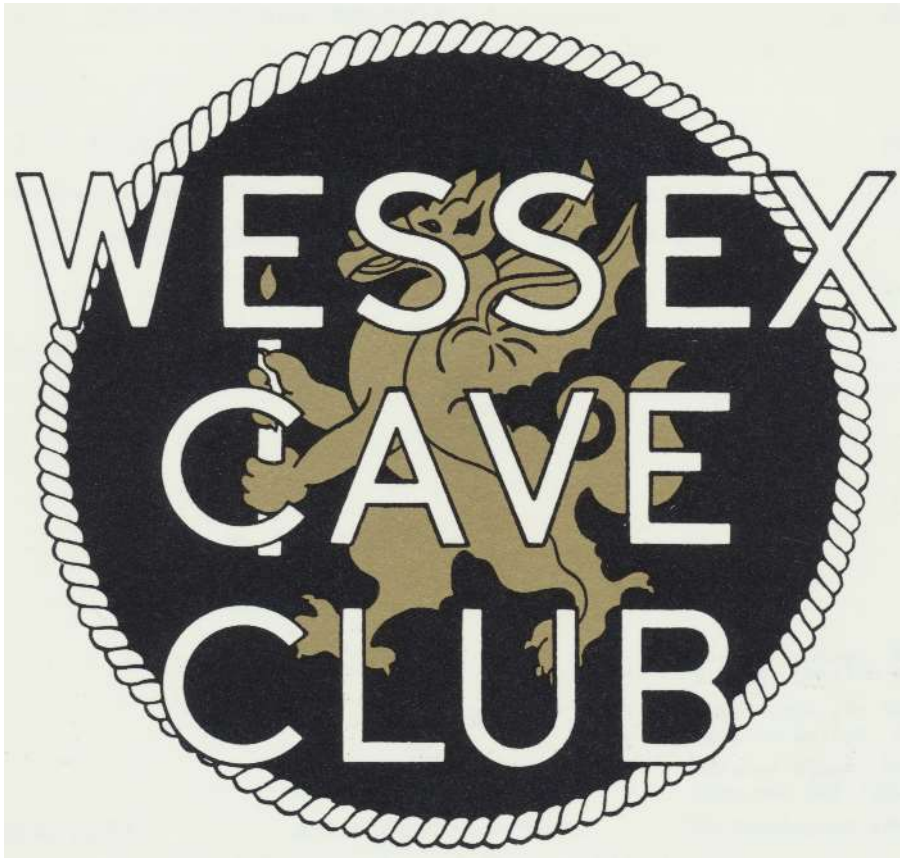

WESSEX
CAVE
CLUB

CONTENTS

Hon. Secretary:	Carl Pickstone, 156 The Philog, Whitchurch, Cardiff.
Asst. Secretary:	K. Barber, 4 Catsash, Shepton Mallet, Somerset, BA4 5EH.
Hon. Treasurer:	Mrs. P. Green, 12 Keyford Terrace, Frome, Somerset.
Subs. Treasurer:	A.E. Dingle, 32 Lillian Road, London S.W. 13.
Hut Bookings:	A. Macormack, 19 Alfred Place, Cotham, Bristol.
Journal Distribution:	Not finalised.
Club Meets:	(Editor temporarily).
Editor:	M.D. Newson, "Setterfields", Christmas Common, Watlington, Oxfordshire.

CLUB NEWS

The Club this year is a little different from past years as there has been an election at the same time as a change of Secretary. The new Committee is now mainly comprised of members who actively use the H.Q. as a base for operations, rather than a place from which to collect tackle. Thus it is hoped that the Committee will be more 'in touch' with members and Club affairs. To enable members to learn what affairs they discuss at Committee Meetings a brief synopsis will be printed in the Journal.

We beg to remind members that annual subscriptions of 30/- (Full Members) or 35/- (Joint Members) are now due, and they should be forwarded to Tony Dingle. Affiliated clubs are asked to forward their subscriptions and to present a list of membership to the Hon. Assistant Secretary. As this year's expenses are expected to be heavy you are asked to be prompt with payment.

The latest Club Occasional Publication ('The Great Storms and Floods of July 1968 on Mendip') by Jim Hanwell and Malcolm Newson is now on sale, Price 12/-. As only a limited number have been printed you should order now to avoid disappointment. The reprint of the Balch volume is also selling quickly - so order that at the same time.

John Jones is revising the membership address list. If you have difficulty in receiving your Journal it could be because we have the wrong address. He can be contacted at 33A Dinham Street, Nant y Moel, Bridgend, Glamorgan.

Members are warned that rent (10/-) charged annually for food boxes in the Upper Pitts kitchen is now due - failure to pay will result in seizure of contents. From 15th. November 1970 the Hut Fees are 2/- (10p) per night (Guests 4/-, or 20p). This brings the fees in line with the change to Decimal.

Volume 9 of the Journal, kept at Upper Pitts, has disappeared and we would be grateful for its prompt return - whoever has it is depriving several members of the chance to read it.

Bill Maxwell has given us the new address for administration of Ogof Agen Allwedd: W. Wilkes, 10 Elms Rd., Govilion, Abergaveny, Mon.

Committee Abstracts

The 261st. Committee meeting of the Wessex Cave Club was held at Upper Pitts at 10.00hrs on Sunday 8th. November. Twelve members were present. The Chairman welcomed the new members and advised them of the general procedures. The problem of clearing the Hillgrove site was resolved by the Committee itself promising to gather there after the next meeting. Jim Hanwell was asked to see to the creosoting of the Lamb Leer timbers. The A.G.M. and Dinner was discussed and everybody was agreed that both were very satisfactory.

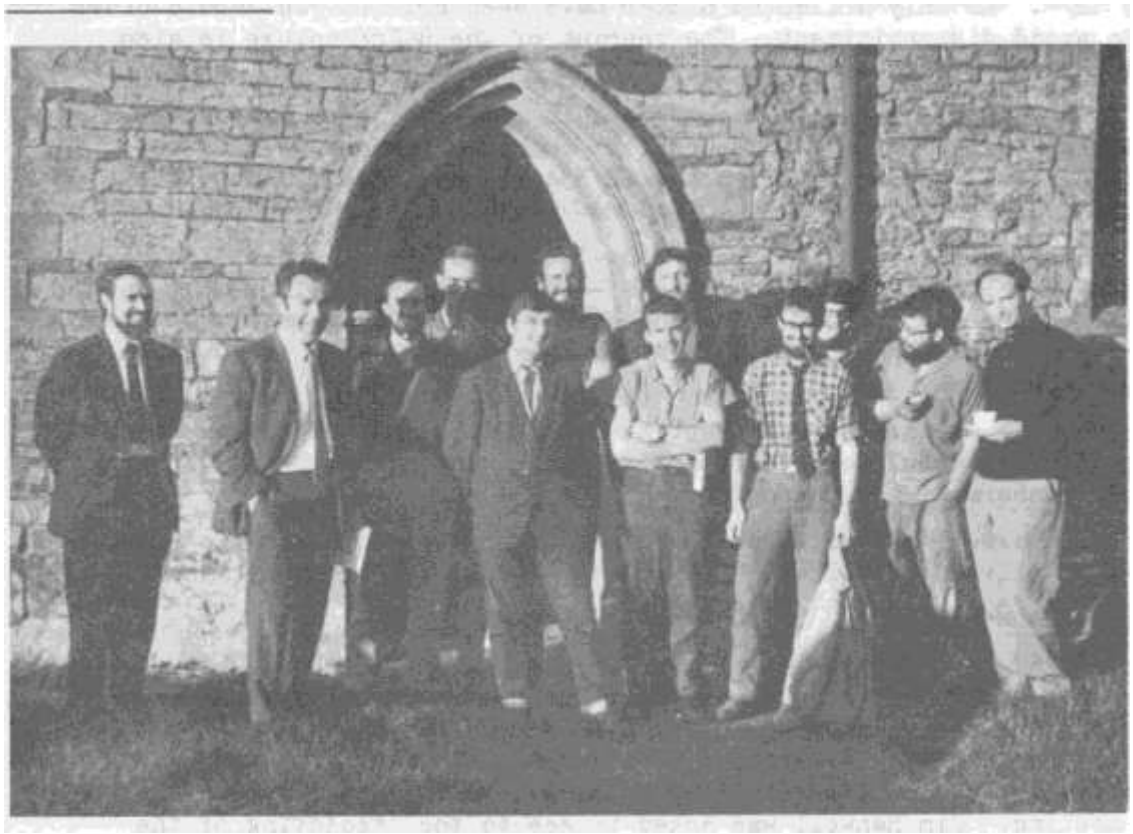
The Committee decided to organise a rota of hut wardens and that bookings would be handled by Andrew Macormack. On the question of future activities Wally Wilcocks proposed that the

Club should equip itself for major digging projects. A report will be prepared for the next committee meeting. It was decided that the survey scheme should help to sponsor a radio location device. The Tackle Warden asked for £60 to be allocated for new tackle as we should increase our stock of tackle and rope.

Keith Barber was asked to work with Dennis Manuel and prepare estimates for work on the Library. The fire precautions at H.Q. were discussed and Ian Jepson was asked to get a fire blanket and foam extinguisher. Alan Green was asked to organise the repositioning of the oil tank so as to conform with fire regulations. Mike York described the Fees Box he was about to fit to the lounge wall at H.Q. Carl Pickstone was to look into the provision of lockers there. John Jones agreed to look at the Journals which the Club exchanged for its own and report back. Chris Hawkes was to prepare an inventory of the Library. Carl Pickstone was to arrange printing of Membership Cards.

Next meeting was fixed for January 3rd. 1971 and meeting closed 13.45hrs.

THE NEW COMMITTEE



You can read how they came to power at the back of this Journal.
These you will definitely see at Upper Pitts. To recognise them instantly they are (1 to r), Tony Philpott, Jim Hanwell, Carl Pickstone, Tony Dingle, John Jones (front), Alan Green (back), John Alder (front), Mike Dewdney- York (rear), Keith Barber, Ian Jepson, Wally Wilcocks, Donald Thomson.

Acknowledgements

One of the many mundane tasks which have to be done for the Club is to ensure that there are clean tea cloths for drying dishes at Upper Pitts. Jenny Murrell has done this for quite a long time now and we think it is about time that our thanks were recorded for all the trouble she has taken on our behalf. We should also record our thanks to Jack Carlton who recently wandered into Upper Pitts and donated a number of mattresses and blankets which were badly needed for the women's dormitory. If any members have any more decent single mattresses and pillows tucked away at home we should be grateful for a few more.

We should like to thank Marcus Barton and Keith Goverd for the donation of several pieces of furniture for the H.Q.

Club Events

Saturday, 9th. Jan. 1971	O.F.D.1 Leader: Carl Pickstone, 156 The Philog, Whitchurch, Cardiff. Meet 10.00, S. Wales H.Q.
Saturday, 16th. Jan.	Slide Show. Bob Craig of the Shepton will show slides of a recent S.M.C.C. visit to the lava caves of Iceland. 19.30 at Upper Pitts.
Saturday, 23rd. Jan.	St. Cuthberts Swallet. Details from Jenny Murrell, 1 Clifton Hill, Clifton, Bristol.
Saturday, 13th. Feb.	Dan-yr-Ogof. Leader: Bob Pyke, 22 Pinner Road, Northwood Hills, Middlesex. Wet suits and nifes essential. Meet 10.00 at S. Wales H.Q.
also 13th. Feb.	Carl Pickstone will show slides of Mexico/Guatemala. 19.30. Upper Pitts.
Sunday, 21st. Feb.	Slide Show. "Trans Sahara", by Phil Davies. Globe Inn Wells, 19-30 for 20.00. Discussion follows.
Sunday, 28th. Feb.	Lamb Leer. Leader: John Jones. Meet at cave 10.00.
20th. and 21st. March	Agen Allwedd. Leader: Mike York, 19 Alfred Place, Cotham, Bristol 2. Meet 10.00, Chelsea H.Q.

Other delights

9th. - 12th. April (Easter) will see a party in Yorkshire, organised by Carl Pickstone. There will be a full range of trips and accommodation. All serious Mendip cavers should take the opportunity to experience the more testing vertical features of Yorkshire's big pots. "If yer not ard yer'd best not come".

On the 17th. of April Tazieff's "Volcano" film will be shown, together with another great outdoor adventure, "The Ascent of Everest".

In May there'll be a visit to Portland with Mike York, also Devon with Don Thomson and in September Derbyshire with Carl Pickstone. So get your kit ready!

We'd also like to mention that there are regular caving and digging meets on Mendip. 'The Friday Club' is run by Howard Kenney, Tudor Cottage, Beryl Lane, Wells. There are digs at North Hill (NASA - see Mike Thompson), Thrupe Lane Swallet (Tony Dingle) and Rhino Rift (John Cornwell).

Richard Witcombe (39 Whitstone Road, Shepton Mallet) and Keith Barber (4 Catsash, also Shepton) will be running scavenging trips to clear caves of rubbish. More details in February Journal.

New Members

We should like to welcome the following new members, elected 27.9.70:

AUBREY DENNIS NEWPORT, 87 Bonnington Walk, Lockleaze, Bristol, BS7 9XH.
DAVID IAN KELSON GORDON, Pound Cottage, The Square, Brislington, Bristol 4.
CHRISTOPHER WILLIAM DAVIES, Hillcroft, Woodborough Road, Winscombe, Som.
JONATHAN JAMES SHAW, The Hollies, Widcombe Hill, Bath, Somerset.
ADRIAN RUSSELL KING, 29 Pembroke Road, Clifton, Bristol BS8 3BE.
DAVID JOHN TRINGHAM, North Longwood, Failand, Bristol BS8 3TH.
WILLIAM ROBERT HINDLE, 371 Heath Road, Northfield, Birmingham 3.

Elected 8.11.70:

ROGER ALAN SEARCH, 29 Oxford Road, Bruford, Oxon.
STUART SMITH, Flat 2, 337 East Park Road, Leicester.
ALAN DAVID MILLS, 44 Hill Corner, Chippenham, Wilts.
HOWARD BUSBY, 47 The Sands, Milton-Under-Wychwood, Oxon.
BRIAN JAMES PITMAN, 302 Greenway Road, Rhymney, Cardiff.
RONALD ERIC PARFITT, 'Twyford', Upper Stanton Drew, Bristol.
PATRICK ROLAND DOWN, 78 Church Lane, West Town, Bristol.
RICHARD HEDLEY BOWDEN SHAPLAND, 30 Bibury Crescent, Henleaze, Bristol, BS9 4PW.

Ammendments to Rules

The following rules were amended by the 1970 A.G.M. They now read:

Rule 7. That any person desiring to join the Club must be nominated by two members and elected by the Committee. All applicants for Full or Joint Membership, or members of an affiliated club, who are under the age of majority must obtain the permission of his or her parent or guardian, who will be required to sign a special form supplied by the Club. Adult members of an affiliated club must sign a form accepting the provisions of Rule 10.

Rule 8. That subscriptions for Full Members shall be £1.50 per annum, due on October 1st. each year, and that every new member shall be required to pay an entrance fee of £0.25. Every Member whose subscription has become more than three months overdue shall be named in the next Journal and if within one month the subscription has not been paid, the member’s name shall be removed from the list of members, and a notice to this effect shall be sent to the member.

The subscription of a member joining near the end of the financial year may be deemed, at the Club's discretion, to cover the subscription for the following year. Married couples may become Joint Members, paying an annual subscription of £1.75. They shall enjoy all the amenities of the Club, except that they shall receive one copy of each Journal issued, and one vote only. A membership card shall be issued to every member.

Rule 9. That the charge for the use of the Club facilities and tackle by non-members shall be regulated by the Committee. The size of a caving party shall be at the discretion of the leader.

SIXTEEN YEARS UNDER THE EARTH

by J.D. Hanwell

Unlike Norbert Casteret's celebrated book "Ten years under the Earth", the sixteen years referred to above is literally true. For this is the total time actually spent underground by a sample of one hundred cavers from those who replied to the questionnaire on pollution (W.C.C. Jnl. 11, (129), 55-57).

The following report gives the main findings of this survey. It is plain that more could be done on these lines, for the design of subjective tests is exacting and, in many ways, this experiment might be considered exploratory. However, as only three out of the sample 100 definitely stated that the questions confused them, the results are valid enough.

Three aspects are reviewed here insofar as they have a bearing on the vexed question of pollution in caves; the response to the survey, the activities of the sample and their attitudes to pollution hazards.

Response

385 questionnaires were circulated, largely by the Wessex Cave Club, but also to Westminster Speleological Group and Cerberus Spelaeological Society members. Thus, a representative range of Mendip club cavers was canvassed. To date 112 have replied, being a 29% response. It is difficult to be exact; several individuals belong to more than one of these clubs, one return (treated as such in analysis) was a consensus of 15 in a school group, and at least one came from a Journal reader belonging to neither organisation. Eight replies came from cavers now resident overseas.

At least a 29% return is above that normally cited for surveys of this sort. In itself this suggests genuine concern over pollution amongst cavers. Except for a few who introduced other words for the calls of nature, there is every reason to believe that the questions were answered seriously. Practically every post brings more returns to increase the response. The selection of the first 100 was to simplify the arithmetic and to meet the promised publication deadline. Statistical tests indicate that the sample represents a fair cross-section of club cavers.

Activities

The following data have been gleaned from answers to questions 1 to 5 inclusive. Tables I to V below summarise the respective answers:

TABLE I: Which year did you start caving regularly?

Year	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
No.(%)	1	-	-	-	-	-	-	1	-	-	-	-	3	-	-	1	1	3	3	1

Year	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
No.(%)	1	2	2	-	4	2	1	4	6	2	4	5	5	9	8	6	6	6	9	3	1

TABLE II: How old were you at the time?

Age	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
No.(%)	1	-	-	-	1	2	3	11	9	15	9	9	4	7	3	3	3	2	4	-	2

Age	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
No.(%)	5	2	3	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-

Age	49	50	51	52	53	54	55	56	57
No.(%)	-	-	1	-	-	-	-	-	1

TABLE III: Between what periods, or since what year did you cave most frequently? (Number of years recorded)

Years	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No.(%)	3	15	18	14	6	10	7	7	3	3	1	2	4	1	-	-	1	-	-	1

Years	21	22	23	24	25	26	27	28	29
No.(%)	-	-	2	-	-	-	-	-	2

TABLE IV: During this period of frequent caving did you cave, daily (D), several times a week (S), once a week (W), fortnightly (F), monthly (M), occasionally during a year (O), or rarely (R)?

Trips	D	S	W	F	M	O	R
No.(%)	-	19	27	30	12	8	-

TABLE V: During the same period what was the average time underground (hours)?

Time	1	2	3	4	5	6	7	8	9	10
No.(%)	-	7	22	31	19	14	3	3	1	-

Although these tables are self-explanatory to some extent, useful conclusions only emerge from a comparison of two or more answers. Figure 1 illustrates an arrangement of the answers to question 1 in rank order: in addition columns are divided with respect to questions 2 and 3, widths are proportional to trip length (question 5) and trip frequencies are indicated as above. It is seen that 38% of the sample started regular caving before 1960 and the remainder within the last decade. The pre-1960 and post-1960 groups were examined for possible changes in caving over the years.

The mean age of pre-1960 cavers on starting regular trips is l8.5 while the corresponding post-1960 figure is 20.2. A similar 2-year gap is apparent in the most frequent or modal ages of both groups, viz. 14 and 16 years. Figure 2 shows that in each case mean ages are less relevant than modal ones, being biased by a few starting to cave relatively late in life. Both median ages happen to be 32, but it is clear that older beginners affect the pre-1960 figures more; for example, 7.9% of this group lie in the upper two quartiles whereas after 1960 the corresponding value is only 1.6%. Standard deviations in each case are 9.2 and 8.3 respectively. On the whole

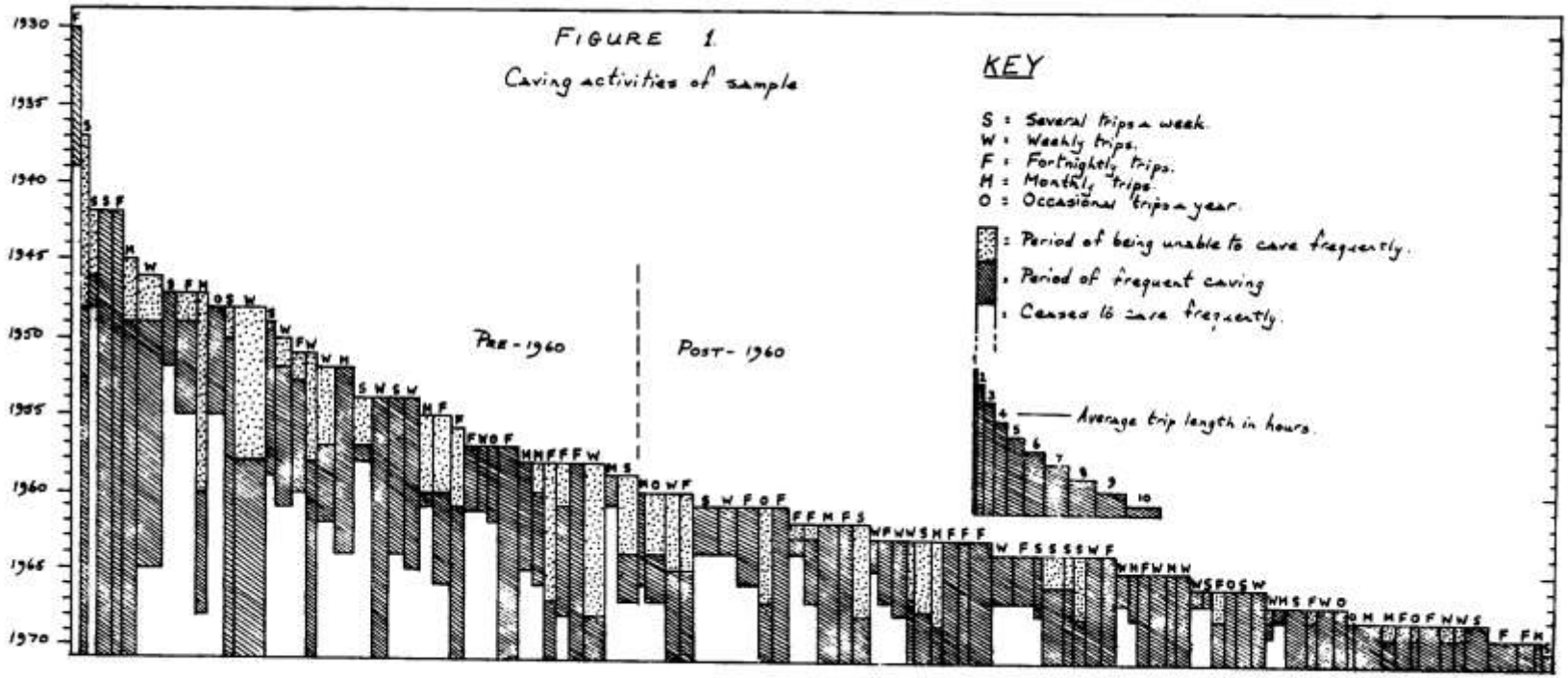


FIGURE 1.
Caving activities of sample
KEY
S = Several trips a week.
W = Weekly trips.
F = Fortnightly trips.
M = Monthly trips.
O = Occasional trips a year.
: Period of being unable to cave frequently.
: Period of frequent caving
: Ceased to cave frequently.
Pre-1960
Post-1960
Average trip length in hours.
1930
1935
1940
1945
1950
1955
1960
1965
1970

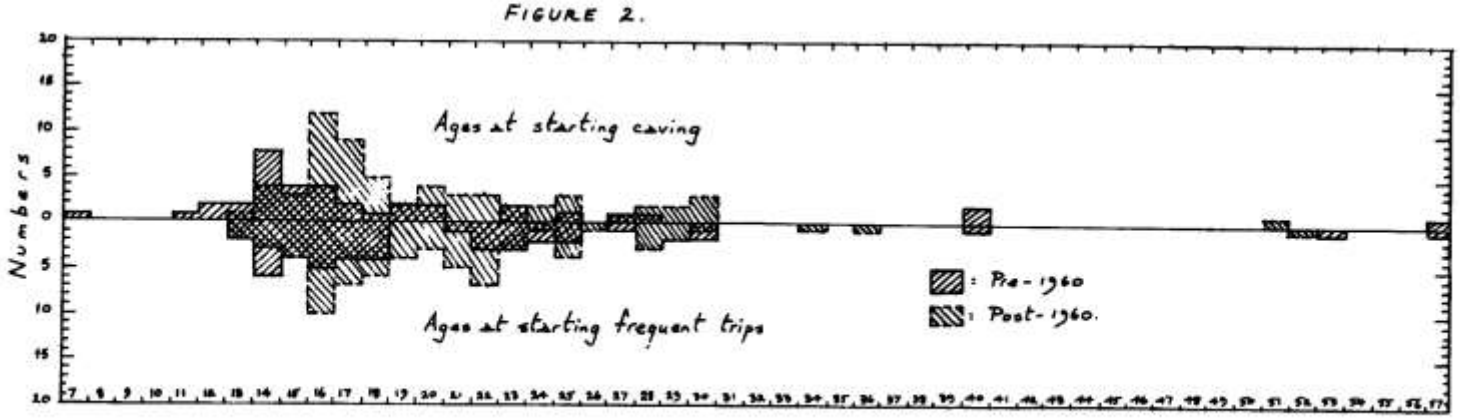
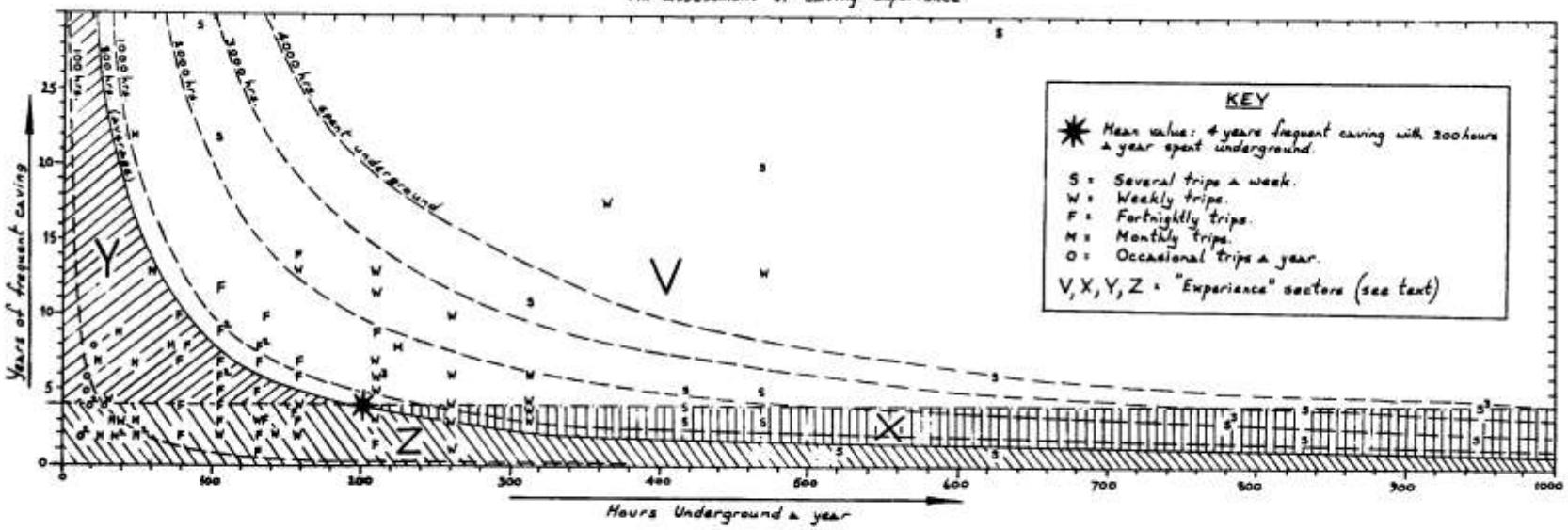


FIGURE 2.
Ages at starting caving
Ages at starting frequent trips
Numbers
: Pre-1960
: Post-1960.

FIGURE 3.
An assessment of caving experience



it appears that most beginners before 1960 were at least two years younger than is the case today. Whilst pre-1960 figures may be biased because those who were older on starting to cave then have now ceased to hold membership of the three clubs canvassed, this cannot be confirmed - though seems unlikely. Alternatively, the possibility that younger members of the post-1960 group failed to reply is not borne out by the fact that 56.4% of them were 18 or under on starting to cave. Even now, 27.4% are 20 or under and nearly 60% less than 25 years of age. In all one concludes that there is a general tendency to take up caving at a later age. Increases in the school leaving age and clubs seeking greater maturity from potential members may have a lot to do with this trend.

Just over half, 54%, started to cave frequently immediately following their introduction to caving. The remainder, either through inclination or, more probably, from lack of opportunity, did not cave often initially. Whereas only 44% of those before 1960 started frequent caving straight away, about 90% since 1960 have done so. This may be a reflection of the greater means of mobility with which the latter are blessed and the discontinuation of compulsory National Service. For instance, there is a distinct lack of returns from 19 and 20 year olds before 1960 which is not so marked today.

No correlation between age and the number of years before caving frequently is evident as might have been expected; correlation coefficients are + 0.01 before 1960 and + 0.03 afterwards. However, the mean ages of starting frequent caving are virtually similar at 21.1 and 21.6 respectively, suggesting some relationship with the old age of majority. Figure 2 shows the details, it being significant that peaks occur at the school leaving age and at the usual end of college or university courses.

On the other hand, age is clearly related to trip frequency. Mean ages of those caving monthly or less, fortnightly, and at least weekly are 25.5, 18.4 and 17.1 respectively. A closer breakdown reveals that teenagers are almost twice as likely to go on frequent long trips than those over 20. It appears that these long trips are due to relative inexperience rather than other factors, however.

Another aspect examined in some detail is what the majority considered as "active caving" during the period they went underground "frequently". Just over three-quarters considered at least fortnightly trips frequent, and 60% of these caved at least once a week. The mean time spent underground lies between 4 and 4½ hours per trip, and the average active caver totals fractionally under 238 hours a year. Group means before and after 1960 are both 4.3 hours per trip. This may surprise those who contend that trips are getting shorter since the advent of the wet suit; and, although some evidence points to older cavers scaling down trip lengths to compensate for lulls during their active caving, this is probably offset by the odd over-estimate.

Claims are often made that cavers do not remain active for long. Table III shows the mean period spent caving frequently is almost years, but this is misleading since 56% of the sample are still active. For those who have ceased to cave often the figure reduces to 5 years; yet before 1960 it is again 6½ and under 3 years for the post-1960 group. The difference suggests that several who were active for a short while before 1960 are no longer members of the clubs circulated. On balance it seems fair to estimate that the average caver remains really active for

about 4 years.

However, active years may not be so important as hours underground in terms of experience. Table VI lists the number of hours spent underground a year by the sample when most active. Numbers or percentages are given at 20-hour intervals.

TABLE VI:

Hours	<20	20-40	40-60	60-80	80-100	100-120	120-140	140-160
No (%)	5	9	7	6	2	11	10	8

Hours	160-180	180-200	200-220	220-240	240-260	260-280	280-300	300-320
No (%)	-	2	9	-	3	3	-	4

Hours	320-340	340-360	360-380	380-400	400-420	420-440	440-460	460-480
No (%)	-	-	1	-	3	-	-	4

Hours	480-500	500-520	520-540	540-560	560-580	580-600	600-620	620-640
No (%)	-	1	-	-	-	-	-	-

Hours	640-660	660-680	680-700	700-720	720-740	740-760	760-780	780-800
No (%)	3	-	-	-	-	-	-	3

Hours	800-82-	820-840	840-860	860-880	880-900	900-920	920-940	940-960
No (%)	-	-	2	-	-	-	-	-

Hours	960-980	980-1000
No (%)	4	-

It is seen that 69% put in less than the mean of 238 hrs.p a. To approximate, it might be said that the average caver spends about 200 hrs. underground a year, i.e. a total of 4 hrs. most weeks as mentioned earlier. Consequently, at the end of the usual 4-year spell, most will have put in about 800 hours caving. Interestingly, exactly half the sample have done more than this (and vice versa); either by virtue of many long trips or several years of shorter ones. Figure 3 illustrates this point. 71% of the pre-1960 cavers have topped 800 hrs. while only 31 % of the post-1960 group have done so. Of further interest is that exactly half the sample have exceeded the 4-year period of active caving: once again, 71% of the pre-1960 have managed this and 31% of the post-1960 group. While these figures generally favour older cavers, and there is more to being experienced than just hours underground, sectors V,X,Y and Z on Fig. 3 offer an arbitrary distinction between the very experienced and least experienced of the sample. Table VII summarises the percentages in each sector with a breakdown of trip frequencies involved.

TABLE VII:

Experience	% of Total	% of pre-1960	% of post-1960
V	34	58	19
X	16	13	18
Y	16	16	16
Z	34	13	47

Experience	Trip frequency as a percentage of total				
	S	W	F	M	O
V	8	13	11	2	-
X	12	4	-	-	-
Y	-	-	8	5	3
Z	2	10	10	7	5

Grouping X and Y for convenience, it is seen that the whole sample virtually falls into three equal parts. Although pre-1960 cavers emerge as more experienced on this basis, the distinction is not so marked as might have been imagined. In short, the results of the survey are weighted but not dominated by older experienced cavers whom, one assumes, are more likely to have developed a greater awareness of pollution hazards (see Tables X and XI).

Apart from providing useful data concerning caving activities on Mendip since the last war, it is clear that all shades of opinion are fairly represented by the returns.

Attitudes to Pollution

The following table gives the percentage replies to questions 6 and 7 concerning the necessity to urinate and defecate underground.

TABLE VIII:

	Never	Every trip	Once in every-		
			1-5 trips	6-10 trips	over 10 trips
Urinate (%)	24	5	36	15	20
Defecate (%)	94	-	-	-	6*

* Denotes a total of 11 instances

No general relationships with length of trips or other data are found. On the whole the average caver finds it necessary to urinate once in every eight trips, although a considerable variation exists. Just under half, 44%, have never found it necessary to urinate while caving, or do so very occasionally. In most cases it is clear that the necessity has arisen on trips much longer than the average given. Unfortunately a numerical treatment of this is not possible, but the implication is that it is largely confined to extended visits to the larger cave systems. Thus it is axiomatic that its incidence on Mendip is limited by and large to the six major swallet systems of Eastwater, G.B., Longwood, St. Cuthbert's, Stoke Lane and Swildon’s. Much the same applies to

defaecation, though the figures show this to be very rare indeed, viz. 11 instances in a total of 16 years underground by the sample. The few responsible have above average caving experience and a strict attitude to pollution hazards.

Table IX below summarises the replies to questions 8 and 9 concerning precautions to avoid fouling caves. With hindsight it appears that the questions should have been phrased more specifically since some felt it necessary to qualify their replies with explanatory notes. On the whole these remarks indicate that it depends very much on the cave and trip intended as to whether special precautions are taken. Those who only occasionally undertook prolonged trips recorded taking fewer precautions to relieve themselves beforehand for the simple reason that the likelihood would not arise during their short time underground. Nevertheless, as shown below, the vast majority take special precautions whether or not they were strictly necessary.

TABLE IX:

	Yes	Often	Rarely	No
% taking special precautions to avoid urinating or defecating underground.	79	14	4	3
% making special efforts to avoid contaminating streamways, etc. when underground.	86	6	4	4

General attitudes to pollution are shown in the final two tables, based on answers to questions 10, 11 and 12,.

TABLE X:

	Very Strict	strict	Adequate	Casual	Careless	Don't Know
Personal attitudes:						
a) % of total	23	45	29	3	-	-
b) % of post-1960	21.0	40.3	33.9	4.8	-	-
c) % of pre-1960	26.3	52.6	21.1	-	-	-
Assessment of cavers' general attitudes:						
a) % of total	1	4	42	29	8	16
b) % of post-1960	-	6.5	40.3	33.9	6.5	12.8
c) % of pre-1960	2.6	-	44.7	21.1	10.5	21.1

TABLE XI:

	Well above average	Above average	Average	Below average	Poor	Don't know
Assessment of own attitude to Conservation compared with that of general public						
a) % of total	40	50	8	1	-	1
b) % of post-1960	35.5	54.8	6.5	1.6	-	1.6
c) % of pre-1960	47.4	42.1	10.5	-	-	-

Readers may form their own conclusions from these results since it is plain that a responsible attitude to pollution prevails amongst an influential majority of cavers. Some might argue that most replies came from those concerned with the problem in any case though the writer is aware of a good number of such individuals not given to complete such a return. Such points cannot be confirmed statistically. What remains is that in all other respects the replies came from a wide and representative range of club cavers on Mendip.

Accepting a reasonable recent estimate that about 120 cavers will put in an average 4-hour trip during a normal week on Mendip, it follows from this survey that there will be some 15 instances of urinating a week and a case of defaecation every 6 months. All will be limited to the larger systems mentioned earlier, of which the three most frequented (Eastwater, St. Cuthbert's and Swildon's) do not feed a public water supply. As it is understood that urine is sterile, except in diseases likely to prevent serious caving anyway, one is forced to conclude that the theoretical risk of cavers contaminating water supplies several miles away is minimal compared to the great quantities of sewerage and other pollutants discharged underground every day via septic tanks by the average household on Mendip, let alone its farms and extractive industries.

LIONEL'S HOLE: SURVEY NOTES AND OTHER TRIFLES

by W.I. Stanton

1. The Survey

The accompanying survey was made by myself, Frank Reynolds and Will Edwards on 4 trips in June and July 1970, following the untimely discovery of the cave and its subsequent exploration. Traverses were run at Grade 6 through the entrance passages, Boulder Chamber and Traverse, and at Grade 5 down the 2 routes through the Labyrinth to the East and West Low levels. Some of the main side passages were sketched and are shown (dashed lines) at Grade 2; others in the most complex areas were left entirely alone.

The instruments used were an oil-filled prismatic compass graduated in degrees, a Fibron tape 100' long graduated in feet and tenths, and an Abney Level. They were calibrated, mounted, read, etc. as for the "Caves of Cheddar Gorge" survey (Wessex Journal 8 (103) pp 324-325. The "leap-frogging" technique was used throughout. The compass and Abney were tripod-mounted for the Grade 6 traverses and hand-held for the Grade 5 ones. Passage dimensions were measured at all stations, and the passages themselves were sketched in the notebook.

The altitude of the cave entrance was established by an unclosed Grade 5 traverse from the entrance of East Twin Swallet, leapfrogging with a Fibron tape and a tripod-mounted Abney Level, on the assumption that the 1969 B.E.C. survey of East Twin is accurate. The fixed point marked in East Twin's Second Chamber could not be found.

No closures were obtained, so the accuracy of the survey cannot be checked. Previous experience with the same or similar instruments at Cheddar, Swildon's Hole and Ebbor suggests that the position error of any point on the survey relative to any other point is less than 1% horizontally and 0.5 vertically of the traverse distance between them.

Calculation of co-ordinates and altitudes was done almost instantaneously by computer using a programme devised by Jerry Lavis, to whom praise be.

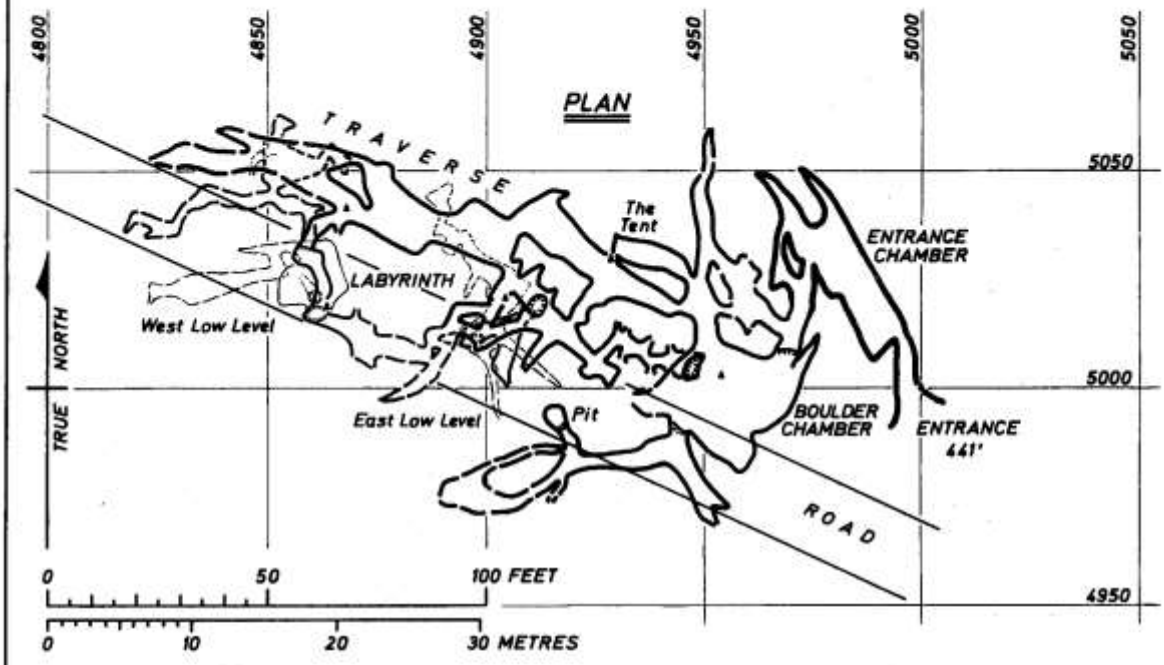
Six permanent survey points were established in the cave, marked by a black triangle on the plan. Five of them are holes about 0.3 inches deep made with a ⅜ inch Stardrill. Their descriptions follow:

EASTINGS	NORTHINGS	ALTITUDE	DESCRIPTION
5000.0	5000.0	442.0	Entrance. Drillmark on rock face 1' above ground level immediately east of entrance.
4953.8	4002.7	398.8	Boulder Chamber. Drillmark in middle of chamber, in roof, in rock face facing east, 3' above floor.
4927.4	5027.7	379.1	Traverse. Drillmark on north wall, below chink into Tent, 5' above floor.
4904.3	5020.7	330.7	East Low Level, middle of lowest chamber. Bottom of cup-sized circular basin in solid rock, 1' above pebble floor, by 3-inch bedding plane dropping 10' to water.

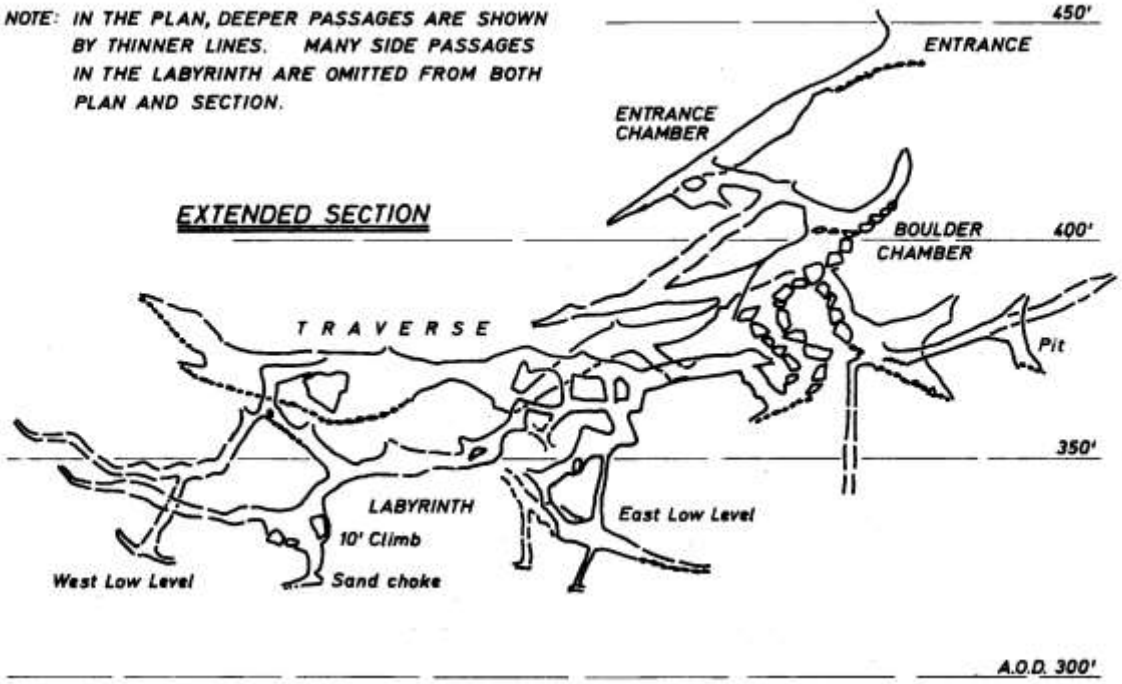
LIONEL'S HOLE

BURRINGTON COMBE, MENDIP N.G.R. 47965823

SURVEYED TO GRADE 5-6 AND DRAWN BY W.I.STANTON, 1970
NOTES ON THE SURVEY APPEAR IN THE WESSEX CAVE CLUB JOURNAL NO. 132



NOTE: IN THE PLAN, DEEPER PASSAGES ARE SHOWN BY THINNER LINES. MANY SIDE PASSAGES IN THE LABYRINTH ARE OMITTED FROM BOTH PLAN AND SECTION.



4868.0	5040.9	372.3	Traverse, at entrance to way down to West Low Level. Drillmark at south edge of upper surface of giant rock, 2' above floor.
4863.8	5018.2	329.5	West Low Level. Drillmark on south wall at top of 8' chimney down to sand choke,

Extra copies of the survey are available through the Cave Survey Scheme.

2. Lionel's Hole statistics

Altitude of entrance 441' A.O.D.
N.G.R. of entrance ST 47965823
Surveyed and sketched passage length 1360'
Unsurveyed side passages estimated 240'
Total length 1600'
Vertical range 123'

3. Other Trifles

The diggers were indeed fortunate (or unfortunate, depending on one's opinion of the system) in entering the third largest Burrington cave after only 3 days work. Previous digs by B.E.C. and M.N.R.C. appear to have failed because the original small entrance creep made the loose boulders beyond difficult and dangerous to tackle; it was while we were probing to bypass this creep, to see if a long-term dig looked an attractive proposition, that we broke into the Entrance Chamber. No other digging apart from a few minutes' scraping away pebbles here and there, was required to explore the rest of the cave as presently known.

Lionel's Hole is a phreatic three-dimensional maze like most of the larger Burrington caves, but it breaks all records for passage density with 1600' of tunnels packed into a space less than 200' x 120' x 100'. In the Labyrinth they are so close together that in some places the intervening pillars are breaking down to form a boulder ruckle. The entrance and Boulder Chambers are largely mechanically formed by collapse into underlying cavities, and part of the Traverse is a bedding plan opened by sagging of the floor into the Labyrinth. The Main Chamber of Read's Cavern and the ruckle beneath it may have passed through this stage not long ago.

Also in the Burrington tradition there is no established vadose streamway, active or abandoned, in the cave. At present, dispersed trickle water seems to funnel down to the various low levels where it soaks away through pebble or sand chokes. The phreatic network was formed below a water table (sic) at 450' A.O.D. or higher (c.f. the Goatchurch, Read's Cavern and Rod's Pot water tables at 540' A.O.D. or higher; they could have been one and the same, connected with the extensive 550'-650' bench or benches of N.W. Mendip). At a later date the surface stream down cutting Burrington Combe breached the roof of the Lionel's Hole network, and then, and/or during later periods of surface drainage, mainly in cold phases of the Ice Age, the cave was partly filled with sand, pebbles, cobbles and small boulders of Old Red Sandstone transported from Blackdown by the stream. Since the last period of filling, trickle water has carried away much of the fine-grained sediment and left banks and "chattering slopes" of

pebbles throughout the system.

The entry of trickle water into the Labyrinth is aided by its position slap underneath the road down Burrington Combe. Part of the cave in fact crosses to the other side of the road, where it is only 200' from the end of East Twin Swallet and about 25' lower. With Reservoir Hole, which passes 100' below the floor of Cheddar Gorge, it provides evidence (if such were needed) to disprove the old theory that the Mendip gorges are collapsed caves, with a great thickness of loose rock, the fallen roof, on their floors. (Ebbor Gorge apart, of course).

One of the main reasons for our interest in Lionel's Hole was the strong draught which since at least 1946 has been known to blow strongly into, or more often out of, the entrance. To our shame we have not traced the draught through the system, mainly through indolence but partly because it becomes attenuated in the many possible routes beyond the Boulder Chamber. On one occasion we followed an indraught through the Boulder Chamber via the top of the East Low Level into the Traverse, where we left it to start surveying. The draught may lead someone to the way on, or it may prove only to be air filtering through the sides of the Combe above the Labyrinth.

4. Acknowledgements

The diggers are grateful to the University of Bristol Speleological Society, who control digging in Burrington Combe, for permission to work at the site.

They are also indebted to the group of 12 guests including hard men from N.A.S.A., soft men (they said) from Cerberus, and intrepid men (and women) from East Somerset, who by swarming through the Labyrinth on June 10th proved its relative stability and ensured that not many stones remained unturned.

1970 N.S.S. CONVENTION

by Carl Pickstone

In August some five hundred cavers attended one of North America's most popular caving functions the 29th Annual Convention of the National Speleological Society. The convention was held in two parts, the first three days were in the Mid-Appalachians area of West Virginia and the remaining four days in Pennsylvania.

The scenic Watoga State Park was the venue for the caving section of the convention, with N.S.S. members camping upon an emergency airstrip carved out of the tall pine forest. The organising grottoes produced an excellent booklet giving details of the caves in the area which could be visited during our stay. Each day there were trips available with local cavers as guides, or you simply organised your own trip. The evenings were spent around the smokey camp fires, drinking the insipid West Virginian beer.

For the academic side of caving we moved two hundred miles north to Penn State University in State College, and the camp-ground was at a nearby ski lodge closed for the summer. Upon registration we were given a sheaf of papers and a brief abstract of the presented papers. The lectures were given in the J. Orvis Keller conference centre of the University.

The first day of the convention was mainly concerned with the internal politics of the N.S.S., and the first paper of the Geology session was presented in the mid-afternoon.

Geology Session

The origin of maze type caves was discussed by Arthur Palmer of State University, New York. He defined a maze type cave as a labyrinth of interconnecting passages which have undergone simultaneous rather than sequential development. He expanded this to explain the conditions which proved favourable to the formation of a maze type cave, and he quoted examples from Mexico, Russia, and West Virginia where caves have been produced by hydrostatic pressure beneath plateaux.

The next paper on "Measurements Relating Flow Markings to Flow Velocities" was given by Rane Curl of the University of Michigan. The researchers simulated conditions in a laboratory to produce scallops and fluting upon a slab of plaster of paris. They verified the hypothesis that scallops are a purely hydrodynamic phenomenon which is unaffected by rock structure, and that by measuring the scallops on the basis of a root-mean square maximum reach, the scallops provide an estimate of the flow velocity producing them. They also found that the flow had a Reynolds Number of 25,000.

Tom Wolfe in his paper on "An attempt to classify cave sediment environment and provenance types", examined three karst basins and attempted to classify cave sediment based upon the profile of the basin, the function of each cave within each basin, and the changes in profile and function of the system throughout the development of the cave. In one of the cases he studied he

found evidence to show that the basin had moved during the life of the cave.

The last paper of the day was given by Robert Thrun having a critical look at the well known cave system of Simmons-Mingo and the closely related My cave. He described the various phases of exploration and development up to the present time.

In the early evening there was a Corn Boil at the campground, the menu included 6000 ears of corn, tossed salad, fruit, jello and coffee. Price 12/6 per person.

Thursday morning started bright and early with a paper entitled "Certain aspects of the hydraulic geometry of karst drainage systems". This concerned the area of South eastern Illinois around Cave In Rock, which was subjected to an analysis of surface hydraulic geometry involving comparison of depression frequencies, depression catchment areas, depression catchment relief values, and depression orders which are defined by the highest Horton order of all streams flowing into the depression. By using a modified form of Horton analysis, it was found that karst drainage systems exhibited similar characteristics to surface streams.

It was hard work digesting this early in the morning, and the next paper given by William K. Jones on "Characteristics of the Underground Floodplain" was a little easier. He discussed the formation of meander channels carved by an underground stream when perched upon an alluvium fill, or when a stream flows on a soft homogeneous bed. He found that an underground stream often exhibits similar characteristics to a surface stream, and that subsequent enlargement of passage occurs primarily in a horizontal direction.

Mexico

The Mexican caving area was the subject of the next three papers. "The Hydrology and Speleogenesis of the Los Sabinos area of the Sierra de El Abra of North-Central Mexico" was presented by Russell Harman. He discussed a classic paper by Russell and Raines (1967) which had interpreted the development as occurring in two stages:- Extensive but isolated solution beneath the water-table followed by integration of these phreatic features by stream capture associated with continuing erosion. He found that the initial stage occurred with a fluctuating water-table which formed isolated chambers and conduits, depending upon the solubility of the country-rock and water velocity.

The second paper on Mexico concerned the Xilitla area, and was given by John Fish of McMaster University, Canada. He discussed the speleogenesis of the impressive Sotano de las Golindrinas with its impressive 1094 foot deep entrance shaft, and a floor area of six acres- a recent discovery at the bottom of the shaft has led to further pitches which now makes Golindrinas 1689ft deep. Nearby to Golindrinas is Sotano de Tlamaya 1488 ft deep, and the 700 ft entrance shaft of Hoya de Guaguas which has still to be descended. The highest parts of the range are still to be reached, so the prospects in the area are quite good.

After a well-earned coffee break the third paper on Mexico was given by Russell Harman, "Preliminary Results of the Groundwater Geochemistry of the Sierra de El Abra" in which he discussed the results he obtained from fifty water samples obtained from the area. Using the

interpretive treatment of Hem (1969), Garrells (1960), and Holland (1964) he found that all samples were under saturated with respect to calcite and very under-saturated with respect to dolomite. Surface waters had higher concentrations than cave water. He also found that nitrate concentrations of waters is greatly increased in caves that support large bat populations.

Fluorescence

The paper on fluorescence and phosphorescence of cave minerals was given by William White of Penn State University. He used 254nm UV excitation to observe these phenomena and most specimens showed a slow delay green-white phosphorescence. Aragonite exhibited a pastel lavender emission which was also phosphorescent with a colour and emission similar to that of calcite. Some specimens of Gypsum fluoresced a blue-white colour.

Photographic Session

The afternoon session was devoted to photography, opening with a rare film thought to be the first caving film ever produced. "In the Cellars of the World" by Russell Neville, was made in 1927 in 16mm Black and White, with titles. A modern taped soundtrack provided the characteristic period piano accompaniment to this classic film. The problems associated with the 3ft long smoky flares used for lighting provided an amusing insight into the techniques of early filming. Then followed the three french classics "Padirac", "Pierre Saint-Martin", and the Gouffre Berger film "Siphon -1122m", made over sixteen years ago these films still rank as some of the greatest films ever made. Before each film there was a short description of the filming techniques employed.

After the movies came the still photographers who proved that they could still hold their own. Vic Schmidt ably demonstrated the reason why he is one of the U.S.A.'s leading cave photographers with his beautiful slides. He spoke about lighting, composition and the "Rule of Thirds" as applied to cave photographs. Daniel Gealt showed that you do not always need flash to obtain excellent photographs underground, with his carbide light colour slides. He explained that the secret lies in uprating the film during processing.

The techniques of macro-photography were discussed by Charles Mohr who used the lecture as an excuse to show his superb photographs, many of which he used for his book "Life in Caves". His photographs of cave insects and cave fauna, together with his slick lecture style held the audience spellbound for a period well beyond his allotted time, but nobody minded in the least.

Biology

On Friday morning a short course on Biology opened, providing an alternative to the main lectures. The morning session was given to lectures on Protozoans, Planarians, Amphipods and Isopods, finishing up with Crayfish just before lunch. The afternoon provided lectures on Cave Beetles, Amphibians, Fishes, and the short course ended with a paper on Bats given by Charles Mohr.

The main lectures continued with a paper on a relict cave system in Brazil, with passages up to

350ft high. The remaining six papers of the morning session were mainly concerned with the exploration of various cave systems of the U.S.

Vertical Session

In the afternoon the Vertical Session started with a discussion on a new rope just out, which is suitable for prussiking and rappelling. The Bluewater rope is made from Nylon, having a braided sheath with seven straight strands in the core and sixteen in the sheath. Its main advantages over the popular rappelling rope made by Samson, are less extensibility, better abrasion resistance, and much stiffer construction. However, some U.S. cavers prefer a laid rope to the Kernmantle type of rope, the Goldline rope, has twice the abrasion resistance of the Bluewater, and four times the abrasion resistance of the Samson rope. But there is a tendency to spin on free fall drops with this type of rope.

There was also a film produced by the Alabama Grotto, which illustrated various rappelling and prussiking techniques in current use in the U.S. After the lectures there were demonstrations of these techniques, and short talks on harness manufacture etc. A prussik contest was organised and the winner managed a 100ft climb in 39.9 secs, using Jumars. The 400ft mechanical prussik took 7 mins 36 secs, and using three knots took 12 mins. The prussik contest was somewhat artificial as the rope is fed out over a boom in the gymnasium and the contestants go in training months before the event. The techniques used for the contest such as the "Inchworm Method" are only suitable for free fall shafts such as Golindrinas, where the normal time of ascent is two and a half hours. Although one lanky U.S. spelunker has done the ascent in an incredible 33 mins. Someone made a motorised prussiker which managed the 1094ft ascent in 28 mins, but it has a nasty habit of running out of petrol half way up.

Helium-Neon Laser

The last day of the convention was mainly given over to the history of various cave systems of the U.S., but there were three papers worthy of a mention. The first paper was given by Frank Reid of Indians University, concerning the use of a small battery powered Helium-Neon Laser for cave surveying. The prototype weighed only a few pounds and was built for £40. Its main advantage was in long sights where see-through optical instruments have problems. Also by the use of mirrors it could be used as a parallax-type rangefinder. At the present time the device is rather expensive and a little bulky, but with the advancement of laser technology these problems should diminish.

Resistivity

The detection of cave passage by resistivity means was the subject of a paper given by David Beiter from the University of Kentucky. By placing 20 rods in the ground, 5ft apart, with an additional electrode placed 110ft from one end, and a 90 volt battery connected between the extreme electrodes, it is possible to detect cave passage up to 60ft below the surface. The variations in potential between the inner pairs of electrodes will, when given simple mathematical treatment, yield the location and size of the air-filled cavity. The main difficulties appear to be in the analysis of the data.

Cave Diving

James Storey of Atalanta, advocated the setting up of a National Cave Diving group, in his paper on Cave Diving. It would seem to be a good thing as in the last ten years, 84 divers have been killed in Florida alone, where there are many deep vauclusian springs. In fairness it must be said that most of these deaths were open-water divers who fancied there chances in the 200ft deep, warm clear waters of the springs. Some of the springs are so big that two or three divers can swim side by side, each with triple tanks on his back. Most of the deaths were due to entanglement of safety lines. Multiple deaths were common, and in one case four divers drowned in one incident.

The convention was finally brought to a close with a banquet, (Tickets 35/-) where all the prizes were given. As an overseas visitor I found the convention very stimulating, and I made many friends. The organisation of the whole convention was excellent, and the organising grottoes of Baltimore, Nittany, Philadelphia, Pittsburgh and York, are to be congratulated for doing such a good job. My only criticism of the convention was that the proceedings would have been better written in full rather than in abstract form, as many of the papers were the result of years of original research, which I feel sure would be of interest to others engaged in similar work throughout the world.

THE NATIONAL CAVING ASSOCIATION

On Saturday, 31st of October last, delegates of the Regional Councils and other constituent bodies throughout the country met for the second full meeting of the National Caving Association at Axbridge, near Cheddar. The unanimous election of the Cave Diving Group to the Association meant that, at long last, all established facets of caving in Britain were together - in itself a significant development.

Some hold the view that earlier meetings of the parent body have been non-events. Many have felt that the slow progress towards formulating a generally acceptable constitution would ultimately frustrate any useful work that a national body might do. Yet the facts are that the N.C.A. does exist and has itself quite a formidable programme of work to do.

Most difficulty had centred around the voting structure. In the south we have preferred the safeguard of unanimity, whereas others believe this at least unworkable and at its worst a failure of good faith. A compromise was reached at Axbridge whereby 90% and 75% majorities were accepted for constitutional and procedural matters respectively. The questions of finance and the admission of new members have been referred back - leaving little doubt that the voting structure will need reviewing again.

For some indication of the difficulties here might be gauged from the fact that the ninety minutes before tea were taken up with the customary reports and a bare introduction of the crucial constitutional points. Tea was occupied by informal discussions of the major impasse which lay ahead. It is to the credit of the meeting's Chairman, Howard Kenney, the retiring secretary (Jenny Potts) for her carefully drafted proposals, and the willingness of many delegates not to force issues that progress was made in the right direction afterwards. By 7 pm. when the meeting closed all members present must have been relieved and encouraged that the N.C.A. was well and truly launched as a pretty sound federation of all caving organisations in the country. With slight readjustments here and there and 'sea trials' this year, cavers in Britain can look forward to having a potentially powerful representative organisation at the helm. It is now up to everyone not to rock the boat and to contribute positively to realistic policies for the N.C.A. to follow.

An idea of future areas to be explored can be gained from the following proposals which, very significantly one feels, were carried unanimously by the meeting:-

1) Applications for government aid to administer many of the services developed by the regional councils, e.g. the N.C.A. weather forecast service, the opening and maintenance of footpaths to caves, and so forth;
2) a coordination of conservation and access schemes to ensure that, with the somewhat alarming prospect of there being at least 250,000 cavers by 1980, our sport and caves will not be denigrated;
3) an agreement that Britain should stage the 7th. International Congress of Speleology in 1978 so that preparations can be started under the auspices of the N.C.A. and its constituent scientific bodies;

and 4) that appropriate Government departments be contacted to reduce and stop the unacceptable number of badly led parties of unprepared (and even unwilling) novices which go underground - mainly through the auspices of some unenlightened education authorities. Rescue statistics from some regions show this to be reaching ridiculous proportions.

These objectives should alone ensure that next October's meeting at Whernside Manor, Dentdale, will have a lot of very useful things to do.

It will be of interest to members that Jenny Potts (3, Greenway, Hullard Ward, Derby DE6 3FE) - who is well-known on Mendip - continues as Hon. Sec./Treasurer of N.C.A. for 1970-71. Also that of 22 elected delegates attending the Axbridge meeting give held Wessex membership and, as mentioned above, Howard Kenney was Chairman. Nick Barrington kindly provided the venue and the dinner which followed.

LETTER TO THE EDITOR

R.R. Kenney
'Yennek', St. Mary's Road,
Meare, Glastonbury.

19 Oct.

THE REPLETE MENDIP CAVERS

Dear Sir

Many people who were present at the 1969 Annual Dinner must have wondered if it was worthwhile to attend in 1970, for the food was so poor.

I, for one, became even more uncertain when I heard that our learned medical member Dr. D.M.M. Thomson would be responsible for this year's effort.

I thought of all the things that doctors are supposed to say are bad for you :-

No alcohol	----	disintegrates the liver (do cavers need livers?)
No salt	----	corrodes the heart
No sugar	----	makes the blood gritty
No strawberries	----	they form kidney cobbles
No mushrooms	----	cause galloping fungaloids
No potatoes	----	they are too aquiferous
No carrots	----	your Nife cells should be fully charged

In fact the list is endless, and I imagined that we would all starve.

However, Don deserves our congratulations for a well organised and very pleasant evening, and I hope that we shall see Frome again next year.

'Twas Medicare's finest hour.

Richard Kenney.

SPELL BOUND

by Heardian

A long while ago now, children, I told you an amazing tale about some friends who dug a deep twisty hole to find where a little brook ran beneath North Hill. You may all have wondered what has happened to Mike, Jim, Freddie and all, not to mention Big Willie. Well, if you wrap up cosily by the fire I will tell you of their new adventures.

I'm afraid that the beginning is very sad. Our friends came to a teeny-weeny crack through which the little brook trickled. It seemed to chuckle with laughter as it tumbled out of sight, and left everyone very puzzled as to where it went. One dark, stormy night though, Mike heard it really booming as if to call him on. Caught by this spell he and his friends agreed to try even harder to find where it went.

But, alas, Big Willie had been far away and was now bewitched by a ghostly spine-chilling wind in some eerie cliffs where a mysterious giant river was known to hide. He vowed to discover the hiding place where he said he would find a great Table full of treasure to make him famous. Little brooks did not interest him anymore, even when warned by a cheeky little elf that the legendary table was just a series of higgledy-piggledy planks. The elf was banished across the sea to a cold country called Fordlandia. Big Willie joined a feared band of brigands led by the wicked Barabobath. He issued astounding proclamations which went throughout all the land, but did not frighten our heroes of North Hill who had vowed to follow their little brook. Even when Tinker Bell, who flitted gaily about the hills on Friday nights, told them Big Willie had discovered a path to the giant river they did not mind.

So Mike, Jim and Freddie went to see Uncle Luke, the Wise Old Wizard of Washingpool. He gave them little magic potions, explaining that they should be left on those rocks which barred the way and should then be left alone. Upon returning it would be found that the rock was broken, or had even vanished if big potions were used. No one was to peep to see how the magic worked for fear of the potion acting on them too. Uncle Luke once came with his wand and pushed it right into the rock as though it were only cheese. All this helped our friends on their way.

Every Wednesday and Sunday they toiled away, gathering together a happy band of helpers. When a dreadful pestilence stopped them crossing the fields they practised for the day when they would need to clamber down the great shafts carved out by the brook. Their fame began to spread and the dark hole grew deeper and longer. Mike captured Barabo bath's secret hideout, and now the villains sometimes spy on our heroes as they make merry after working up an honest thirst in their hole. Even children tried to copy like little sheep - which is not surprising since they were said to come from the place called Sheep Town. But don't you try copying them, readers, until you're big and strong.

After a lot of hard work they came to a place where they could all stand together, but the elusive brook was hiding beneath a heap of mud. Now, this would have stopped the less resolute. Are

you resolute children? Wouldn't it be a good idea if we all made a New Year's resolution to be resolute! Gradually they carried away the nasty mud. They even found time to dig another hole, which has a name so rude that I think you must wait until you're older before I tell you about it. Much later they found the little brook beneath the mud. Freddie could wriggle along it out of sight and got very excited - are you excited children? Well, hard luck, 'cause you're going to have to wait to hear about this one too!!

From the Standard, 3rd March 1905

An insignificant crevice, a hole scarcely wide enough to tempt a fox, alone gives admittance to what is perhaps the wildest and most magnificent cavern in Britain. This cavern lies on the top of Mendip, nearly one thousand feet above the sea, in the same drainage area as the great Eastwater Swallet. The waters of both cavities unite somewhere in the bowels of the rocky hills, to flow out of Wookey Hole, eight hundred feet below, as the River Axe.

In the same basin there are many other natural pits and openings, some dry, some still engulfing streams, but none of these has yet been entered. Full of interest are they to the speleologist. For each is a locked gateway to scenery that may eclipse all the examples of crystalline beauty yet discovered.

When the first explorers entered this cavern, some little while ago, they met with serious difficulties owing to the presence of ancient chokes or dams which held back pools of water, but they were assisted by the dryness of the weather. We, on the contrary, made our descent after a period of heavy rains, and the volume of water that accompanied us down was twentyfold as great. We had one advantage, however, the original discoverers were with us to point the way. With luggage reduced to a minimum, two ropes, plenty of illuminants, food, and two cameras we passed through the uninviting entrance, and attacked methodically a close-packed mass of debris that had been washed into a narrow gut since the former visit.

Whilst we lay at work, the sound of falling water in the depths below broke on our ears, a musical but ominous salutation. The obstacle occupied two hours of valuable time. Wriggling through at last, feet foremost, our legs came out over the rift, a narrow chasm some twenty feet deep, with the head stream of the cavern tumbling in over a chockstone at one end. Our goods were let down carefully into the hands of the first man, who lodged them in a sheltered spot, whilst we scrambled hastily down through showers of spray. Now began a painful advance into the depths. Along the tilted bedding-planes, down the perpendicular joints of the limestones, widened by the water into broad, low chambers and deep shafts and canyons, we forged ahead, hugging the stream, which grew larger and angrier as tributaries came swishing in from walls and roof.

At one point the water swept horizontally along a straight canal, but was stopped at the end by a recent choke, and now tumbled through a hole in the wall into a huge pot-hole. Through this lay our road.

By great effort we managed to keep tolerably dry, but, as we clung to this watery ladder, I

pricked up my ears at the remark, "Will you have your back or your stomach in it?" Not one of my companions escaped a drenching as he crept through the narrow space between water and rock. I pushed through cautiously, but, in spite of my efforts, I floundered in a pool. Now began the most sensational part of the journey. Through a succession of vertical rifts, which seemed without top or bottom in the gloom, the torrent swept headlong. The ledges giving out, we scrambled along the walls, bestriding the gulf or pushing on from hold to hold, candle in hand, with feet against one side and back to the other. Beneath us, beyond the glimmer of the candle-light, the water roared with a deafening echo.

Here the stream is suddenly precipitated into a deep, round pit, in which it is churned to foam and driven out with accelerated speed along a rugged gorge to the second staircase of pot-holes. Shreds of magnesium ribbon dropped into the well lit up such a turmoil of waters as one might see in some gigantic turbine going at full speed. Two of us now went ahead to report on the condition of the next stage.

Reaching the pot-holes with some difficulty, we found that one of them was a giant, with a deep pool. But the water-chute at the foot of the staircase was the problem. Could we attempt it, with the foaming water almost skimming the crown of the arch? The first man went down the slide on his back. The rest adopted all the other attitudes possible short of a complete header; but we were none of us prepared for the big pool beyond the tunnel. It was waist deep in the middle. But we had got through the worst, for we had reason to hope that there was another, and a drier, way back to the rift, could we but find it.

The large square chamber that now opened out before us must, in times gone by, have been a vast cistern, or reservoir. At the far end, the rock barrage that once held back the water was now cloven into a series of crumbling serace, between which the stream roared onward. Enormous blocks of clay, some fifteen feet thick, still flanked this rugged portal into the unknown. The stream quickly descends into the great Water Rift, a ravine only a few feet wide, but prodigiously high. Its walls go up like the mountain cliffs, but are lost in gloom instead of mist. Here tremendous changes had taken place since the last exploration. Then the Rift was blocked by a mass of rock and stalactite, that came down to the water, and forbade progress save by one straight and difficult way. Above the water, a hole ascended into the barrier, its orifice nearly closed by a fringe of stalactites. On the other side, the hole descended again to the face of a cliff overhanging the water.

Forcing their way through, the explorers reached the utmost limit of their journey in a few more steps; The stream fell through a cleft for forty feet into a pool, where depth and extent are entirely unknown. Now all was different. In the short time that had elapsed, the strength of the ungovernable torrent had swept away the whole of this vast structure, the work of ages; and now the stream rushed unimpeded from end to end of the Water Rift, and the incessant thunder of the cataract deafened ears already attuned to the noise of the higher falls and canyons.

Our ropes had been brought down for the purpose of descending the 40ft. fall; but this was impossible with such a volume of water to contend with. We turned back, accordingly, out of the main cavern into a lofty gallery or transept that opened out beyond the toppling seracs. At the corner, a hollow corbel of stalactite projected from the wall like a colossal stoup, its huge

rims curving over as the petals of a flower. It stood there in solitary grandeur, but it was a token of glories beyond. A few more steps, and we saw that we were on the threshold of a fane more wonderful than any made with hands. We were veteran cave-explorers, but it seemed to us that all the other caves we had seen in Britain could not vie with this.

But the camera had been left at the top of the well. It had seemed an impossible task to bring it down to the 300ft. level, but the photographer declared that it should be accomplished. He could not, however, fetch it alone. The expedition, therefore, returned to the main cavern; two men went back through the water-chute, and two of us waited. We had time to explore a subsidiary gallery before we heard the shouts of our adventurous comrades. One of us crept under the arch, the other held a candle above the raging water; then a hand appeared, the camera was pushed into our arms, and the two men came wading after. In another ten minutes the flashlight was at work in the great stalactite gallery.

We spent several hours in photographing the main cavern, the transept, and its ramifications; then two men who had left part of the luggage beyond the well returned that way home, carrying orders to leave tokens at the cave-mouth of their safe issue. Two members of the original party of discoverers had followed us down after an interval, so that we still counted four. We spent some anxious hours working out another route back to the entrance. It was a dry route, and, compared with the other, easy, but it was perplexingly intricate, and we were uncertain all the time until we reached the Rift whether we should not be obliged, after all, to return and ascend the waterway.

All the way up there were marvellous grottos and corridors, paved and hung with sheets of stalagmite, changing their configuration with kaleidoscopic swiftness. Only at one point was there the least sound of running water, and there distance subdued the noisy beat of the torrent.

We had come into the cavern at noon; between ten and eleven we stood once more under the stars. Hoar frost covered the fields, and a keen wind was blowing; we had been drenched from head to foot for many hours, but a brisk four miles' walk down the hill to Wells restored the circulation.

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The above is typed verbatim from a newspaper clipping stuck into a book of cuttings made by my wife's paternal grandfather many years ago. Neither author, nor party members are named. Any guesses?

Eric Hensler.

REVIEW

The Great Storms and Floods of July 1968 on Mendip, by J.D. Hanwell and M.D. Newson, Wessex C.C. Occ. Pub., 1(2), 1970, 12/-

In view of the considerable volume of material collected by and made available to the authors concerning things connected with the Great Flood, Jim Hanwell and Malcolm Newson are to be congratulated on having the temerity to select only sufficient to fill a slim volume. It is to their further credit that the final selection has a value extending beyond the purely parochial. Their main failure has been an inability to reconcile the needs of their potential readers in the academic and caving worlds, which has led to a tortuous change of emphasis in places.

Part 1 contains the meteorological side of the 1968 floods as analysed by Jim Hanwell. A detailed description is given of the meteorological conditions preceding and during the main storms on July 10-11 which will be of interest to a very wide audience. The work involved in compiling the available information will undoubtedly make this section a source for further investigation. The limitations of the data are discussed with creditable honesty although this could have been reinforced in the text of diagrams where postulated figures have been used. A short section is included on the theory of thunderstorm generation which will prove useful to the uninitiated despite its difficult terminology. It is heartening to read a short summary of so complex a problem which does not commit perjury. The subsequent discussion of likely return period for such a storm is rather too brief. At least part of the problem here is that Jim's own estimate of a 60-110 year return period falls far short of most other estimates. A more detailed discussion of the relationship between the recurrence interval for single points and flood-producing areas may have resolved at least some of these anomalies.

Part 2 is Malcolm Newson's description of the major landform changes resulting from the flood. Unlike Part 1. this section suffers from a deficiency of background theory, particularly with respect to the runoff process. It is to be regretted that no estimate of possible contributing area was made for a flood of this rarity and put into the context of the partial area argument. A more theoretical approach may have avoided some errors (e.g. the flood peak of 11.2 cumecs. at Longwood has shrunk to 10 cumecs. by the time it gets to Cheddar) and the inclusion of misleading figures such as the "soil moisture deficit". These criticisms apart, an excellent description is given of many surface and subsurface landform changes accompanied by a unique sequence of photographs. Process theory is included in parts of the description although in places this does verge upon the parochial. Hidden well within the depths (sic) of this section are several important ideas. These include the light which 1968 sediment data sheds on the relationship of catastrophic to "normal" events in erosion and the feed-back mechanism of flood recurrence and drainage basin morphology.

Part 3 is an appraisal of factors affecting cave flooding. In part this is a down-to-earth summary of antecedent and expected meteorological conditions and swallet catchment characteristics which in combination might lead to flooding. The final section is an empirical analysis of likely flood discharges in the Swildon's Hole catchment using the variable contributing area concept. At the present state of knowledge this empirical data is very valuable although the methods of

assessing contributing area and extending the empirical equations to the 1968 flood undoubtedly beg more questions than they answer.

D.R.W.

REPORT OF THE 1970 ANNUAL GENERAL MEETING AND DINNER

For the benefit of those unable to attend this year's A.G.M. and annual Dinner here is a brief review. The more formal 1970 A.G.M. minutes will be circulated prior to next year's A.G.M.

The 1970 Annual General Meeting of the Wessex Cave Club took place as usual in Priddy Village Hall and was attended by 68 members. The meeting was opened at 3.10 p.m. with the President's address, in which he welcomed those present and expressed the hope that it would be an interesting meeting. He said the Club had come a long way since its conception in 1934, as it was now the largest caving club in the country, with a journal and headquarters second to none. He went on to say that the continuity of the new committee was a little more tenuous than in previous years, and that this may give the new committee a chance to remove the 'air of stagnation' mentioned in the retiring Secretary's Annual Report, but he warned against change for change's sake. He also emphasised that the burden of the Club's affairs rested upon the shoulders of a very small proportion of the membership, and that the general membership could do well to offer more assistance in furthering the Club's interests, be it in the form of articles for the club journal or wielding paint-brushes at the H.Q., each to his own skill. Finally he added his thanks to the retiring Officers and Committee and welcomed the new Committee for 1970/71.

Howard Kenney raised a point in the 1968 minutes in which it was stated there had been an inconclusive discussion on tethers. He proposed and Richard Kenney seconded, that more tethers be made available in the tackle store, as he felt that the Club should stand the heavy loss of tethers rather than risk damage to the ladders because of incorrect rigging. This was supported by the meeting.

Another point raised by Howard Kenney was that the Mossdale Memorial Fund still appeared on the balance sheet when in fact half the amount had been spent upon replenishing the M.R.O. box at the H.Q.

The Hon. Secretary's Report for 1969/70 (circulated in W.C.C.Journal No.131 Oct 1970) was accepted, and then several matters arising were discussed. The Hon. Secretary wished to know if the proportion of the annual subscription spent upon the Journal was fair, as he had received correspondence from affiliated members who thought that their affiliation fees were too high. A discussion ensued upon this, and the Hon. Treasurer pointed out that at the present time their subvention as one quarter of the full subscription. There might be a case for pegging the subscription for affiliated members at an amount rather than a proportion of the full subscription. Most of the members present at the meeting thought that the Journal was a very important part of Club facilities, and that the proportion of the annual subscription spent upon the Journal was justified.

On the topic of future prospects, aims and objectives of the Club, Howard Kenney outlined the proposals at present being discussed by the Council of Southern Caving Clubs, regarding the possibility of securing more permanent access rights. Peter Cousins quite rightly asked that the Club be consulted before any serious steps such as these were undertaken, either through the Journal or by calling an extraordinary meeting. Luke Devenish asked next year's Committee to mull over the idea of sinking shafts down to previously isolated cave passages, which have been detected from the surface. (There is already a project such as this in the pipeline).

During the discussion on the Hon. Secretary's Report, Don Thomson reported that he had been approached by a resident from Priddy, with a view to members signing a petition against the establishment of a slaughterhouse in the village. A discussion followed and the Chairman instructed the meeting that members signing the petition would do so as individuals and not as members of the Wessex Cave Club. He said that although the Wessex as a Club would be strongly opposed to the polluting of underground streams by any industrial undertaking, it was understood this particular proposal incorporated satisfactory methods of waste disposal. Thus, the Club as such need not be concerned.

The Audited Treasurer's Report and Statement of Accounts (circulated in W.C.C. Journal No.131, October 1970) were briefly reviewed and unanimously accepted. In the Auditor's Report Howard Kenney expressed the thought that the Club ought to consider setting up an Occasional Publication fund out of the profits from previous publications. Whilst on the topic of publications he displayed for the first time the latest W.C.C. Occasional Publication, 'The Great Storms and Floods of 1968 on Mendip' which had just been received from the printers, and in the other hand he swiftly produced a saucepan and sheet of paper for advance orders. He concluded by saying the Treasurer had wound up the Club's American account to relieve us of the worry of exchange regulations. He finished by proposing that the retiring Hon. Treasurer be elected as Auditor for 1970/71. This was accepted unanimously by the meeting.

Mike Dewdney-York explained his proposal about asking Committee Members and Officers of the Club to spend more time at the H.Q. This was to bring the governing body of the Club more in contact with our activities, because in past years the Committee has become more and more remote from the active members. Because of this he felt the Club had suffered the stagnation mentioned by the Hon. Secretary. The Committee of the Club should influence Club activities by example, not by sitting in the big armchairs at the H.Q. during Committee Meetings, spouting a lot of hot air then vanishing until the next meeting. After some discussion the proposition that the A.G.M. recommend next year's Committee to stay at the H.Q. on four separate occasions, was put before the meeting, and carried with a small majority.

The alterations to some of the Club's Rules proposed by the retiring Committee were carried unanimously (See Club News).

The proposition to elect Mr. and Mrs. R.E. Foord as Joint Honorary Members in recognition of their services connected with the Club's publications, was carried unanimously.

For the first time in many years the Club has had an election for the Committee, and the following were elected:

J.C. Alder, M.W. Dewdney-York, A.E. Dingle, A. Green, I. Jepson, J. Jones, A. Philpott, T.E. Reynolds, and D.M.M. Thomson. As no nomination was received for the post of Hon. Assistant Secretary, the Chairman proposed Keith Barber be put forward for the position, and the meeting agreed.

Finally, a vote of thanks was given to the retiring Officers and Committee, and the President declared the meeting closed at 5.50pm. Refreshments were provided by the ladies of the Club, and publications were sold by Tony Philpott.

The Annual Dinner was attended by 140 members and guests, and was held at the Masonic Hall in Frome, with outside caterers providing the meal and bar. I am glad to report that the Dinner was a resounding success, the retiring Hon. Secretary did us proud with a sumptuous meal, and first class wine service, served in comfortable surroundings. Jack Sheppard was the Guest of Honour and he related his experiences on the first dives in Swildons Sump One way back in 1936, to a very appreciative audience.