

OXFORD UNIVERSITY EXPEDITION TO NORTHERN SPAIN

1st-AUG-1961-SEPT-21st

MEMBERS

- M.J.WALKER, LEADER, age 20, second year, medicine, University College, Oxon, Secretary of Oxford University Cave Club (O.U.C.C.), member of Craven Pothole Club, sent to Spain 1959 by O.U. Near Eastern Archaeological Essay Prize Board to investigate aspects of Galician rock-carvings, written paper on 'The Problem of Cup and Ring Carvings' to be submitted to the Prehistoric Society, extensive caving and climbing experience in all parts of England and Wales, archaeological field-work at many sites in Yorkshire and Edinburgh University excavation at Iona Abbey, Queen's Scout, speaks Spanish.
- W.J.CROMPTON, GEOMORPHOLOGIST-IN-CHARGE, age 22, third year, geography (special subject Geomorphology), St. Catherine's Society, Oxon, Sec. of O.U.C.C. 1960-1, caving experience in all parts of England and Wales, incl. photography and surveying, area of special study Upper Ribblesdale, Rover Scout, driver-mechanic.
- J.D.WILCOCK, CAVING ORGANISER, age 24, third year, physics, Hasting's Scholar at The Queen's College, Oxon, member of White Rose Pothole Club, O.U.C.C., extensive caving experience in all parts of England and Wales incl. cave-surveying and hydrology, amateur geologist and archaeologist Queen's Scout, two Explorer Belt expeditions (awarded).
- M.AUSTIN, GENERAL EQUIPMENT Q.M., age 22, third year, chemistry, Magdalen College, Oxon, member of O.U.C.C., considerable caving experience and camping experience, cave photographer, has led ski party to Austria, amateur entomologist and ornithologist, Rover Scout.
- I.R.GORDON, FOOD Q.M., age 21, third year, chemistry, Exhibitioner of Magdalen College, Oxon, member of O.U.C.C., considerable caving and camping experience abroad, photographer, Queen's Scout.
- D,A.HUKIN, TRANSPORT OFFICER, age 24, third year, chemistry, Magdalen College, Oxon, caving experience in Mendip and Derbyshire, wide experience in professional photography, expedition film accepted by B.B.C., National Service in Germany as Driver-Fitter and Field-Engineer.
- M.CUMMINS, INTERPRETER, age 19, accepted to read zoology at The Queen's College, Oxon from M.T.1961, (ex-Bradford G.S.), now assisting Dr N.Tinbergen of the Dept. of Zoology and Comparative Anatomy, Oxford University, with field-research into bird behaviour at Ravenglass, has had much previous experience in Spain and fluent command of Spanish, has interest in cave biology and ornithology
- M.T.HOLROYD, age 21, third year, Hons. Geology and Physics, Manchester University, Treasurer of Manchester University Speleological Society (M.U.S.S.), member of Verein fur Höhlenkunde, member of Dachstein Mammuthohlen Expedition 1959, delegate to Austrian National Speleological Conference at Wiener Neustadt 1960, ten year's caving and climbing experience in all parts of British Isles.
- G.J.MORGAN, age 20, second year, Hons. Physics, Manchester University, Secretary of M.U.S.S., much caving experience in England and Wales and original cave exploration in Eastern Austria--Langsteán Heule et al., attended Wiener Neustadt Conference 1960.

K.J.MILLS, age 20, second year, chemistry, University College, Oxon, member of O.U.C.C., caving experience in many parts of England and Wales.

A.C.DELANY, age 20, second year, Hons. Chemistry, Manchester University, Warden of Clapham Hut of M.U.S.S., original exploration in limestone and lava caves of Arizona, surveying experience, caving experience in England and Austria.

Arrangements are almost complete for an archaeologist from London to join the party.

HOME AGENT

M.J.WEBB, M.A., Lecturer in Geography, Oxford University.

SENIOR CO-TREASURERS

Professor C.F.C.HAWKES, F.B.A., F.S.A., Professor of European Archaeology, Oxford University.

Miss M.M.SWEETING, Ph.D., Dean of St Hugh's College, Oxon, an authority on limestone Geomorphology, President of O.U.Cave Club.

RECOGNITION

Permission has been granted by the Hebdomadal Council of Oxford University for the expedition to be called Oxford University Expedition to Northern Spain.

The expedition is sponsored by the Oxford University Cave Club and all properties of the expedition (excepting personal gear) shall be the property of the O.U.C.C. after all costs (incl. publication) have been met.

ARCHAEOLOGICAL PROGRAMME

The rock-carvings of Galicia are concentrated around the province of Pontevedra and the Mino valley, but extend north, south, and east to varying degrees. The limits of the area in which they occur are far from clear as the only existing distribution map is of far too small a scale. Three types of carving seem to exist: the 'cup and ring' type of carving, which is common in the highland zone of the British Isles and consists of a centrally placed cup (or hollow) within a pecked-out ring or rings carved on exposed rock-surfaces and rocks; zoomorphic designs carved similarly and obviously representational; lastly, a schematic or 'cruciform' element.

That there should be three types of rock-carving occurring together--occasionally all three types are intermingled on the same rock if Buhigas's photographs are to be trusted--is interesting since, whereas the zoomorphic designs are found only in Galicia (although perhaps related to rock and cave-paintings found in other parts of Spain, see below), the cup and ring motifs are elsewhere in Europe common in the British Isles only, where occur also three examples of the schematic motifs (one example in Scotland and two in Ireland). M.J.Walker suggests that the Galician cup and ring element could be probably developed from that of the British Isles, in which case it would be especially important to attempt to date the carvings in Galicia, which the archaeological party would try to do by examining their relations to other types of carving as also associated sites. The interest in dating the cup and ring carvings lies in the lack of associations they have in the British Isles. It is known that they occur in both Food Vessel and Beaker connexions, but the rarity of such associations suggests that these could well be an upper limit of their dates or that they are intrusive.

That the cup and ring carvings in Galicia are intrusive on the

the zoomorphic art if not also the schematic designs, can be reasonably supposed from studying the work of Buhigas and Mac-White. However, the published work is most unsatisfactory and it a new corpus of the drawings in the region must be made, and the associations of the carvings studied more closely. The mountains to the east must also be examined for possibilities of an eastern extension of the zoomorphic art (c.p. cave paintings at Llanes (Asturias) and Batuecas (Salamanca)). For this reason we wish to examine more closely the ~~mmmk~~ caves of the western massif of the Cantabrian mountains and their foothills where painted caves have been reported as yet unrecorded (Llado).

The difficulties in recording rock-carvings are great for it is essential that artificial markings be not confused with natural depressions caused by erosion. M.J.Walker has had considerable experience over four years of recording carvings in Yorkshire and has evolved a technique relying upon drawing an accurate plan of each carved rock using a grid and taking several cross-measurements of each marking. For larger carvings and for all paintings the direct tracing method of Dr E.Anati will be employed. Photographs of rock-carvings are of little use by themselves because of the distortion which natural undulations in the surface of a rock results in.

The archaeological party hopes to visit most of the carvings and paintings which have been reported, but emphasis will be laid upon the solution of the problems outlined above. The party will therefore, be very mobile and hopes to have the use of light transport for this purpose. It is also desired to borrow a camera with a wide-angled lens for photographing cave-paintings on the advice of Dr E.Anati:

References

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- Macalister, R.A.S. Ireland in Preceltic Times 1921
- MacWhite, E. Estudios sobre las Relaciones Atlánticas de la Peninsula Hispanica en la Edad del Bronce. 1951

GEOMORPHOLOGICAL PROGRAMME

The caving party will carry out investigations of caves and karst topography in the Cantabrian mountains. The area chosen is the western massif of the Picos de Europas, and includes several peaks over 2000m. in height, culminating in the Pena Santa de Castilla, 2596m. above sea level. It consists of mountain limestone of lower Carboniferous age, forming the northern limb of a major syncline, and surrounded by softer impervious slates and sandstones. The whole is an uplifted horst block, where the effects of glaciation and glacio-fluvial action have combined to make the Picos de Europas a region of very steep slopes. The rivers Cares and Dobra, the former separating the western and central massifs, flow in very deep valleys, excavated by glaciers and by glacial melt-waters. The steep slopes of the valleys contrast strongly with the more gentle slopes of the area to the north-west of the Pena Santa, which may be related to an ancient erosion surface.

The presence of limestone has brought about a modification of the glacial topography, especially on this erosion surface, and though a few streams still flow on the surface, many of the valleys are dry. Of special interest are the 'hoyos' and 'jous', words used in this region to denote solution hollows, and outstanding among these is the area of the Llanos de Caneya, a flat-floored polje measuring 2¹ km. by 1 km., from which water is believed to drain to the Tabardin and Arganca rivers to the north, and to the Pelabarda to the south-west. The strong relief, coupled with the quite heavy rainfall of the region, should favour the development of sizeable cave-systems and other karst phenomena.

The massif will be examined for cave entrances, and these will be mapped. As many of the caves as possible will be mapped at the standard of Grade 4 as defined by the Cave Research Group, and thoroughly explored. Special attention will be given to any erosion

levels on the surface. It is hoped to be able to analyse water samples for content of carbon dioxide and calcium carbonate at high altitude. No satisfactory method of determining carbon dioxide, carbonate and bicarbonate concentrations of such small amounts in the field has so far been applied to this problem, but work is in progress to develop an apparatus which may solve the difficulty. The determination of these values will prove doubly interesting because of the importance of melt-water at high altitude. The number of dolines per unit area will be mapped in samples at different altitudes and on slopes of different aspect, with a view to investigating the effect of altitude and aspect on solution, and the influence, if any, of the climatic divide between the coastal regions and the much drier interior. The possibility of making a magnetometric survey of the area is being considered. If a suitable instrument can be obtained, readings will be taken over the whole area during the preliminary examination of the ground, and the results will be plotted in the hope of finding evidence of large underground cavities in the limestone. It is also hoped to undertake collection of biological samples under the guidance of the Cave Research Group.

Though no areal limits for these investigations can be defined at this stage, chiefly because of the need to select suitable areas for doline density mapping after a preliminary examination of the ground, most of the work will be carried out in the area bounded by the heads of the Covadonga, Tabardin, and Casano valleys, the rivers Cares and Dobra, and the low pass which connects the headwaters of the e two rivers. The area has already been studied on the largest scale map available (1:50,000) but efforts are being made to procure maps at a scale of 1:25,000 at which the area was originally surveyed.

The party will use the expedition base camp at Cangas de Onis, and will probably set up a subsidiary camp within the area, preferable within the neighbourhood of lakes Enol and Encina.

References:

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EQUIPMENT

It is hoped to take a two-ton truck, a Land Rover, and suitable spares. For base camp it is hoped to use large tents and for mobile field parties small mountain tents. Food for 583 man-days will consist of remote-area rations and fresh food obtained locally. Surveying equipment --plane tables and dumpy level--has been kindly lent by O.U. Dept. of Surveying and Geodesy, but clinometers and other instruments have still to be obtained. Reflex cameras are possessed, but accessories remain to be bought. A wide-angled lens camera for photography of cave-paintings may also be borrowed. For cave research wire ladders and nylon life-lines, a winch, volumetric chemical analysis equipment, dyes, lighting, exposure suits, a rubber dinghy, a small hand generator (for recharging batteries), biological collecting materials, first aid supplies, a stretcher, and personal gear are required.

COST (approx)

Transport	£500
Camping equipt.	£150
Food	£180
Archaeological equipt.	£ 50
Spelaeological do	£200
Photographic accessories	£105
Contingencies	£ 90
TOTAL	£1375
Personal contributions	£480
OTAL REQUIRED	£895

SUPPORTERS

A.L.C.Bullock	Censor of St Catherine's Society, Oxon.
J.M.Houston, D.Phil.	Dept of Geography, Oxford University
Dr A.R.Robins	Dept. of Surveying and Geodesy, Oxford University
Dr T.Ford	Dept. of Geology, Leicester University
O.C.Lloyd, M.D.	Lecturer in Pathology, University of Bristol, Treasurer of U.B. Spelæological Society.
C.Thomas, M.A.	Dept. of Prehistoric Archaeology, Edinburgh University.
B.B.Lloyd, M.A.	Senior Proctor, Oxford University, Dept. of Physiology, Oxford University.

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The Royal Geographical Society, The Royal Archaeological Institute
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GEOPHYSICAL PROGRAMME

SUPPORTERS:

Professor L.S. Palmer, D.Sc., Ph.D., F.Inst.P., M.I.E.E.; Professor Emeritus, Hull University; Honorary Curator, Wells Museum.
Dr M.J. Aitken. Research Laboratory for Archaeology and the History of Art, Oxford University.

The geophysical party will be a subdivision of the caving party, and will work in conjunction with the geomorphological party.

Of the available geophysical methods for detecting subterranean caverns, it is considered that the most economical method suited to the requirements of the expedition is resistivity surveying. It is anticipated that this method will be most useful in the flat-floored solution hollows which have been noted from the 1:25,000 map of the area. Likely positions of caverns will be determined by a comprehensive survey of dolines, sink-holes and resurgences, in conjunction with hydrological survey using fluorescein dye and chemical tests (pH; temperature; carbonate, bicarbonate and CO₂ content). An attempt will then be made to locate the caves by both the step-traverse and expanding electrode methods of geoelectric resistivity survey.

In all cases the Wenner four-electrode method will be used. It is expected that the depth (c.100 ft), extent, and water content of the caves will be detected by this method. Where access is gained to a cave, a survey will be carried out, and an attempt made to correlate the depths determined by geoelectric survey and direct measurement, with consequent testing of the theoretical formulae used in the calculation of the 'geoelectric' depth.

The terrain is expected to be hard rock with only a thin cover of soil, and for this reason electrodes must have case-hardened points and be robust enough to be driven in with a sledgehammer.

References:

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Tagg G.F.	A Resistivity Survey in the Wash Area Journal I.E.E. 3 p. 5	1957

Assistance is being given by:

Evershed and Vignoles Ltd.
Hilger and Watts Ltd.
Rylands Bros Ltd.
Messrs John Shaw Ltd.
The Sheffield Wire Rope Co. Ltd.

PERSONNEL

The twelfth member of the expedition is Mr M.R. Trump, who will assist the archaeological party. He has considerable experience in the field on D. TRUMP's site in Malta, and other Mediterranean sites.

TRANSPORT

A heavy lorry has been obtained, and accommodation arranged for this and one other vehicle, possibly a Land Rover, on the cross-Channel ferry.