

NEWSLETTER

1963



Wilcock, J.D. 1963
"Oxford University Expedition to Northern Spain, 1961"
Newsletter Vol.1 No.2, NCMRS, pp.12-18

Published by the
THE NORTHERN CAVERN & MINE RESEARCH SOCIETY
SKIPTON U.K.

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OXFORD UNIVERSITY EXPEDITION TO NORTHERN SPAIN - 1961.

by

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CAVING ORGANISER & GEOPHYSICIST.

The organisation of any sort of expedition requires a large amount of work. Preparation for the Oxford University Expedition to Northern Spain 1961 began almost a year before the expedition member's left the shores of Britain, and was tackled as follows. The idea was originally that of Mr. J. Walker of Ilkley and Oxford University, a potholer and amateur archaeologist. He decided to put forward the idea of an archaeological expedition to Spain to study prehistoric rock carvings, and their possible connection with cave paintings. It was decided that [12] if it was intended that caves should be explored in connection with the archaeological work, then a number of experienced potholers would be required in the party so that adequate rescue facilities would be available in the event of accident (there is no Cave Rescue Organisation as we know it, in Spain, and it was intended to visit remote areas.) The original idea was discussed over tea in a Leeds cafe in the summer of 1960, and on return to Oxford for the Michaelmas Term the idea was put before the Oxford University Cave Club, and a meeting called for interested members. Eventually there were eight members from Oxford, and numbers were made up to twelve by inviting three members of the Manchester University Speleological Society and an experienced amateur archaeologist from London University.

It was decided that the expedition would leave Britain on the 1st. August 1961 and return on the 21st, September. The task of organising the transport, food, and equipment for twelve people for this period was shared among the members according to their special aptitudes and qualifications. It was decided at an early period to have a separate caving programme, so the task of obtaining a full set of caving equipment fell to the author. Eventually firms provided enough materials to make 1500 feet of electron ladder, overalls, helmets, boots, lamps and batteries, carbide lamps and carbide, waterproof electric torches, and nylon rope. For the geophysical programmes three firms loaned resistivity meters and associated equipment. For water testing we were given fluorescein, Rhodamine B, indicators and other chemicals, and loaned a Lovibond Nessleriser.

The leader of the expedition approached the University authorities for their recognition, which was given and so helped in the quest for support and also approached various learned societies and charitable trusts, the Spanish Embassy, the Oviedo University in Spain, and H.M. Customs.

The geomorphologist arranged the loan of surveying equipment, and also carried out duties as driver-mechanic.

Because of the large weight of equipment required by the expedition it was decided to purchase two ex-army lorries, a 3-ton Bedford OY and a 1-ton Bedford MW. Once Final Examinations were over, the mechanics set to, and within a few weeks produced a pair of shiny, green painted, smoothly-running lorries. Paint was given and a complete tool kit was loaned to the expedition. This was to prove very useful. The worn tyres were retreaded free of charge. A roof rack extension was constructed with Dexion steel angle.

Many firms generously gave food to the expedition. Menus were built round a 'backbone' of 200 kilos potatoes, 30 kilo rice, 60 lb. porridge oats, 18 tins of crisps and 50 kilo bread. Most of the non-perishables were taken out from Britain, and perishables bought in Spain.

Several types of Spanish dishes were tried, notably PAELLE. Ingenuity was at its greatest in the mountains: during one expedition into the high peaks an acceptable meal was made from a handful of rice, a clove of garlic, Marmite, Oxo and wild chives - a chive paelle.

Underground rations had to be portable and nourishing, and here lifeboat biscuits, tubed jam, Marmite, chocolate and other concentrated sweets formed the staple diet.

The photographic equipment of the expedition comprised; three 2.25" [13] square reflex cameras, three 35mm cameras, tripods, flash guns and a large number of flash bulbs. In addition developing equipment was taken so that films could be processed in the mountains. Altogether about 2000 exposures were made in colour and black-and-white, covering every aspect of the Expedition work and life in Spain. Although many of these were purely for the records, many publicity pictures for firms showing their products actually in use on the Expedition were taken. Things like toilet paper posed some problems! A comprehensive record of rock carvings and caves was compiled.

Daily records were kept of the Trema and Vega de la Cueva springs (see Table I,p,15.). Rate of flow using a graduated container and stop clock), temperature, p.H. (using a B.D.H. Nessleriser and indicators), and hardness (by means of E.D.T.A. titrations) were all measured, and attempts made to refer these to weather conditions, source of water, and supposed length of underground passage, etc. These results showed that the rate of flow was generally influenced by rainfall within 24 hours and fell off considerably during the period because of the extremely dry weather. Temperature and p.H. in general showed no relationship to rainfall. Water samples for each day were brought back to Britain for further analysis, Samples of surface water, sinks,

resurgences and cave pools were also tested for p.H., and showed considerable local variations between 6.5 and 9.5.

The aim of the geophysical surveys was to provide support for the main caving programme, and also to provide corroboratory evidence of the course of a cave, where needed, The resistivity method using the Wenner configuration of electrodes was used in all cases.

The survey in a suitable dry valley over the pothole designated P.1 (Poza Palomeru) located the passage in good agreement with surface plot of the underground surveys, and measurement of the depth by the 'expanding electrode' method enabled the various theoretical formulae in use to be tested. A further survey across the dry valley beyond the furthest point reached underground indicated the presence of a cave, which may be an extension of the passage explored.

A survey across the floor of the enclosed valley at Las Reblagas was handicapped by marshy conditions, and a further attempt to locate the underground connection between Lago de la Ercina and Las Reblagas, proved by Rhodamine B testing, failed because of the inadequate depth reached by the survey.

Hydrological testing was carried out using fluorescein and the new method evolved by members of the Bradford Pot-hole Club using the powerful Rhodamine B. Meteorological observations were taken daily as follows: wind speed and direction; barometric pressure; wet and dry bulb temperatures and relative humidity; rock temperatures; rainfall; cloud amount and types; and prevailing weather conditions. The average barometric pressure was 26.45 inches of mercury, and this low value is a consequence of the altitude of the base camp. Air temperatures often reached 25°C and the relative humidity 85%

The Western Massif of the Picos de Europas proved to be an excellent area for the investigation of limestone geomorphology, and the Expedition geomorphologist was kept busy with observations both on and below the surface. Apart from the survey of caves, the drainage of the area was investigated, and details of the rock-forms were sketched, described and photographed. In all thirteen potholes, nineteen caves,

TABLE I.

RECORDS OF RESURGENCE IN THE VEGA DE LA CUEVA.

Date 1961	Time.	Temp. °C.	p.H.	Comparable Flow. gals./min.	Inches Rainfall Preceeding 24 hrs. & Beaufort Weather Symbols	Barometric Pressure. ins. Hg.
20.8	0900	9.0	7.7	3.8	0.155 bcm	26.54
21.8	1000	9.0	7.7	3.5	- Cc bc ☉	26.48
22.8	1100	9.5	7.7	3.2	- Cb zbc ☉	26.54
25.8	1100	9.5	7.7	2.9	- Cu zbc ☉	26.56
24.8	1000	9.0	7.7	2.7	- Cu bc ☉	26.50
25.8	1100	9.0	7.7	2.6	- Cc bc ☉	26.46
27.8	1630	9.5	7.7	2.3	- b ☉	26.61
28.8	1000	9.5	7.7	2.1	- b ☉	26.57
29.8	1700	9.5	7.7	1.8	- Cu bc ☉	26.44
30.8	1000	9.0	7.7	1.5	- Cu mc	26.49
31.8	1700	9.5	7.7	1.1	- b ☉	26.48
1.9	1900	9.5	7.7	0.8	- Cu Ci As	26.45
2.9	2000	9.5	7.7	0.7	0.05 Cb o	26.38
3.9	2000	9.5	7.5	0.7	tr md	26.33
4.9	1700	9.0	7.5	0.8	0.21 Cb om	26.36
5.9	2000	9.0	7.5	0.5	0.02 bc /mr	26.32
6.9	2000	9.0	7.6	0.6	0.09 bc /m	26.35
7.9	0900	9.0	7.6	0.7	0.02 om	26.39
9.9	2000	9.0	7.6	0.6	tr bz ☉	26.44
10.9	2000	9.0	7.7	0.6	- be ☉	26.41
11.9	1000	9.0	7.7	0.6	- cm /d	26.47
12.9	1000	9.0	7.7	0.4	0.02 bz ☉	26.41

EXPLANATION of WEATHER SYMBOLS.

Cloud types: Cu cumulus
 Cb cumulonimbus
 Ci cirrus
 Cc cirrocumulus
 As altostratus

Other symbols: b blue sky
 c cloud
 o overcast
 m mist
 z haze
 r rain
 d drizzle
 ☉ sun

Preceding weather conditions are separated from prevailing weather conditions by an oblique stroke 3/3.

twelve blocked entrances, seventeen sinks and fifteen resurgences were recorded. Although the thickness of the limestone is sufficient for the formation of very deep potholes in the area, none of those explored reached a depth greater than 250 ft. from the surface. The largest system discovered was that of Pazo Palomeru (P.1). This has a 140 ft. entrance shaft, walled at the top, and was pointed out by the shepherds soon after arrival. About a mile of passages have been explored. The drainage is complex, consisting of at least two separate vadose passages, linked by flood passages. Although at the time there were only a few pools of water, there was strong evidence that in times of flood, when the snow melts on the surface, there must be a powerful river through the cave. Survey indicates that the cave comes quite 'close' to the surface at the point of furthest exploration, and in this section it was located by geophysical survey. The largest cave, and the only one containing an active stream, was named Cueva del Viento (Cave of the Wind) because of the strong icy draught blowing from the entrance. This consists of a long rift passage connected to a number of stream passages. The best formations and rimstone pools discovered by the expedition were in this cave, which acts as an overflow for the large river at its inner end in times of flood. Cueva de Orandi was explored to a depth of nearly four hundred feet, in extremely wet conditions, and further exploration will require rubber dinghies and a large amount of tackle. The resurgence at the shrine of Our Lady of Covadonga is some four hundred feet below the furthest point of exploration. Five caves of moderate size were explored, of which the most interesting were P.11, with very little horizontal extension, and the 'Cave of the Snow', about 5500 ft. above sea level, so called because the main chamber was filled to a depth of thirty feet by many years accumulation of snow. To keep a balance between the large caves and the more frequently-occurring small caves, about 25 small caves were also surveyed; these varied from 150 ft to only a few feet in length. The small caves seem to be older than the large ones, and the formations in many of them were in an advanced, state of decay. At higher altitude many potholes were seen, some blocked by frost shattered boulders, but others open, and often quite deep. The expedition was limited by time from exploring them, but they are an attraction for further work in the area.

The drainage of the area was very interesting, although many streams had dried up during the long spell of dry weather. Lago de Enol receives only a small trickle of water above the surface, and as more water flows out than in, it seems that there must be an inlet under the surface. Lago de la Ercina overflows in winter by a dry, valley to the Vega de Comeya, a completely enclosed valley, but in summer its only outlet is a cave, the water appearing at Las Reblagas, a neighbouring enclosed valley, before sinking again.

Several rock surfaces from 3500 up to 8000 ft above sea level were studied for development of runnels. Frost shattering obliterates these above 7500 ft.

The archaeological section of the expedition, four members, investigated many prehistoric rock carvings in Galicia. These are of three types: the familiar 'cup-and-ring' carvings as seen on Rombalds Moor, Yorkshire; zeomorphic, or animal designs; and 'schematic' designs. The cup-and-rings are roughly dated as late Neolithic or Early Bronze Age.



LARGO DE ENOL



VIEW FROM REFUGE



PLANE TABLE SURVEY
in CLINTS.

OXFORD UNIVERSITY EXPEDITION. 1961.

It will be appreciated that to carry out such a comprehensive programme the members had to be carefully chosen, and finally had the following functions:

- Leader of the Expedition, and chief archaeologist,
- Geomorphologist, also driver/mechanic.
- Caving Organiser, also geophysicist and cave surveyor.
- Quartermaster, general equipment; also photographer, chemist, and entomologist/orthinologist.
- Quartermaster, food; also chemist, photographer, and driver.
- Transport Officer, chemist and photographer
- Interpreter, and zoologist.
- Storekeeper, chemist.
- Assistant archaeologist, driver/mechanic.
- 3 experienced speleologists.

All members of the expedition except one had some, and in most cases extensive caving experience.

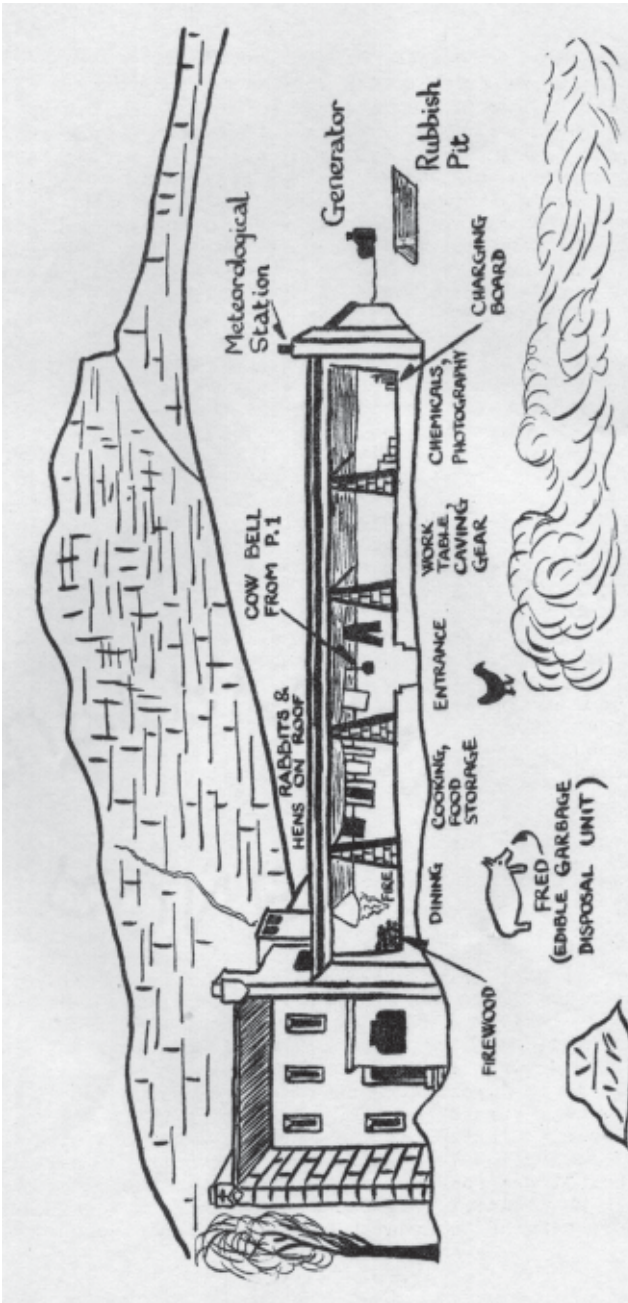
Many months of hard work were followed by a last week of final preparation in Oxford. At last the great day arrived and the convoy departed from Oxford at 6 p.m. on Monday 31st. July 1961. The route was to London, where the night was spent at Twickenham in the houses of members of the expedition. Starting early next morning the expedition travelled to Dover, where several last minute purchases were made. Duty-free films and cigarettes were collected from a bonded warehouse, together with some cases of fruit drinks which had reached Britain from America on the Queen Mary. The crossing, on the car ferry 'Compiègne' was pleasant, and there was little delay at the Calais customs. The first night was spent on a state farm at Vron, near Boulogne, and we were treated to some cider by the farmer. The following day saw us encamped near a rubbish dump at Rouen, where brakes and a ball-race, on the three-tonner were repaired. The following night we camped near an explosives factory, on the site of houses which had been destroyed when the factory blew up. Luckily nothing happened whilst we were there. On Friday, 4th. August we reached Montignac in the Dordogne, where we camped and visited the Lascaux caves, and some other painted caves near Les Eyzies. At Bayonne we got caught up with dancing people in the streets, since it was Basque Festival Week. After the formalities at the French side of the Spanish Border, the Spanish customs would not-let us through until morning, so we had no choice but to camp in 'no man's land' between the French and Spanish customs posts, on the Spanish side of the river. Most of us slept underneath the lorries. The customs officers must have thought-us the maddest Englishmen they had seen. We had a communications telephone rigged up between the driver's cab and the back of the three-tonner and they spent hours amusing themselves with it. We had a telescope and persuaded them to look through it at a non-existent American satellite, gave one tea about 1 a.m., and got water from their lavatory.

The equipment was finally released at 10.30 the next morning, and we journeyed along the beautiful 'Basque coast, stopping in the hot [17] afternoon to bathe. At night we passed through the ill-lit streets of Bilbao, and had our first taste of Spanish food - squid cooked in its own Ink! We also had some soup with lumps of decaying fish in it. Many people said that had the meal been served up in camp they would not have eaten it. However, our estimation of Spanish food became better the next day at Torrelavega. On Wednesday 9th, August we reached Cangas de Onis, at the feet of the Picos de Europa. Here a visit was paid to the Mayor, who gave us full permission to carry out our work in the area. That night we camped near the town, and had dinner at the cantina. All the local populace seemed to come in to have a good look at us, and at one time the waiter came across to say would we like the company of some girls! The next day we climbed the mountains and took up residence in and around the mountain refuge at Lage de Enel. Here we were to stay for the rest of the expedition, and the verandah of the refuge was turned over to our exclusive use for the storage of our equipment.

The first few days were misty, so that we could not see the mountains but we will never forget one evening, when the clouds suddenly cleared, giving us our first view of the peaks lit by the setting sun. Soon we had the verandah quite homelike. At one end we had the stores of food, the cooking equipment, and our eating shelter. At the other we had the chemical and caving equipment, and a worktable, where notes and surveys were often done far into the night. Besides the Tilley lamps we had electric lighting from our generator, which also was used to charge batteries. We were allowed to sleep in the dormitories of the refuge free of charge, except when other climbers came with permission from the Mayor, but some of us used tents pitched in front of the refuge. Our EDIBLE GARBAGE - DISPOSAL UNIT was a pig belonging to. Senor Ramos, the warden of the refuge. The pig we were pleased to call Fred, and whenever we yelled this name the pig would come up at the double and begin to tuck into the pile of potato peelings, etc. which we had left for it. During our stay Fred put on weight quite considerably.

After the shepherds had shown us the open shaft of Pozo Palomeru we decided to fell a tree and fix it across the shaft, as otherwise it would have been rather difficult to rig tackle. The felling of the tree posed some problems, as at one time the butt end of the tree was ten feet in the air, and the branches on the ground! However eventually it was in position, and the cave proved well worth the effort.

As a light relief from our efforts in the mountains, we periodically descended to Cangas, camped outside the town, and ate in the cantina. Here we also watched bullfights on television. At the exciting bits the vertical hold of the set kept going wrong, and a waiter kept running up and down a little step ladder to put it right. On another occasion we attended the religious festival (FIESTA) in Covadonga. There was a procession from the basilica to the shrine (which is set in a cave at the resurgence



Refugio de la Vega de Eñol

As used by the OXFORD UNIVERSITY EXPEDITION TO NORTHERN SPAIN 1961

ENLARGEMENT OF SHIELD ON LEFT-HAND GABLE. COAT OF ARMS OF LANGAS DE OÑIS (ROMAN BRIDGE.)



J.D.W.

of Cueva de Orandi) through a tunnel which has been blasted in the rock. Covadonga is an important shrine as it commemorates the place where the Moors were turned back for the first time in the 8th. century, and the re-Christianisation of the country began. Lots of rockets were set off during the festival, and we amused the priests by setting off one of our signal rockets, which we had obtained in case we had difficulty in the mountains. It was the equivalent of a Batik Holiday in Britain. People were dancing to Spanish bagpipes, which have only one [18] drone, and are slightly shriller than Scottish bagpipes.

All too soon it was time. to pack up and return. The expedition made its leisurely way back along the Basque coast, frequently stopping to bathe in the warm waters of the Bay of Biscay, then moved more quickly through France.

In Boulogne the small lorry had to have a completely new set of tappets - the result of running 5000 miles on 62 - octane fuel. There was no trouble whatever with the Spanish customs on our way back – in fact the customs men embraced us as well loved friends. At Tours we were invited for a drink to a real chateau, where the owner was very hospitable and his daughters and small son served drinks while we lay in deck chairs on the lawn: finally he insisted on showing us his Citroen 2 CV, which he put through its paces around the garden, perhaps to the slight disapproval of his wife.

We had a surprisingly easy customs check at Dover. One member asked if he could have the customs notice stating which goods should be declared, etc. as a souvenir. The customs officer said that it was highly illegal, but he would see us in the pub round the corner in ten minutes. There we toasted the successful completion of the expedition, rather sorry to have left the sunny south, but filled with memories of the last seven weeks. Finally we went our separate ways, some back to Oxford for the coming term, some to new jobs. All, we are quite sure, will remember the Oxford University Expedition to Northern Spain 1961 for the rest of their lives.

.....’ and so for ever, brother hail and farewell.’

Catullus 101.