage, which leads to a loose constricted rift.

Below this, another squeeze, or a descent through boulders, gives access to Ochre Rift - a narrow, but high, rift containing several veins of red and yellow ochre with some vein calcite. At the end of Ochre Rift a cross-rift occurs, neither one of these are penetrable for very far. There is one side passage in Ochre Rift, which is a parallel rift, though not as large.

Most of the mine is undoubtedly a natural cave which was presumably discovered and worked for iron. (See Figure 6.)

Calcite Mine

This mine is also partly natural, being a rift about 30 feet long, and is choked at the far end. It contains a thick band of "Beef" calcite. (See Figure 7.)

This is only a preliminary report, and I hope to publish a revised copy, containing more mines, in a future newsletter.

Fig.4 SMALL MINE

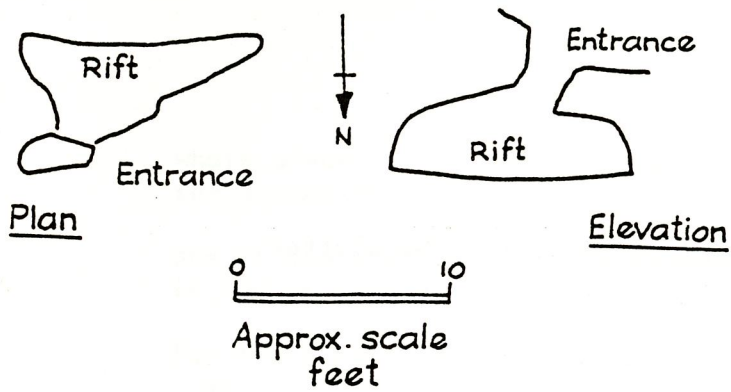


Fig.5 BOULDER MINE

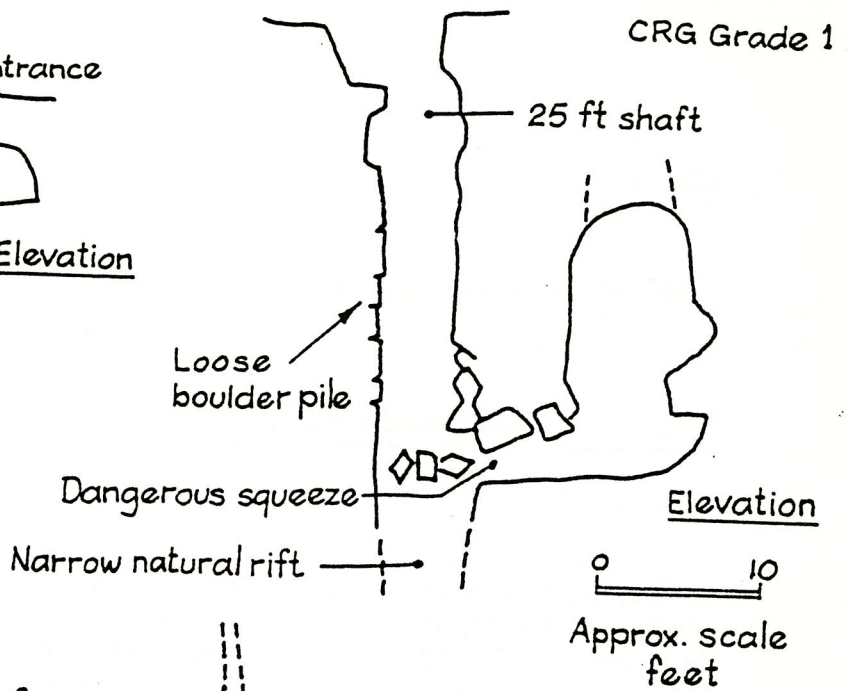


Fig.6 RIFT MINE

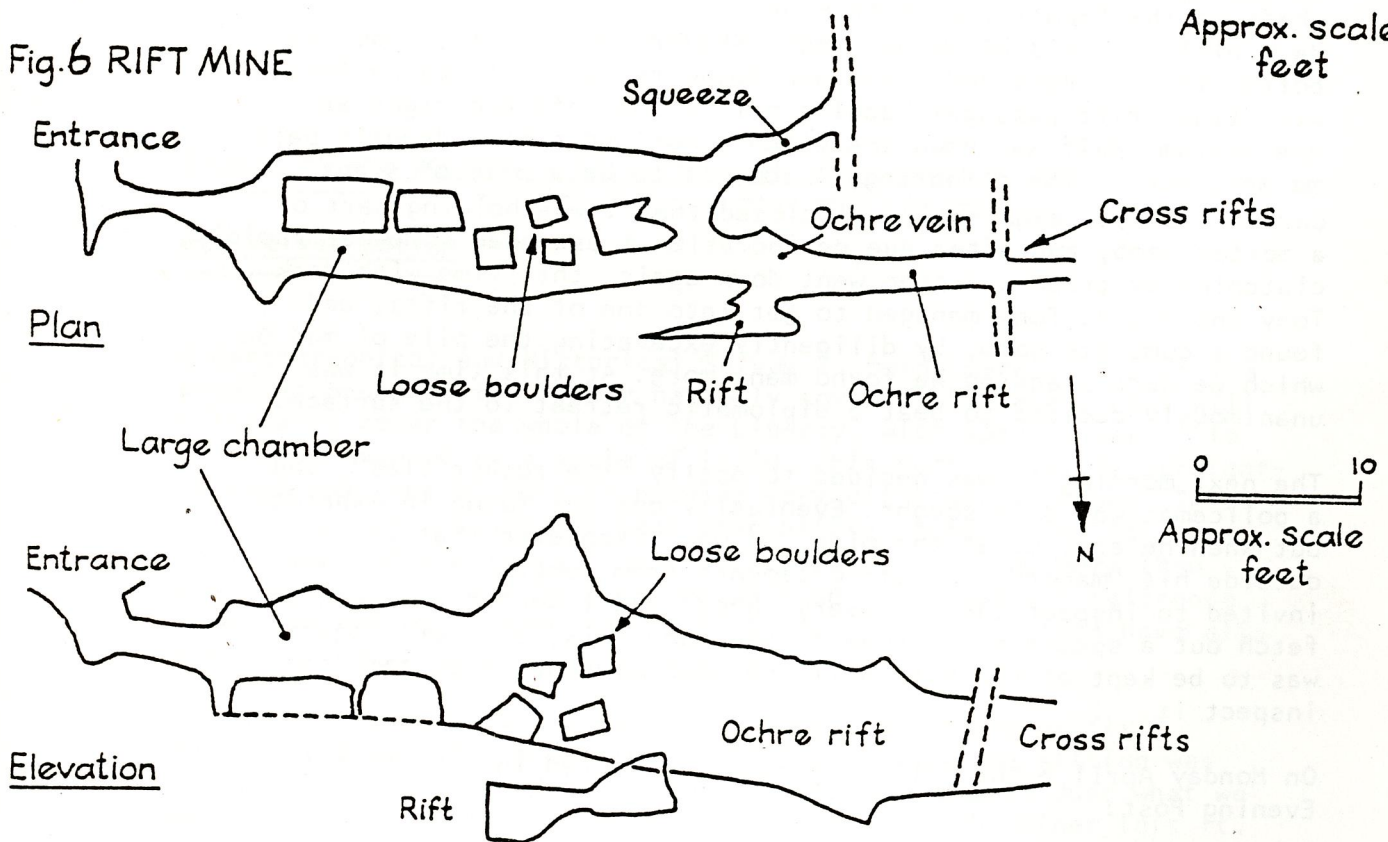
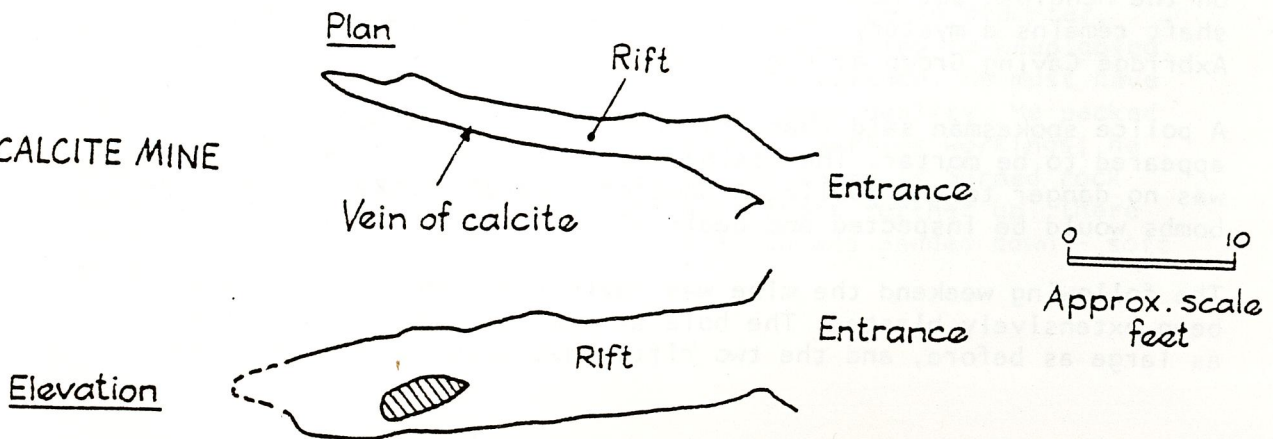


Fig.7 CALCITE MINE



CRG Grade 1

Appendix C

From Axbridge Caving Group and Archaeological Society Newsletter
June 1968

Thatch's Bomb Mine (Charterhouse)

By Brian 'Thatch' Waite

Following the discovery, by Tony Jarratt, of a previously unentered shaft in the locality of Rift Mine, a party consisting of Tony, Mark Hill, Chris Richards, Roger Thayer and myself set out to bottom it. I descended first and found the shaft to be 20 feet deep with tight rift passages leading off to the left and right at the bottom. Half way down the pitch I noticed a blue deposit below me and, due to the colouring, I took it to be a pile of spent carbide. Closer examination disclosed that I was holding part of a mortar bomb, and after due deliberation I ascended somewhat rapidly, clutching my trophy. I then went down again, this time with Mark, Tony and Roger. Tony managed to get into one of the rifts, and found a complete bomb, by diligently excavating the pile of mud on which we were standing he found many more. At this time it was unanimously decided to beat a diplomatic retreat to the surface.

The next morning it was decided to notify "the authorities", and a policeman was duly sought. Eventually one was found in Axbridge, but when he arrived at the mine, it was discovered that it was outside his "manor", so reinforcements from Compton Martin were invited to inspect the discovery. Roger and I went down again to fetch out a specimen for them to see, and this, at their request, was to be kept at the Hut until the bomb disposal team came to inspect it.

On Monday April 8 the following report appeared in the Bristol Evening Post:

"An all-clear has been given today by the police over 25 bombs found at the bottom of a disused lead-mine shaft at Charterhouse on the Mendips. But how they came to be at the bottom of the 20 foot shaft remains a mystery. They were discovered by members of the Axbridge Caving Group at the weekend.

A police spokesman said that from the shape of the bombs they appeared to be mortar. The casings were empty of explosives and there was no danger to the public. A Southern Command spokesman said the bombs would be inspected and dealt with tomorrow".

The following weekend the mine was revisited, and found to have been extensively blasted. The hole at the surface is now twice as large as before, and the two rifts have been obliterated. The

whole place is now dangerous due to the very loose rock left by the explosion.

One of the bombs, minus the detonator which was removed by the police, is now on show at Field HQ.

The shaft was named by unanimous decision, for somewhat obvious reasons, 'Thatch's Bomb Mine', the only other suggestion ('Mine Mine') being rejected.

Appendix D

From The Society for Mines Research in the Bristol Area
Journal 1970

Report on the Society's Activities at Charterhouse Rakes

and Velvet Bottom

A Cartographical and Historical Survey is being carried out on the area. At present, the former has only covered the rakes, but will eventually cover the whole of the Liberty, with special parts, ie the rakes, mapped to a scale of 1:200. This part is fairly straightforward, but the history is proving very difficult to trace. This is probably why it has not been done before. Information is appearing from all sorts of unlikely places, and I am more than grateful to those who have passed on even the smallest reference. 'Keep 'em coming, I need 'em'. The Somerset Record Office have also been very helpful but could not offer much.

It was during a surveying session, in the snow, that we first noticed a mineshaft "breathing", this meant that the filling was almost intact and would be reasonably easy to remove. Just what we wanted, a mine which had not been entered since the miner left it.

Later in the year we uncorked it. We did not find any treasure, but we did find plenty of information as to the workings of such mines. This one had shot marks, three-quarters of an inch in diameter, fire breaking used after the shot, he was struggling to keep going. Kibble rope marks, one and a half inch circumference. He must have hauled out a fair amount of ore, though of poor quality. He packed all his waste material into the rift and his earlier workings; he probably had a fire for air circulation, as there is burned rock below a narrow shaft which joins the main shaft further up. There were no boot marks, though some of the earth was padded down - soft soled shoes.

The filling supports were tree branches, originally two-and-a-half inches thick, now they consist of carbonised paste around a core of about half an inch. These were not supporting the filling, but this was held by a large rock. The wood was dated to about 100/150 years; - this is also helped by the small shot holes. Later than is generally believed.

It is a cave-type rift with a bedding chamber at the bottom, 52 feet deep, but not really worth digging as a cave. We are leaving temporary stopping on until March, when we will block it properly, before the picnic parties fall down it. Mines Register No C/R 170. "MM Mine". Location plan and section Figure 8.

Upper Flood Swallet was observed to have a thin glaze of lead slag on the rocks at the Western end of the support wall; the end of a small leat is also at this end - it is silted up. Marks of wire kibble ropes appear, cut into the hanging wall. We have not yet been into the mine, though from the entrance it looks like another cave/mine.

A line of Flue remains were noted, just below the road, on the left, looking down Velvet Bottom.

A part of a substantial Rail Chair was found amongst the heaps of Buddle Tailings (?) lower down the valley, also a pipe stem of circa 1800 was dug out of a heap, below the leat which cuts through to two Buddles. The flue and chimney remains of this lower Smelting Works were also found.

A small, floored, circular foundation wall was noted, about 25 yards from the end of the track to the lay-by near the Stirrup Cup, (marked Roman Road on Ordnance Survey). Could this be a Sentry Box?

In connection with the opening of King John's Hunting Lodge* in Axbridge, we have been asked to arrange a mining section. This will only include material from the Rural District; fortunately, this covers all our serious work. With this in mind, we will have to concentrate on the Axbridge Hill/Shute-Shelve area next year, so we have a really local show for the opening. We will, however, return to Charterhouse afterwards. All the finds will be available at King John's Hunting Lodge when it opens. Until then, they may be seen at Claremont Road, Bristol.

*As a museum.

Report on the Society's Activities in Ubley's Rake near Charterhouse-on-Mendip

At the eastern end of the main rake, nearest Ubley Warren Farm, there is a Mining Complex, consisting of an open shaft in the field above; two Whim Platforms, one overlying the other and looking large enough to have been operated by horsepower, and having a Socket Stone in the middle; a "Groof House", or miner's temporary dwelling, and several deep depressions.

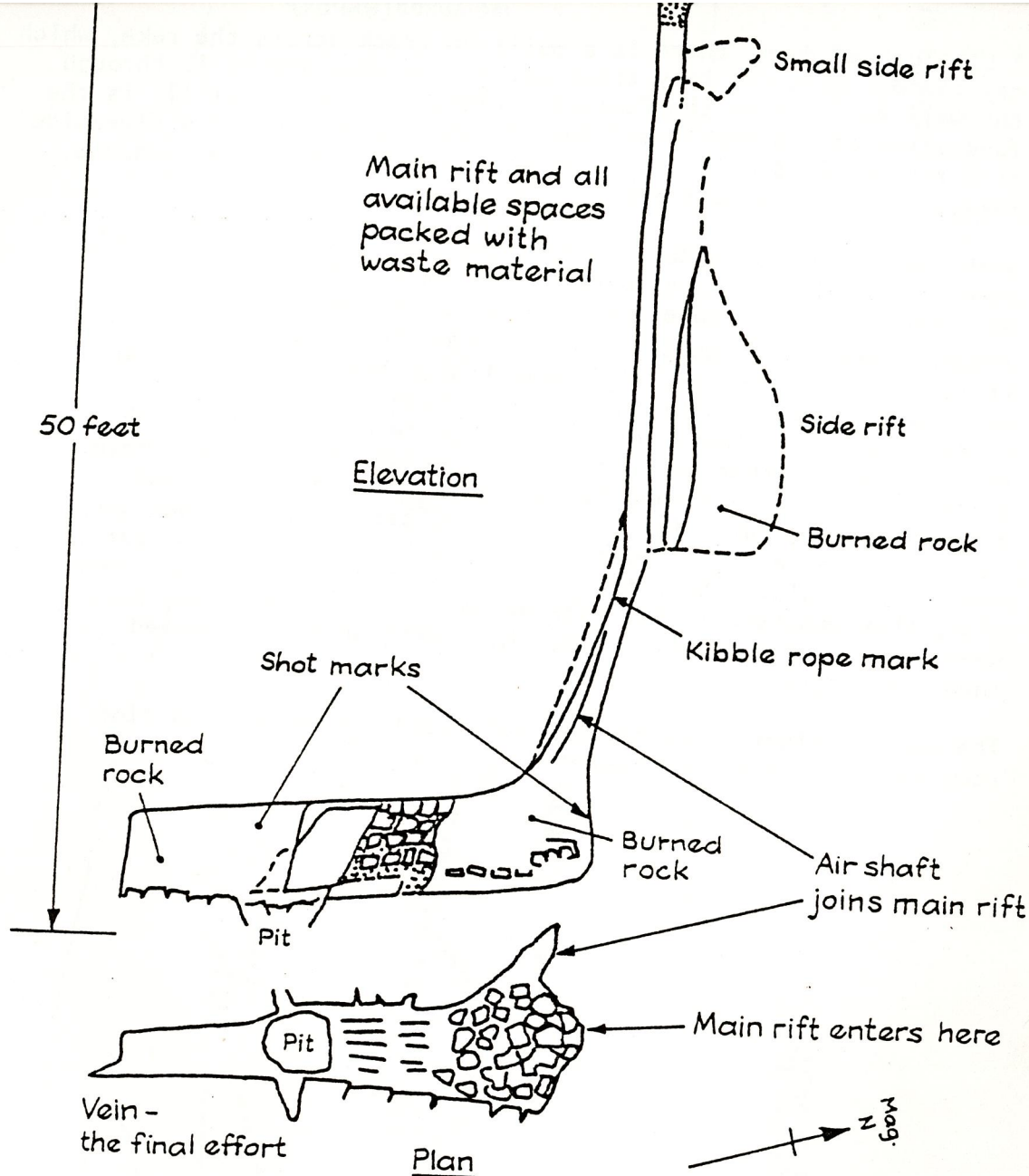
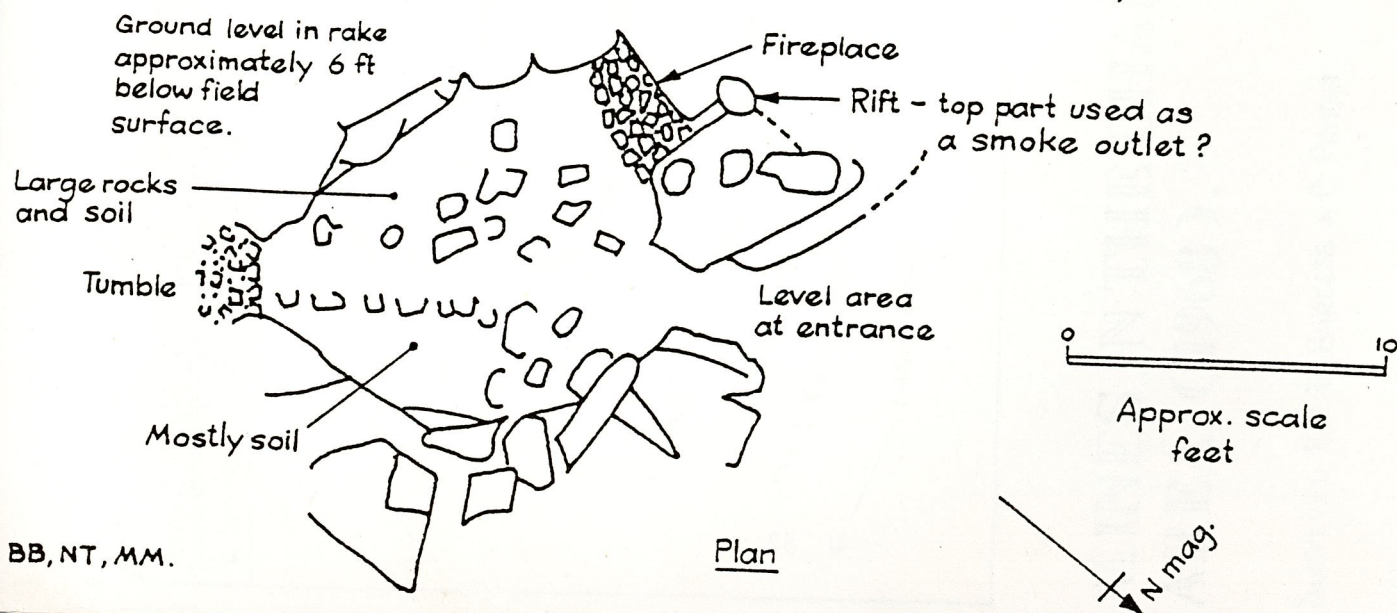


Fig. 9 UBLEY'S RAKE - No 1 "Groof House" at commencement of operations May 1970



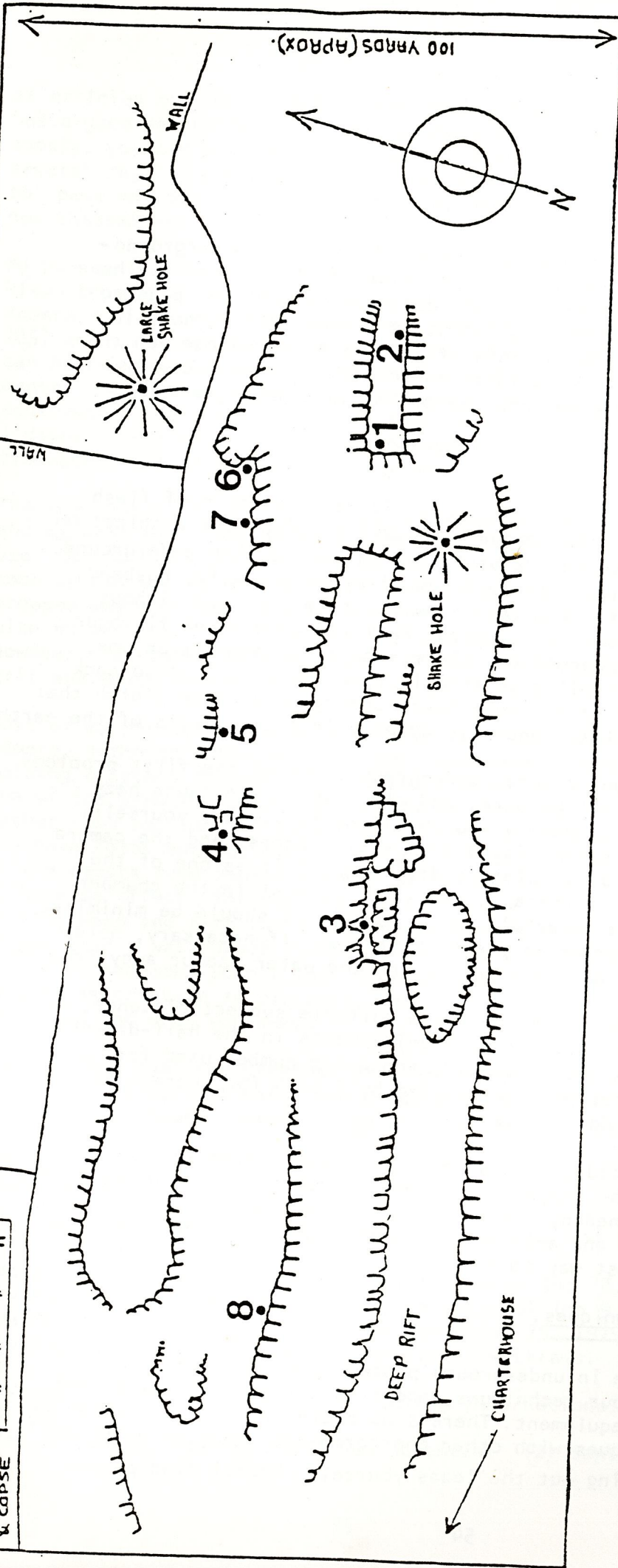
A bit further down, there is a built-up track across the rake, which may connect with the Pony track which runs down the hill, through the wall and towards the Pattinson Plant. Further on still, is the foundation of another "Groof House", showing as two walls diverging to a rock face. Similar features were also noted in Charterhouse Rakes, whilst mapping these.

Work was commenced in May, on clearing the first "Groof House", permission having been granted by the farmer, Mr Parrott. When we first saw it, it appeared as a collapsed Level entrance (it may turn out to be this too, or a Drift). After weeding, it was full of Brambles, it looked like a Smelting House, but as we worked through the tumble, a Fireplace appeared, built of 'Dry' stone. Although none of us has seen a "Groof House" and as yet, no other evidence of occupation has appeared, intuition tells us that this is what it is. It is made in an enlarged rift within the rake. The rift contains calcite, which has been removed as far as it is possible to reach into the narrow part, eight inches wide. Where the horizontal joints in the rock were wide, they had been filled with stones, and the walls may have been built up for a foot or so, this being what had tumbled into the centre.

The work of clearing is not yet completed, so we hope to find some real evidence next year.

ACG

OLENIK
HOUSE (RUINS)
& COARSE



MINES IN THE CHARTERHOUSE AREA. (1968).

SURVEYED BY: B. BURGESS + C. PRIEST

KEY:

- 1) RIFT MINE
- 2) CALCITE MINE
- 3) CASTLE MINE
- 4) SMALL MINE
- 5) BOULDER MINE
- 6) MINI-MINE
- 7) TWIN-FORK MINES
- 8) BOMB MINE

Fig.10 Survey by Axbridge Caving Group

Cave Photography

By Ian McKechnie

It's quite probable that you have taken photographs underground - perhaps successfully, perhaps not so successfully. Or you may have decided you're going to try it some day, but haven't yet plucked up the courage to risk your equipment in a damp, dirty, hole in the ground. The intention of this article is to encourage you to try it out, and to give some ideas on how to progress once you have taken that first step into the art of cave photography.

The First Attempt

Almost any camera will do - as long as it has some form of flash attachment. You should be thoroughly familiar with your combination of camera and flashgun before you think of taking them underground. If it's new to you, then use up a few films on the wife, husband, children, MCG members, etc, until you can take pictures without thinking, and with your eyes closed. Pack the camera and flashgun in a waterproof, shockproof container such as an ammunition box, with foam rubber or similar to stop it rattling around. Also pack a towel of some sort to dry your hands underground. Then finish that pint, put on your helmet, and slip quietly into the bowels of the earth!

When you take out your camera underground, one of the first problems you will encounter will be water and mist which can cause hazy and unclear pictures. Ideally you should be fairly dry yourself, so that there is no steam rising from your clothes. And the camera and flashgun should be completely dry, even if it is one of the waterproof variety. If there is any steam or mist in the chamber (as is inevitable in waterfalls or streams), it should be minimised by keeping the number of people to a minimum. If necessary, hold your breath, or ask an assistant to fan the water vapour away from you.

Preset the camera and flashgun for a suitable subject distance, as it can be difficult to focus or make adjustments in the half-darkness. If your flashgun is not automatic, the guide number used for calculating exposures must be divided by 3 or 4 for average caving scenes, due to the dark walls.

Then when you're ready, just snap away! Take a wide selection of types of photograph and, when you see the results a few weeks later, don't be disheartened by the failures, or rest on your laurels with the successes. Try and analyse what went right or wrong with each one: that's the best way to learn.

More Advanced Techniques.

As your experience in underground photography increases, you will want to improve your techniques, and find new ways of making the best use of your equipment. There's no better way to learn than by discussing techniques with other photographers, reading books and articles, and trying out the ideas yourself. You'll find plenty

of articles on the subject in the caving press - the MCG club library has a good selection of journals, and when you have exhausted the supply, you can ask the librarian for more. And there are inevitably several regular photographers in the club, always keen for a chat to pass on some of their experience, and perhaps learn something new themselves.

My own equipment box normally includes a camera (currently a battered Nikon EM with 28mm wide-angle lens; this is by no means the ideal camera for the job, but it's what I happen to have); a flashgun (Vivitar 285) and spare batteries, a 2m long flash lead (so that the flash can be used away from the camera if I want), and a remote flash sensor (so that a second flash may be fired from the first). Other equipment is used on occasions, such as a tripod or a bulb-flash unit. I usually work with another photographer, so that we can use two flashguns, but only need to carry one each.

The ammo-box is lined with sheets of foam cut to fit neatly around and between the items of equipment, and to be easy to repack after use. An old tea towel is kept on top of it all, ready for use as soon as the box is opened. This arrangement has been through sumps, dropped several feet, and bumped and clattered through crawls, all with no apparent ill effect on the equipment. It is a good idea, however, to check the rubber seal of the ammo-box regularly for grit and mud, which could allow water to seep in.

Most of my photographs are taken with the flashgun on or near the camera, although often an assistant somewhere in the picture is holding a second flashgun to highlight a particular area of the cave. One of the greatest advantages of providing your own light source rather than relying on the sun as one must on the surface, is that you have total control over the lighting. You can point a flashgun at the camera from behind a caver or formation and achieve a silhouette effect. You can set the camera on a tripod with the shutter open and fire the flash repeatedly to build up a picture. If you have a waterproof flashgun, you could even fire it from under the water and make Sump 1 look like an aquarium. In fact you can be just as creative as you want, until the rest of the caving party get bored and drag you away.

I still find that the greatest problem in taking cave photographs is the battle against water and mist, and very often all that can be done in a steamy chamber is to give up and try again next time.

Bibliography

All these items can be found in the MCG library, and form a good basis for further reading:

- Photography Underground, Robins, British Caver (no 78, 1980), p38-40
- Cave Photography, Koolhof, Caving International (no 9, Oct 1980), p40
- Cave Photography, Stoddard, British Caver (no 75, 1979), p22
- Cave Photography under Adverse Conditions, Williams, Caving International (no 5, 1980), p34-36
- Close-up Cave Photography, Howes, Caving International (no 11, April 1981), p41-42
- Caves in Camera, Pearce, 1978, New Scientist (21 Sept), p868

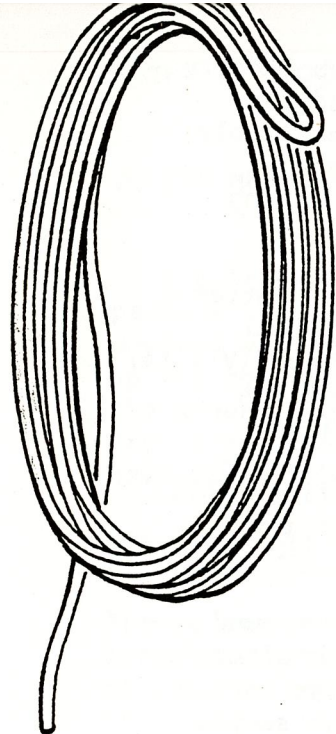


Fig. 11A

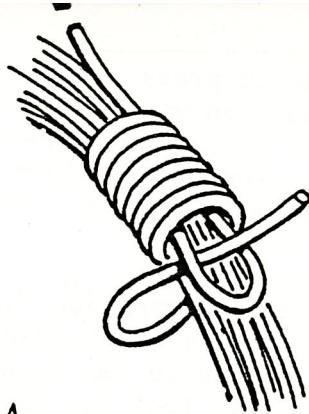


Fig. 11B

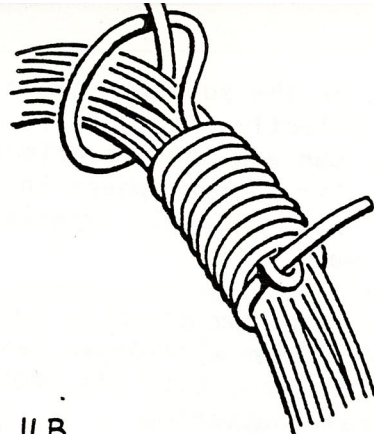


Fig. 11C

Method of coiling a rope

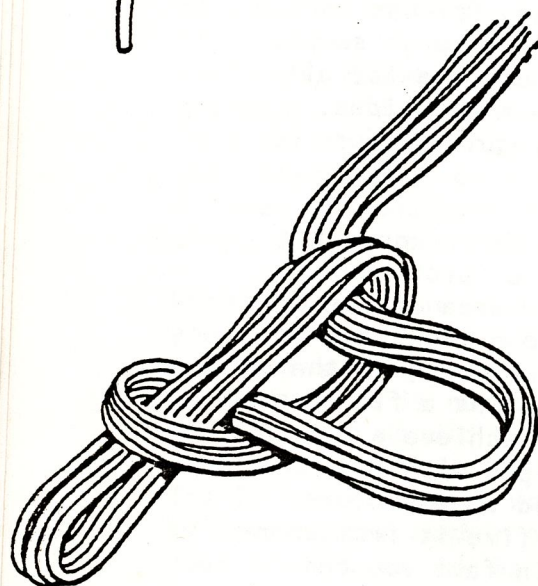


Fig. 12A

Method of plaiting a rope

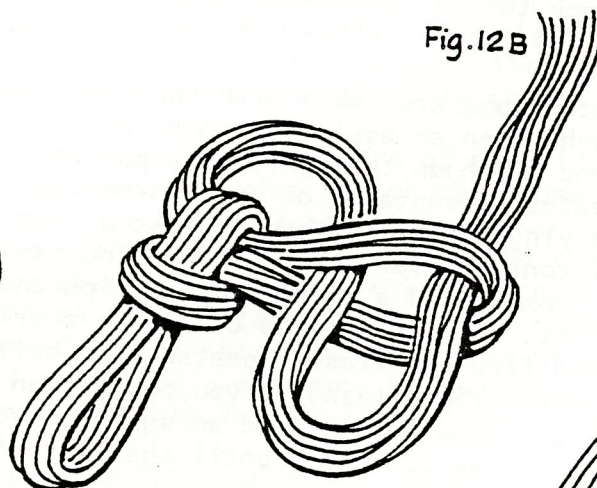


Fig. 12B

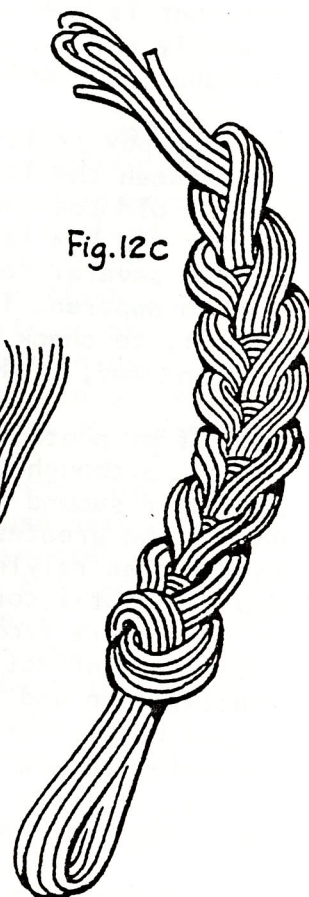


Fig. 12C

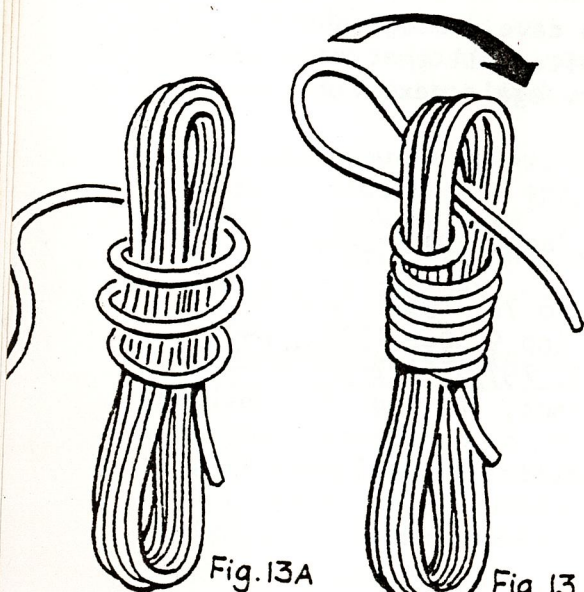


Fig. 13A

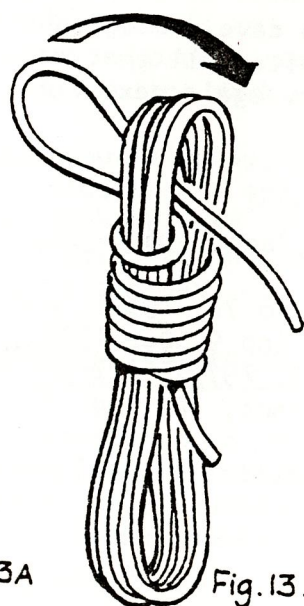


Fig. 13B

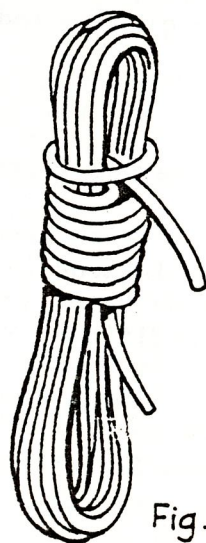


Fig. 13C

Method of hanking a rope

Hitches for Pitches

By Arthur Spain

Ropes have many uses underground - as lifelines, securing lines, traverse hand holds and rescue lines, as well as for single rope techniques (SRT). Each different use of rope demands a different knot or type of rope.

In the past, cavers used ropes made of natural fibres, such as manila, sisal, or hemp. These ropes had serious drawbacks. They were heavy when wet, had a nasty tendency to rot from within, and knots tended to jam when the ropes were wet. Today's synthetic ropes are superior in every way, provided you don't use the wrong rope for the wrong job.

The ropes currently in use in the club are:-

Lifeline

11 mm Viking 3 strand climbing rope, which is strong, high stretch (to absorb energy in a fall) and resistant to temperature fluctuations. It will not float, and it is not suitable for SRT.

SRT

Various club members have their own SRT ropes, but the club does not own any, as it would not be able to monitor these ropes closely enough.

Most SRT ropes are made of nylon, (continuous fibre construction) or of terylene, or polyester, (braided, sheathed, kernmantel construction, or continuous fibre construction). Some are made of polypropylene or polyethylene, but these are not suitable for long pitches over about 30 foot as both have a dangerously low heat resistance and can be melted by a hot abseil device. Laid construction ropes are used for SRT for their good abrasion resistance, but if you use this type, be prepared for a long dizzying continuous spin - especially on free-hanging pitches!

Storing and carrying ropes

To make storing and carrying ropes easier, they can be hanked, coiled or plaited. When you coil a rope, secure the free end to hold the coils tight. Hanking or plaiting are methods of neatly securing the whole length of rope in a series of loops which can be undone with one pull. Plaiting is usually favoured for long ropes and restricted passages where coils can easily snag.

To coil a rope

Take a free end and by using the full length of one arm as a measure

pass from one hand to the other allowing the rope to drop into a loop. The loops hang freely if they are allowed to coil in the direction of the strand lay - kinks will occur if the opposite takes place. Continue until about a loop and a half remains. Using this part, lay a flat loop on the top of the coils and with the other loose end, wrap it tightly around the flat loop, coiling towards the closed end finally passing it through (see illustration). Grasp the original rope end and pull the closed loop tight, so securing the free end. Finish with a half hitch. Shake to settle the coils. (See Figure 11.)

Hanking

Hanking is similar, but the looping is carried out in the coil centre. This method is not used very often. (See Figure 12.)

Plaiting

Ensure the rope is in a loose pile. Hold one free end and pull the rope from one side to the other securing the two ends together (if necessary, if the rope is very long, double it again). Using the closed end, form a loop by turning back onto the doubled rope lengths and twist (see illustration). Keep the loop open, then by grasping the doubled rope beyond, pass it through the closed loop so allowing it to form its own loop, repeat this process again and again until the doubled lengths are nearly ended. Finally pass the free end through the last loop. Pull gently to tighten. (Figure 13.)

Knots

To most people, knots are what they use for tying shoe-laces and parcels, and all you need to know is a reef knot. But use a knot like that for securing an SRT rope or lifelining a pitch and there's likely to be a nasty accident. After all, a reef knot isn't designed to take all the load on one side for lifelining, but for an equal distribution of load on both sides, such as tying a rolled sail to a yard or reefing, hence the name.

Here is a list of knots which are used, or could be used underground. Unfortunately many cavers only really know a couple of well used knots, when, with a little practice, more suitable ones could be used.

Bowline

This is the most common and favourite knot used underground, best employed by the person being lifelined either around his or her waist or as a small loop secured by a karabiner (krab). It will not slip and with a half hitch to finish, is as safe as is possible.

To tie this knot is as simple or as difficult as you make it, but there are two ways, using both hands, or single-handed.
Both hands - with the rope in the left hand, pass around the waist, twist the standing part into a loop with the right hand with the fixed end underneath, hold securely with the thumb and forefinger,

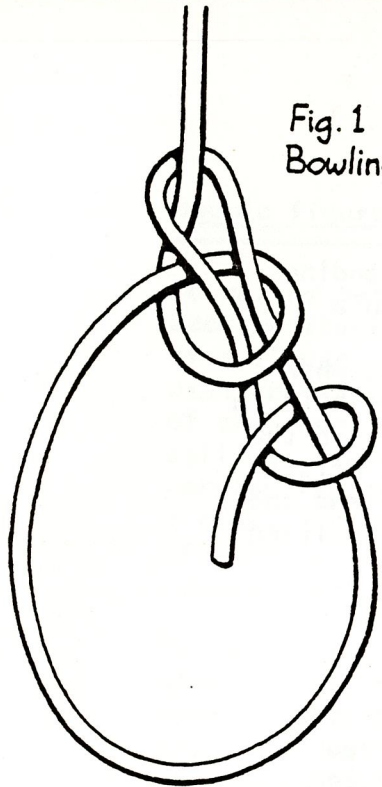


Fig. 1
Bowline with half hitch

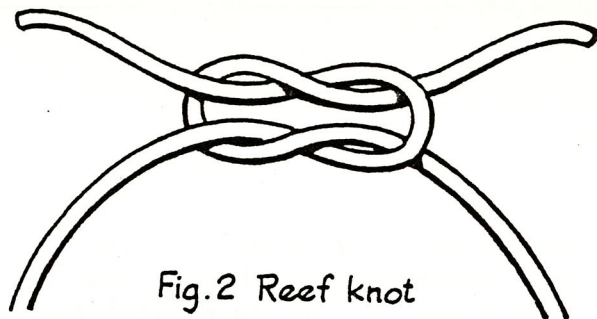


Fig. 2 Reef knot

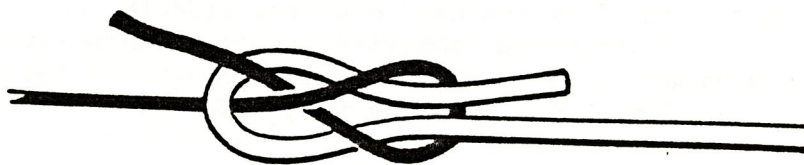


Fig. 3A Sheet bend



Fig. 3B Double sheet bend
with half hitch

Fig. 4 Double fisherman's knot

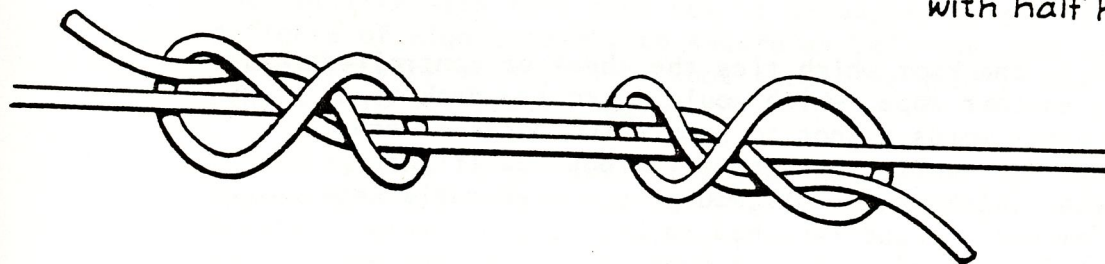


Fig. 5A
Figure of eight

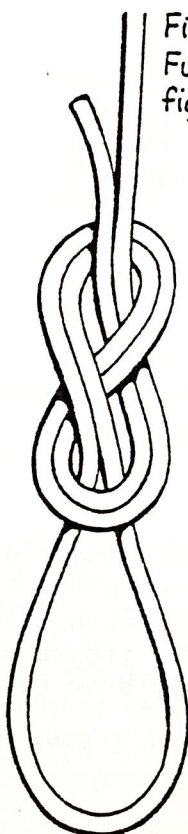


Fig. 5B
Fully formed
figure of eight



Fig. 5C
Two ropes joined
by figure of eight

then pass the free end up through the loop, around the standing part and back through the loop. Pull tight and secure with a half hitch, adjust to waist size.

Single handed - this method requires a bit of practice but when mastered is definitely more satisfying. With the free hand held in the right hand (or vice-versa for left-handers), wind around the waist then pass the hand over the standing end. Twist the wrist and rope clockwise so forming a loop, manipulate the free end under the standing part and then back through the loop, finally pulling tight. Some adjustment may be necessary. (Figure 1.)

Reef knot

A general knot that is often mis-tied, used when both ends of the rope need to be tied together, this knot can be employed to secure waistline ends. Very easy to tie, take each end in either hand, pass the right hand end over the left and tuck under, then reverse the procedure left over right then under, finish by pulling both standing ends tight. The beauty of this knot is that if tied correctly it is simple to undo and can be seen to be correct if it lies flat. (Figure 2.)

Sheet-bend

This is so called as the knot which ties the sheet or controlling rope of a sail to another rope, which would reach the deck of a sailing ship. In other words a knot to secure two ropes of equal thickness together. (A double sheet-bend is required if the ropes are of unequal thickness.) This would be a preferable knot to use if two lifelines or handlines had to be tied, as it is more secure than a fisherman's knot, is more easily untied, and will not jam.

To tie, form a bight or loop in one end of one rope, with the other rope end pass up through the loop, around the back then tuck the end under itself and over the face of the loop. For a double sheet-bend, pass around the back twice then finish with a half hitch. (Figure 3)

Double fisherman's knot

A relatively simple knot to tie but very effective when two ropes of equal thickness need to be joined as for instance a sling, lifeline or handline. It should be noted however that any knot reduces the strength of the rope, so where possible use a single length of rope.

To tie, lay the two lengths to be joined alongside each other. Take one end and pass over then under the other length, continuing back over itself then under the double length. Finish by passing the end through the centre of the formed figure of eight. Repeat the knot with the other end, and finally draw the two knots together to form a secure tie. (Figure 4.)

Double figure of eight

So called because it uses the standing part of the rope folded back on itself so giving a doubling effect and tied in the form of a figure of eight. This knot is essentially a stopper knot used primarily in its single form to prevent the standing part of the rope from pulling through an eye, cleat or fairlead as in sailing. However I understand that SRT experts utilise the double version for securing the rope to a krab fitted to a belay around a rock. Personally I would favour a figure of nine for the increased efficiency provided by the cushioning effect of the extra twist, however personal preference will prevail.

To tie this simple knot, double the standing part of the rope back along itself for about one metre. Take the looped end and form another loop by passing it over the standing part, double back under it then pass through the loop and pull tight, the resulting finished loop will be the one secured to the krab. (Figure 5.)

Figure of nine

One of the most efficient of knots I am reliably informed, this because it does not reduce the rope's strength by more than 28%, unlike most other knots that hover around the 50% mark. I am not familiar with this knot but it accomplishes the same task as a figure of eight, namely to secure an SRT rope. Obviously with the efficiency so high this knot should be used in preference to others - so get practising!

To tie is simplicity itself. Double the end of the rope back by approximately one metre as for the figure of eight knot. Grasp the doubled end and fold back along itself. Pass under the double standing end, twist the formed loop twice then feed the initial loop back through the formed loop and pull tight. (Figure 6.)

Fisherman's bend

Another useful knot for securing the end of a rope, greater in security than the round turn and two half hitches and more easily released, (Figure 9.)

To tie, pass the free end twice through the belay krab, then through both turns, finishing off with a half hitch and pulling tight.

These final knots are more for interest, and could be used if mechanical equipment is either not to hand, or has failed.

Butterfly knot

Used for putting a fixed loop in the middle of a rope when the ends cannot be used, perhaps for securing purposes to remain in a fixed position on a handline. To tie, form a loop by twisting the rope, take the end of the loop and pass it back through another loop formed by passing behind the standing part. Pull tight and adjust loop to size. (Figure 7.)

Prussik knot

Can be used if an ascender device is not available. This knot is employed to secure a preformed loop to a standing rope as in SRT. To tie, pass the looped rope over the standing rope (note that the looped rope must first be formed either by splicing the two ends together, or by tying). With one end of the closed rope, double it over the standing rope, then pass it through the other end of the closed loop and pull tight. The resulting loop can be used for putting either foot in as it will not slip until the weight is removed. For practical purposes another loop will have to be used and formed onto the same standing rope to accommodate the other foot. They can then be pushed up in turn to take a new position, so steadily climbing. (Figure 8.)

Body harness thumb knot

Some modern thigh and waist harnesses are often made up of a single length of nylon based woven tape, approximately 2 cm in width by 2 mm thick. Its normal use is to form a sling passing around the tops of the thighs, under the groin and around the back of the waist, being secured in three places by a krab, so forming a relatively comfortable seat for the body to rest in when abseiling or prussiking. Obviously each individual's body measurements vary, so allow for a fully adjustable harness by tying the two ends of the tape together with a thumb knot, by forming a loop and passing the doubled end back through. Its strength lies in the fact that the tape being flat allows a greater cross-section to bear against each other, so increasing the friction surfaces.

Finally - look after your ropes

Breaking strain can be reduced considerably by knots, sunlight or age, and also to a lesser extent when the rope is wet. If the following rules are followed, premature deterioration should be prevented and increased safety ensured.

1. Discard any rope that has been subjected to a heavy stress such as a fall.
2. Inspect ropes for wear, regularly. Laid ropes - open up and look at inner surfaces of the strands, if they show substantial powdering the rope is no longer safe. Braided, kernmantel ropes - look at the yarns of the outer sheath through a magnifying glass. If 50% of these fibres are broken, the rope will have lost 30% or more of its original strength and should be "retired". Inspect ropes before all trips and at regular intervals while stored.
3. Avoid chafing of ropes on overhanging belays - wrap if necessary.
4. Always use carrying bags for transporting ropes, to reduce ingrained grit.
5. Don't tread on rope, as this causes ingrained grit and chafing.
6. Clean rope after use to remove grit, using washing machine if possible. Terylene can be washed fairly hot, nylon at 40°C, hand hot to prevent stiffening of fibres. Polypropylene and polyethylene should be washed in cold water. Use detergents, not natural soap, but do not use chlorine bleaches on nylon rope. Fabric softener can improve nylon ropes that have hardened slightly. Dry in open air, out of sunlight. New ropes should also be washed before use (avoids too fast abseils).

Fig. 6
Figure of nine



Fig. 7 Butterfly knot

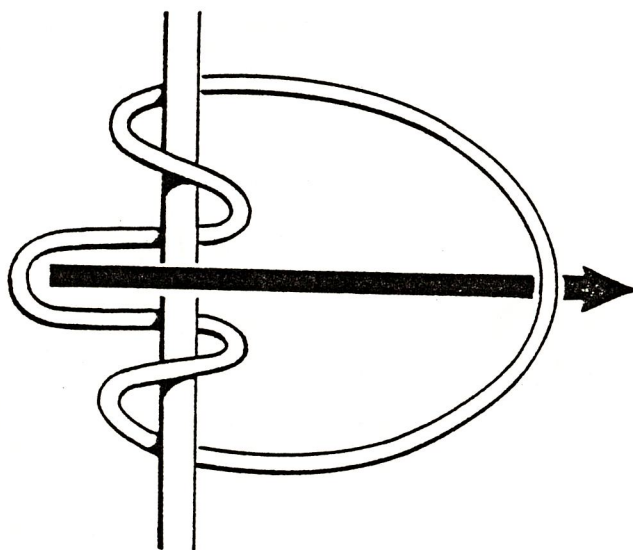
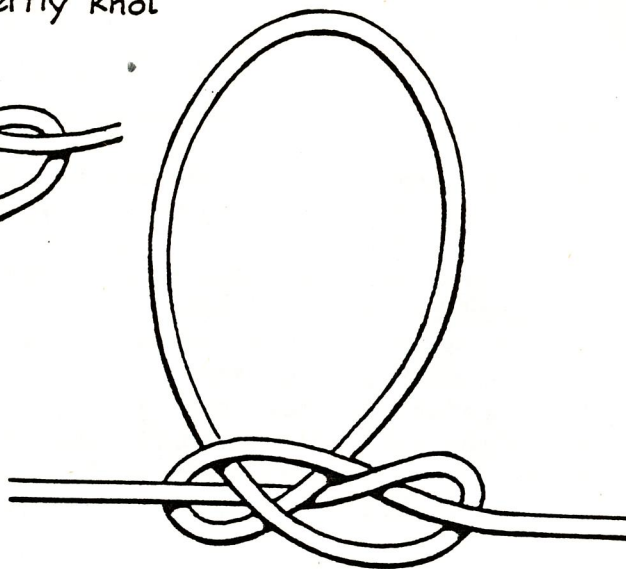
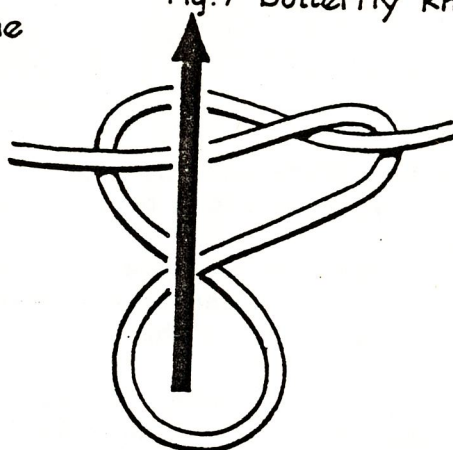


Fig. 8 Prussik knot

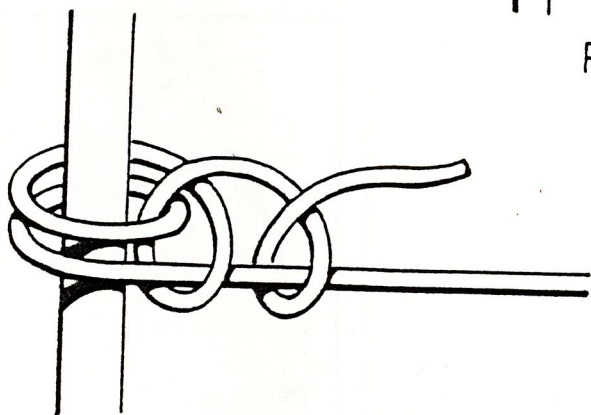
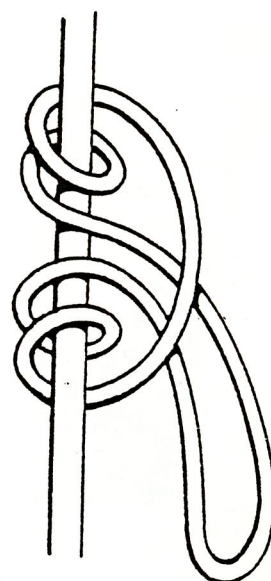


Fig. 9 Fisherman's bend

Fig. 10A Thumb knot

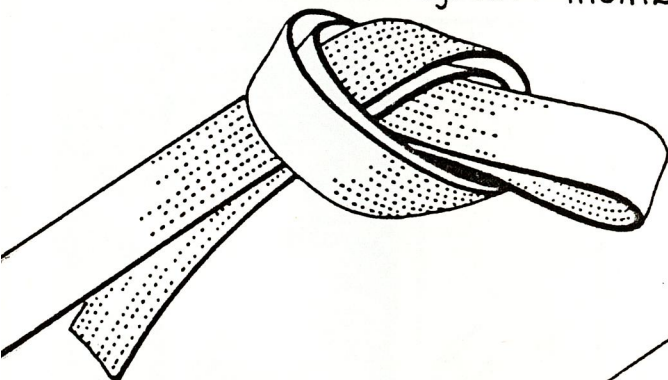
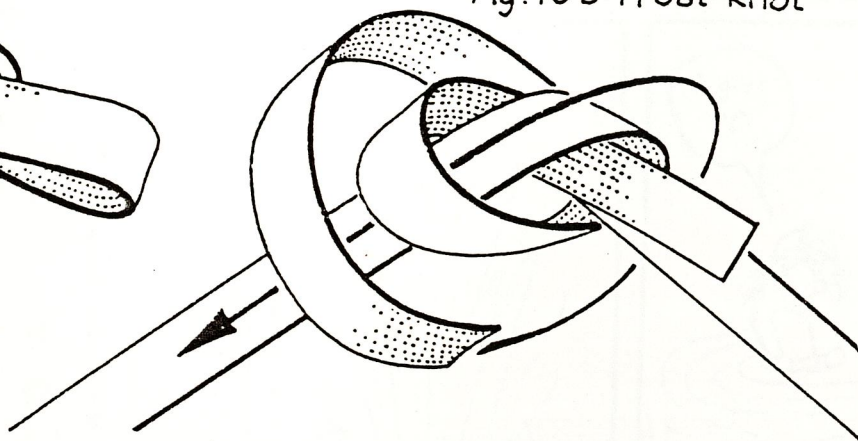


Fig. 10B Frost knot



7. Ensure all knots are undone before storing rope.
8. Coil rope and hang up to dry, then store by hanging in a dark dry place.
9. Some chemicals can attack rope, for example nylon ropes are attacked by lead acid battery acid, while terylene (polyester) rope is attacked by strong alkalines such as the caustic soda in NiFe cell caving lamps.
10. Before you buy yourself any type of rope, but especially SRT rope, talk to experienced club members. Single Rope Techniques by Neil R Montgomery amply explains rope construction and use. It's available from the MCG club library.

Bob Speleo β The Lone Caver

