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THE HEPSTE RIVER CAVES AND A STUDY OF THE HEPSTE - MELLTE AREA

by
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ABSTRACT

A description is given with surveys of the Hepste River Caves. They are four in number and they interconnect: Ogof Afon Hepste, Ogof Tarddiant Hepste, Ogof Tram Trucks and the Hepste Resurgence itself. The Hepste River normally sinks four kilometres upstream of this and the water runs underground to both the Western Streamway and the Main Streamway of Ogof Afon Hepste. The course between the Main Streamway and the Resurgence is lost but the Western Streamway runs through Ogof Tarddiant Hepste to the Resurgence.

The uplands of the Hepste - Mellte area contain a number of caves with peculiar features; five are illustrated. The drainage pattern of the uplands is that Pwll Derw goes to the Hepste Resurgence while Ogof Ffynnon goes to the Cwm Porth Inlet of Porth yr Ogof. Waterfall Cave in the Cwm Porth Woods does not run to Ogof Glan Mellte.

Three of the Upper Hepste caves are illustrated: Blaen Hepste Resurgence, Ogof Glan Hepste and Tuck's Rift. The Hepste caves are mainly under water. This makes them divers' caves, not cavers' caves.

INTRODUCTION

On concluding the survey of Porth yr Ogof in the summer of 1969 (Standing and Lloyd, 1970) the author continued prowling around those valleys and his attention lit on the Hepste, just as Ogof Afon Hepste was being discovered. He was thus able to promote the exploration and survey of the entire cave system, a preliminary report of which was published in 1971 (Lloyd, 1971). Having found an excellent excuse for continually revisiting those lovely valleys, he then made a study of the other caves in the area and of their drainage pattern. The area he has tried to cover is bounded by the rivers Hepste and Mellte and runs as far north as Gwaen Cefn y Garreg. Such a study can of course go on indefinitely and the following account must not be regarded as complete.

THE HEPSTE RIVER CAVES

Situation

The River Hepste has been divided into three parts, upper, middle and lower. The Upper Hepste runs down as far as the sinks, the last of which is Ogof Glan Hepste. Only in exceptionally wet weather does the river run past this cave and under the Hepste Bridge. The Middle Hepste originates in Nant Ty Mawr which runs into the dry Hepste at

Photo. O. C. Lloyd

Plate 7. Ogof Tarddiant Hepste. The waterfall in semi-flood.

SN 9432.1106, where there is a ford. The Lower Hepste runs from the Resurgence to the confluence with the River Mellte. The Hepste River Caves are all related to the Middle Hepste.

History

Ogof Tarddiant Hepste (O.T.H.) is an obvious cave under a waterfall and has been known for a long time. It used to be called Ogof Hepste (Jenkins and Williams, 1963) but later on the adjective "Tarddiant" was added (Davies, 1966) to indicate that it was near the resurgence and to distinguish it from Ogof Glan Hepste which, at that time, was also called Ogof Hepste. The streamway of O.T.H. was assumed to be the River Hepste, but it was always apparent that more water came out of the resurgence than flowed inside O.T.H. The first real progress was made in September 1969 with the discovery of two large rivers in Ogof Afon Hepste (O.A.H.). The history of this cave is as follows. It was found by members of the Westminster Spelaeological Group on the 8th December 1968 by pulling away boulders from the entrance. They got as far as Sump 1 but were able to make no further progress. In May 1969 they tried to siphon the sump by means of a plastic pipe but were not successful. On the 3rd September 1969 John Parker found the opening, went in, found Sump 1 to be dry and discovered all those parts of the cave which lay beyond, up to Sump 2 on the Main Streamway and down to Sump 4 on the Western Streamway.

Sump Numbering

A short digression is here necessary to explain the numbering of the sumps. There are four series: 1. The Hepste Resurgence Sumps 1, 2 and 3, 2. O.T.H. Sumps 1, 2, 3 and 4 which continues upstream as the Western Streamway to Sump 5, 3. O.A.H. Main Streamway Sump 1 (variable) and Sumps 2 to 6, 4. O.A.H. Eastern Passage Sumps 1 to 8. The downstream sumps of O.T.H., the sumps in Ogof Tram Trucks (O.T.T.) and other smaller sumps have not been numbered. In O.T.T. it is not even certain how many sumps there are.

Ogof Afon Hepste

A few metres inside the entrance the passage becomes a steeply descending tube followed by a vertical drop of 2 m. into "Pipe Passage". On the return journey the explorer needs to be cautious, for if he fails to notice the vertical 2 m. he will follow Pipe Passage to a drop down to the left into a sump. In dry weather the sump disappears and it is seen that the upper and lower ends of it are both impassable.

Sump 1, which is next encountered is of variable height for reasons which will be explained later. It is usually impassable without diving equipment, but may be free-dived by somebody who knows the way, when the sound of the Main Streamway can be heard through a crack above it. In dry weather it is confined to the small pool seen in Fig. 24, into which the Main Streamway disappears. To the right the Main

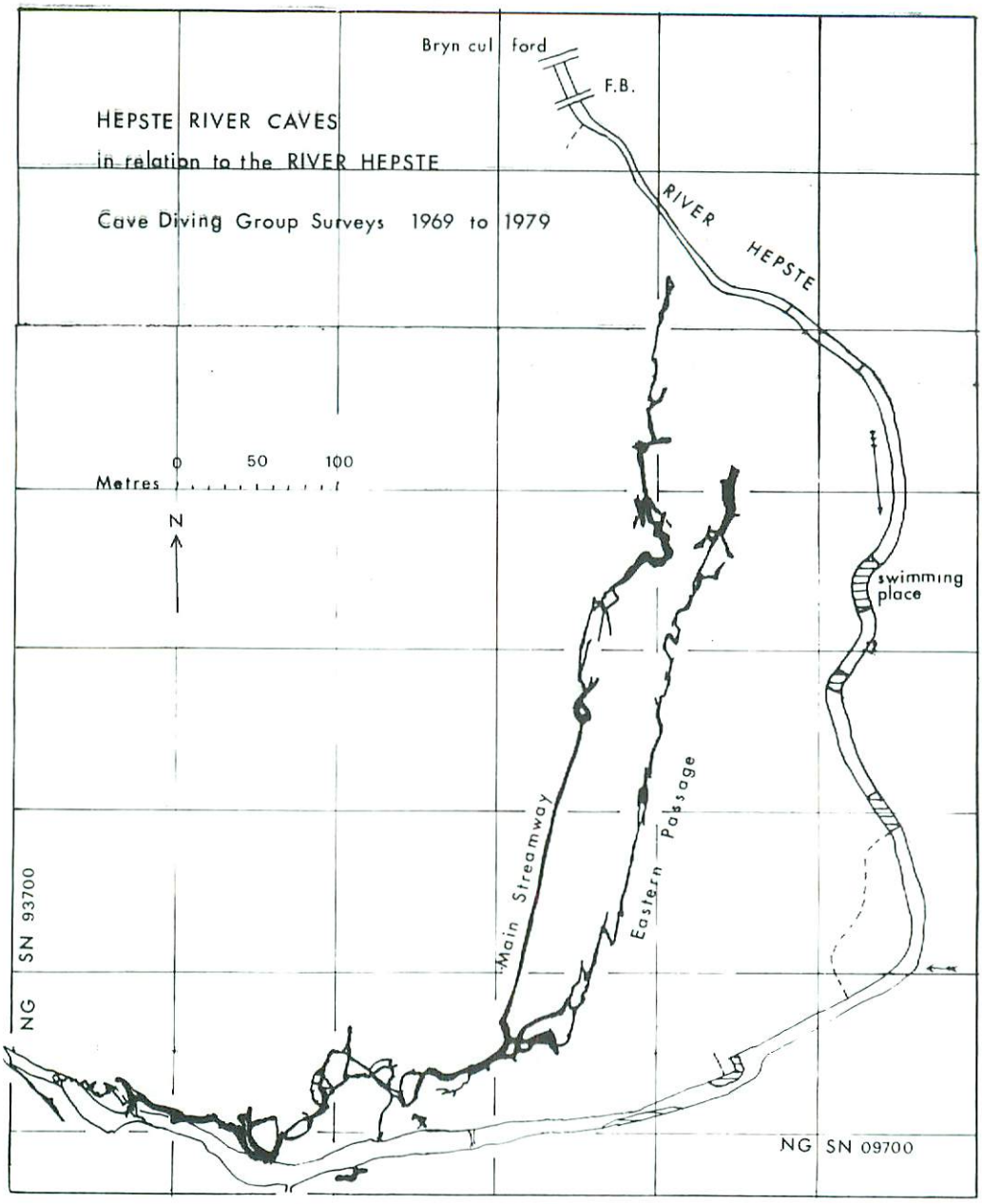

Fig. 25 The Hepste River Caves and R. Hepste

Streamway may be followed to Sump 2; straight on is a high level by-pass; to the left one crawls along Bug Passage until it is crossed by another passage 2 m. higher. At this point one may climb up into Pinnacle Passage and so to Pinnacle Chamber and the Western Streamway. It is characteristic of all these passages, that the limestone is worked into sharp edges and points, of which the Pinnacle is the most prominent. Many a sore gash has been suffered.

The Western Streamway is a noisy crawl, as the water comes tearing past. At its upstream end Sump 5 is too narrow to pass. Downstream one may by-pass Sump 4 and so reach Sump 3. This is as far as the non-diver can go.

To return to the Main Streamway, Sump 2 for the diver is a beautiful dive of 31 m., clear, wide and handsome. O.A.H. 3 is clean-washed and roomy. A climb up a steep muddy slope leads to the Blue Pool, where the flowstone is tinged with copper salts. Sump 3 has been found by many divers to be impassable in wet weather, as the force of the water is too strong. Eighteen metres into this sump is a boulder constriction, which may be hard to pass. It is here that the diving line most often becomes severed. Even a wire line put in to obviate this became destroyed within a year. The sump 213 m. long leads to O.A.H.4, which has only been explored by a handful of divers.

Sump 4, which begins 20 m. upstream of Sump 3, has been by-passed by a passage (50 m.) to a small pit, down which is the "sound of running water". Thirty metres beyond this is Sump 5, while on the way passages branching south lead back to Sump 4. Sump 5 was passed after 22 m. by removing a boulder choke at its upper end, and a high rift passage followed with some high level passages. Accounts beyond this do not quite tally but after about 65-75 m. the "roar of streamway" can once more be heard. The high level passages ("Watergrave Passage") at present end in a dig about 75 m. further on. At this point the cave is about 20 m. from the R. Hepste at a point 130 m. south of the ford at Bryn cul.

Back in O.A.H.3 a crawl from the Main Streamway through low muddy passages to the east leads to the Eastern Passage, much of which is an awkward muddy rift. It contains much standing water and some small sumps draining to a sink, as it is 20 cm. above the level of O.A.H. Sump 3. In particular there is The Canal, which can be approached either by Sump 1 at the southern end or by a slide down a muddy tube from the western side. Sumps 2 and 3 are pools. The sumps all have the same water level.

At the end of Worm Rift is Sump 4, not dived until May 1974 (Farr, 1974). This extension consists of Sump 4 (9 m.), passage 61 m. to Grit Chamber, Sump 5 (24 m.) to passage (18 m.) with stream flowing south. This (Eastern Streamway) contained about half the volume of water issuing from O.A.H. Sump 3. Sump 6 (20 m.) led to another 114 m. of

passage and then to Sump 7. This was passed (12 m.) in May 1975 (Farr, 1975) to Sump 8, which chokes after 12 m. and has not been passed. It is not possible to say how close together are the Main Streamway and the Eastern Streamway Extensions, because O.A.H. Sump 3 has not been surveyed. They seem however to be very close (Fig. 25), but see Appendix 2.

Ogof Tarddiant Hepste (Plate 7)

The cave is strongly joint-controlled being composed of a network of passages running along the major and minor joints and crossing one another at right angles. Downstream there are two undived sumps both of which can be by-passed and at the end are two which have been dived into Ogof Tram Trucks. The upstream sump is impenetrable but may be entered by a small side passage which takes no current. It is a tight twisting passage of 2 m. in which one may all too easily get stuck on the return journey. Beyond this constriction O.T.H. Sump 1 is low and wide, with roof projections which catch hold of you as you pass. O.T.H. 2 is strewn with large wet slippery boulders. A small side passage to the north leads into a sort of by-pass sump from Sumps 1 to 2, but this is not fully explored. Sumps 2 and 3 are wide and continuous. They were separately numbered because there is an air space along the eastern limb. Into this space runs a thin muddy tube ("Vaseline Tube") which by-passes Sump 3. Upstream of Sump 3 one has reached the Western Streamway and one's non-diving sherpas, if one has any. They, of course, have gone round by the O.A.H. entrance.

Ogof Tram Trucks (Pwll y Dram)

This is a collector's piece. It consists of a tortuous narrow tube in which it is impossible to turn round, punctuated by about ten small ducks or sumps according to the weather, starting in the pool containing the tram trucks and finishing at the lower end of O.T.H. It is too narrow for diving equipment and quite unsurveyable. Part of the Western Stream flows along it but leaves by an impenetrable side route to enter the Hepste Resurgence Cave upstream of its second sump.

Hepste Resurgence Cave

This has been dived upstream for a distance of 76 m. and is dead straight along the major jointing. Only the first 48 m. have been surveyed. The diver is stopped in the third sump by its becoming too narrow.

DISCUSSION

The entire cave system lies below the quartz conglomerate of the Millstone Grit (d^4). The Limestone (d^2) dips gently to the south and only comes to the surface at O.T.H. The grit capstone is however thin and

allows collapse into the underlying cave system at various points. The greater part of the cave is on one level, the water table. That is why there are so many sumps. In the southern part of the cave there are few higher level passages but in the northern parts, where there is a greater thickness of limestone, because of the dip, these become more frequent. The caves are controlled by the major (316°) and minor (44°) jointing.

The R. Hepste normally sinks between points 45 and 46 shown in Fig. 26. From here it has been proved to feed both the Western and the Main Streamways of O.A.H., a colour test taking less than 24 hours.

Of the three main passages in O.A.H. the Eastern is the oldest and the Western the youngest. The Eastern only takes part of the Main Stream down to its Sump 5. Further south it only fills in flood. The flow in the Western Streamway is constant, whatever the weather conditions. But the flow in the Main Streamway varies a lot. In drought it is reduced to a trickle and Sump 1 is empty but for a pool in the floor. There must be a considerable obstruction between this and the resurgence, for, apart from its impenetrability to divers, it fills up with moderate rainfall and eventually flows down Bug Passage into the Western Streamway. The level of Sump 1 then remains fairly constant, as this overlow takes all the flood. But gradually with more rain the level rises until it overflows into Pinnacle Passage and then the level of Sump 1 rises no further. It hardly ever floods Pipe Passage.

In like manner of the two resurgence caves O.T.H. is the older. The Hepste Resurgence Cave shows juvenile features, being narrow and almost completely submerged. The behaviour of O.T.H. in flood is interesting. The flood pulse comes down the R. Hepste on the surface much more quickly than it does underground, so that the surface pulse reaches O.T.H. first. The pool then fills up and the cave becomes a swallet. Later, when the underground flood pulse reaches it, the cave becomes a resurgence. Water drains from the pool by sinks on the south side but eventually it fills right up and overflows towards O.T.T. Long before that time, however, O.T.T. has been acting as a flood resurgence for the underground system.

The Middle Hepste North-West Cave is a dirty little hole whose only interest is that it leads down a funnel to an impenetrable passage which will communicate via Pebbledash Aven with O.A.H. between Sumps 1 and 2. An interesting dig in fine weather, flooded in wet.

The course taken by the surface water which sinks above the Fallen Ash Tree (Middle Hepste Main Sink) is not known.

UPPER HEPSTE

Moss Rising

A summary of our knowledge of this cave is given in Appendix 1. It will not be worth any further study, until a survey is made of the underwater passages.

Blaen Hepste Resurgence (Fig. 32)

The interesting thing about this cave is that its water is much warmer than groundwater. It appears to be derived mainly from the sink in the river bed opposite Tir yr Onnen. However there is strong evidence that it may drain a larger area than this. It has been pointed out to the author by Frank Baguley that, when the river bed is dry between Tir yr Onnen ford and the Blaen Hepste Resurgence, more water seems to be coming out of the resurgence than appears to be flowing in the river upstream of Tir yr Onnen. This observation was promoted by an article by Thomas (1959).

Hepste Sinks

The river usually sinks by the Tir Mawr ford at 45 and 46 (Fig. 3) but in wet weather will extend further downstream, sinking at a number of places down as far as Ogof Glan Hepste. A little water sinks at Pwll Hepste but much more at another sink in the river bed a few metres upstream. In extreme flood, the river runs past O.G.H. and under the Hepste Bridge. This is rare.

Ogof Glan Hepste and Tuck's Rift

These are illustrated in Fig. 33. They interconnect and are almost completely under water. Downstream the cave becomes low and tight and obstructed by domestic rubbish.

THE CAVES ALONG THE GRIT - LIMESTONE JUNCTION
(Including the Coeden Prop Group)

The peculiar characteristics of these caves (for details and sites see Appendix 1) were thoroughly written up by Burke (1967). There are three groups, (a) the Cwm Porth Woods caves, (b) the Ogof Coeden Prop group and (c) the Pulpit Hole group.

A. THE CWM PORTH WOODS GROUP

These were the special study of Burke. Their peculiarity is that they are formed entirely by drip solution, being neither phreatic nor vadose. A bedding cave, possibly in origin phreatic, first opens between the basal conglomerate and the carboniferous limestone. After this, drip through crevices and lines of weakness in the caprock causes solution of vertical shafts with fluted walls. Subsequent collapse of caprock results in boulder debris on the floor and the opening up of cave entrances.

The lines of drainage from these caves is still not clear. In flood conditions dye put into Waterfall Cave (No. 12 in Fig. 3) will reappear at resurgences 4 and 7. In dry weather it will not reappear at all. Burke does not state this clearly but it is almost certainly what he observed. The course taken by water sinking at Waterfall Cave, when the two flood resurgences are dry, is unknown. There is no suitable resurgence between that and the footbridge over the R. Mellte, and by the time one has gone that far one has run out of limestone.

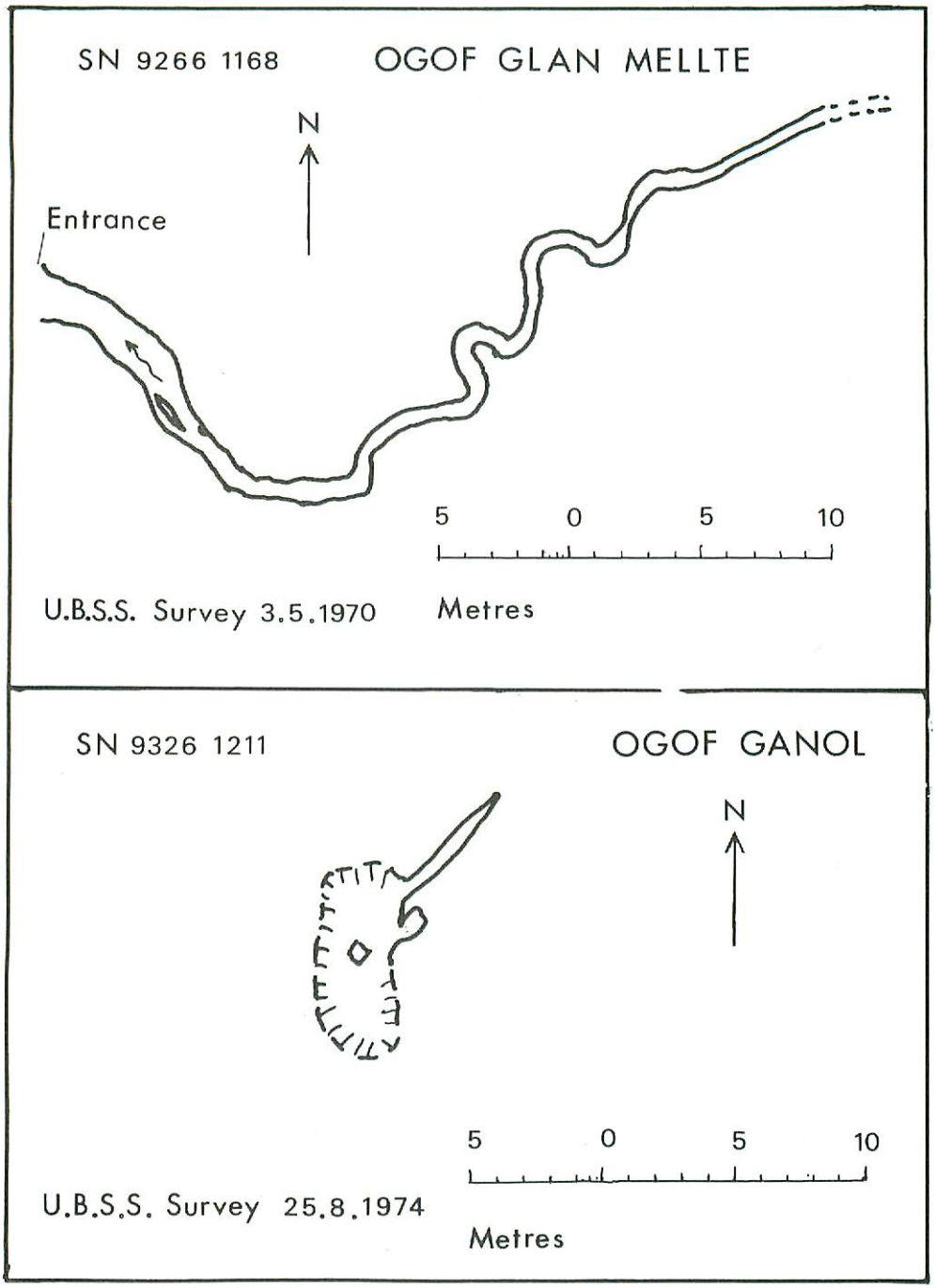

Fig. 27 Ogof Glan Mellte and Ogof Ganol

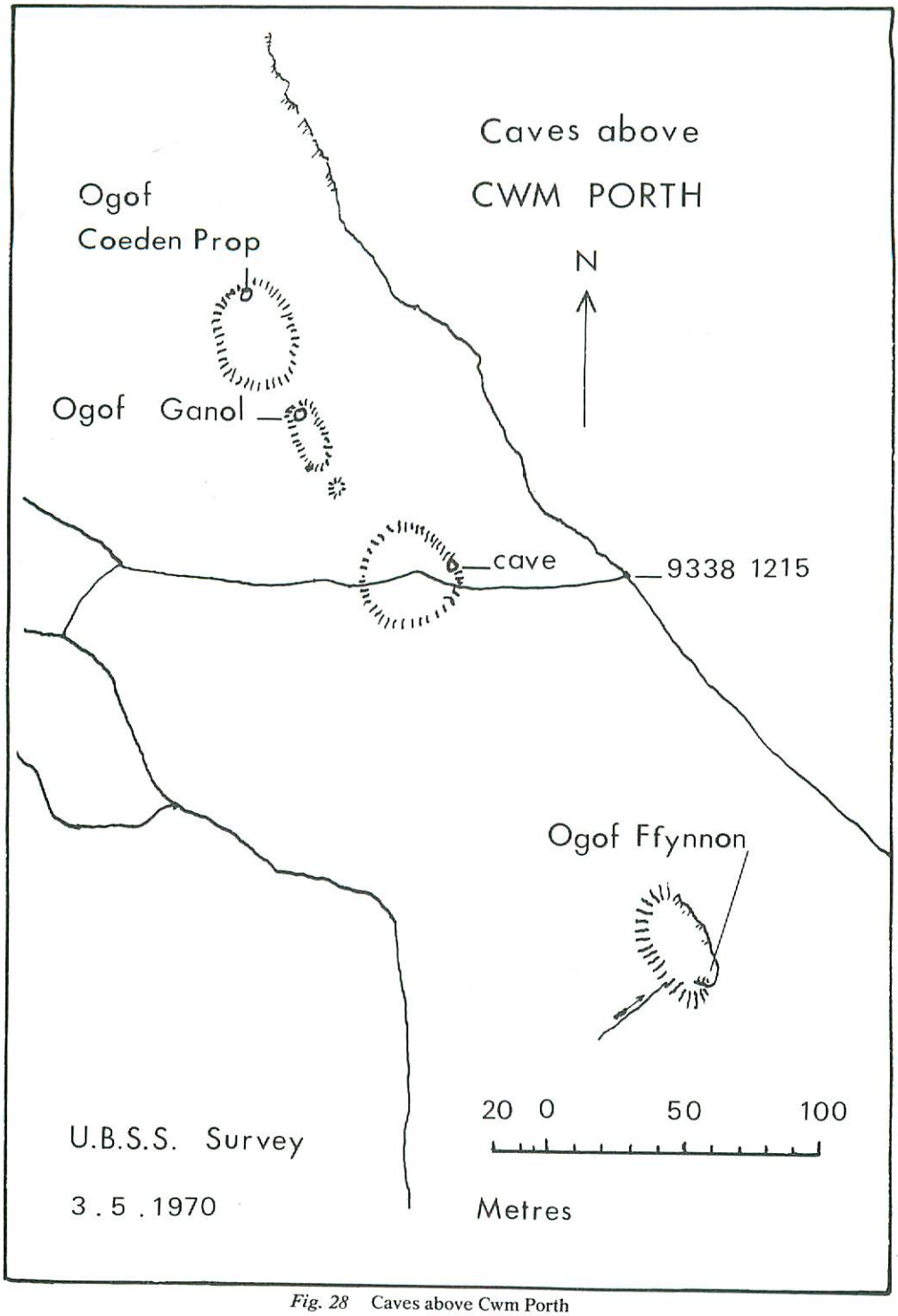

Fig. 28 Caves above Cwm Porth

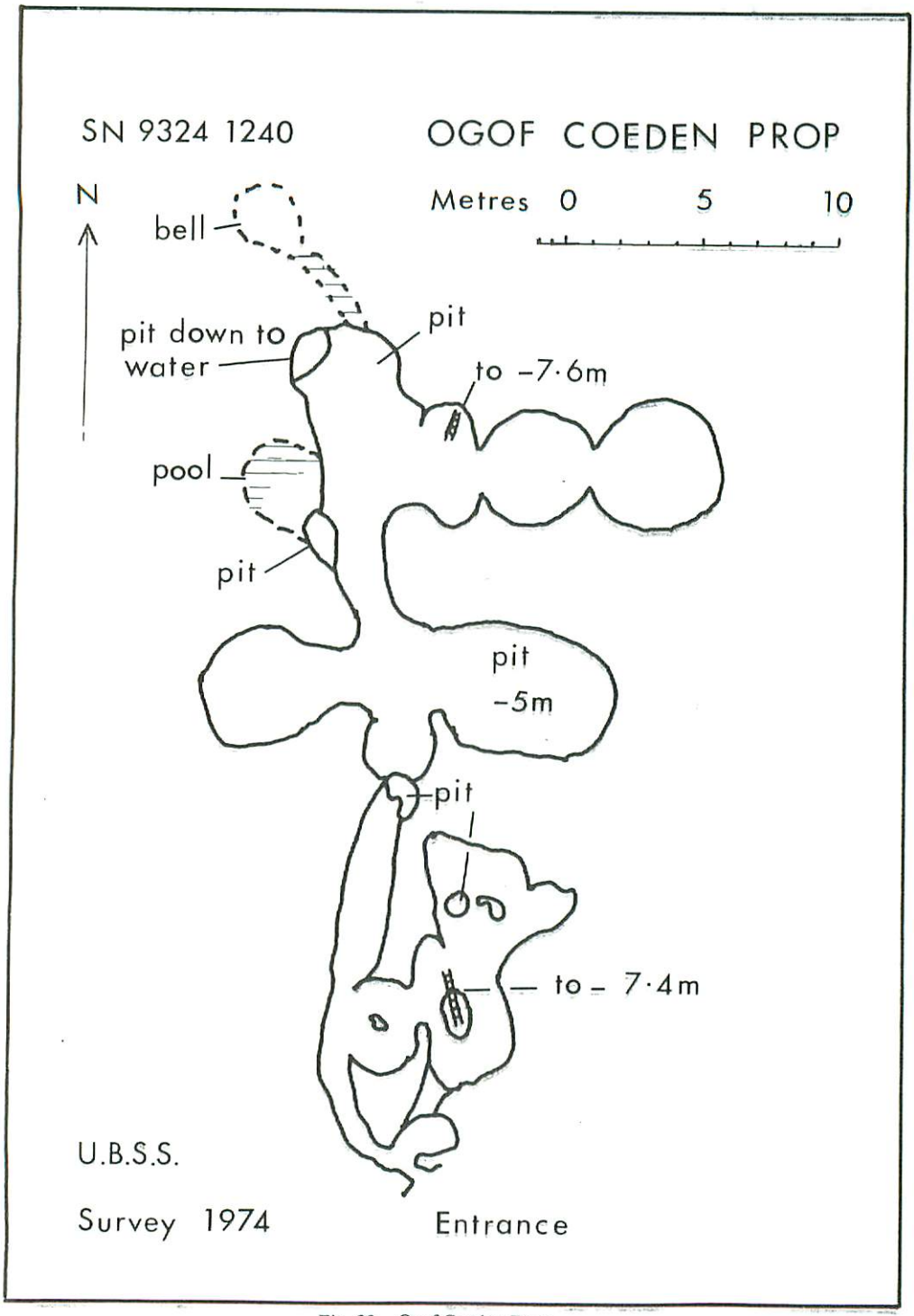

Fig. 29 Ogof Coeden Prop

Ogof Glan Mellte

The status of this cave (Fig. 26, No. 5) is still a mystery. Burke concluded, without actually naming it, that it was a deep drainer of the Cwm Porth Woods Caves, but this is almost certainly wrong. For one thing it has never shown any dye after tests. For another its water is not peaty but hard and lays down tufa. In structure the cave is a canyon passage (Fig. 27). It is probably a relic of some previous drainage system and is now only fed by percolation.

B. THE OGOF COEDEN PROP GROUP

These four swallets are situated along a line of weakness in the caprock, not along the grit-limestone junction which has been shown by a dot-dash line in Fig. 26. They are included in this section because of their structural similarity to the other caves mentioned by Burke. The grit-limestone unconformity is in fact just under the surface of each of these depressions.

Ogof Coeden Prop (Fig. 29) shows the same structure as the Cwm Porth Woods Caves. It derives its name from a Y-shaped dead hawthorn tree, lying in the floor of its shake-hole, which resembles the kind of wooden prop used for supporting a clothes line in the backyard. The entrance leads to a bedding cave between the basal conglomerate and the limestone and from this a number of pits have been hollowed out in the floor. These give some fairly sporting ladder pitches of up to 7.6 m. There are some pools but no running water and colour testing is not possible.

Ogof Ganol (Fig. 27) is also developed at the grit-limestone unconformity but there is no vertical development.

In *Ogof Ffynnon* (Fig. 30) the vertical development has been modified by two factors: in its northern part by collapse and in its southern by running water. The climb down into the northern chambers is dangerous, as the way lies through a loose ruckle of large boulders, which shift their positions from time to time. Recent extensions here to a sump have been reported. The southern part takes a very small stream from the Fountain which gives the cave its name, a beautiful red pool beneath a red stalactite continually dripping. In times of flood a much larger stream enters from the west and this has been colour tested to the Cwm Porth Inlet (Sump 10) in Porth yr Ogof.

Pool Swallet (No. 18) has not been dye tested. There is no cave.

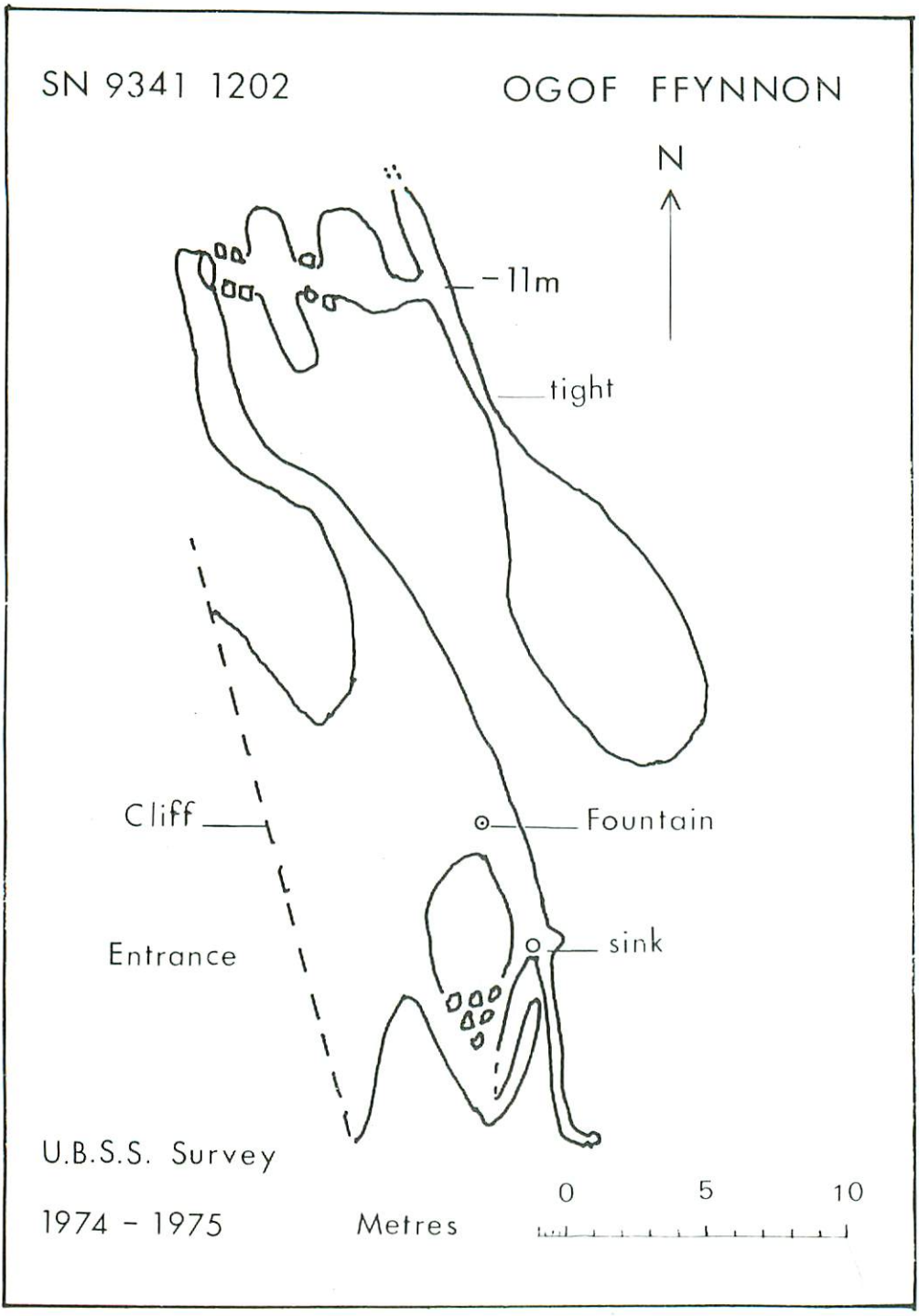

Fig. 30 Ogof Ffynnon

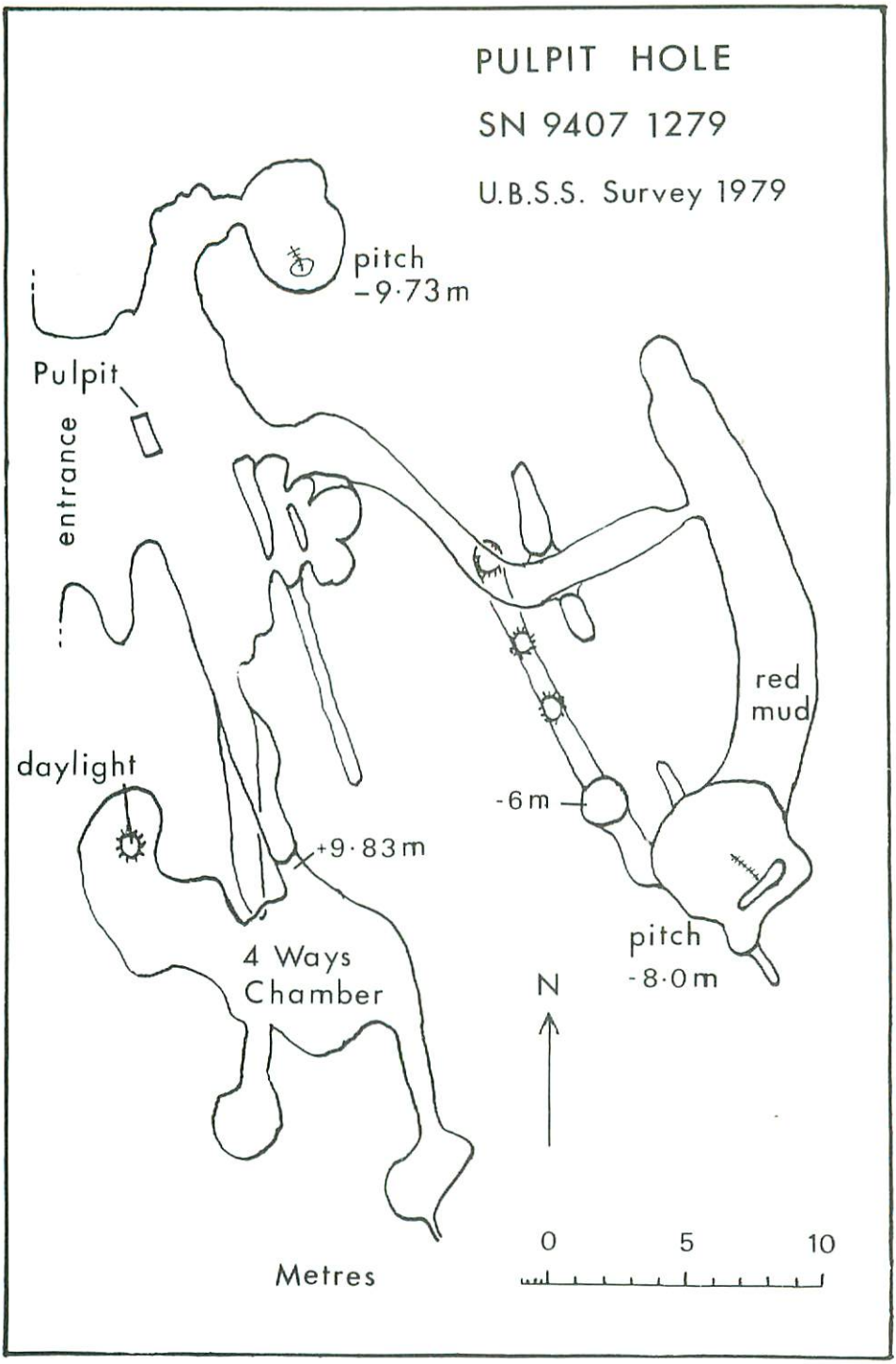

Fig. 31 Pulpit Hole

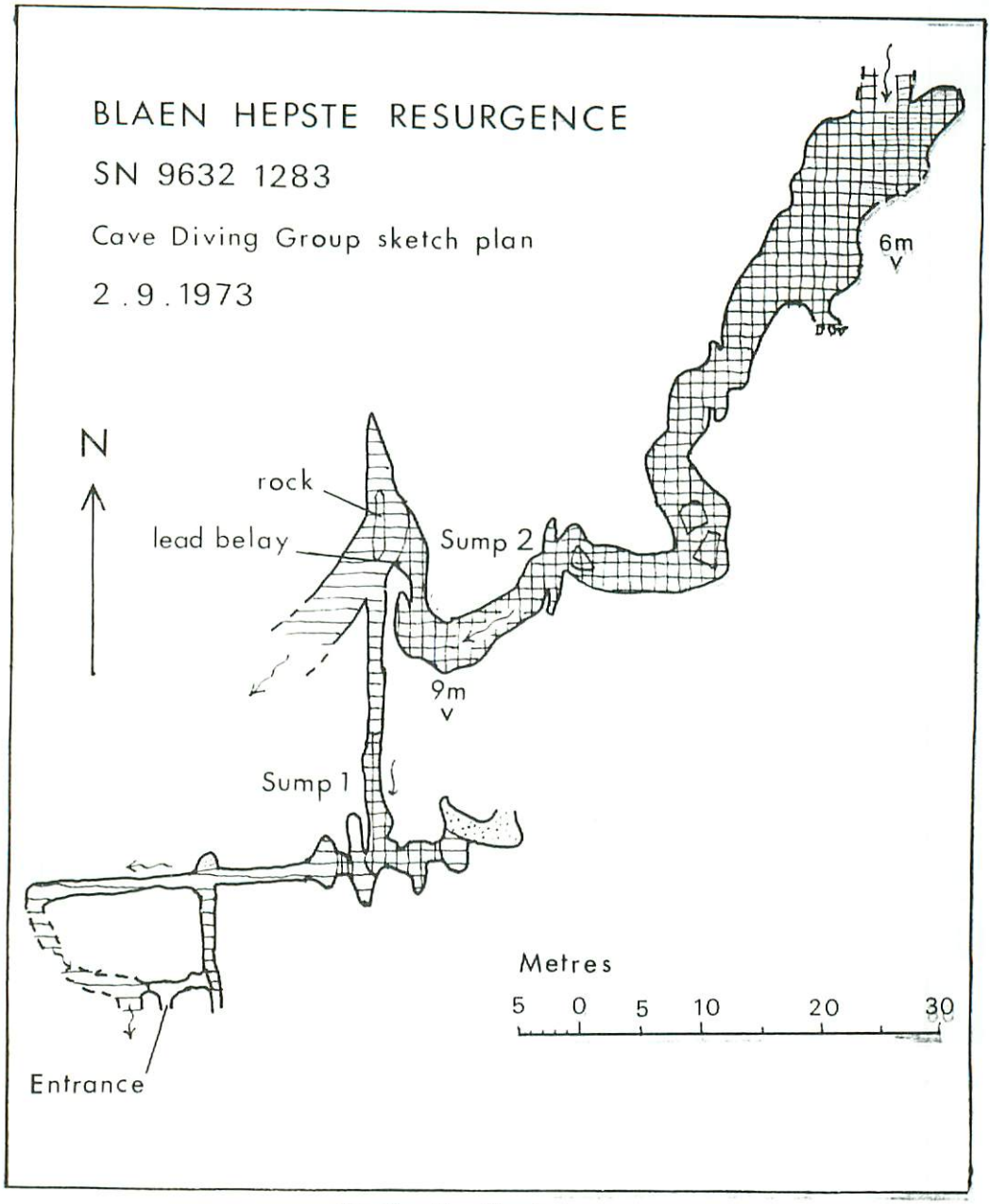

Fig. 32 Blaen Hepste Resurgence

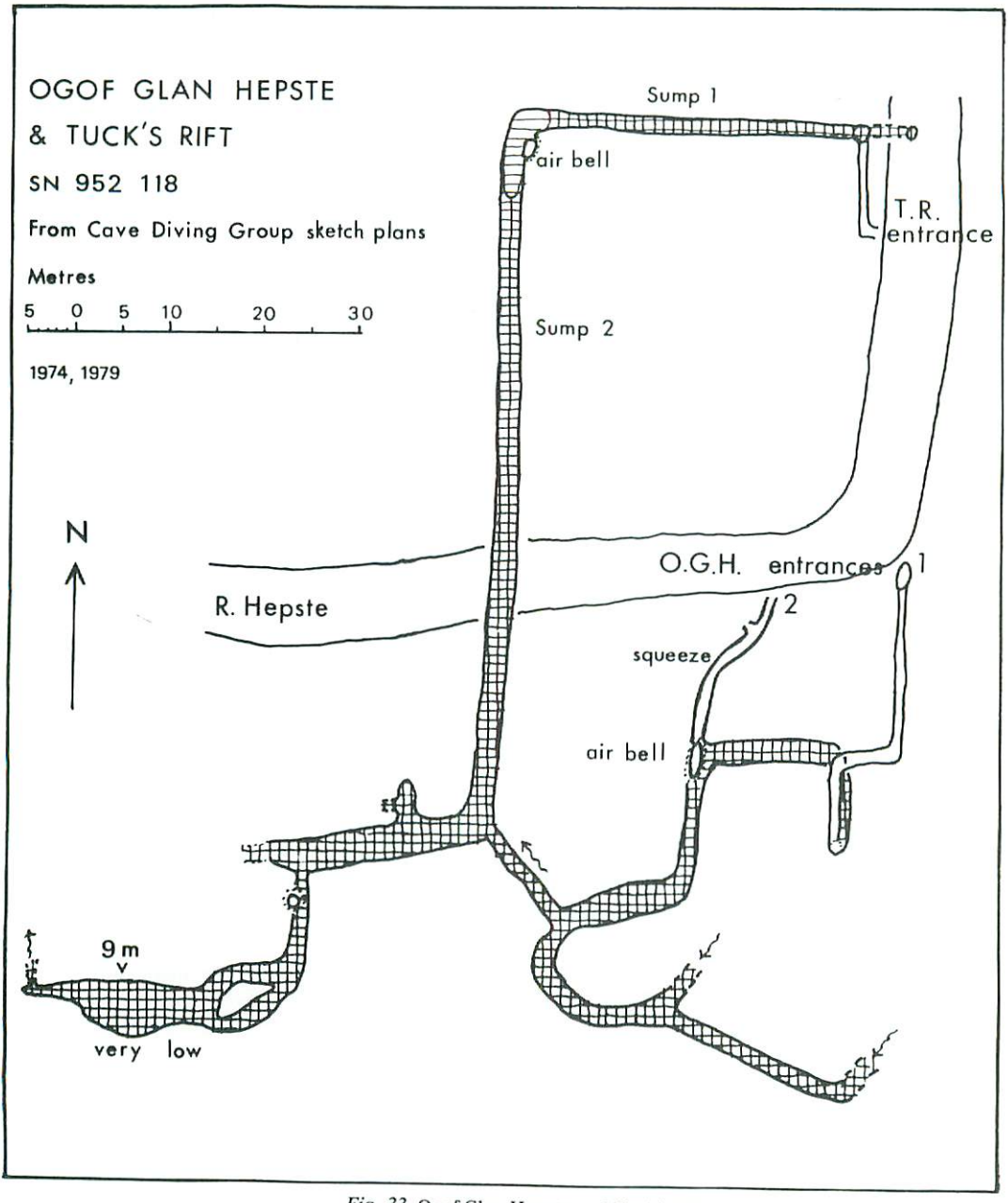

Fig. 33 Ogof Glan Hepste and Tuck's Rift

C. THE GROUP ROUND GWAEN CEFN Y GARREG

The only considerable volume of water draining this upland runs into *Pwll Derw* (No. 20). Many attempts had been made to dig into a cave at the bottom of this enormous shakehole but none have been successful. A colour test showed that water flows to the Hepste Resurgence and not to the Mellte.

Pulpit Hole (No. 24) has the same structure as Ogof Coeden Prop. The red Pulpit stands facing you in the middle of the wide entrance. A new survey is published (Fig. 31)showing rather more cave than had previously been described (e.g. by Stratford, 1978). There are three series of passages running in the unconformity, north, east and south. Of these only the east had previously been explored. The north passage leads to a chamber with a hole in the floor and a ladder pitch (9.73 m.) mostly in boulders and with no way on. The south leads down a rift with further communicating pits to the east, clean washed because this is the direction taken by a stream in wet weather. The water sinks 11 m. below the level of the Pulpit into an impassable hole. By traversing one can regain the unconformity level and enter Four Ways Chamber. To the west is a chamber with a daylight hole in the roof. The other ways are short and end in small chambers.

The east passage leads through a squeeze to a north-south bedding in which the mud is unique, having the consistency of ketchup and the colour of henna. It lies 0.3 m. deep in a flat-out crawl, so that one becomes completely coated with it. The bright red colour is due to oxides of iron washed through by drips from cracks in the overlying millstone grit caprock. These cracks give rise to some interesting iron stalactites in the northern part of the bedding. At the southern end of the bedding is a pit 5 m. in diameter and 8 m. deep leading to a crawl at the bottom of 2 m. followed by a -6 m. difficult climb to a clean washed passage running north for 10 m. The 8 m. pit needs a ladder, which may be belayed with a 3 m. belay in the position shown in the survey.

This is not a popular tourist cave.

The *Garreg Fawr* rising is outside the area which the author had intended covering. The stream issues from a cave of the same name and the origin of its water is unknown. The farmer uses it as his water supply and strongly discourages all visitors, particularly cavers.

There are a number of sinks near Hepste Fawr but the only one carrying any spelaeological promise is No. 38 near Tir Duweunydd. This might well be worth digging.They probably all flow straight into the underground Hepste.

ACKNOWLEDGEMENTS

The surveys were done by means of a linen reinforced tape, Suunto compass and clinometer. The author was assisted by a large number of

people of whom he has recorded the folowing: Ian Cassely, Mel Davies, Paul Esser, Christine Greenall, Mark Greenwood, Paul Harvey, Barry Johnston, Marianne Last, Terry Lewis, Olivia Lind, Graham McGeoch, Dick Marsh, Pete Marshall, Dave Nuttall, Tim Pardoe, John Parker, Bob Peat, Steve Perry, Tim Reynolds, Charlie Self, John Skelton, Jenny Sutherland, Colin Thomas, Adrian Wilkins and Brian Woodward. To all of these many thanks. The computation of co-ordinates was done by Adrian Wilkins. The plot of the main cave was made by the author at 1:500. The lesser caves were plotted at a convenient metric scale. An accuracy of about B.C.R.A. Grade 5 may be claimed. The northerly parts of the Main Streamway and Eastern Passages in O.A.H. have only had sketch plans made by the divers. It is not known what accuracy may be claimed for these. They have been omitted from Fig. 24, partly for reasons of space, but have been included in Fig. 25. Thanks to the Cave Diving Groups for permission to republish. Thanks also to Frank Baguley, Martyn Farr and Charlie Self for criticizing the typescript and making many helpful suggestions. Also to Frank Baguley for access to the Cambrian Cave Registry.

The National Grid References are taken primarily from the O.S. 6 in. to 1 mile maps and secondarily by personal survey. In a few cases they are quoted from the Cambrian Cave Registry. Thanks to the O. Survey for permission to use their material, particularly as a basis for Fig. 26.

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APPENDIX 1

SITES OF INTEREST ALONG GRIT-LIMESTONE JUNCTION
(Fig. 26)

A. Starting at R. Mellte

1. 9259.1154 a small cave in the right bank of the R. Mellte, where it is crossed by a fault. This is just north of the Nant y Carad.
2. 9276.1150 is a small swallet, very unstable, There are no more south of this to Hendre bolon.
3. 9292.1158 water sinks in swallet.
4. 9275.1165 rising, probably for 3 but also for Waterfall Cave (12).
5. 9266.1168 *Ogof Glan Mellte*.
6. 9264.1172 small cave in right bank of R. Mellte nearly opposite 5.
7. 9277.1182 rising in the wood 20 m. to east of track. This also receives water from Waterfall Cave.

8-13 *Cwm Porth Woods Caves* above Gyrnos. Burke lists 21 of these, but I've only marked six. Grid references approximate, as they are now in dense forest.

8. 9288.1176 a series of four openings all connecting. There is a drip all along the line of collapse, which reveals the grit-limestone junction. Burke A - E.
9. 9288.1178 leads to a chamber (6 x 6 m., height 3 m.). Burke F.
10. 9288.1182 *Hollybush Cave* (Burke between G and H.)
11. 9287.1185 a small hole. Burke J, K or L.
12. 9287.1188 *Waterfall Cave* (Burke M N). This is the only easy one to find. You stumble on the stream out in the open and follow it down. Two entrances to moderate sized caves.
13. 9287.1191 Swallet immediately above Gyrnos. Burke O P.

Burke lists 15 swallets north of this before Cwm Porth Cave. Some of them may be identified as follows. R. is an unstable cave. It is crossed by a valley. T. is a badger hole. At V. is an oak tree, the forest being conifers. There is another valley north of this. At W. is a rowan tree. Between X and Y is a wall. AC (3 x 2 m.) has a draught. AD is another badger hole.

14. 9295.1217 *Cwm Porth Cave* (Burke AG), at head of valley going down to Cwm Porth Farm. There is a Well on the way, marked W, probably surface drainage. See Jenkins and Williams, 1963, p. 27.

B. Along the line running SE from Cwm Pen y Porth

15. 9324.1240 *Ogof Coeden Prop.*
16. 9326.1211 *Ogof Ganol*.
17. 8341.1202 *Ogof Ffynnon*. Colour test to Cwm Porth Inlet of Porth yr Ogof.
18. 9364.1188 *Pool Swallet*. Two streams enter, from N and S. It has a peaty floor, so that dye testing would be difficult. There is no

cave. Besides these a cave was discovered in 1973 just north of O.C.P. at SN 9319.1242. It has been filled in (Baguley, personal comm.)

C. *Around Gwaen Cefn y Garreg.*

19. 9422.1210 *Pwll y Felin.* Another peaty soakaway with no cave. The stream enters NE and is frequently dry.
20. 9417.1235 *Pwll Derw.* A deep shakehole 70 m. across fed by a fairly constant stream from the NE. Colour test to Hepste Resurgence and not to Mellte.
21. 9411.1247 A swallet cave in forest, now hard to find, 100 m. N of Pwll Derw. The entrance was covered with corrugated iron resting on beams. It was said to go on for about 60 m. starting with a squeeze at the bottom of a steep 5 m. entrance slope.
22. 9412.1254 A flood stream from the top enters a collapse swallet at the grit-limestone junction. Only a small cave.
23. 9410.1275 A shakehole in the grit just behind the NS wall. Passages to the north (15 m.) and south (10 m.)
24. 9406.1279 *Pulpit Hole.* There is now a stile and forest track leading up to this cave. It is unmistakeable from the red pulpit in the middle of the entrance.
25. 9407.1291 Cavity (4.5 x 4.5 x 0.6 m.) below slight drip.
26. 9409.1300 Wet cliff with rowan. No hole.
27. 9407.1313 Slight drip over overhang onto boulders in rock shelter.
28. 9414.1338 Streamlet over cliff. Possible cavelet below. There is a rock shelter nearby at 9421.1340, taking surface water in wet weather (Baguley, pers. comm.)
29. 9456.1375 Trickle through gate near trig. station goes to two swallets. No cave.
30. 9483.1362 Swallet with small stream sinking. No cave.
31. 9508.1306 Swallet with small hole and strong draught coming out. Could there be a hole higher up on the grit?
32. 9517.1294 A dry swallet with no cave.
33. 9521.1291 Another ditto.
34. 9528.1250 "Well". Trickle rises in limestone and sinks after 9 m.
35. 9494.1196 Stream sinks in grit; line of weakness 55°.
36. 94855.1188 Hole (1.5 x 1 m.) leads under grit to chamber (9 x 9 m.)
37. 9479.1177 *Tir Duweunydd North Sink.* Water from brook sinks near a pothole 6 m. deep and 9 m. across. All in grit; could be dug. Stream falls over line of weakness. Dry gorge down to 38.
38. 9476.1173 *Bridged Pothole* (Tir Duweunydd). Two caves, right and left. Much folded limestone in right, grit in left to floor. On right passage chokes after 2 m., on left a hole (0.6 x 1.2 m.) continues into bedding cave.
39. 9490.1178 Cistern in quarry, water sinks in floor. No cave. Probably gets water from 35.

SITES OF INTEREST ALONG R. HEPSTE

41. 9698.1327 *Moss Rising.* Survey in Allen, 1970. M. J. Farr dived East and West Sumps in 1974 with ambiguous results (Farr 1974b) and penetrated Western Sump for 200 m. to SE in 1975 (Farr, 1975b).
42. 9646.1284 Sink in R. Hepste just upstream of ford at Tir yr Onnen. This is the probable origin of most of the water in Blaen Hepste Resurgence, which is much warmer than groundwater.
43. 9632.1283 *Blaen Hepste Resurgence.* Survey Fig. 9. Just by fault.
44. 9616.1280 *Blaen Hepste Hole.* In right bank of river. Surface dig 60 m. away now filled in. Survey in Lewis, 1970.

45-46 Upper Hepste Sinks. There are several sinks in the river bed here.

45. 9552.1219 The first big sink, wet all the year round, just downstream of the Tir Mawr ford (stepping stones) in the left bank.
46. 9544.1212 In normal weather this is the most downstream sink. There is a cattle-catcher just upstream of this and a larger sink just upstream of that.
47. 9534.1202 J.P.'s Hole. A dirty little debris-filled hole on the left bank on a line of weakness at 154.5°.
48. 9518.1185 *Tuck's Rift.* Up on right bank of stream. Connects under water with 49. Fig. 32.
49. 9520.1182 *Ogof Glan Hepste.* This is usually the terminal sink in flood, Fig. 10. There are many small openings nearby, O.G.H.2, O.G.H.3 etc. Between 48 and 49 there used to be a pothole in the stream bed known as Pwll Hepste, long since choked with boulders. Below O.G.H. the river bed is dry except in extreme flood, until one reaches the ford at 9433.1106, where a tributary Nant Ty Mawr enters right. Soon after this the river leaves the limestone and runs over the grit. Fed by further tributaries a stream persists as far as the *Fallen Ash Tree Sink* at 9389.0969.

    At 9417.1018 the river runs into a deep pool in a gorge, where one can swim (Fig. 25). The water is all derived from surface streams and so is sometimes quite warm (18°C).
50. 9384.0969 *Ogof Afon Hepste.*
51. 9467.0971 *Ogof Tarddiant Hepste.*
52. 9363.0973 *Ogof Tram Trucks* (Pwll y Dram).
53. 9559.0975 *Hepste Resurgence Cave.*

    These four are described in detail as the 'Hepste River Caves', Fig. 24.
54. 9268.0989 Cil Hepste Falls. Limestone is exposed here. An alleged rising does not exist. Water goes from two cracks on the right a few feet above the plunge pool of the second and largest waterfall. It re-enters lower down through fissures. Proved by dye and also by temperature.

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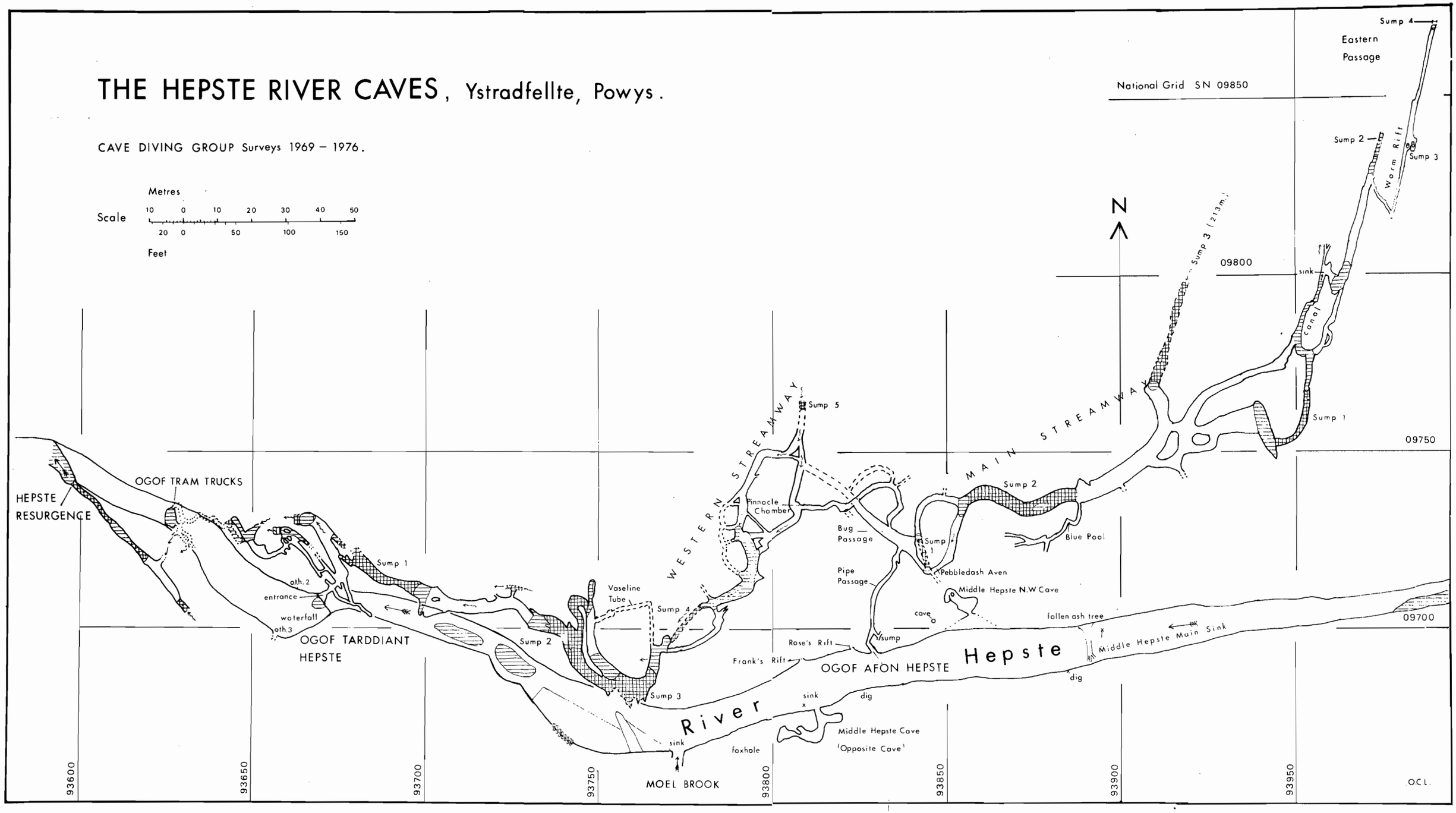

Fig. 24 The Hepste River Caves

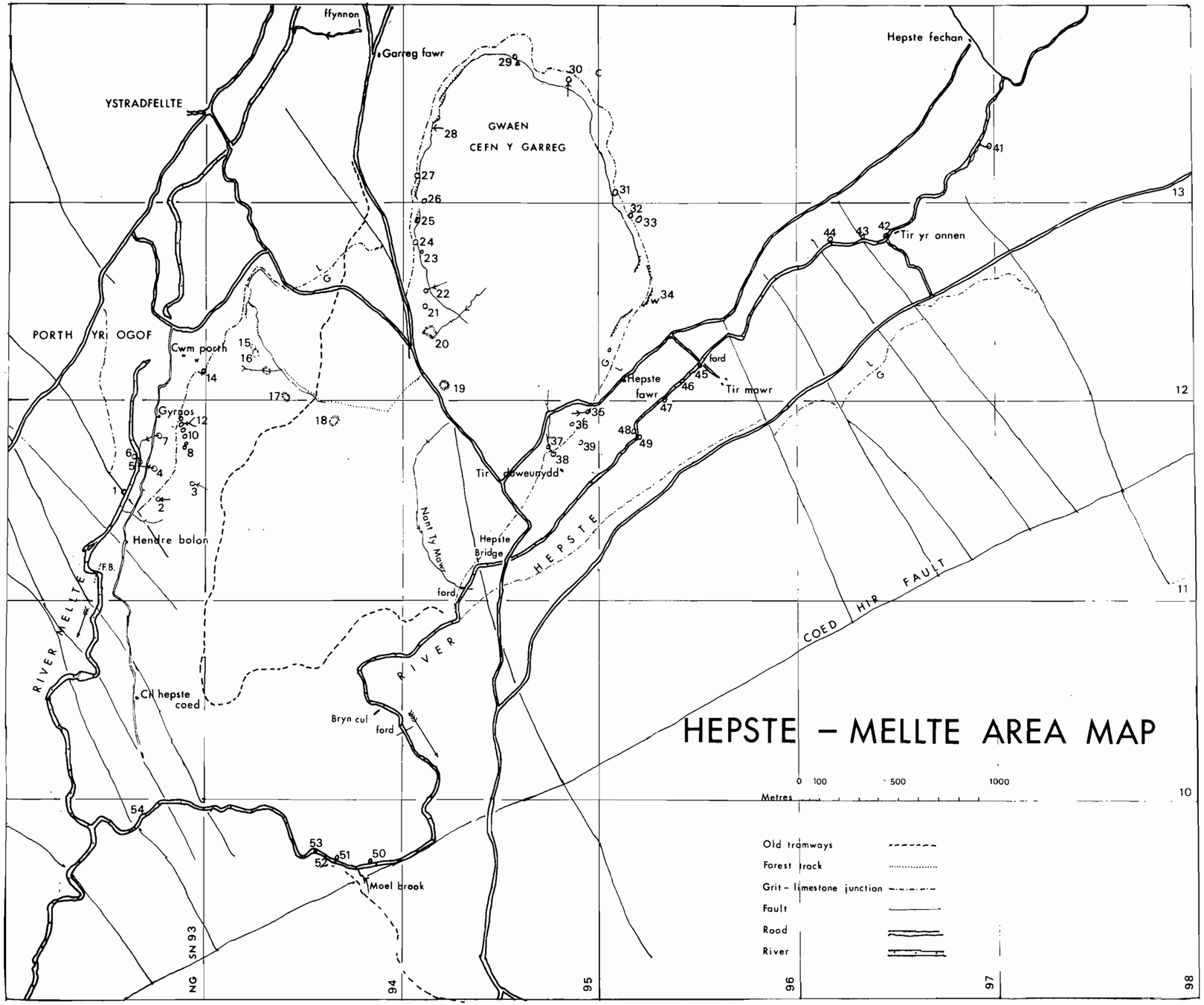

Fig. 26 Hepste-Mellte Area Map. Based upon Ordnance Survey Data with permission.

APPENDIX 2

In June 1979 Martyn Farr surveyed Sump 3 in O.A.H. and found it to be only 152 m. long, which is much less than John Parkers's estimate of 213 m. Diving upstream O.A.H. 4 is entered by a side passage, while Sump 3 continues upstream for 38 m. At this point it is derived from three parallel passages which are too small to enter (Farr, 1979). We hope to publish a more detailed description and survey of the upstream parts of O.A.H. in *Proceedings* next year.