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EDITORIAL

The Wessex is forty this month. It has survived a World War, the advent of television, the Bristol Exploration Club, and the Great Flood of 1968. At this rate it might even outwit "Big Brother" and celebrate its fiftieth anniversary in 1984. It might come as a surprise to some of our younger or newer members to learn that three out of the five people at the Foundation Meeting in 1934 are still members of the club Jack Duck, Wyndham Harris, and Hywel Murrell. Furthermore, the club now has a growing number of second generation members, sons and daughters who have followed in their father's or sometimes other's footprints. Cynics might attribute their membership to an hereditary disorder, but I prefer to think that a sense of tradition played at least some small part in the process. This is not to say that the Wessex believes in living in the past or resting on its laurels. The times are a' changing' and our newer members must ensure that the club is neither left behind nor left in a rut. Continuity plus change equals survival in my book even if it does sound like having your cake and eating it! May I wish all club members past and present: "Many happy returns - to the surface".



CLUB NEWS

Upper Pitts

John Ham and Barry Gay have begun building the bookcases for the Library, These are being fitted along one wall, and they will house all but the most valuable items of the library collection.

O.F.D. Fighting Fund

The South Wales Caving Club is seeking the promise of donations in case it should be necessary to defend O.F.D. at a public enquiry. The Committee thought that the club should pledge a minimum of £25. Individual members may also pledge money and details are given in Wessex Journal No. 153.

Access to Thrupe Lane Swallet

The existing timbered entrance shaft at Thrupe Lane has only a limited life span and work has started to replace it by an adit and shaft driven through solid rock. The cost of the drilling and blasting will be in the order of £30-£40 and the club has agreed to lend this money to the digging team. They intend to reimburse the club by asking for donations of 10p per person from all visiting parties. This is only a temporary arrangement and will cease once the cost of the work has been met.

Because of this slight change of plan, no further Thrupe keys will be issued to Mendip clubs for the time being. Visiting parties will be able to obtain a key from Mr. & Mrs. N. Butt at Thrupe Farm - the house almost opposite the cave and facing down the road towards Croscombe. The 10p donations can be left with Mrs. Butt.

M.R.O. Callout Procedure

The new 999 call-out procedure detailed in Journal No. 152 is now operational. New M.R.O. notices are being affixed to the major cave entrances.

New Members

We welcome the following new members:-

Tim Gilbert, 19 Cotswold Drive, Sprotsborough, Doncaster, Yorkshire.

Antony Butcher, 48 Ashgrove Road, Bristol, BS3 3JW.

Tony Fouracres, 16 Highridge Walk, Bristol, BS13 8BA.

Adrian Gay, 10 Cosbycote Avenue, Herne Hill, London SE24.

John Hunt, 35 Conygre Road, Filton, Bristol.

Glynis Buckham, 13 Grosvenor Place, Bath, Avon.

John Willman, 32 Waldemar Avenue Mansions, London, SW6 5LT.

Michael Holland, 3 Park Road, Dartington Hall, Devon.

Guest Leaders for South Wales Caves

O.F.D. 1.

R. Kenny

P. Davies

R. Pyke

C. Pickstone

D. Thompson

I. Jepson

J. Jones

D.Y.O.

R. Staynings

I. Jepson

R.A. Philpott

T.E. Reynolds

D. Tringham

MEETS

Friday Night Club meets. Details from:-

Richard Kenney,
"Yennek"
St. Mary's Road,
Meare, GLASTONBURY,
Somerset BA6 9SS.

Friday October 4th

Cuckoo Cleeves

Friday October 18th

Eastwater - Twin Verticals Route

Friday November 1st

Hunter's Hole

Saturday November 16th

Wales. Details from Richard

Friday November 29th

Hilliers Cave

Friday December 13th

Thrupe Lane

NEWS IN BRIEF

Thrupe Lane Swallet

Members of the Westminster Speleological Group have climbed 40' above the main ledge in Atlas Pot to reach one of the inlets visible from the stream passage. From a small ledge a low passage leads after 15' into a shaky boulder chamber. The way on appears to be a loosely choked rift passage which emits a slight draught. A fixed rope has been left on the climb for those with prussik gear.

Flower Pot, Hollowfield

Enlargement of the terminal rift revealed another 150' of muddy phreatic passages, bringing the total length of the cave to 350'. There is no obvious way on and digging in the cave has temporarily ceased.

SOME SECOND HALF SCORES

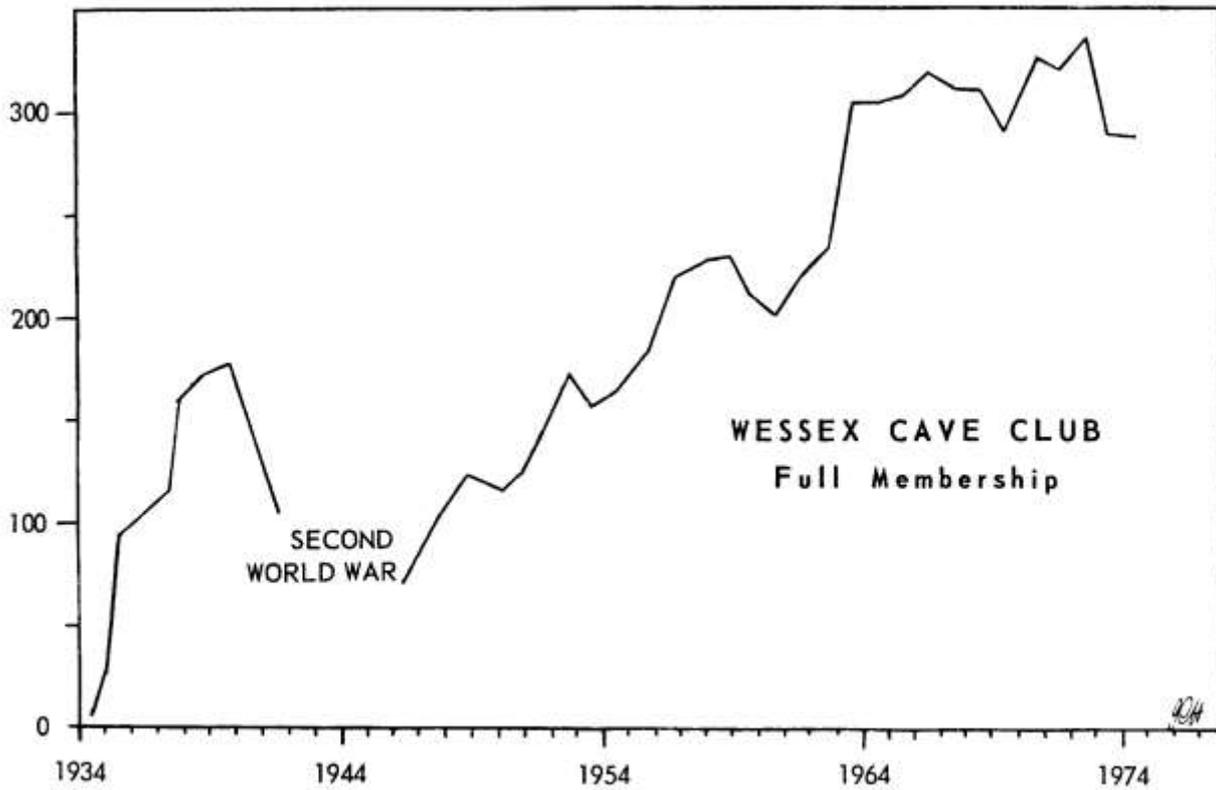
by J.D. Hanwell

The misty dawn of British caving is oft supposed to have cleared with Eduoard Martel's first descent of the main shaft into Gaping Gill in 1895 nearly eighty years ago. If so, then the Wessex Cave Club's history spans just about the latter half of the period to the present day. Every time the writer partakes of a pint in the Hunter's Lodge, he is reminded by the engraving on the pot presented him at last year's Annual Dinner that he joined the Club back in 1954. Thus, but for the members' generosity and Phillip Davies' careful search of the records, the nostalgia of our Fortieth Anniversary would have passed with your scribe blissfully unaware that he too "came on" at a half time stage. The occasion and its coincidences prompts a few musings on the past forty years on Mendip.

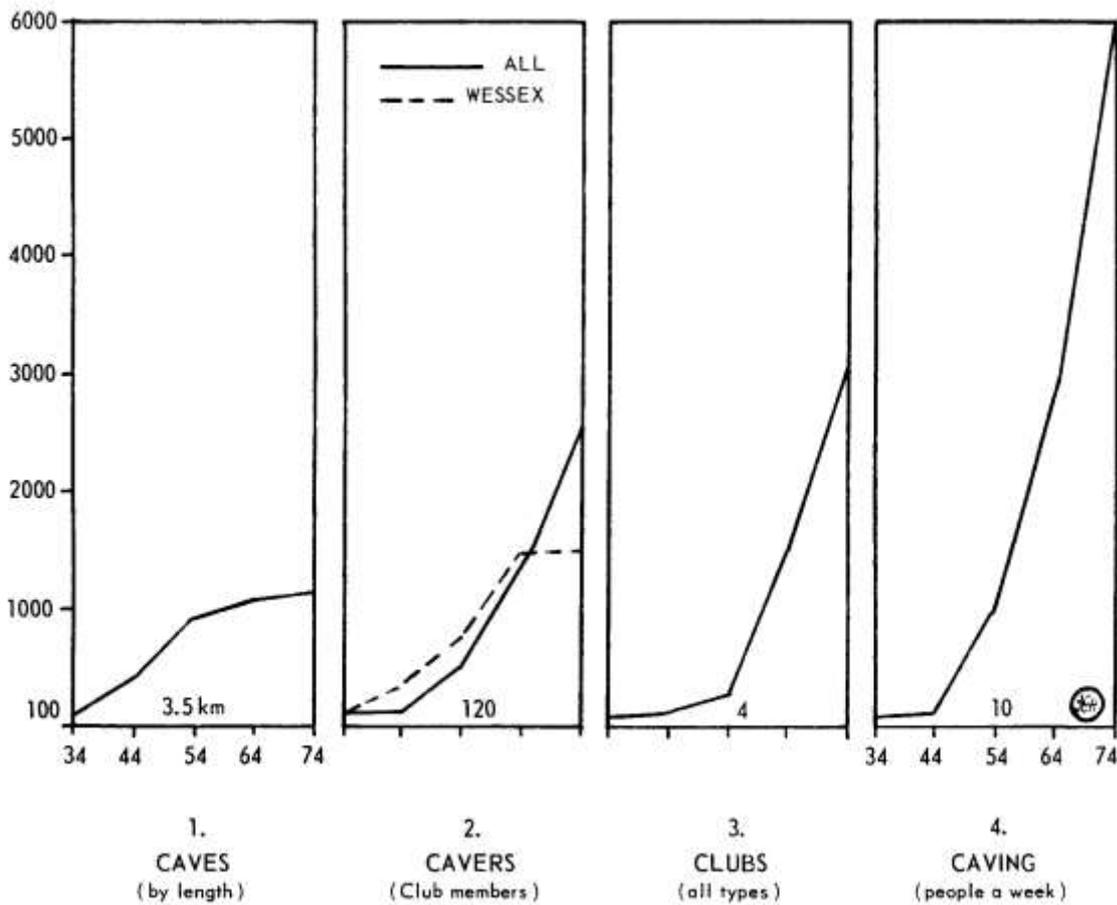
Almost by halving the time scale yet again, we can turn back to the Annual General Meeting of 1963 when discussions centred around the growth in the Club's membership. In the Journal before this meeting (Vol. 7, No. 91, Sept. 1963), I illustrated a short article on the subject with a graph showing how our membership had grown since the Inaugural Meeting held on September 29th 1934. For the record, this is now brought up to date here. Being older, hopefully wiser and certainly more indolent, I will leave others to chance an analysis of this information.

The quartet of graphs showing the comparative growth rates of local caves, cavers, clubs and caving is also offered taking 1934 as a common base. The information used to plot the changes each decade to the present has been reasonably if not rigorously researched; the respective 1934 values used are shown on each graph. Some gentle juggling with the figures will show that the post-War membership of the Wessex accounted for almost half the local caving community at the time. In 1954 it was virtually a quarter and ten years later barely a fifth. It is now a tenth and, presumably, still shrinking relative to the whole caving population on Mendip today.

Ducking any interpretation of these trends again, the temptation to move an unknown step to the right on each of the four graphs is easily resisted. The only firm predictions for ten years on are that the Club and, shortly afterwards, the writer will both be celebrating the respective jubilees. It will also be 1984!



MENDIP CAVING
Comparative Growth Rates since 1934 (as 100)



THE BRITISH CAVE RESEARCH ASSOCIATION

by Eric Hensler

As most members will by now know, the British Speleological Association and Cave Research Group were merged last year to form the British Cave Research Association. I have been asked by your Editor to write a brief outline of the objects of the new association, the facilities it offers to those who are interested in speleology and the relationship it has to other organisations such as the National Caving Association.

In the hope of not being tedious I shall give an outline of the main points in the BCRA Constitution together with my comments as this gives a succinct summary of what we hope to offer and achieve. They are briefly as follows:-

"To collect and publish information of speleological interest."

All serious contributions to the subject, whether from Members or anyone else will be welcomed for consideration by the Editors. Journals, giving current news and reports, other matters of speleological interest, notices of impending meetings etc. are published at two to three monthly intervals, and Proceedings from time to time in which appear papers dealing with scientific matters relevant to speleology, new discoveries, and expedition work carried out abroad.

"To organise conferences and meetings of a scientific or educational nature." For instance, this will include an annual conference generally on the lines of the well-established BSA Conferences of the past, several regional gatherings in each year, generally in the South, the Midlands and the North and preferably within reach of a caving area at which talks on speleology and allied subjects, or symposia on specific subjects will be given. Hopefully, trips to local caves or potholes will be organised on the day following the meeting and informal dinner. The Winter Meeting and AGM this year is to be held in Wells in December when we hope to offer you an interesting programme.

"To maintain a library." The amalgamation of BSA and CRG libraries has brought together a very large and comprehensive collection of books, journals, club publications, foreign publications, surveys and mining plans and other relevant papers. At present, most of this collection is housed in a room at the Skipton Museum pending permanent arrangements. Members may borrow many of the items by post or may refer to the library by arrangement at certain times.

"To advise on exploration and excavation of caves." The library will be useful to this end.

"To acquire apparatus for use in research." Such equipment may be available for use by members on approved projects.

"To encourage the co-operation of voluntary organisations, museums, societies, statutory bodies, institutions and individuals".

"To undertake and execute any charitable trusts which may lawfully be undertaken by the Association, and which may further its objects". In this connection the Ghar Parau Foundation is in process of formation with the object of investing funds coming from publication royalties, the interest from which may be used at the discretion of the Trustees to give financial support to speleological expeditions organised in the United Kingdom to carry out exploration and/or scientific research abroad.

"To undertake the registration and conservation of caves, their contents and associated phenomena".

Etc.

Dr. Gordon Warwick, our Conservation Officer, is keeping closely in touch with the Nature Conservancy Council, County Council Planning Officers and various other bodies and Club members can actively help in this matter by asking their Secretary to let him know of any threats by industry or development schemes to the caves.

A thorny question exercising the minds of BCRA Council and others has been our relationship with the National Caving Association. Initially beset by misunderstanding, rumour and indecision, with the passage of time and thanks to close liaison and much discussion we are mutually approaching an understanding of our complementary roles and a happy relationship should soon emerge.

Although the WCC is an Institutional Member there may be those who would care to become Members of BCRA. Application forms may be got from our Hon. Sec. David M. Judson, Bether Green, Calderbrook Road, Littleborough, Lancs. OL15 9ND. Full membership, open to all over 16 yrs. of age, at present costs £3 per annum and carries the right to vote and to the receipt of all publications of the Association. Associate Members may join if over 16 yrs. at a subscription of £2 per annum and they receive only the Bulletins free. Other publications are available at concessionary rates.

Looking well into the future we are pleased that the International Congress of Speleology has accepted an official invitation from our delegate Dr. Warwick for the 1977 Congress to be held in this country. This is a very big affair with cavers coming from all over the world, and already an organising committee formed of well-known and experienced cavers in Britain is at work tackling the formidable logistics involved.

JUST HANGING AROUND IN THRUPE LANE

by Clive North

In the June issue of the Wessex Journal, Simon Meade-King described the discovery and the early stages in the exploration of Thrupe Lane Swallet, Croscombe, and the article concluded by hinting at the prospects of further passages in the Marble Chamber and Atlas Pot areas. Since Simon penned his article considerable effort has been expended pushing a large 50' high aven in Bypass Passage near the start of the Marble Streamway, and the two avens above Marble Chamber itself. The latter revealed very little, whereas the Bypass Aven led to an inlet series worthy of note and consideration.

After climbing down through the boulder choke at the lowest end of Marble Chamber, one follows a short passage to the foot of a 20' aven down which pour two streams. In the early stages of exploration Andrew Webb succeeded in climbing up through the spray to the point where the largest of the two streams appeared from a small passage. After crawling in and clearing many loose cobbles from his way, he saw the passage widen considerably ahead, got stuck in his excitement, but eventually reversed safely.

By taking a fairly obvious rift passage to the left of the stream at the base of the aven a short crawl can be followed into another fine aven some 50' high by 8' wide. Continuing from here takes one through Bypass Passage to emerge about 20' above the stream in Atlas Pot. A spot beam directed up "Bypass Aven" revealed what appeared to be a black hole in its roof. This and the considerably fluted nature of the shaft prompted me to have a go at climbing it.

Festooning myself with purloined and borrowed pitons and with a lump hammer jammed awkwardly in my boiler suit, I began the climb lifelined from below by Dave Everett. After about half an hour I had climbed 35' on a zig-zag course, protected by a series of five runners. It was then that I found I could hear

falling water coming from a small passage off the side of the pot, about 10' above me. Unfortunately, those 10' were just overhanging and peppered with useless cherty nodules.

Next began a more unusual piece of aven-climbing which entailed bridging the pot (now narrowed from 8' to some 4'-5' I hasten to add) and chimneying away across the pot for about 15'. A 10' climb up a narrow part of the rift (dislodging a rock which demolished an ammo-box below) and a chimney back across the rift tight under the roof brought me back above the "hole of roaring waters". A short slither down and I lowered myself in, well pleased with my first underground attempt at climbing with pitons and runners. An attempt to name the pot "Annapurna Aven" in honour of my death-defying climb was rejected by the Thrupe Lane Association of Passage Namers and Allied Trades in favour of Bypass Aven. C'est la vie!

Untying the lifeline I followed the sound of the stream into a small chamber with two short waterfalls and a section of narrow stream passage with blackness beyond. This was obviously the chamber Andrew Webb had viewed from the top of the adjacent aven recently. Two tight passages containing tiny streams entered the chamber but these were too small to be forced.

Returning to the main aven I could look up into the black hole in the apex of the pot at which I had really been aiming. A fair space seemed to exist above it but the access was suicidal for free-climbing. I then found that there was a slit in the roof of my little passage leading to the stream. Through this was the way into the elusive passage above.

It turned out to be an abandoned stream inlet about 8'-10' wide and 4' high going straight back up-dip for about 150'. At the end it became blocked with boulders and stream debris with various short routes leading off through it. Two 25' avens and one of 15' were found in the roof whilst the sound of the stream could be heard through holes in the floor. The avens, lined with crumbling chert, made interesting climbs but revealed little. After a cursory examination I abseiled back to my companions and it was not until the following week that they too sampled the delights of Bypass Aven - as a free-hanging ladder pitch rigged through the hole in the roof of the aven.

To rig the aven requires the first man to free-climb (on a lifeline) clipping his runners into the pitons and tapes left for the purpose. He then pulls his line up through the runners and hauls up the ladders. These are belayed to a stout wire tether and shackle left above the hole in the roof of the aven. On the return trip, the ladder-climbers remove the krabs from the pitons on the climb and the last man can abseil by doubled rope from the ladder belay point, pulling the rope down afterwards.

Fresh from our success in Bypass we turned our attentions to the two avens above Marble Chamber which had been tantalising us for several weeks. They appeared to be about 40' high and just off the vertical. At the top of both appeared to be dark holes. The problem with the largest of the two avens was that its top was "hold and piton-crack"-free, whilst the only access to the second aven was via an overhanging traverse and bold-step across from the first. It was decided to attack the second aven first and soon the first protecting runner was in with Ray Cavill lifelining from below.

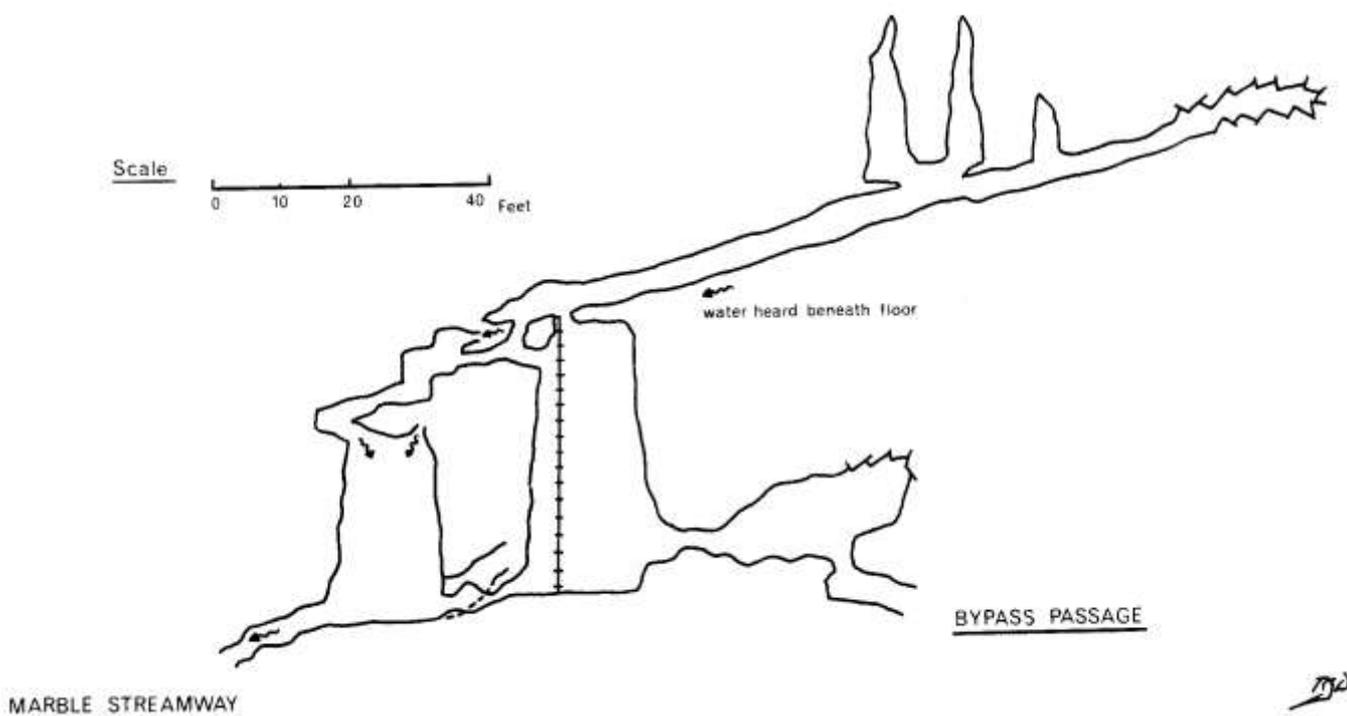
Unfortunately, someone had "borrowed" the piton hammer and the early stages of the climb were accomplished with the aid of a protesting entrenching tool! Happily, the hammer later arrived and its owner and friends each drew up a boulder below to view the scene and offer useless suggestions! After about an hour little progress had been made along the overhanging traverse. What was required was a very good handhold immediately above, thus enabling one to swing round. Needless to say, there wasn't one. Chocks inserted in cracks tended to pull through whilst a piton inserted further back only succeeded in cracking off a large slab of rock!

The whole rock mass around which I was climbing appeared unstable, loose, and hopeless for pitons. In the end an 8' rope belay looped over a rock projection formed a "hanging-foothold" in mid-air, encouraging me to make the bold step around the corner onto a steep section of almost hold-free rock.

The manoeuvre worked and I gratefully made a precarious perch halfway up the second aven and searched in vain for a good place for a piton. In the end, tapes around rock flakes afforded some protection and the top of the aven was reached. A 10' wide passage, blocked after 20' with large boulders and stream debris, was all there was to reward our efforts. Prospects in the other aven were also hopeless as it came into the same section of stream passage. Disappointment all round, but the climbs were well worth attempting and answered several questions as to the layout of the upper portions of the cave.

Aven-climbing is still a fairly reasonable prospect for new passage in Thrupe with the most dramatic examples still to be examined in Atlas Pot. By checking with a powerful light it appears there is a 10' high inlet passage coming in almost at the top of the aven. This would need a climb of about 80', probably with bolts most of the way. Other shorter climbs to inlets around Atlas are available but the walls in the area are thickly mud-coated. However, the challenge remains and an abandoned route to St. Andrew's Well could easily be lurking in the walls of this shaft.

THRUPE LANE SWALLET
Sketch of Bypass Aven Area



CAVE PHOTOGRAPHY

by B.L. Milton

This article is not intended to be a comprehensive photographic guide, but more to assist those already conversant with the general principles and use of photographic equipment, but who require additional information in order to achieve satisfactory results underground.

The equipment and techniques described will account for the majority of situations but will obviously have to be adjusted according to personal resources and the nature of the desired end result. Although these techniques are mainly based on experiences with the use of popular and adaptable cameras such as the 35mm S.L.R., it should be appreciated that quite acceptable results can be obtained with even the simplest type of "box" cameras provided that their particular limitations are acknowledged. No apologies are offered for the inclusion of over-simplified descriptions and apparently "obvious" items, as many are often overlooked for the same reasons.

Equipment

All items should be preferably as robust and simple as possible consistent with the desired end result. All knobs and controls should be of the large, protruding and heavily knurled variety for easier operation with cold and mushy fingers. Plain, easy to clean casings will cause less trouble than intricate types bristling with extras (many extras have in any case a limited use underground).

Robust cameras are generally more bulky but the extra weight will be found an advantage for steadier handling in unstable situations. View-finders should be as large as possible for easier composing in the absence of natural light. A wire finder fitted to the accessory shoe of some non-reflex cameras will be found useful. Built-in exposure meters are of no advantage except possibly for time exposures using artificial lighting such as electric or carbide helmet lamps. A limited number of cameras are available which have varying degrees of built-in protection against water. Transparent, waterproof (diving) cases are available with universal controls for most makes of cameras but their extra bulk is usually prohibitive for other than underwater use. A simple and effective method of protection against spray and dripping water is to cover the camera with a large, inverted polythene bag with a hole for the lens-front and the lens hood used to keep it in place. Flash leads will be accessible from below, and provided the bag is large enough, all controls can be seen and operated externally.

A standard 50 or 55mm lens is suitable for most situations but an additional wide-angle lens is invaluable in cramped conditions or for extra field-depth with large apertures (the distortion normally associated with this type of lens is less noticeable in irregular cave surroundings). Bayonet fittings will often be found preferable to screws which tend to require rather deft handling in cold, wet conditions. Supplementary close-up lenses are straightforward and useful additions especially for rock and fauna details (extension tubes are of course more flexible but fiddly to assemble). In order to provide extra lens (and coating) protection against possible knocks and regular cleaning, it is recommended that a UV filter be used at all times. Always use a lens hood; apart from improved colour contrast, it also provides some lens protection against dripping water. A lens-cap should be fitted at all times during carriage to prevent lens contact with other loose equipment. A lens-brush/tissues kit will often be needed, especially in very wet surroundings.

The choice of film is, as always, a matter for personal preference, there being no particular caving-use merits except that colour reversal film will probably be the choice of most. Unless the trip is an extended one, it is advisable to ensure that sufficient frames are available beforehand to avoid opening the camera underground. A single piece of grit can scratch and ruin a complete film apart from possible damage to the camera mechanism.

The only form of effective and practical lighting is by means of flash-gun units. The use of flash powders, magnesium tape, flares and the like are not advised as, apart from the danger of fumes and burns, the vast quantity of smoke emitted usually prohibits further photographs. Several flash-guns of various powers are better than one large, fixed output unit. The latter tends to burn out large areas of foreground whilst several, strategically placed, smaller units produce much more interesting effects. A good compromise seems to be a small to medium sized electronic unit for the bulk of normal use plus a small and a large conventional unit for fill-ins and distant subjects. Make sure all batteries are in good order (or charged) beforehand and, if in any doubt, include some spares (a caving cell and some imagination can be adapted in an emergency). "Automatic" flash-guns, whilst excellent for hurried, candid shots above ground, can cause problems underground due to loss of aperture flexibility.

Two or three flash extension leads of various lengths are required for some of the more involved lighting set-ups together with a three-way camera-socket adaptor. Be sure to check that the polarities and voltages of the flash units' terminal plugs are the same before connecting otherwise short circuits and possible damage will result. Special care should be taken to avoid dirtying plugs and sockets as even small amounts of grit will cause misfires. A set of personally pre-calculated aperture/distance tables for each flash unit and contained in a transparent, waterproof envelope is indispensable when comparing different flash/subject combinations, especially for multi-flash set-ups. Photo-cell, radio, and ultrasonic-beam operated flash units are available and dispense with the need for synchronising cables but are expensive extras unless essential use for other than caving is anticipated.

A choice of tripod will have to be between a desirably rigid (and therefore usually heavy and separately transported) model, or a small, collapsible type to suit the size of kit-container. A non-ferrous, easily cleaned construction is to be preferred without an undue number of joints as it will often have to survive long periods of partial submersion in mud and water.

Cable-releases should incorporate a locking device for extended exposures or open flash. A bulb-release and additional long tubing is useful for camera operation in confined spaces, the elimination of camera pull, and for freedom during directing operations. It can also come in handy for delayed timing and photographer-included shots. A waterproof notebook and pencil are useful for future repetition or improvements to various lighting set-ups and exposure values etc.

Apart from the camera, a good kit-container is probably the most important piece of equipment as the success of the complete operation will depend heavily on its correct selection and use. The most suitable type of container is undoubtedly the metal type of "ammo" box with certain adaptations. Soft bags, biscuit tins, etc. invariably get damaged and leave the contents practically unusable. A box no bigger than 300 x 150 x 150 mm and weighing up to 5 Kg with contents will be ample for most uses. The box should be lined with a shock absorbing material such as plastic foam or wetsuit neoprene, with added layers if necessary to prevent the contents from wandering (in cases where photographic equipment forms only part of the contents, it is best protected by means of individual, nylon-lined neoprene bags). A watertight lid-seal will often need to be fitted, especially for transport through sumps, and is also best made from neoprene. Use new material in preference to rotten, worn-out socks and broken jockstraps. A wide shoulder-strap makes carrying easier rather than relying solely on the lid-handle. An ideal strap material is rubber furniture webbing and the provision of a detachable snap-clip at one end is useful for lowering the container down pitches.

A small hand towel is necessary for wiping wet or muddy hands before handling equipment. This is best kept in the uppermost part of the box where it will act as extra packing, be accessible first and absorb odd water drips from helmet and lid when opening. All equipment should be packed such that the most frequently used items such as camera and flash-guns are at the top, tripod and other accessories in the middle, and spares etc. at the bottom. Flash leads and similar flexible items give additional protection if these are placed around and below the camera.

Techniques

The following information will enable basic problems to be appreciated, and it can be developed to individual requirements by practice and experimentation. Despite all precautions it is inevitable that some unsatisfactory results or complete failures will result and therefore more intensive use of re-exposures or bracketing is to be recommended especially for "never to be repeated" situations.

Due to differences between above and below ground air conditions, it will be found that condensation will invariably appear on the camera lens when it is first exposed to the cave air. Depending on conditions, this can take up to ten minutes to clear. No attempt should be made to remove the condensation with tissues as it will sometimes reform and cause lens smears. Occasionally opening the kit-box during the incoming stages of the trip will often prevent this initial nuisance. Warm hands and breathing too near the camera can cause similar troubles during use of the camera. When making the actual exposure, breathe away from the line of fire for a few seconds and hold your breath whilst releasing the shutter, otherwise vapour will cause hazy photographs.

The use of a flash-gun mounted on the camera should be avoided whenever possible as breath vapour and fumes from rotting clothing, which are scarcely noticeable under normal lighting conditions, can completely obscure photographs due to back reflection of the flash. The use of angled lighting, kept away from the camera by means of extension leads, or open-flash will nearly always eliminate this problem. The photographer should also enter confined photographic areas before other party members to avoid a concentration of atmospheric pollution.

Focusing with S.L.R. or rangefinder cameras is best carried out with the assistance of a candle or helmet lamp near the subject. When in doubt, especially for close-ups, a tape measure is useful.

Due to the absence of natural light, the cave photographer "enjoys" the advantage of complete lighting control, and the opportunity exists for unlimited scope with various combinations and degrees of lighting. Single-flash shots produce more interesting shadows and depth impression if used well away from the camera. In large chambers it is best to use several flash-guns either by means of synchronising leads or open-flash, to create the necessary impression of depth and to highlight small objects, side passages etc. If time permits, open-flash can often be carried out with a single gun and a lens cover. Time-exposures, utilising cap-lamps etc. (and the appropriate lens filter) can produce interesting effects and "animated" light trails.

The photographing of some types of formation requires much consideration if a dull, mass of rice pudding effect is to be avoided. Rear lighting sometimes brings out the true colours of often translucent formations and the inclusion of any accompanying water is helpful. Needless to say, action photographs will often demand aerial acrobatics if the best effect is to be achieved.

Manufacturers' flash guide-numbers are notorious for being overrated and should be corrected by bracketed test-shots in an average-sized room with normal wall reflection. In addition the following will serve as a guide for guestimating exposure values:-

Large chambers: plus 1 to 2 stops depending on extent and colour of decorations.

Small, well decorated chambers: plus ½ stop.

Stream passages: plus 1 to 1½ stops.

45 lighting : plus ½ stop.

60 lighting: plus 1 stop.

Specially dark subjects: plus ½ to 1½ stops.

Planning ahead whenever possible is of great advantage to prevent long holdups when photography is not the main object of a particular trip. As for purely photographic trips, they are best made by small groups at "off-peak" times to avoid tangles with the normal cave traffic.

BALCH WAS RIGHT

by W.I. Stanton

April 6th of this year saw a party of ageing but intrepid speleologists (i.e. the Reservoir Hole diggers) assemble in the Ninth Chamber of Wookey Hole Cave, intent on making history. Our object was to swim into and survey Wookey Six, to check that the new tunnel, which had brought us effortlessly into Nine and was now driving on in the direction of Three, would not unexpectedly break into the side of the only surveyed chamber downstream of Nine. So Bob Elliott, Tom Davies, Terry Tooth, Brian Mulloy and I, with Brian Prewer as distinguished visitor and Graham Jackson as director and observer, made our way by John Parker's high-level route to a wooden ladder 16' long, precariously spanning Eight 30' above the water. From the far end of it, Terry, Tom, Prew and I dropped down a wire ladder into the lake in Seven.

Water level was about 5' below normal as the resurgence sluice had been opened, and we hoped, following a remark made by John Parker, to find an air space leading into Six. We weren't disappointed, for half way along the west side of Seven was a low arch 2' high which after 4' brought us into a lofty rift 3' wide and 15' long: Six-ii. At its north end another arch only 1' high (normally 4' under water) entered another slightly wider rift: Six-i. It was possible to stand, in deep mud, along the southwest side of Seven and at the south ends of Six, but elsewhere all was deep water. Both rifts ran roughly parallel to Seven, and were well removed from the proposed line of the tunnel.

Now, at last, I come to the point of this communication. Returning to Nine we swam around the upstream and downstream pools to see what was new, and whether we could reach Twenty. We couldn't, but a phenomenon manifested itself in the downstream pool, viz; a small stream running out of the south end of the lake and splashing away southwards down a narrow rift. The lowest point visible (the rift was only 4" wide) was about 2' below river level and was still air filled. Obviously some research was necessary.

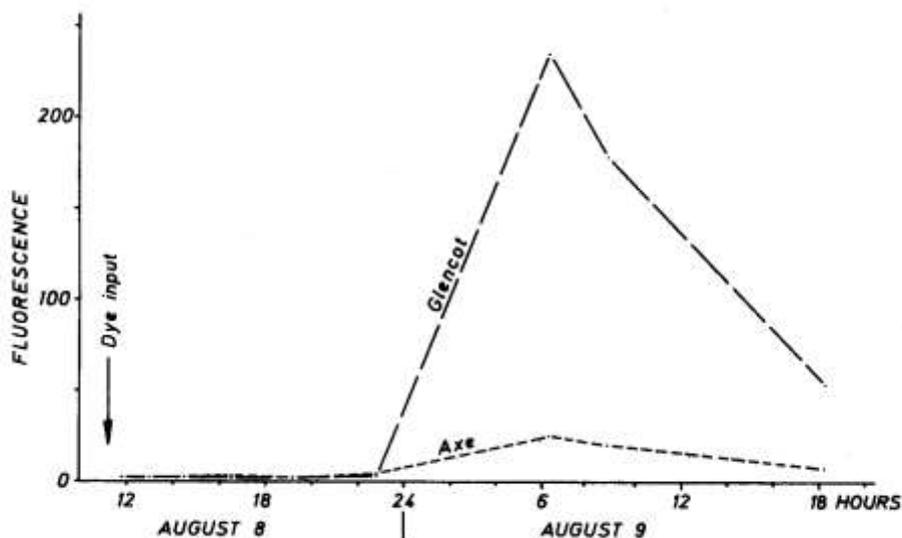
H.E. Balch, so long ago as 1914, had studied the Glencot Spring, half a mile down the Axe valley from the great cave, and had formed the opinion that it was the lowest, latest level of Wookey Hole, "due to a portion of the water of the subterranean river entering the lower beds of Conglomerate, and passing through them until these beds are cut off at Glencot". He continues, in a masterly piece of common-sense deduction; "The facts which support the theory are simple. The spring varies comparatively little, seldom falling to 350,000 gallons a day, and never exceeding this quantity by one half. It is, rarely, liable to discolouration, but not to the same extent as the water of Wookey Hole itself, and not quite so quickly. It throws up fine sand usually though not invariably when the Axe is discoloured to a considerable extent, and this sand resembles that of the finer beds in the cave. The inference is that they have a common origin, but that the Glencot water undergoes considerable filtration before it reaches the spring. There can be no doubt that if the channel which this is wearing for itself became sufficiently large, it would carry off the whole of the water of the subterranean stream, and the present waterway would only come into action in time of flood". (Wookey Hole, Its Caves And Cave Dwellers, 1914, page 21).

Much later, in 1936, Balch drew a section of the divers' discoveries in chambers Five to Seven, and showed the cavern floor as consisting of "conglomerate beds through which water passes to Glencot and smaller springs" (Mendip - The Great Cave of Wookey Hole, 1947, plate 24).

It was not until January 1967 that doubt was cast on Balch's deductions. Then for the first time the major Central Mendip swallet streams were traced, using lycopodium spores, as Phase Two of the Mendip Karst Hydrology Research Project (Atkinson, Drew and High, 1967? W.C.C. Occasional Publication 2 (1)). Seventeen springs were netted, but spores were only recovered from Wookey Hole, Cheddar, and Glencot. Those from the last site "were very few in number, and of such uneven distribution in time, that they can be attributed to contamination of the net" (page 13). Good Lord, we thought, poor old Balch was wrong after all.

The question was re-opened by the discovery of the little tributary of the Axe in Nine. In August 1974 the water level was lowered again to allow Professor Tratman's archaeological dig in Four, and I took the

opportunity on August 8th to pour 30 cc of Rhodamine WT dye into the distributary. For the next 35 hours I sampled Glencot Spring (ST 53174699) and the River Axe about 100 yards upstream of the spring (ST 53174707), and the results are shown in the accompanying diagram.



The dye took 11.5 hours to reach Glencot Spring from Wookey Nine, and the peak was probably reached 15 hours after input, at about 2 a.m. Flow in the Axe was estimated at about 2 million gallons a day, or about six times the flow from the spring, so taking this dilution factor into account nearly as much dye reached the Axe (presumably from Balch's "smaller springs", of whose whereabouts I am ignorant) as emerged from the spring itself. The flow entering the visible distributary in Nine was very small during input, and there must be other distributaries not far away. Probably Glencot Spring also drains the adjacent limestone mass of Milton Hill.

Glencot Spring is 1100 metres from Wookey Nine, and 16m lower. The straight line gradient is 0.9 degrees, and the flow rate 96m/hour (315ft/hour). This is much slower than the average for Central Mendip (Atkinson *et al.*, op. cit., table 6), although the gradient is probably comparable to or steeper than that from the bottom of the major swallets to their risings, after the initial steep descent is over. Stage during the test may be thought of as "high", for flow at Glencot did not visibly increase when water level in the cave was raised again, and the trace is thus comparable to that of the Central Mendip swallets, which was done at high stage. There is no "hosepipe effect", though I might have anticipated one, had I thought about it.

So in Wookey Nine we have, for all to see at low water, one of the mysterious branching underground streams that were brought into prominence about 1966 by Dave Drew's water tracing. They have fascinated hydrologists by their unpredictability, their capacity for complicating and obscuring an otherwise simple groundwater situation and their essential transience.

In this particular case there is no mystery; the distributary is no more extraordinary than a leak in a pipe, or in the side of a canal, the only fundamental point being that the main stream is recharging the aquifer surrounding it. In other words, the river is perched above the water table in the adjacent rock. This is not an unusual phenomenon in Mendip, it simply reflects the capacity of a sediment-bearing stream to choke and largely seal the minor fissures in its bed. Bigger fissures are not so easily choked, and when they reach a certain size they capture the river. Stoke Lane Slocker is a fine example of a perched underground streamway (The Complete Caves Of Mendip, 1972, page 122), and in summer the Mells River beside Mells River Sink (*ibid.*, page 90) illustrates a perched surface stream.

Hats off to Herbert Balch!

NOT NOW AND AGAIN, BUT AGAIN AND AGAIN AND AGAIN

PART IV by Fred Davies

The incident of Dave's Knee had a more profound effect than we had at the time realised. Ray and I did not feel like returning to that region to push harder on the hole which we were attacking, fearing further loose rocks. We therefore decided to attack Shit Sump again. On the 20th August 1972 we returned to Cowsh and were surprised to find a doubled line looped through a metal ring allowing a ladder to be raised up the climb from the IV streamway.

We coiled this gear neatly and left it at the top of the Cowsh climb. In a letter later to Mike Haselden who we assumed to be responsible, we explained that we felt this to be a very bad move from several points. 1) Safety - such an aid allows your accident to travel to a more difficult part of the cave before occurring. The place for fixed aids is at the extremity of a cave, not the beginning. A bloke willing to make the climb up Cowsh is more likely to stand up to an emergency situation than one who demands aids. 2) Maintaining standards of caving ability. Rather pretentious perhaps but valid I felt. At the same time Speleo Rhal were invited to continue with any assistance they felt was possible.

When Ray and I reached Shit Sump on the 20th August we found that the bang, fired after the Dave's Knee incident simply to off-load the stuff, had had a tremendous effect on the lip of the sump. It had been lowered, in this one go, by over three inches. The water ran rapidly away and one could crawl easily around the corner with the head well clear of the residual clag.

My record of individual trips during the remainder of 1972 has been lost. I know that for several months we continued to dig mud out of the tube beyond the sump, dig out some rock and slowly push on, but the tube gradually gets narrower, and when, tighter than the Goatchurch Drainpipe, it came to a tight bend requiring chemical enlargement, we decided that Mansfield's Hole and the country by the Top Avens could not really be so bad. Perhaps time had soothed our jagged nerves. So back we went.

But it was not until 1973, the 3rd February in fact, that we broke through into new ground. Brian Woodward and I on that day managed to clear away the bang-made gravel sufficiently to wriggle through a 6' long horizontal squeeze to the foot of an aven.

The Speleo Rhal boys had not been idle in the intervening time. Their radio location gear had been modified and strengthened and during 1972 they made two trips into the Cowsh Aven Series to try it out. On the first trip they made a successful location at the Mud Sump (this agrees to within a few feet with the Stanton survey), and of a point at the top of Main's Aven. This appears to fix Main's Aven as about 50' north of its location on the Stanton survey.

Later, in October 1972, they carried the transmitter to the Dave's Knee Squeeze and operated it at 2 a.m. so as to have the minimum of interference from other electrical equipment. The depth was put at between 150' and 200', which is good agreement with our rough estimates, but the Top Avens were placed south of Main's Aven. There is obviously some discrepancy between the two fixes. All measurements and guestimates yet made, however, show a distance of some 150' horizontal to the lower end of Priddy Green Sink but only 50' vertical. Not a very pleasant prospect as the horizontal stuff is all very tight and miserable.

Looking over all the data available I came also to the gloomy realisation that Mansfield's Hole was not likely to lead us towards Priddy Green Sink since it was trending south. I even suggested leaving it alone but others, especially Brian Woodward, urged that it was worth continuing if only because "it is there" and it was certainly going to lead to new cave.

The new point reached on the 3rd February was the foot of an aven about 2' wide with a boulder choke at the top. A narrow crack led straight on from the base of the aven which in itself was more of an

enlargement of a rift than a true aven. More exciting, however, was the open space that could be seen above the boulders. Gingerly I crept up and placed a charge among the slabs.

Enthusiasm seemed to be waning amongst the team and it was not until the 25th February that I returned to look at the effect of our bang. No one being willing or available I went alone and found that a couple of large boulders had fallen to the floor but a good many remained wedged over my head. Another charge was placed among them and fired safely. Things were different on the 11th March when "Goon", Ray Mansfield, Brian Woodward and I arrived to find that all the boulders had settled down to floor level. Whilst moving some of these out of the way Brian very nicely crushed a finger and left the cave early. When I crawled through to look at our new bit of cave it was liberally spattered with Brian's blood.

About 12' up, the aven widened a little and to the south, through about 6' of narrow rift, could be seen a black space. I little thought as I put the first charge on to start enlarging the rift that it would be 49 weeks before we first entered that inviting space.

DATE FOR YOUR DIARY

Wednesday November 27th. An illustrated talk "Exploring Canal Tunnels" by A.M. Simpson. 7.30pm. Wells Blue School.

HILLGROVE SWALLET - THE FINAL SOLUTION

by Alan Mills

Hillgrove Swallet, which lies about 400 yards east of the old hut site, was dug in the 1900s, in the 1920s, in the 1940s, in the 1950s, and in the 1960s - so it is about time that it went! Generations of bucket and spade men have tried and failed to find the cave, and the time has now come to lay siege to the place with a major mining operation. The construction has begun of a completely automated method of spoil removal, which will enable a handful of diggers to shift over two tons per weekend with the minimum of effort and the maximum of comfort.

The basis of the system is a motorised winch and railway. A 45° ramp has been built down to the cave entrance, along which steel angle rails have been laid. The pie-tray trucks mounted on a metal chassis will run on flanged wheels and will be hauled out by the powered winch on a steel cable. The winch was made up from a 250 cc invalid car engine and has two forward and one reverse gears. To protect both winch and winchman from the elements, a hut has been erected over the mounting. This is in addition of course to the main workshop and canteen building.

The trucks will be hauled up the incline to a turntable which will be operated by pulleys from the winch position. Once the truck has been turned onto another track, the winch will be put out of gear, and the laden truck will run down another incline under gravity. At the foot of the slope the flanged wheels will run into a pair of inverted rails which will twist the truck upside down, allowing the spoil to tip out. The truck will then be hauled back up to the turntable to be returned to the digging face by gravity.

Hillgrove Swallet is in a very deep depression and digging there in the past has always been plagued by the collapse of the high mud banks. It is intended to get around this problem by means of a tunnel. A steel tube about 10' long by 4' 6" in diameter will be concreted into the entrance so that it protrudes 8' or so. The railway track will be laid through this, and the bank will then be collapsed once and for all over the tunnel.

Over the years several hundred feet of passage has been found at Hillgrove and the neighbouring swallets. The last dig at the site in 1968-69 revealed a series of tight rifts ending in a boulder choke. The present push is directed at a mud-choked bedding plane just inside the entrance which descends at an angle of about 30°. It appears to be 4' or 5' high and has a heavily scalloped roof. The railway will be extended along this passage as digging progresses, and if need be, it can be "persuaded" to take a straight line.

The digging team has been selected and is as follows:-

Railway & Constructional Engineer : Glyn Bolt

Site Photographer: Bob Scammell

Entertainments Officer: Pete Palfree

Canteen Manageress: Anne Golledge

Excavators: John Hunt, Keith Newbury, Derek Stead, Dave and Rich Gordon

Site Manager: Alan Mills

"N.B. All helpers on the site must sign an indemnity chit and be over 18".



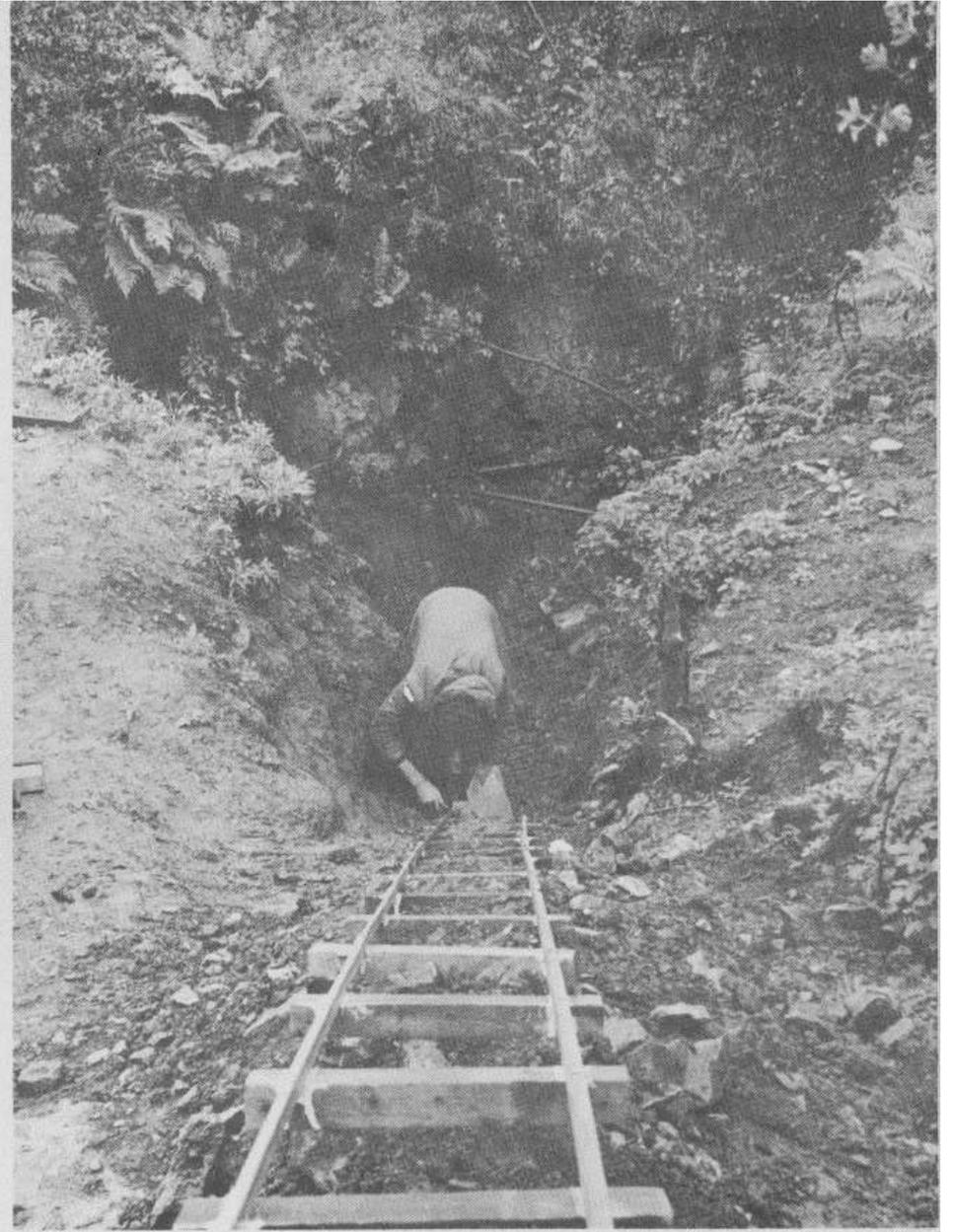
The Hillgrove Light Railway

Photograph R. Scammell



The Turntable

Photograph R.Scammell



Tracklaying at Hillgrove

Photograph R.Scammell

REVIEWS

Cave Surveying for Expeditions by David Judson. (Royal Geog. Soc.) Geographical Journal Vol. 140 Part 2 (June 1974) pages 292-300

This short paper is the fifth published in a series relating to various aspects of expeditions. The author is currently Secretary of the B.C.R.A. and is well known for his own caving on overseas expeditions.

After brief statements on objectives, timing and manpower, a checklist of equipment commends Suunto compasses and clinometers for cave surveying. Whilst this concurs with the reviewer's preference too, a cautionary note should have been included regarding the idiosyncratic problems of two-eyed sighting with these instruments. Most people have a stronger eye, and this is the one which makes the best reading eye at close quarters. I know a very accomplished cave surveyor who consistently reads an error of 8 degrees with a Suunto compass relative to myself and his own prismatic instrument. What is even worse is that it is 8 degrees plus with one eye and 8 degrees minus with the other!

The now well known six grades of magnetic cave surveying are summarised and the old C.R.G. Grade 7 (better denoted as Grade X) is effectively dismissed to very special circumstances. The recommendation of 'radio location' methods to fix key points is all very well in theory but, in practice, very difficult especially in mountainous terrains and wet caves. On the other hand, only the briefest mention appears of the time-honoured method of making closures to determine the accuracy of survey line and station positions. Again, the personal element has been underplayed, particularly in the light of the recommendation that several people should take turns at surveying on expeditions.

The five A to D grades for "detail" are merely tabulated. These are logical enough but highly subjective in interpretation. Experience indicates that the nature of a system exerts a strong influence upon the surveyor's perception of "significant changes" and "areas of possible interest". Personally, I have long held that the only way to resolve this, on first surveys in particular, is to relate the method used to the scale predicted for the final drawings. Accepting the accuracy gradings of the survey line as the sacrosanct element, for example, it is needlessly precise and wasteful on time to measure offset details to the nearest 10 centimetres as suggested. Either the scale of the final drawings must be larger than say 1:400, or the line thicknesses used and draughting must be better 0.25 millimetres.

Unless passage cross-sectional shapes are helpfully regular or all stations located where offset measurements are well defined, the determination of widths and heights usually results from the whims of either surveyor or recorder - often depending on which one is the thinnest and most optimistic! In the reviewer's experience, there is no solution to this problem. Since consensus opinion is impractical, it makes sense to have one person consistently applying his own judgement rather than the work of many. In every other branch of cartography, the plottable error has long been acknowledged and made use of relative to the scale and format of the drawings. The art of cave surveying is no different and we are trying to err too far towards "engineering drawing" pedantry regarding topographic detail. Take a look at E.A. Martel's superb examples for inspiration.

The paper concludes with ten key principles regarding presentation. These are succinct and useful. Whilst one cannot expect a comprehensive treatise in a nine-page article, the glaring omission which spoils an otherwise interesting resume is the lack of any reference to the calibration of instruments before and after every trip. This would be number one principle on my list as the major guarantee that a survey is up to scratch. One hopes that Bryan Ellis makes amends in his forthcoming book on Cave Surveying to be published by David and Charles.

J.D.H.

Tony Waltham is now widely regarded as an authority on the spelaeogenesis of caves and a book to which he has contributed is worthwhile reading for any caver who questions why "caves is where you find 'em". Of the 24 chapters in this book, Tony himself has written 6; other well known authors and cavers - Dave Brook, Ben Lyon, Dick Glover, Marjorie Sweeting to mention a few - have contributed chapters on areas where they have specialised.

This book is a mighty 'tome - just under 500 pages with over 50 illustrations and 100 figures and tables. Approximately half of the book comprises descriptions of the caves and potholes in particular areas - from Morecambe Bay eastwards; these vary in quality with the authorship - and quite naturally with the amount of work which has been done in each area. Nevertheless all are good reading, and several are classic discourses on the spelaeogenesis of a system. Some of these chapters should be required reading for all cavers whether their affiliations are to Mendip, South Wales, Ireland, or Foreign Parts - let alone the Pennines. I found the chapters on Leek Fell, and Gaping Gill particularly illuminating, but don't let that put you off the rest!

The first half of the book, and one chapter later on, is of a more general nature although slanted towards the Pennine area. Although it is all good stuff I suspect some of it will look very similar in each of the 4-5 books planned. In this context it must be noted that there are four chapters devoted to Hydrology, and one each to Archaeology and Biospelaeology. Now I am not a philistine (?) but these are minority interests, and much that can be said applies equally to all regions. None of these specialities are popular enough to merit a book of their own, and would much better be published in an issue of B.C.R.A. Transactions, where information for all regions could be collected together. Surely one cannot discuss the Archaeology or Biospelaeology of Yorkshire in isolation from South Wales or Mendip - let alone Devon for which a volume may not even be planned?

Personally I strongly regret this all-in policy of general editorship which has pushed the price of this volume from a popular £5 to nearly £7, probably similarly clobbered the succeeding volumes.

This book is of course the first of a new regional series; Mendip follows later this year, with Derbyshire and South Wales books substantially written. In spite of the price, Limestones and Caves of North West England is, allowing for inflation, good value.

P.R.C.

FROM THE LOG

15th July 1974 CUCKOO CLEEVES

Alison, Barry Gay, Barry Wilkinson, Adrian Gay, Marian Gay, Pete Gordon, Adrian Vanderplank, Chris Hammond. Myself, Adrian Vanderplank, Pete and Chris continued down the extension squeeze with assorted oddments of old pipes each about 4' long which together provide a useful and somewhat safer method of pulling boulders out from above you. It is just about impossible to take any rigid object longer than 4' through the extension squeeze. I climbed up and had another look at the boulder ruckle. More boulders had fallen out since the trip of the 16th June and it is still continuing to dig itself quite happily. Not feeling suicidal I decided to leave the boulders well alone until we have done some work at clearing up the digging platform. At the moment anything that chooses to fall out while you are climbing down to the lake falls straight onto you. Slow exit out with lights doing their usual trick of going out just at the wrong minute. Two people each spent between 40 minutes and 1 hour to do the 40' extension squeeze and surfaced muttering that they were never going back. 4 hours to get to the lake and back.

Alison

15th July 1974 EASTWATER

Alison Hooper, Adrian Vanderplank + 1. Quick trip (45 mins) - First Traverse, Primrose Path, Lower Traverse and out via the Canyon so that we could make the Hunters before closing time. The whole of the Upper Series is rapidly becoming one large carbide dump, especially at the small chamber at the top end of Primrose Path. Will those people who cave on carbide please set an example to other cavers and carry a spare tin in which you can carry out used carbide, which can then be disposed of in a responsible manner on the surface, instead of polluting an interesting and unique cave. Remember that Eastwater is seldom wet and in many places the carbide will never wash away. If anyone is interested in clearing up the cave I am looking for volunteers who will come down and help me.

Alison

27th July 1974 MANOR FARM

Adrian Vanderplank, Rich Websell and members of Salisbury Caving Group (N. Rigiani and D. Walker). Managed to enlarge a squeeze below Ham's Corner and enter new passage. About 200' of extensions with squeezes and formations, and still going. Aural connection with the main streamway. Present end is a 30' aven which has not yet been climbed. Essentially an S.C.G./W.C.C. dig. 5 hours.

R.A.W.

28th July 1974 MANOR FARM

Rich Websell and Dave Walker, Neil Rigiani and A. Sole of S.C.G. Returned to yesterday's discovery and climbed aven. Small 10' long streamway at the top with deep cowsh. Impenetrable at the end but can be pushed. A horrible place to go - four squeezes in the inlet, one of them very tight. I suppose we will have to return to push and survey sometime. Returned photographing on the way out. The passage has been named Sarum Inlet. 4 hours.

R.A.W.

28th July 1974 SWILDONS

Swildons 4. Bob Ellinor and Julian Penge went down the streamway to 4, Geoff Marshall's zip broke in 2, so he dropped out. Alison Hooper and Pete Moody went via P.R. The dig in 4 had a few gallons of water in the bottom which was quickly bailed out. The way on can be seen beyond a constriction some 12" long but the digging is really difficult. After about half an hour Chris Murray arrived having come in via 2 and 3. About three hours were spent digging but still no real progress. All out the way we went in with plenty of light troubles.

P M

11th August 1974 SWILDONS

Swildons 4. Julian Penge and Pete Moody down to 4 to meet Fred and Chris Wood coming from Cowsh with the radio location gear. Fred kindly blew up the constriction in our dig but in return we had to take the ammo can which contained the batteries for the R.L.G. out. Certainly didn't need lead in Sump 3!

P M

11th August 1974 MANOR FARM

Dook Mills, Alb Wilkins. Digging in ruckle at the end of the cave (the muddy rift). A small hole was opened up and this had a small rift at the bottom which was open and didn't appear to close down in the first 5'. Unfortunately we were both too large to force it. Small person required to push it please.

D.M.

16th August 1974 SWILDONS

Bob Ellinor, Geoff Marshal and Pete Moody to Swildons 4. Dig under 15" of water. Stream is very badly polluted by something coming in from the Inlet Sump in 2. It is probably coming from one of the inlets near the bend in Vicarage Passage and entering the main stream via the N.W. Streamway. The same pollutant was noted in that area of Vicarage last year.

P.M.

WESSEX CAVE CLUB
LIST OF MEMBERS AT AUGUST 1974

Airey, D.N.	8 Attwood Road, SALISBURY, Wilts.
Alder, J.C.H.	43 Rowlands Crescent, SOLIHULL, Warwicks.
Ansell, G.O.S.	21 Moseley Road, Naphill, HIGH WYCOMBE, Bucks.
Atkinson, T.C.	82 Onley Street, NORWICH, NOR 95E.
Attwood, H.C	155 Goddard Avenue, SWINDON, Wilts.
Audsley, Mr. & Mrs A.R.	Lawn Cottage, Three Mile Cross, READING, Berks.
Bainbridge, R.	10 Miles Road, Clifton BRISTOL, BS8 2JN.
Balcombe, F.G.	143 Newgate Street Road, Goffs Oak, WALTHAM CROSS, Herts.
Barber, K.E.	'Solva', 21 Southfield Road, SHEPTON MALLET, Somerset.
Barnacott, R.J.	Orange Court Farm House, Littleton, GUILDFORD, Surrey.
Barrington, N.R.	'The Oak House', The Square, AXBRIDGE, Somerset.
Barton, Dr. M.	'Farlea', Holcombe, BATH, Somerset.
Bate, K.W.	98 Hill Morton Road, Four Oaks, SUTTON COLDFIELD, Warwicks.
Beauchamp, C.A.	65 Coombe Lane, Raynes Park, LONDON SW20 0BD.
Benham, J.A.	90 Elsdon Road, WELLINGBOROUGH, Northants.
Bignell, R.	Dept. of Geography, McMaster University, Hamilton, Ontario, CANADA.
Bliss, A.M.	123 Westwood Road, Tilehurst, READING, RG3 6LH.
Blundell, P.R.	66 Bromley Heath Road, Downend, BRISTOL.
Bolt, G.	18 Winscombe Court, Berkeley Down, FROME, Somerset.
Borrett, R.	15 Chandler Close, Bampton, OXFORD.
Bryant, Mr. & Mrs. T.C.	'Glyncoed', Victoria Road, Maescywmmer. HENGOED, Glam.
Buchanan, I.	61 Rogers Lane, STOKE POGES, Bucks.
Buckham, Miss G.A.	13 Grosvenor Place, BATH, Avon.
Burleton, A.S.	27 Doncaster Road, Southmead, BRISTOL.
Burnett, J.M.	The Bungalow, 1 New Ridley, STOCKFIELD, Northumberland.
Burt, P.E.	66 Roundwood Lane, HARPENDEN, Herts.
Busby, H.	Forest Lodge Flat, Frog Lane, MILTON-UNDER-WYCHWOOD, Oxon.
Butcher, A.P.	48 Ashgrove Road, Chessils, BRISTOL, BS3 3JW.
Camburn, E.	10 Beach Road East, PORTISHEAD, Bristol.
Candlin, P.P.	14 Brookfield Way, Olton, SOLIHULL, Warwicks.
Casteret, N.	Castel Murlon, St. Gaudens, Garonne, FRANCE.
Causar, Mr. & Mrs. D.J.	19400 Sorenson Avenue, Apartment 122, Cupertino, California, USA.
Chard, T.H.	c/o the Earth Science Dept., The Open University, Walton Hall, Walton, BLETCHLEY, Bucks.
Church, J.R.	6 Marshfield Way, Fairfield Park, BATH, BA1 6HA.
Clarke, A.	8 Cogsall Road, Stockwood, BRISTOL.
Clatworthy, N.R.	2 Queens Road, WESTON-SUPER-MARE, Avon.
Cleave, F/O & Mrs. N.H.	Stream Cottages, The Street, Cradwell, MALMESBURY, Wilts.
Cobbett, J.S.	c/o Shell Co. of Qatar Ltd., P.O. Box 47, Doha, Qatar, ARABIAN GULF.
Cooper, Dr. N.	'Westover', Compton Bishop, AXBRIDGE, Somerset.
Cornwell, Mr. & Mrs. J.	26 Russell Road, Fishponds, BRISTOL.
Cousins, Mr. & Mrs. P.R.	8 Giffords Cross, LICHFIELD, Staffs.
Crabtree, S.G.	Cleeve Cottage, Craddock, CULLOMPTON, EX15 3LL.
Cullingford, Rev. C.H.D.	The Staithe, BECCLES, Suffolk.
Dainty, Mr. & Mrs. C.D.	61 Clarence Road, Four Oaks, SUTTON COLDFIELD, Warwicks.
Dare, H.	Bromans Farm, East Mersey, COLCHESTER, Essex.
Darke, R.	303-2336 York Avenue, Vancouver 9, British Columbia, CANADA.
Darville, J.M.	24 Alcester Road, Moseley, BIRMINGHAM.
Davies, C.W.	'Hillcroft ', Woodborough Road, WINSCOMBE, Somerset.
Davies, F.J.	'Camp V ', Withey Lane, Neighbourne, Oakhill, BATH, BA3 5BQ.
Davies, Mr. & Mrs. P.	'Cophthalls ', West Hill, Wraxall, BRISTOL, BS19 1PN.
Davies, Dr. R.E.	7053 McCallum Street, Philadelphia, Pa 19119, USA.
Dawe, K.R.	Birch Lodge, Much Birch, HEREFORD.

Devenish, Mr. & Mrs. L.W.E. 'Washingpool' Chilcote, East Horrington, WELLS, Somerset.
Dewdney-York, M.W. 59 Kennington Avenue, Bishopston, BRISTOL.
Dingle, A.E. 32 Lillian Road, Barnes, LONDON, SW13.
Dolman, J. Geophysics Dept., School of Physics, The University, NEWCASTLE, NE1
7RU.
Drake, R. 5 Hillside Close, Paulton, BS18 5PN.
Drew, Dr. D.P. 87 Rail Park, Maynooth, Co. Kildare, EIRE.
Dubois, D.A. 'Holly Cottage ', Edwin Road, WEST HORSLEY, Surrey.
Duck, J.W. Stoberry Crescent, WELLS, Somerset.
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