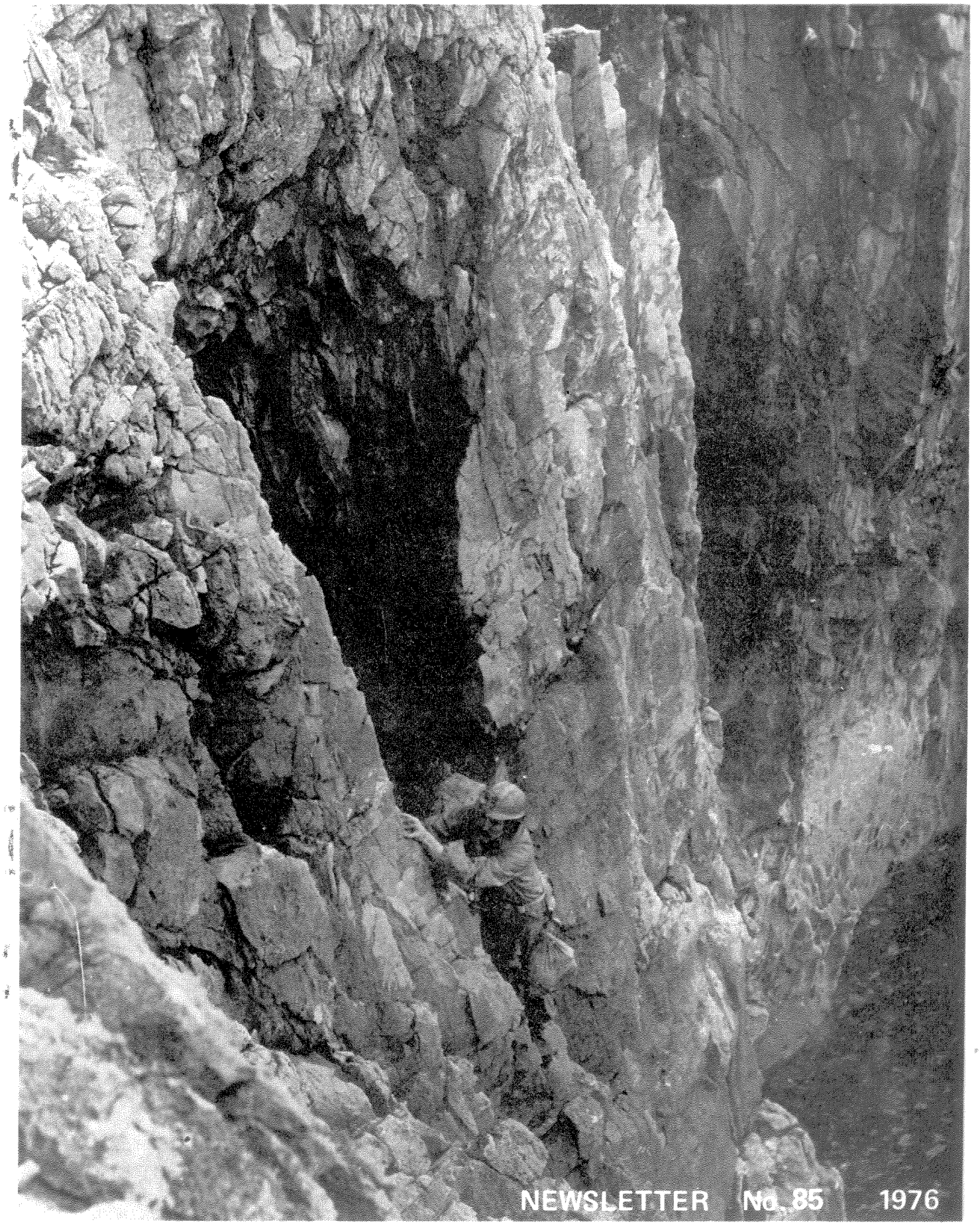
SOUTH WALES CAVING CLUB



NEWSLETTER No. 85 1976

SOUTH WALES CAVING CLUB

NO. 85 NEWSLETTER DECEMBER, 1976

Contents

Cover Photograph -'Descending to the Entrance of Ogof Gofan' by Mel Davies.

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WATER TRACING IN OGOF FFYNNON DDU

Introduction and Aims of the Study

The area is shown in Fig.I. Water sinking at Pwll Byfre feeds the 5 km main stream of Ogof Ffynnon Ddu, and resurges some 280m lower at Ffynnon Ddu in the Tawe Valley. At Penwyllt, Hobbs Quarries operate a large limestone quarry within the Commoners' Allotment (Area I in Fig.I. Area 2 has unrestricted planning permission, and is owned by them; they have avoided quarrying here to date because of possible damage to the Cwm Dwr area of Ogof Ffynnon Ddu. Planning permission has been sought by Hobbs Quarries Ltd. to extract further stone from Area I, and the Company has expressed its intention to apply for permission to extend its activities into Area 3 at some time in the future. The land overlying part of Ogof Ffynnon Ddu has recently been acquired by the Nature Conservancy Council, and been declared a National Nature Reserve.

Within Ogof Ffynnon Ddu 2, a large percolation water stream, the Cwm Dwr Stream, contributes an estimated 25% of the resurgence discharge in 1 low flow conditions, compared to a figure of 40% for the total increase in flow between sink and resurgence. The minimum area of the Cwm Dwr Stream catchment may be calculated using the relationship between effective precipitation (P)T), average annual stream flow (Q) and catchment area (A), where P is the total annual rainfall and T is the total annual potential evapotranspiration.

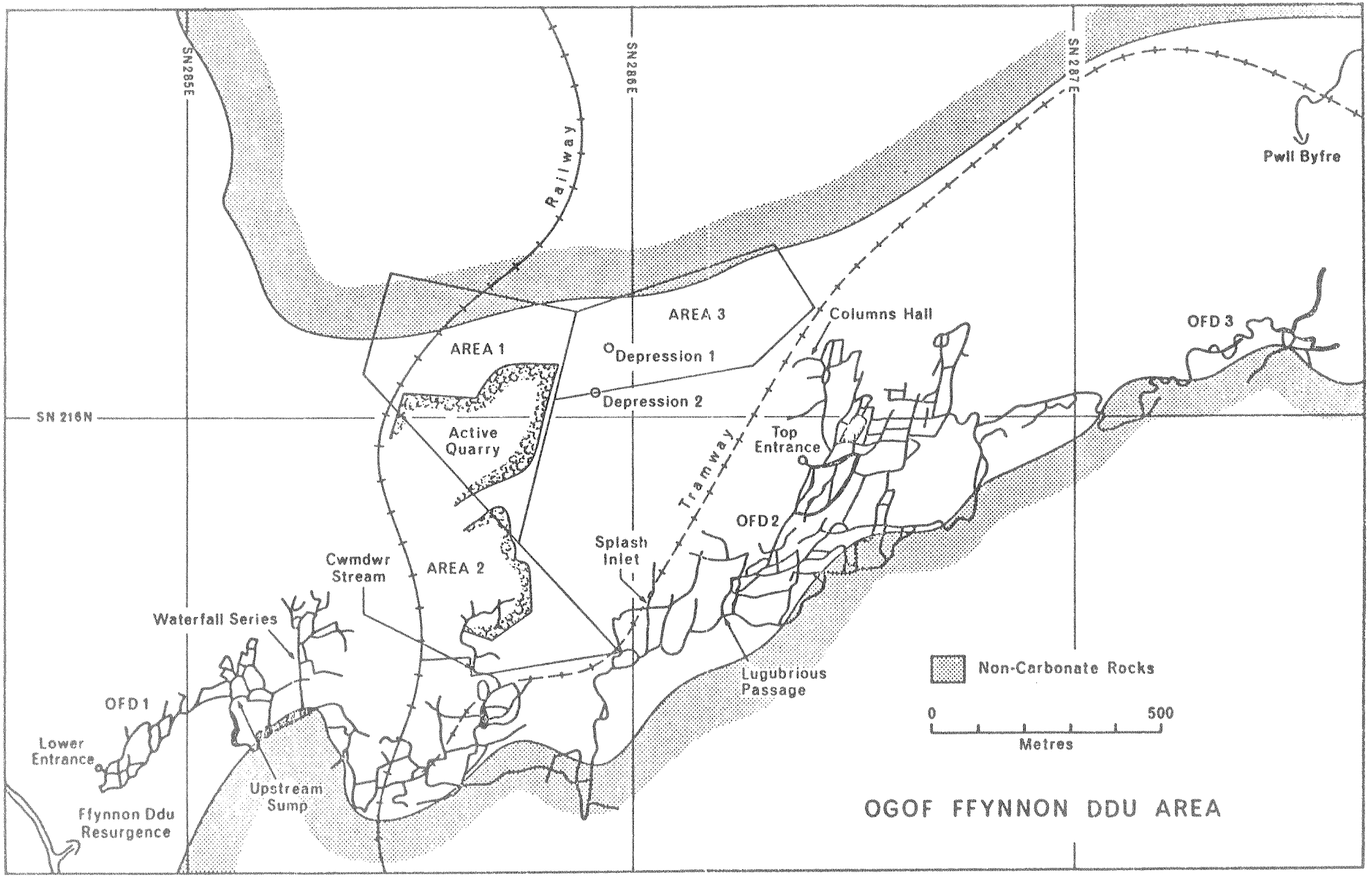
$$\bar{Q} = (P)T).A \qquad \text{Eq.1.}$$

By taking 25% of the low flow discharge of the resurgence (100 litres sec^{-1}), and assuming that this figure represents the average discharge of the Cwm Dwr Stream, a minimum estimate for the average annual discharge may be obtained. Total potential annual evapotranspiration is given by the Ministry of Agriculture, Fisheries and Food Technical Bulletin No. 16 as 443mm for areas in Breconshire above 365m AOD. The average rainfall obtained from Meteorological Office figures is 2250mm. Substituting in Equation 1, using consistent units:

$$A = \frac{7.88 \times 10^5}{2.250 - 0.433} = 4.34 \times 10^5 \text{ m}^2 = 0.434 \text{ Km}^2$$

This area corresponds well with the area for which no cave passages are known to the North-east of Cwm Dwr Entrance, and West of Column Hall and Top Entrance. Therefore it may be inferred that the Cwm Dwr Stream integrates the drainage from this area as far north as the boundary of the limestone. Thus any extension of quarrying East of the present limits may encroach significantly on the Cwm Dwr Stream catchment. Given the importance of this tributary to the hydrology and geochemistry of the Ogof Ffynnon Ddu Streamway, such encroachment would be harmful to the whole system.

This study therefore aimed to test the extent of the Cwm Dwr Stream catchment in Area 3. Information was also to be obtained on the rate and nature of flow in the inaccessible portion of the


SN285E
SN286E
SN287E
Railway
Pwll Byfre
AREA 3
Columns Hall
OFD 3
AREA 1
Depression 1
Depression 2
SN 216N
Active Quarry
Top Entrance
Tramway
OFD 2
Splash Inlet
Cwmdwr Stream
AREA 2
Waterfall Series
Lugubrious Passage
Non-Carbonate Rocks
0
500
Metres
OFD 1
Lower Entrance
Upstream Sump
Ffynnon Ddu Resurgence
OGOF FFYNNON DDU AREA

Karst aquifer. This would be of considerable importance in predicting the effect of accidental spillages if quarrying were to be permitted in the area.

Methods Employed

After inspection of the area, it was decided to inject tracers at two locations in the dry valley which runs sub-parallel with the eastern limit of the present active quarry (Fig.1). Depression I was a relatively recent collapse feature in the till mantle overlying the limestone in the valley bottom. It was located at the highest point just East of the valley axis, immediately South of the old railway track (SN 859169). Depression 2 was a similar recent collapse adjacent to a zone of deep dolines some 150m South of Depression I and on the valley axis (SN 859160).

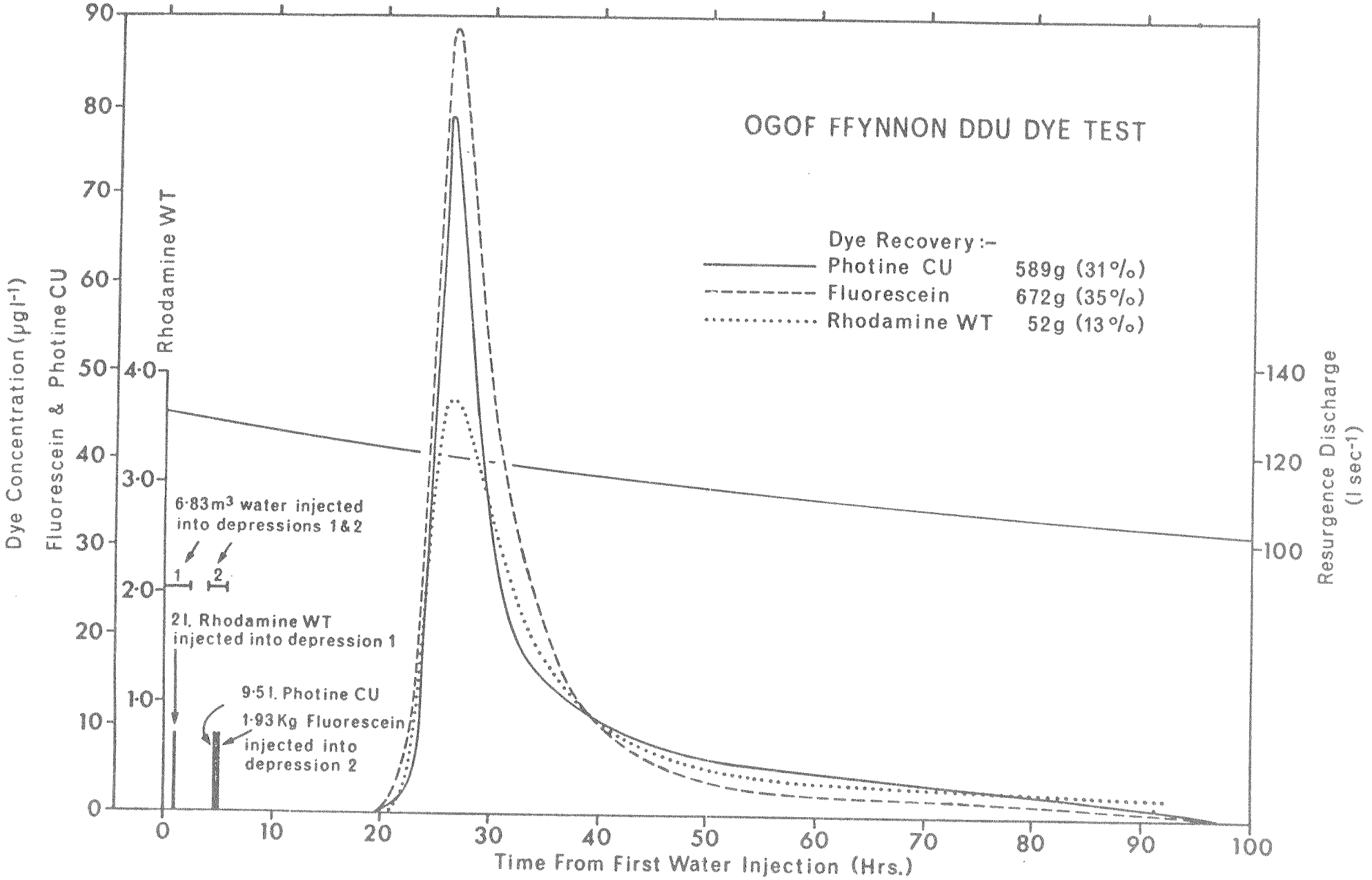
Water was transported to the site in a 1100-litre bowser towed by a Range Rover, and run to the depressions through 'lay-flat' polythene tubing. At each site, 6800 litres of water were introduced into the depression in six separate injections. Each injection lasted about five minutes, and was repeated at intervals of between 20 and 30 minutes, determined by the time taken to refill the bowser. During the second slug of water, 2 litres of 20% Rhodamine WT dye was injected in Depression I at 12.35 on Friday 28th February 1976. At Depression 2, 9.5 litres of Photine CU were added to the second slug, and 1.93 kg. of Flourescin to the third slug of the injected water at 16.15 and 16.45 respectively.

Water samples were collected at the resurgence (Ffynnon Ddu) using a Rock and Taylor automatic water sampler with a 2-hour sample interval. Sampling stopped on 6th March at 16.30. The resurgence discharge was monitored using a continuous water-level recorder and rated cross-section. Dye detectors were also placed at the Hospital Resurgence (SN 844157) and at several points within the cave system. In OFD 2, these locations were Main Stream (above Splash Inlet,) Splash Inlet, Main Stream (above Cwm Dwr Stream) and Cwm Dwr Stream, and in OFD 1, the Main Stream (at Upstream Sump) and in the Waterfall Inlet Stream. These detectors were placed during the morning of 28th February and changed on 7th March, finally being removed on 14th March.

The three dyes were determined in the water samples using a Turner III filter flouremeter, and the readings converted to concentrations using prepared calibration curves. The detectors were eluted with methanol and the dye determined fluorometically in the elutant.

Results

During the week following the test, there was no significant rainfall, and the discharge at the resurgence decreased from 135 to 104 litres sec^{-1} by 6th March. Dye was first detected in the water samples 20 hours after the start of the injection, and all three dyes peaked nearly simultaneously, some 28 hours after injection. Dye concentrations then fell rapidly, and in the last samples dye was not present in significant concentrations. The curves for both the Photine CU and Fluorescin injected at Depression 2 are very similar, whilst that of the Rhodamine WT is much lower in concentration, peaks marginally earlier, and declines at a slightly lower rate. Dye recoveries accurate to


OGOF FFYNNON DDU DYE TEST
Dye Recovery :-
Photine CU 589g (31%)
Fluorescein 672g (35%)
Rhodamine WT 52g (13%)
Dye Concentration (µg l-1)
Fluorescein & Photine CU
Rhodamine WT
Resurgence Discharge (l sec-1)
Time From First Water Injection (Hrs.)
6·83m3 water injected into depressions 1&2
2l. Rhodamine WT injected into depression 1
9·5l. Photine CU
1·93Kg Fluorescein injected into depression 2

± 5% were calculated over the sampling period and were found to be:-

Photine CU	589g	(31% input)
Fluorescin	672g	(35% input)
Rhodamine WT	52g	(13% input)

The dye detectors from the Cwm Dwr Stream in OFD 2 and the Upstream sump in OFD 1 were positive for all three dyes during the first and second weeks. Furthermore, a Manchester University caving party observed that the Cwm Dwr Stream was a green colour on the 1st March 1976, thus supporting this evidence. Very much less certain positive results were also obtained for all three dyes in the Waterfall Series (OFD 1), and for Photine CU and Fluorescin in Splash Inlet (OFD 2) for week 1 only.

Discussion and Conclusions

The dye test has shown conclusively that water infiltrating in the area near the Depressions 1 and 2 passes into the Cwm Dwr Stream and subsequently is discharged from the Ogof Ffynnon Ddu resurgence. There is also some evidence that both the Waterfall Series and Splash Inlet may discharge water from this area. The relatively rapid travel time to the resurgence under these low flow conditions, and the very peaked shape of the time/concentration curve together suggest that flow occurred in a relatively open streamway for a considerable proportion of the underground course. Consequently, any contaminant spilled at the surface will move rapidly without dilution through the system, and may severely contaminate the resurgence, which is used for a potable water supply.

The relatively low recoveries of the tracer dyes indicates that a large amount of the injected water had moved into storage in the aquifer, as would be expected under base-flow conditions. Furthermore the difference between the recoveries at the two sites infers that Depression 2 is better connected hydraulically to the Cwm Dwr Stream than is Depression I. This is expected, given the topographic and geological controls of the sites, and their known relation to subsurface passages.

A previous dye test near Column Hall proved a connection to Lugubrious Passage. Therefore, as only the relatively small Splash Inlet is tributary to the Main Stream between Lugubrious Passage and the Cwm Dwr Confluence, it must be concluded that the Cwm Dwr Stream drains a major part of Area 3 (Fig.1). There is a strong possibility that if permission to quarry were granted, previously unexplored cave, forming an integral part of the Ogof Ffynnon Ddu system might be broken into and destroyed. Furthermore, the geochemistry, hydrology and ecology of the area would be irreversibly altered, both on the surface and underground, by the removal of the soil cover,and excavation of the limestone succession. Such changes would not be limited to the Cwm Dwr Stream, but would also occur throughout much of Ogof Ffynnon Ddu I and parts of Ogof Ffynnon Ddu 2.

Acknowledgements

We would like to thank the following Members of the South Wales Caving Club, without whose assistance this study would not have been possible:- F. Baguley, L. Galpin, M. Galpin, R. Hall, E. Inson, E.Jones, K. Maddocks, H. Rees, G. Sanders, M. Smart, B. Smith, R. Short,

S. Walter and S. West. Mr. and Mrs. J. Barrows kindly gave permission to dye the resurgence waters (their water supply), and Mr. D. Lloyd, Managing Director Cnewr Farmers Ltd., permission to inject the dyes on Cnewr Farmers' land. We acknowledge support given to the study by Dr. R. Bray, Regional Officer of the Nature Conservancy Council, Dyfed/Powys Region, and Dr. G. Black, Head of the Geological and Physiographic Section, The Nature Conservancy Council, Newbury. The Department of Geography of the University of Bristol provided the equipment and financial assistance for the project.

P.L. Smart,
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University of Bristol,
Bristol

R. Smith,
17 Llwyn-y-Grant Road,
Penylan, Cardiff.

Spring 1976.

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CLUB LIBRARIANS GUIDE ON WHERE NOT TO CAVE IN GREAT BRITAIN

Mendip - Overcrowded, hundreds of 'weegees' and even more show-offs make this a number one to avoid. Caves are too short (for caves too long see S. Wales, D.Y.O., O.F.D). Caves have sumps (nuff said) and generally dirty. Good points - Scrumpy and digs with little or no chance of finding a cave plus crumpet.

South Wales - Swansea Valley: - Rain, caves too near parking places (for caves too far see Yorkshire) except Pwll Dwfn which is a pothole anyway and O.F.D. III with an underground walk in. O.F.D. I too easy, D.Y.O. too difficult. Good points: H.Q. at Penwyllt is Palatial (please help build back room in No. 10!), abundance of surface digs in summer sunshine, crumpet.
Rest of South Wales:- Caves wet and crawley (nuff said), pollution in towns makes you give up smoking: Good points, bathing on Gower and crumpet.

Yorkshire - Full of hard men when they are not in South Wales and jealous of their caves. Potholes (see Giants, Derbyshire) expensive to get to, rain and long wet walks (for short walks see S. Wales) big systems (for small caves see Mendip), nice beer (for Scrumpy see Mendip; for weak beer see South Wales), lots of tackle needed which has to be carried (!) to the cave. (For weegees who will act as sherpas see Mendip). No crumpet.

Derbyshire - Wet, caves and mines too near road (for caves and mines too far from road see Yorkshire), except for Giants Hole which is too deep anyway and requires too much tackle to be carried in (for sherpas see Yorkshire ref. Mendip). Mines nice and easy. Good points: - beer (good beer - for weak beer see South Wales, for Scrumpy see Mendip), available until midnight at A*ST**FI*LD.

Scotland - Beware of midges!! (and caves). Good points:- booze, mountains, booze. Bad points: pubs close at ten. No-one knows whereabouts of caves and Scots are very friendly and like Englishmen (fried or roasted).

Ireland - Too far and over the water. Too many caves, too many itinerant Welshmen looking for more caves.

Ken Maddocks

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RECENT DISCOVERIES AT WOOKEY HOLE

The diving at Wookey Hole has always provided the ultimate challenge to aspiring 'pushers'. From Standard Equipment (surface fed air) to oxygen rebreathing, 'mixtures' and current methods based on compressed air, the cave has steadfastly refused to divulge its innermost secrets. For forty years the very best equipment and techniques have been applied, with all too little in the way of positive results.

By the summer of 1971 Wookey 22 had been reached, an exceptional achievement by the Welsh John Parker. Then for nearly five years there was complete stalemate. The basic reason for the lapse in activities was to be found in the isolation of 22. The round trip from base in Chamber 3, to 22 and back, incorporating Coase's Loop around the Ninth Chamber, involved over 2,500 feet of diving. In this distance one was required to descend to 70 feet depth in Chamber 15 and 80 feet depth in 21; the only airsurfaces being in 9 and 20. All this involved a heavy consumption of air and required at least three full forties; each cylinder giving approximately 40 minutes duration at the surface. Further, examination of the distant reaches revealed little indication of a way on. It was thought therefore that any search should first take place on the deep water boulder slope leading out of 21 into 22.

In 1976 the systematic search was commenced, involved being C. Edmunds and R. Stevenson. Immediately on his return from America M. Farr joined the pair, in the role of support, thereby making his first visit to the end. Fortunately the dive had by now been rendered somewhat shorter than in 1971, by the tunnelling operations from 3 to 9. On this trip the way on was clearly located, in the Lake, at the furthest point in 22. Following a dive to 60 feet depth, Edmunds had traversed a gradually ascending muddy passage until forced to return due to shortage of line. He had laid just over 300 feet and reached a point at about 15 feet depth. A major breakthrough was imminent.

On the Monday, Yorkshire divers Yeadon and Statham joined the fray. Laying 30 feet of line they broke surface into an obvious flood overflow passage of rather dismal character. A muddy rift led for about 100 feet to a low and very muddy sump. A 20 feet dive led to a further section of canal, followed by a 60 feet dive. An awkward slippery mud bank then gave access to a chamber of more spacious proportions and within a few yards the mighty Axe was audible.

The beatifully clear stream pours from a lofty but narrow rift, not quite what one might have imagined from indications back in the Show Cave. Instead of easy walking one is forced initially to traverse, the current virtually precluding any movement in the water. Some distance upstream a high-level oxbow is encountered, more than welcome after an extremely strenuous 100 feet swim just beforehand. The alternative to the oxbow involves a nasty sinuous rift, waist to neck deep in a raging torrent. Where the two routes once more converge a canal leads one into a grand lake, and the mainstream entry deep under the left hand wall.

On Friday 27th February Farr and Edmunds returned to push home the attack. It was anticipated that the Lake dive would be short

and it came as something of a shock when the diver was confronted by the deepest dive so far, reaching the elbow of the sump at 85 feet. An air-surface was gained after about 300 feet, in another lake, far more gloomy than the one he'd left behind. Belaying the line to a bridge the return was made.

On 10th April Edmunds and Farr returned to continue the assault, using this time far larger cylinders. Unfortunately Farr lost a fin in the section beyond 22 and gallantly Edmunds stepped down from the push to enable him to dive. Reaching his previous limit Farr set about finding a route into the adjoining sump pool. This proved utterly abortive on his own, with full equipment, but he did manage to dekit and make a quick recce. A three feet high mud wall was scaled with difficulty and the next sump reached. It looked to be at least 40 feet deep. On the return he became completely enmeshed in the line and having forgotten his knife was forced momentarily to jettison his reserve set. An uneventful exit was made over 9 hours after entry, still minus the fin!

The way on was clear; over the wall and into the Well. This was seemingly impossible for a solo diver, especially when one of the cylinders weighed around 35 pounds (72 cubit feet). However as the months drifted by it was apparent that the necessary combination of circumstances was very difficult to achieve. Divers capable of reaching 24 and portering additional cylinders for the exploratory stage were few and far between. Individual health proved to be the main drawback, for even the slightest cold rendered participants incapable of diving.

In mid July, supported by D. Morris and P. Lord, another solo attempt was made on the Well. This time a pair of normal 45 cubit feet cylinders (comparatively light) were used. It was thought that the wall could be easily scaled without kit and that the gear could be transported using a short length of hauling line. In fact brute strength won the day; the diver reaching the next sump fully kitted.

Diving vertically a boulder strewn area was reached at 55 feet depth. Thereafter the route followed, of necessity, the roof of a large strike aligned passage. The dip was extremely steep, down to the left and difficulty was found in holding ones position whenever a stop was made. Deeper and deeper - there was no indication of ascent. At 100 feet depth, 200 feet in, the situation was potentially very serious. To the left lay an incredible void, with no sign of the floor i.e. depth at least 150 feet. Air supply was still plentiful but to progress deeper de-compression would be necessary; for which I had no air reserves, tables or watch. There was no choice - the exit was made.

Another major push will be made towards the end of the year - adopting a Uni-Suit, decompression meter, tables and all the other gear, which we have so far been unable to afford. It should be an incredible dive!

M. FARR.

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DIVING IN LLYGAD LLWCHWR

A party of diggers and divers rendezvoused at the Car Park in Trap on the 5th of September 1976, with hopes of making a major breakthrough into something big, possibly the Llygad Llwchwr Master Cave?

Well equipped with bang etc., the diggers set off hoping to beat us to it, but while we carried gear to the Mainsteam Sump no loud roars were heard, so while Pete, Steve, Tony and Chris searched the place for possibilities, Martyn and I dived through to the Chamber 5 Air Bell.

Armed with two buckets, a trowel and a garden hoe (the dive being pleasant although interesting to say the least), we were soon at the site, and like Percy Throwers, set to work. After an hour's digging we decided it was pointless, as the gravel just kept refilling the way on. Meanwhile Martyn checked John Parker's route for side passages but obviously John hadn't missed anything. We then gardened our way to the Main Stream Air Bell which is 20 feet back into the sump, and to the left. An aven was climbed for 20 feet to a large roof choke, but no way on could be seen. Martyn then set a new diving trend by free falling back into the sump pool and while he checked the notorious 'Slot' I made my way back to our party.

Martyn joinedus shortly afterwards to report the 'Slot' still impassable so we de-kitted and made a speedy exit thanks to our friends, and surfacing after about five hours underground to the welcome of a downpour.

A way over the sump might be possible if the roof choke could be cleared, otherwise it seems unlikely that much more passage will be discovered here by diving. A short dig nearby also proved fruitless, and it is going to take a lot of hard work to break through into anything significant.

D. Morris.

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USELESS INFORMATION FOR CAVE PHOTOGRAPHERS,(OR HOW TO MAKE A BOB OR TWO!)

Towards the end of the 19th century, following an unusual series of storms, there suddenly appeared in the barren upland plateau of the limestone Causses de Gramat, just above the River Dordogne in Central France, an immense hole. An intrepid local speleologist lowered himself carefully down his rope ladder, and found that what had been uncovered was the entrance to a vast series of caves, linked by an underground stream. Since then, exploration has extended the knowledge of the system and the caves have been opened up as a commercial tourist attraction, now known as the Gouffre de Padirac.

The main pothole, 60 metres in diameter leads down (originally by 455 steps but now by 3 lifts) to a narrow, lofty passage which joins the underground stream 103m below surface level. A boat journey of about 500m leads to the Salle du Grand Dome, a large cavern hung with concretions of every form, with a height of 94m. The whole floor is formed of a huge stalagmite, some 28m above the river, surmounted by a pool fed only by the unceasing drips from the roof above, and named Lac Superieur. The tourist follows the guide along a tortuous path emerging once more at the landing stage for a return boat trip. The boatman poles the vessel round a 10m stalactite reaching almost to the water - and there is a tremendous flash. When the light dies down it becomes clear that a small side cave houses a photographer - in what must be one of the most unusual commercial studios in existence.

(Contd page 12) .....

SUTHERLAND 1976

Following the successful trip to Scotland in 1975, when 1500 feet had been discovered in Uamh an Claonite, it was decided to make a stronger assault in July of this year. Consequently a mammoth gathering of S.W.C.C. members (outside the Swansea Valley!) was made in the environs of Lough Assynt.

The first main objective was Cnoc Nan Uamh (Knockers) in the Traligill Valley. Here Tony Boycott, U.B.S.S. had successfuly passed two upstream sumps the previous July (40 feet and 150 feet respectively) to be terminated by a third, within a short distance. Well assisted by P. Francis, Bob Hall, Chris Howes, J. Dearden and Ian Davinson the carry was most pleasant. Sump 3 failed to go within 6 feet of entry, but an overflow passage ending in a pool was dived, leading back into the Mainstream (Sump 4). This was pushed into very tight bedding at 150 feet and 20 feet depth before making an exit. It had been thought that a big discovery, by Scottish standards, would result at this site, but this can now be ruled out.

Day two on the diving scene took us to Allt Nan Uamh Stream Cave in the Allt Nan Uamh Valley. This cave is very close to Uamh an Claonite, in some of the 'better' limestone of Sutherland. As with Claonite the objective was the downstream section of the cave, and once more the potential in both height and distance was excellent; a mile and a drop of several hundred feet.

Making a quick recce of the known cave, we were soon in a slight state of confusion. Our observations were not in accord with the guide book, but it was not long before we realised that there were in fact two completely separate streamways in the cave. These unite and disappear into boulders at Sink Chamber. The static sump that we had come to probe was easily located but the unknown stream flowing from a sump in The Pit was certainly worth a dive. By compass it appeared to originate from under the mountainside, unlike the other stream which we surmised to enter from the river bed, just above the cave entrance.

Martyn was rapidly kitted up, as we had only brought one set of diving gear, and submerged carrying a 500 feet reel of line. It was a great relief to surface after 250 feet as this distance was outside my normal safety bracket, in terms of 'distance/single set of apparatus'. A 70 feet shallow canal followed and Sump 2. This led after another easy 60 feet to an impressive streamway. Within a short distance an aven inlet was noted on the right, but this could only be climbed for a few feet. Continuing Sump 3 was dived for over 100 feet before the line ran out.

Two days later a return was made, equipped this time with a complete reserve set. A further 50 feet of line was laid in Sump 3 and the diver emerged once more onto dry land. Ahead a thundering waterfall, Thunderghast Falls, soon blocked the route! The river

falling over 15 feet, precluded all progress in the obvious direction, but on the opposite side of the small spray filled chamber a series of dry aven climbs led to promising ground above. At a height of 50 feet a large fossil passage leading both up and downstream was found. Heading downstream Sotanito Chamber was entered. The hole in the floor was immediately recognised as being the aven noted previously between Sump 2 and 3. Directly above the aven continued out of sight but would require bolting to ascend. The spacious tunnel led to a point where roof and floor converged. A connection with the known cave should be quite feasible.

Returning to Thunderghast Falls the upsteadm passages were followed for several hundred feet to Sump 4. Two small inlets were found near here, 1 of which was followed for 130 feet to a boulder squeeze. Portering gear to Sump 4 was clearly a precarious task and the diver had to be content with what he had already found - about 1400 feet total.

En route out of the cave a brief examination was made of the original objective, the static sump. This was dived in atrociously muddy and low conditions for 50 feet. It appeared to close down but is worth another attempt. Firehose Cave, in the lower Traligill Valley was dived at a later date but here the failure was complete. A complete gravel fill in a narrow passage obstructed all progress at a depth of 20 feet.

The area is far from being worked out and it is hoped that a strong diving party can be assembled in the area next year.

M. Farr.

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(Useless Information, contd).

Every boatload-11 passengers per boat, is photographed as they pass 'on spec' and naturally the passengers are invited as they leave the cave to order a print. A typical tourist trap perhaps, but one that conceals a considerable technical achievement. The flash heads themselves, capable of being operated at 2000 to 6000 joules, 8 in number, are supplied at 2500V from 2 power units manufactured on site. They have been in continuous seasonal use for 25 years, with periodic 'updating' of the electronics. Total weight of the power pack is some 1800kg.

Naturally the high voltage supply to the heads combined with continual 95-100% humidity of the cave poses special problems in insulation, the whole system of conductors having been designed with a considerable safety margin. A further problem is posed by the fact that at the height of the tourist season, in August, as many as 5500 people may visit the cave, so that 500 flashes are needed per day with a total of some 40,000 during April-September opening season. At busy times boats follow each other at intervals of a few feet so a recycling time of 2sec has been allowed for. Four of the flash-heads are mounted above the small cave in which the photographer works, angled upwards at about 45° to give mixed direct and bounce lighting. The remaining 4 are arranged in pairs just out of shot left and right and shielded from camera position to illuminate the large stalactite.

Work is standardised on Vericolour II, and illumination level allows working at f/5.6. A 35mm focal length objective is used on the 24 x 36mm format with results machine printed to 13 x 18 or 18 x 24cm, depending on the client's preference and purse. The installation operated by Cinemaphot of Toulouse under local direction of M. Herve Taillefer is believed by the owners to be the only one of its kind anywhere.

Photograph of Dan yr Ogof by B. Jorgensen ▶

NOTTS POT, VIA LEFT HAND ROUTE, LECK FELL, NORTH YORKSHIRE MOORS

Alan Jackson and I started out from London with our usual rush so as to arrive in the caving area by midnight, after passing the inevitable motorway pile up within the first 50 miles. I had a thought that there are greater dangers on the drive in than ever there is in caving! We had an uneventful journey as far as Leeds where we met the rest of the St. Albans party who had arranged the trip, stepping out of the local chippy stuffing their faces with greasy food. During the natter it turned out that St. Albans' Oldham lamps were in a doubtful state of charge, so as soon as we reached Bolton S.S. hut at Winskill they had to rig up the charger.

We got up at 8 a.m. after a very cold night (the hut is minus a few windows and with no central heating!). After tucking into a substantial breakfast - St. Albans go in for communal catering, they make you get up with them or else you don't eat - we set off for the public conveniences at Ingleton, as no-one could face the evil looking bucket in the shed at Winskill, and then went on to Leck Fell lane where we were halted by an angry man and woman who demanded 'Wur is t'barn wur t'caivers stay?'. We told them that we didn't know. However, the bugger was observant and said we were cavers, so we couldn't really disagree and told him it was at Winskill, 20 odd miles away. Could he be a dad looking for his beautiful daughter who had run off with a well equipped caver? Leaving him and his woman muttering, we drove on up to Leck Fell itself and struggled into gear to the croaking of black grouse. One cheeky bugger got too close for comfort, obviously eyeing our miniscule appendages as a suitable lunchtime snack.

The party at this point split in two with myself, Alan Jackson, Dick Firth, Derek Ward and Richard Lee of St. Albans doing Notts Pot and the rest were going over to do Kingsdale after sheparing our gear the 1 mile over the moor to the entrance of Notts Pot, which is situated in a large sink hole hidden in the heather.

Richard Lee free climbed down to the first ledge of the sink to receive all the gear and the rest of the party joined him soon after. The second stage to the bottom of the sink was very loose so Richard gently climbed down to entrance proper and safely stowed the gear. He was joined by Dick Firth and they then set off to rig pitch one, while Alan, Derek and I followed on. The entrance shaft was a bit constricted and bore off downstream over a rubble strewn floor to the top of pitch one, this being a short 20 footer. Richard and Dick had rigged the ladder clear of the water, very considerately, and we handlined the tackle for pitch two down to them at the bottom, and off they went.

At the foot of pitch one was Three Ways Chamber and the Left Hand Route went off immediately to the left of the foot of the ladder down a twisting narrow trench passage. Pitches two and three are called the Double Bucket and were tackled in two sections, with firstly a 50 foot pitch into a ledge large enough for the five of us to gather, followed by an 80 foot pitch. At the bottom the way on was via a short scramble down to head of pitch four, an awkward 30 foot where the streamway was joined again. Downstream about 30-40 yards was pitch 5 - 35 foot, which could be rigged clear of the water but the ladder swung into the spray at the bottom. We then started off for pitch six where all attempts to rig a dry pitch were foiled, the only way down being WET, BLOODY WET! In fact the climb was 60 foot of solid water.

Richard descended this pitch first, after all he was the leader!, and

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he got the pleasure of standing at the bottom to unclip the gear as it came down on the line. The first load down snagged on a ledge 10 foot down and no amount of jiggling would shift it. As Alan was responsible for fouling up the line (it's a party piece of his, don't let him anywhere near your rope if he goes on a trip with you; he only has to look at rope and it's in knots!), so he was sent down the ladder to free the snarl up. 'Oh and while you're there lad, krab onto the ladder and sit in the shower and see the remainder of the gear down, will you?'. From below could be heard the curses of Richard, and from 10 foot down the most horrible obscenities from Alan which were variations of 'I am a trifle cold and who is the unsporting gentleman who keeps blocking and unblocking the stream above', causing solid chunks of water to hit him square on the head. He's a miserable sod, never appreciates a little joke! By this time the gear was down in double quick time and also the rest of the party.

At the foot of pitch six the air was full of spray and while Derek and Richard rigged the final pitch, Dick, Alan and I leaped up and down trying to get warm again. Pitch seven was a short 20 foot, again with plenty of water and this led on to the terminal sump. At the foot of the pitch on the left was a short dry side passage which led to a pool of horrible brown coloured water. Only Dick and myself felt inclined to probe it to the sump.

Now it was time to return to the surface as we had taken much longer to reach the bottom than anticipated. Pitch seven was de-tackled and hauled up pitch six, followed by much jostling and elbowing so as not to be last up. The foot of pitch six wasn't a nice place to stand on your own. Then by leap frogging as we climbed and de-tackled, the head of pitch three was made in good time. A five foot climb up through a small hole just beyond the head of pitch two caused considerable problems to everyone as the rock was smooth and offered no foot or hand holds at all. (I would suggest that anyone visiting Notts Pot and using this route would be advised to leave a handline into the hole to assist on the way out.) We then carried on to Three Ways Chamber and took a breather before covering the final leg to the entrance. We reached the surface at 8.30 p.m. after 7½ hours of good sporting caving to be faced with a long haul over the moor with all the tackle, as no sherpas were available at this late hour. (Naturally they were all in the Pub at Ingleton lifting heavy pints of beer!). After a quick and chilly change by the roadside we rushed off to the pub for a quick jar followed by dinner. Definitely to be recommended is a St. Albans curry at midnight after a fast of some 15 hours!

Pete Hall.

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Dear Reader,

Newsletters are voracious beasties, they require plenty of food in the form of ARTICLES and PHOTOGRAPHS to keep them ALIVE. No apologies are given for this beasty being a bit thin. YOU HAVE'NT SENT ENOUGH FOOD OF LATE TO KEEP IT GOING MUCH LONGER.

'The Printers Devil'.

REVIEW

THE LIVES OF BATS by B.W. Yalden and P.A. Morris;
David & Charles, Newton Abbot, 1975 247 p.p. price £6.50 nett.

Of all the known species of mammal, one in five is a bat, and bats are among the most interesting, complex and highly developed of all animals. Unfortunately in many places to survive they need urgent help, and without it they face decline, even extinction.

These are the opinions of the authors expressed in this valuable book, the first comprehensive review to be of any use to the speleologist. The first book on British bats appeared only in 1949 (by Brian Vesey-Fitzgerald) and since then bat research has made tremendous strides.

The book has a very readable style, unlike some scientific textbooks, and is divided into chapters dealing first with the structure, origin, and anatomy of bats. Then come sections on food, hibernation and reproduction. Work on bats such as ringing and population studies is described, then echo-location and the relationship between bats and man. This lay-out makes it difficult to find facts only about the bats using caves in Britain. Also the worker wishing to identify bat skeletons from caves would be better off with a book such as 'Mammals of Britain' by Lawrence and Brown (Blandford Press, 1973 edn.). 14 photographs are given, the close-ups of bat faces being technically better than views of roosts in roof-tops etc., as if the authors were not too experienced with flash photography in difficult conditions. There are 49 figures, all beautifully clear, particularly those showing bat teeth, and 17 figures are devoted to showing the special features of the 17 families of bats. Some bat faces are fearsomely weird! The bibliography of 9 pages includes references to work by John Hooper, well known in the caving world, to R.D. Ransome who worked in Agen Allwedd in 1961-5, and to R.E. Stebbings who is currently researching Greater Horseshoes in South Wales.

It is worth mentioning some of the facts from the book. In these days of vasectomy, bat studies have become important because of the animal's habit of sperm storage and delayed fertilization. They are important pollinators of forest trees, they consume vast quantities of insects harmful to man, dung accumulations in caves are mined for fertilizer, and some of the larger bats are actually eaten. There is a fear that bats might infect man with rabies (as they do cattle in some countries). This danger seems to have been overstressed - 17 million people had visited Carlsbad Caverns by 1973 without detriment to their health and the caverns contain some rabid bats. It is not considered that bats could spread rabies in Britain if they became infected.

Causes for the decline in bat numbers are examined. Greater and Lesser Horseshoes use caves and mines for hibernation in winter. The former declined by at least 80% in 15 years in south-west Britain. Are cavers exploring underground the main cause? It seems probable that pollution and pesticides are by far worse culprits. The bats in winter use up fat reserves built up in the autumn, and this releases

accumulated organochlorine compounds into the blood stream.

One proven cause of bat decline is the bat workers themselves: populations decrease almost immediately a study begins. Fortunately Stebbings has showed that when interference, ringing especially, was minimised by reducing visits to a hibernaculum to 1 per winter, populations recovered over a period of 4 years, and this will be his policy in the South Wales experiments.

Recommendations in the book regarding the conservation of bats, probably written before 1974, have been overtaken by events. Both the Greater Horseshoe and Mouse-eared bat are now fully protected by law, and co-operation between the National Caving Association and bat workers has resulted in an understanding of the need to gate certain caves and mines. There is already a reserve for the protection of bats in the Netherlands and we should be moving in this direction in South Wales. There are literally hundreds of small mines in Wales which could be protected without detriment to the needs of the sporting speleologist.

This book can be thoroughly recommended to the caver who is interested in cave life. Most of us have needlessly dodged Lesser Horseshoes flitting about in the blackness of caves in winter. Here is a chance to learn more about them, and at what is today, a reasonable price.

M. DAVIES.

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