



# Exploration

## REVIEW

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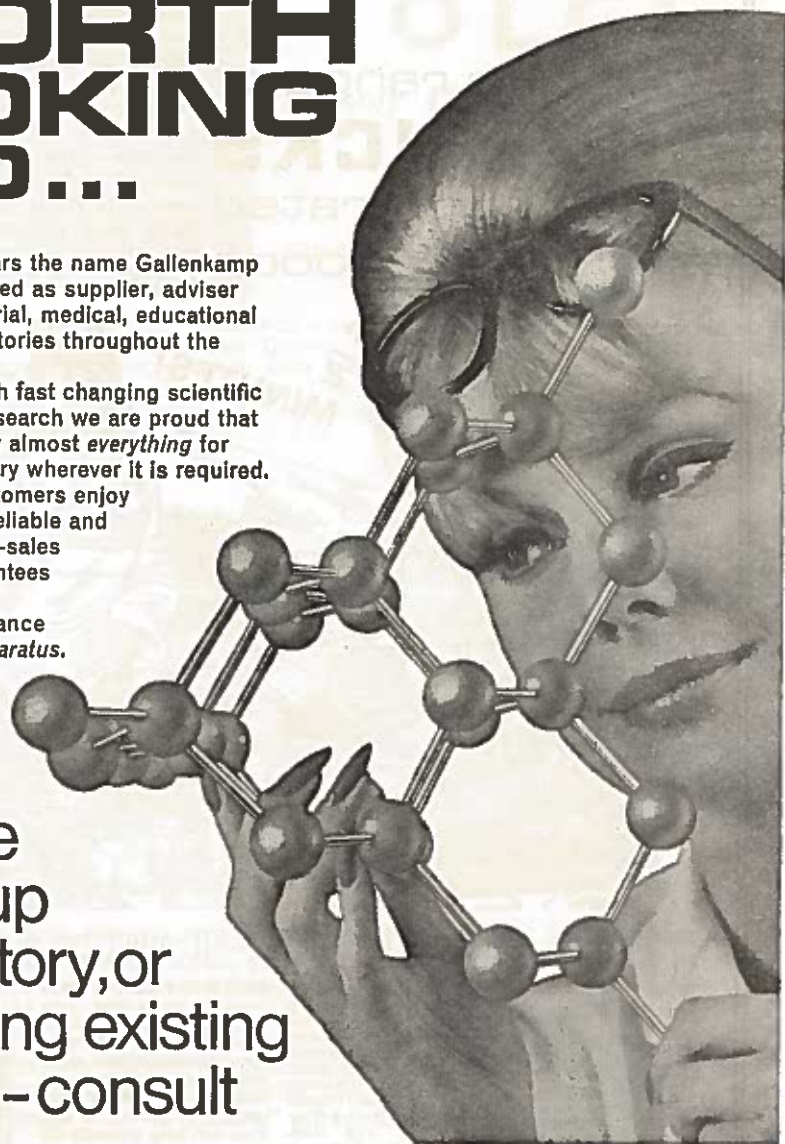
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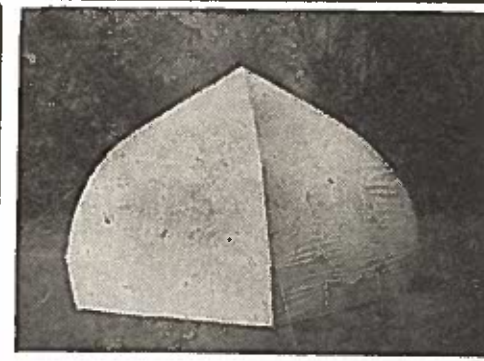
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## FOREWORD

By  
Francis  
Chichester



Exploring is a basic urge and satisfaction for man. The deepest satisfaction is from discovering something unknown or, similarly, from doing something that has never been done before. Our ancestors had the pleasure of discovering new land. Now we must be content with the new discoveries under the ocean surface and in space. These may not produce the same hearty human appetites and the same glow of health as discovery of virgin lands, but they should satisfy explorers for quite a while.

*Francis Chichester*

## EDITORIAL

THE large increase in the membership of the Exploration Society during this year has been matched by an increase in the scope of its activities. It is hoped this broadening of our outlook will be reflected in these pages.

During the past year a librarian has been appointed by the society to collect and index the wealth of information obtained by previous I.C. expeditions. We are also trying to tap the funds of information which must be available at other universities. The survey of the University Exploration Societies forms part of the basis of the article on 'Student Expeditions'. An exchange of information on past expeditions and the plans for future ones must surely result in less duplication of effort and even a cutting of costs in some cases. This in turn should enable groups to attempt even more ambitious projects.

In the past it seems that the Exploration Board and the Exploration Society have only been concerned with expeditions with a specific scientific objective. There has been a considerable increase in recent years in private student expeditions to India, the Middle East, North Africa etc., which, although having no scientific objective, nevertheless require much research and planning. While the Exploration Board, jealous of its high reputation, must continue to support only those expeditions with a scientific objective, the Society could become the forum for the exchange of information on a much wider range of ventures. An article on the journey through Afghanistan, during such a trip to India, has been included to start the ball rolling.

There are two articles on caving, one by a former President of the Exploration Society, and the other on the work of the Cave Research Group, in our series on Institutes concerned with specialized aspects of exploration.

The main 'raison d'être' of 'Exploration Review' is to publicise the work of student expeditions. This year we are very pleased to include the reports of the four 1965 I.C. expeditions, all of which went to Africa.

In addition to our usual feature, giving brief details of the plans for this year's Expeditions, we have been able to include a list of the 1966 ventures which have received the support of the Royal Geographical Society.

We trust the increase in the membership and the activities of the Imperial College Exploration Society will result in a large number of expeditions in 1967 of an even higher standard.

A DISTINCT lack of funds for exploration is now making it necessary for expeditions to be of the highest calibre. I.C., although it is still holding its own, is finding increasing difficulty in obtaining specialists. Geography, sociology, archaeology, medicine and anthropology are all subjects which are ideal for expeditions, but I.C. can only provide amateurs in these fields. For this reason, specialist expeditions from I.C. have been limited to biology, geology, surveying, mountaineering and underwater activities in the main. It is very pleasing however to see expeditions branching out into these new fields and with the support of the Exploration Board a new image of I.C. exploration will be established.

The number of College expeditions is now on the rise after reaching a low ebb two years ago. Last summer saw four expeditions in the field—all in Africa. This year, of a total of seven expeditions that applied for Exploration Board approval, four have been successful. These are the East Greenland, Ife (Nigeria), Minas de Lipez (Bolivia) and Malta Expeditions.

In its capacity to foster an interest in exploration, the Exploration Society has done very well so far this year—nine first-class meetings being a step in the right direction. Sir Vivian Fuchs' lecture on expeditions started the ball rolling and an informal meeting a fortnight later did much to get people talking about going somewhere to do something.

Carl Jones from the 1965 Oxford Sahara Expedition (who had come from Oxford at four hours' notice, due to the illness of the expedition leader) gave an enlightening talk on the perils of desert travel. Films of Australia, Trinidad and Venezuela composed the next meeting, and this term Tony Smythe gave an account of his travels and adventures in Alaska. This was exceptional in that the speaker knew his subject well and had excellent slides to back the talk up.

Certainly the highlight of the Society year was the Dinner which took place in mid-February. Among the many guests were Lord Florey, Sir George Taylor, Sir Vivian Fuchs, Dr. Holdgate and Dr. Scott Russell, along with representatives of organisations that have helped College expeditions in the past. This was a joint Board/Society Dinner and we were fortunate in that the Rector and Lady Linstead were able to be present.

An excellent exhibition of 10 years of expeditions was on display for the Dinner in the Senior Common Room. This provided a focal point for after-dinner chatting for the 80 people at the Dinner—quite a considerable increase on last year.

At the meetings, attendance has never fallen below about 25, reaching a peak of about 70 at Sir Vivian Fuchs' talk. The membership of the Society has grown from just over 30 last year to just over 100 this year, which is a substantial increase, and it is to be hoped that this is a pointer towards bigger, better and brighter I.C. expeditions in the future.

**I**N July an expedition was sent to Uganda at the request of the History Department of the Makerere College, Kampala, which working in conjunction with the Ministry of Information was to locate and survey several of the military stations built in Uganda in the 19th century.

One of the tasks of our party was to locate and survey some of the forts of Emin Pasha who in the late 1880's was known to the world as the valiant governor of the primitive Equatorial Province of Sudan, a fighter against the infamous slave trade and the last defender of civilization against the fury of the Mahdi revolt which murdered Gordon in Khartoum and finally ended in the bloody battle before Omdurman in 1895 when the full might of modern warfare was turned against the primitive weapons of the rebels.

Emin Pasha was born Eduard Schnitzer in Silesia in 1840. After obtaining a doctor's degree in medicine he left Germany in the hopes of finding advancement in the Ottoman Empire. In 1875 Schnitzer now calling himself Dr. Emin appeared in Khartoum, the capital of the Sudan. He soon attracted the attention of General Gordon, the British Governor; a new life began for Emin in Central Africa, a life as a doctor, teacher, diplomat and scientist. From 1878 to 1888 he served as Governor of Equatoria, the southernmost part of Sudan and containing parts of Northern Uganda.

These were years of remarkable achievement; in the vast territory under his control, Emin established more than fifty stations, connected by roads to a postal service. He pacified the country and made pacts with native kings, whose tribes he protected from slavers. He introduced new crops, livestock and novel techniques for the utilisation of natural resources. He criss-crossed the province in innumerable inspection trips, administering justice, giving medical aid and filling his notebook with scientific observations.

Unfortunately this beneficial administration was abruptly brought to a halt by the rise of the Mahdi. Fanatical dervishes swept into Emin's territory, blocked the Nile, cut him off from communication with his superiors in the North and forced him to retreat, almost without resources, into Uganda.

A British expedition led by Stanley set out to rescue Emin and took him much against his will to Dar es Salaam. It is probably true that a man was never more reluctant to be rescued, and Emin set out once more for the interior.

The last few months of his life brought utmost misery; interminable rains, hunger and a smallpox epidemic weakened the expedition. Still Emin by now ill, exhausted and almost blind reached the outskirts of his former province. He became the first white man to explore the southern and western shores of Lake Edward. In 1891 he crossed into the Congo Territory to be cruelly murdered



at the instigation of the Arab slave traders with whom he had spent his life in permanent struggle.

Due to political difficulties it is not now easy to cross between Uganda and the Sudan and therefore once the expedition was in Uganda it had to concentrate only on the southern forts of what was Equatoria.

Before going to Uganda we had spent several months attempting to locate forts by reference to Emin's journals, to one of his maps published in 1880 and to recent air photographs taken to aid the publication of a complete series of 1 : 50,000 maps of the country.

We concentrated mainly on the stations named as Fadibek, Farajok and Bora in Emin's journals. We discovered that Fadibek and Farajok lay between Padibe and the Sudan border, and that Bora was on the east bank of the Nile opposite Rhino Camp. These forts showed up remarkably well on the air photographs and we were able to pinpoint their positions fairly accurately.

We were also able to map the already well known fort at Dufile on the north bank of the Albert Nile near the Uganda Sudan border.

Thus far we had applied scientific analysis to the problem of finding Emin's forts and we were confident that what we had seen on the photographs was in fact what we were looking for. However, the view from 25,000 feet is completely different from that at ground level and it is possible to walk within a few feet of an overgrown fort and yet be unaware of its presence.

We were further handicapped by the fact that present day roads run nowhere near the forts and since we were not supplied with a Land Rover but with a minibus we were unable to consider forts which lay more than ten miles from a road. Bora lying as it does miles from a track was therefore eliminated from our studies. While we were unable to visit Bora we found a game ranger who on looking at our photographs, while leaning on the bar at the Gulu Club, was able to confirm that the remains of earthworks were to be found in the spot marked.

Since everyone knew where Dufile was, we commenced our programme there. We were able to get our vehicles to within sight of the earthworks after only two hours from a good road. We walked straight through the main gate, past the impressive earth banks, and we were just beginning to examine one of the main buildings when we heard shouts. It appeared that a villager thought we were Emin Pasha's men returned from the dead! We retreated and set up camp out of sight of the fort.

Peaceful relations were established with the villagers when it was realised that, far from being intangible ghosts, we represented the Government and could offer them employment. As taxes were still unpaid there was no shortage of willing and interested helpers who completed the clearing of the fort within two days.

We were impressed by the number of brick and stone buildings still evident within the walls, which enclosed the area; however, our job was not of an archaeological nature, and we were unable to discover the full extent of the remains in our superficial study. For instance, we were unable to investigate local rumours that Emin Pasha and Gordon of Khartoum lie buried near the fort!

Our maps of Dufile complete, we proceeded to Padibe via Kitgum. The only incident on this journey was trying to get back onto the road at Dufile through what were now rain sodden marshes. At one time we were proceeding at the rate of 100 yards per hour, and what had been previously a two-hour drive became an exhausting epic of ten hours digging and heaving. Once again we were helped by the villagers whose main interest in our progress stemmed from the fact that we could not pay them until we reached the main road.

From Padibe we drove north for Lokung, where we discovered an old man who said he could take us to Fadibek. He claimed he had fought with Emin Pasha but we suspect he stumbled on the fort while hunting. From our camp site the guide pointed in the general direction that our calculations, based on the aerial photographs, inclined us to take. So we hired him to show us the way.

Our five mile trek to the fort was enlivened by an Educational Television cameraman who had, to our surprise, discovered our whereabouts, and who pursued us relentlessly across the bush, filming our activities.

Fadibek, which has probably only been visited by the hunter since Emin's departure, is in a splendid state of preservation and justified our spending a lot of time working (and filming) there. The remains of several vases and other utensils were visible on the surface. The wealth of information here about the conditions under which Emin's troops lived prompts us to suggest the sending of an archaeological expedition with this fort as its sole objective.

With the vital statistics of Fadibek in our notebooks, we began to consider the possibilities of getting to Farajok on the north bank of the Nyimur. Our experience at Dufile had shown us that it would be crass stupidity to take our vehicles off the beaten track no matter how hard the ground appeared. The situation looked rather dismal until suddenly a Land Rover arrived at our camp and we were able to persuade the driver to join the ranks of the fort-finders.

After an eight-hour drive across rugged, river-crossed country we reached the suspected position of the fort. At this point the cameraman plus all his equipment and the Inspector of Ancient Monuments had clambered in on top of us in the Land Rover as they had to abandon their car where the track petered out. We searched for the fort until, as the shadows lengthened, we realised that we had lost two of our party—including the navigator! When it became pitch dark we despaired of finding them, but fortunately as we returned to camp in the Land Rover we ran into them—literally!

Our camp was on a ridge overlooking the border of the Sudan, then in the grips of a civil war, much to the concern of the Inspector of Ancient Monuments who at any moment expected the army to appear. Fortunately no one appeared, and the next morning the view was so good that, by taking bearings on prominent landmarks (such as a galvanised roof eight miles away), we were able to establish our exact position on the aerial photograph. Our navigator was unusually categorical in declaring that the fort lay 400 yards to the West South West. We searched the area for hours, but were defeated by our inability to see any farther than the elephant grass in front of our eyes; we could have walked around the fort without seeing it. We were willing to continue searching until we found our

objective, but unfortunately the Land Rover was required elsewhere, so we were forced to abandon the search.

Despite our failure, we are convinced that we were within feet of the fort. All factors, including Emin's own description of the fort's position, point to it being in the area we searched, and we are sure that another, better equipped expedition would find Farajok.

During the remaining period the expedition visited Teso district to look for forts built there and in the surrounding area by Semei Kakunguru, a Muganda general who served in the British Army in Uganda around the turn of the century. His power became so great that the British were forced to ask for his resignation. One white officer at the head of only several dozen African police entered the fort of Budaka, capable of holding 5,000 men and which was defended by Maxims, and calmly persuaded Kakunguru to haul down his flag. He then passed quietly into history books mostly written to his version of his activities.

We surveyed the forts of Opege, Makongoro, Kagaa, Bululu, Gogonyo and Budaka and eliminated several forts from history, one of which turned out to be a tree planted by Kakunguru and another a ditch where King Kabalega made his last stand in 1899.

Our fort finding over we attempted to put a route up the west face of the mountain of Kadam in the South Karamoja. After a two day tussle with jungle we were unable to even reach the cliff and gave up with only the sight of a rare colobus monkey to cheer us up.

Our programme completed we returned to England at the beginning of September with contented relief and some reluctance.

#### *Expedition members.*

- I. Blackhurst (leader).
- N. P. Fitzpatrick (secretary).
- M. C. Clark (surveyor).
- M. F. Ashton.
- C. M. Hemming.
- T. P. C. Doe.

## THE CAVE RESEARCH GROUP

*by W. H. Little*

THE discovery and exploration of a new cave never visited by man is the dream of most cavers, but such good fortune comes to few. The finding of a new passage is as much as most can aspire to. The scientific explorer is not only concerned with new caves but he (or she) can find out a great deal more about caves known for hundreds of years. The speleologist is not a white coated laboratory worker, nor need he be a graduate, though there are many problems remaining that require a great deal of scientific know-how. He is often a sporting caver who has got tired of trying to race through as many caves as he can and has started to ask questions—questions which cannot always be answered by others. The Cave Research Group of Great Britain is a tailor-made organisation for such people and also caters for the established scientist or student who wishes to extend his special field of knowledge into the cave world.

The Group was founded in 1947; Brig. E. A. Glennie (now the President) was the original honorary secretary. The aim is the scientific study of caves anywhere but more particularly those of Great Britain. This is furthered by the publication of the results of speleological work . . . carried out by individuals or clubs and societies and by organising General Meetings at which papers are presented. These deal with archeological, biological and physical aspects of caves as well as the dissemination of information about recent discoveries and advances in exploration techniques, cave surveying, photography and kindred subjects.

The Group represents British Speleologists collectively in many matters affecting the scientific study of caves and associated phenomena but does not represent the sport of caving. Cave preservation and access for study are matters which receive great consideration and much attention. Liaison is maintained with the Nature Conservancy and advice is given on Sites of Special Scientific Importance. The Group's observers attend the meetings of the Regional Caving Councils and conferences and are in other ways in close touch with caving activities and affairs at home whilst also representing Great Britain on the newly formed International Speleological Union.

A number of Extra Mural or weekend residential courses in speleology have been held in conjunction with universities or colleges in Birmingham, Keele, Leicester and Bristol. Speleological expeditions abroad by members or member clubs are given advice and information if requested but funds do not enable the Group to make any general grants towards sending these expeditions but may sponsor approved expeditions in liaison with The Royal Geographical Society.

The reports of these expeditions where suitable and of scientific interest are often published although accounts of travelling, logistics or sporting activities are not favoured. Bio-speleological work is organised or co-ordinated by the Biological Recorder and of particular importance is the authentication of the indentifications by internationally accepted experts in the various specialised fields. Many underground



specimen of fauna and flora are collected and sent by cavers; others are 'caught' in places inaccessible to man through wells and even deep boreholes.

Publications represent the largest part of expenditure and subscriptions have been subsidised only by the royalties from the publication of the book *British Caving* (Cullingford). The Group's own publications are all quarto-size and are issued periodically. Most are illustrated with sketches, diagrams, maps, line and/or half-tone blocks, and in the case of survey publications large scale plans and sections of the cave are given. 'The Transactions' is a journal in a stiff paper cover containing papers read at General Meetings or submitted for publication. Volume 6, Number 2 is printed by off-set litho; previous numbers are duplicated. 'Numbered Publications' are monographs on various research topics or aids to research work having a similar format to that of 'The Transactions': Number 13 is printed by off-set Litho; the previous issues are duplicated. The first eight parts of 'Biological Records' give lists of fauna collected from caves, mines and wells as recorded by the C.R.G. of G.B. Part IX and future ones will include short articles of biological interest as well as newly recorded fauna to date.

These records are a complete list of all fauna collected and identified between 1938 and 1964, and are duplicated. 'Occasional Publications' contain reports accounts and information appertaining to many aspects of speleology; eight numbers have been issued; each are stapled into a manilla cover and are duplicated. Newsletters have 6—32 pages of Group News, short papers, notes, reviews, abstracts, etc., 99 numbers have been published to date and are duplicated. Further information regarding the contents of individual numbers of the above publications and the sales of those still available can be obtained from Inett Homes Esq., Lindum, The Homend, Ledbury, Herefordshire.

The members and correspondents throughout the world now number several hundred people and societies. Membership of the Group is of five categories; Full (over 21 years of age), Junior (16—21 years of age) and Member Clubs, also institutional subscribers, the fifth category is Honorary Membership reserved only for those who have rendered outstanding service to speleology. All members receive one copy of every publication issued by the Group and other facilities include:—

1. The right to attend meetings of the Group and take part in discussions.
2. The right to borrow books from the Group's Library which holds a very wide collection of British and foreign books and journals covering the horizon of speleology.
3. Information on caves and cave exploration is given to bonafide speleologists, but caving expeditions at home or abroad are not organised by the Group.
4. Introductions made with fellow workers in specialised fields.

Full and Members Club subscriptions at the present time is £3 per annum and that for junior membership is £1-10s-0d. and institutions £6. Application forms may be obtained from Hon. Secretary, 369, Stone Rd., Trentham, Stoke-on-Trent.

'C.R.G.' is what the Group is generally called and although dedicated to the serious side of caving is a society in which everyone is friendly and helpful whether scientist, explorer or interested layman. This is one reason why membership includes all three of these types and caving clubs as well as learned institutions.

## ETHIOPIA 1965

By Malcolm Baron

TO go meticulously through the twenty months of planning of the expedition would be a book in itself although not a very readable one. During this planning period, personnel came and went—geologists, biologists, sociologists, photographers, and medics, totalling 19 in all.

Being relatively unskilled expedition material we had to look for a project which would be interesting and which would be within our capabilities. Sociology was an obvious choice as there seemed to be no particular skills involved in recording facts. Investigations showed that Ethiopia was an ideal site for study as so little had been done in this particular field.

Correspondence with University College, Addis Ababa, yielded an area and group to be studied in southern Ethiopia and it was at this stage in the proceedings that the Imperial College Ghemu-Gofa Expedition was born. Circumstances made it such that we had to change our plans and study a community of fishermen (the Waito) around Lake Tana in northern Ethiopia. We were therefore in the paradoxical situation of being called the Ghemu-Gofa expedition and having no intention of being nearer than 400 miles to Ghemu-Gofa.

The final party consisted of Neil Sunderland as Co-Leader and Sociologist, Peter Davies as Meteorologist and Assistant Surveyor, Roger Kitching as Biologist, Johannes Tekle Haimanot (whom we were to meet in Addis Ababa) as Sociologist and Interpreter and myself as Co-Leader and Surveyor.

Hectic packing was finished just after the end of term and we were then off to Marseilles in a 30 cwt. van loaned to us by the College Underwater Club. A hasty trip across France and a ten day boat trip across the Mediterranean and Red Seas brought us to Djibouti, the capital and only town in French Somaliland. The humid heat is the reason that people talk so contemptuously about the place and it has to be experienced to be believed. 120°F is a normal sort of daytime temperature about which no-one complains and temperatures around 135° are not uncommon. Djibouti's position on the Red Sea means that the night-time temperature never falls much below 75° and so air-conditioning becomes more of a necessity rather than a luxury.

After two days in Djibouti, Peter and Roger went by train with the equipment to Addis while Neil and I flew by Ethiopian Air Lines. Once in Addis we stayed with John and Jean Tiffin at the General Wingate School from where we went to see the necessary Government and University departments.

This took just less than a week after which we headed by bus to Bahar Dar at the southern end of Lake Tana. The local Governor turned out to be a well educated Ethiopian whose English was extremely good. When we presented our credentials he made us very welcome and arranged a meeting with the local Waito Chief. While we were in Bahar Dar we found out that the largest community of Waito lived just

outside the town in a village by the name of Fasilo. There, numbers were estimated at between 100 and 200 whereas the other communities around the lake consisted of no more than ten huts. For a complete sociological study only the Fasilo community was feasible. We had anticipated being further from civilisation but there was no alternative.

The Polytechnic Institute in Bahar Dar, with whom we were staying, took our equipment to Fasilo where camp was duly set up. Due to the heavy rainfall which fell about six o'clock every evening we had to dig an intricate system of drainage trenches around the tent and also lay a stone floor around the working area.

We thought that by having our camp on the outskirts of the village we would have some privacy but it wasn't to be so. It often reached the stage whereby we wondered who was studying who the most. One of the first things that happened was that we had a meeting with the village elders. We sat with them around a circle of stones while Johannes tried to answer all the questions fired at him "Why have you come to our village, why have the forengi (foreigners) come with you, is what you are going to do going to be of any help to us or will it harm us, are you going to take away our belongings, etc."

Johannes did very well as a politician on this occasion and although the elders didn't appear to be happy (we later found out they never are), he told us that the first round had been won. So with the Governor's and the Elders' permission we were now able to get down to the job in hand. Naturally we had to be very careful in the first few days as we had to create a good impression. Neil and Johannes had the hardest job of all with the sociology as they had to ask a lot of personal questions which the people were loathe to answer.

Everything got under way very well and we found that the first thing that we were asked to do by the people was to give medical treatment as they couldn't afford to go to the hospital. The hospital was only 2 km. away, so anything that was within our capabilities we treated. The demand became so great that we had to limit people to a surgery hour which inevitably dragged on for two hours or more. "Ber sement sat nager" became a familiar phrase which informed the patients that surgery was at two o'clock the next day. In some cases we had to treat immediately and although there were a lot of serious cases there were a few lighter-hearted moments.

Witness the occasion on which a middle-aged man came with a recently cut finger which we bandaged up for him. He thanked us and then went to stand a few yards away to watch others being treated. The next patients were children who complained of headaches; this being a favourite trick to get medicine of some kind. Our cure for these were salt tablets and malarial pills, both of which are particularly distasteful but harmless.

After watching the administering of the pills, the man decided that he had suddenly developed a headache and expressed his feelings accordingly. The malarial pills were in short supply at this time but we had plenty of cascara tablets. He took two of these and went on his way. The next day we saw his tall figure heading for the tent and so prepared for trouble. When he reached the tent he sadly confessed to us that he had lied about the headache and told us that he had really been suffering from a stomach pain. The same pain had completely gone (at this stage he made signs showing how it went), and he was greatly indebted to us. This was quite a relief for us and we regarded this as the climax of our medical careers.

To introduce a more serious note it is fair to say that for every case like that one there were ten patients whose ailments made one wince or feel physically sick. About the worst case that came our way was an old man who had a hole in the bottom of his heel about  $2\frac{1}{2}$  inches in diameter and  $\frac{3}{4}$  inch deep. This was just an open wound that had been in its present state for some time. He had been walking about on it continually and so there was a lot of dirt and grime embedded in it.

This was obviously too bad for us to handle so we took him straight to the hospital. The German doctor carried out touch tests and found that the man could not feel the pin pricks on his foot or on several other areas of his body. The doctor's diagnosis was an advanced case of leprosy and so he instructed the man to go to a leprosarium about 50 miles away. In all probability the man never went to the leprosarium and will die with his family as the sick have always done in primitive communities.

The medical treatment was only a sideline to the expedition but it was perhaps the most rewarding job. With the scientific programme great headway was being made—the survey was completed in a fortnight and most of the fish and fishing methods had been studied. Meteorological readings were taken and biological specimens were collected daily and on the sociology side everyone was busy with their own allocated jobs. On several evenings every week we invited a few village elders to the tent for a chat about their oral tradition. We taped all the conversations and later Johannes translated them for us. This gave us a great insight into the lives, thoughts and culture of the people.

On one occasion, the chief of the Waito-Negadras Mogas Kasengne—asked if New York, London and Moscow were all the same place. It seemed strange that he had ever heard of these places but to actually want to know more about them gained our respect.

To be able to make a comparison between the communities, Neil Peter and Johannes went for a few days to study two agricultural communities of Waito living on the south-east shore of the lake.

Altogether we spent seven weeks in and around Fasilo in which time all the scientific programme was completed. We studied the fishing, boat-making, reed crafts, basketry, dress, games, social structure, religion, politics, occupations, trade, food, houses and their contents, ornaments, vegetation, domestic and wild animals, that is as well as making a map of the village, taking daily meteorological readings, collecting specimens, laying a transect and finding out about oral traditions, ceremonies and customs.

Once fond farewells were said in Fasilo and Bahar Dar, our route lay to Addis where we left Johannes, on to Djibouti by train, and then seven days by sea to Marseilles, pausing for a day in Egypt to see the Pyramids, the Sphynx, Cairo, the Egyptian Museum (containing Tutenkamen's treasure), the Mohammed Ali mosque and Port Said.

Our van was waiting for us in Marseilles and in 27 hours we were back in London after spending a worthwhile 13 weeks in search of Sheba.



## EXPEDITIONS 1966

FOUR expeditions have been approved by the Exploration Board for this summer.

### Bolivia

A four man expedition is going to the remote area of Sur Lipez in the altiplano of the Andes to carry out an historical and geological survey of some silver mines, which were mysteriously abandoned by the Spaniards some 200 years ago. They expect to spend about seven weeks on this and subsidiary botanical and meteorological projects. Lobitos Oilfields have very generously provided two outward and four return passages on one of their oil tankers to Pern. The party will travel to and from Sur Lipez by Land Rover visiting Lake Titicaca and Cusco, the ancient Inca capital on the way.

### Greenland

A party of eight are travelling to East Greenland to carry out a combined glaciological and mountaineering programme. It is proposed to attack peaks in the Mount Forel group, which offers a wealth of unclimbed peaks. A survey of the snout of the only attainable isolated valley glacier will be carried out, as in 1963, and it is hoped that work will also be performed on the Panis Glacier. The main difficulty facing the expedition is that of transport: boat and plane to Kulusuk, and a week-long journey into the interior. An air drop has been arranged to help solve supply problems.

### Malta

The aims of the 1966 Malta Underwater Expedition are threefold. Firstly, to investigate underwater communication between divers, voice frequency transmission will be examined from both the physical and psycho acoustics side. The work of surveying some of the underwater caves of Malta, discovered by a previous I.C. expedition, will be continued, with particular reference to the oxygen content and temperature of the water. Emphasis will be placed on producing a comprehensive underwater film, wide in scope and appeal, showing the distinctive contribution which British workers are making in the fields described.

### Nigeria

Seven zoology students are flying out to Lagos to pursue three separate projects from a base at the University of Ife. The entomologists will be studying the population dynamics of Orthoptera, mainly Acridid grasshoppers, and the association of Mycetophilid flies with Myseomycetes. A general collection of the latter will be made to find new species and new mating types and strains for genetic investigation. (Of the 17 species found by the Imperial College 1962 Nigerian Expedition, 3 were new to Science). The parasitologists will be making a statistical survey of the Endoparasites of bats. It is hoped to find intermediate hosts and the mode of transmission of infective stages together with ecological and physiological problems involved.

## A JOURNEY THROUGH AFGHANISTAN

by Nicholas Fern

**D**URING the winter of 1964/65 an overland trip to India was conceived by M. A. S. Cox, M. J. Davison and N. Fern (Imperial College) and R. A. K. Veber (Worcester College, Oxford). In March a long wheel-base Land Rover was purchased and modified slightly by the addition of extra spring-leaves, heavy duty tyres, shelving and safety belts. A certain amount of food and equipment was obtained free or at a discount from a variety of firms, whose generosity was the greater as the party had no scientific objectives.

Final preparations were finished after the exams in June, and on July 6th the heavily loaded Land Rover was driven aboard the ferry for Ostende. Istanbul was reached six days later, and after driving across the mountains of Northern Turkey and Iran, the party reached Meshed in N. W. Iran on July 28th. Meshed is a great centre of Moslem pilgrimage, but as we were unbelievers, we were forbidden to photograph, or even visit the shrine in the city.

The following afternoon we drove out of Meshed and bumped our way across an abominable dirt track towards the frontier. The frontier village of Turbat was reached late that evening and the night was spent in the garden of an hotel for about 1/3 each. Next morning we finally completed the Iranian formalities and, having passed through a cholera check point, headed towards the Afgan side of the border. Apparently we crossed the frontier just in time as it was closed a few days later by the health authorities because of an epidemic of cholera in central Asia. The frontier was marked by a wooden pole across the track, which was watched from a small square fort a hundred yards or so away. A small, villainous looking soldier examined our passports and we drove the few miles on to the customs and police check.

A decorated Afgan lorry stood in the yard, but no other signs of human occupation were visible. Flies buzzed in the still air; it was almost impossible to escape from the oppressive heat. We walked into the shaded, cooler building that served as a dwelling as well as offices. An Afgan, wearing a long dirty white robe and fur hat, dealt with the customs formalities. The multi-coloured U.S. visas of Mike and myself seemed to fascinate him, but after a long wait we were allowed to cross the courtyard to the police post. A pyjama clad figure, whose ability to read Roman script was only a little better than his ability to write Arabic, dealt with our papers.

Having obtained a full page of scrawls and smudged stamps, we headed towards Herat. After the frontier we came upon a river, whose waters vanished in the sands of the Russian deserts, spanned by a beautiful, but broken, arched bridge. Alone in the desert stood a massive square tower, whose walls were covered in slits designed to direct the wind towards the blades of a windmill, the purpose of which we never discovered.

Approaching Herat we saw six huge towers, once minarets built by Husayn Baikara, probably before the start of the sixteenth century, but now having a somewhat grotesque appearance. By the minarets stands the simple square tomb of Gohar Shar, with its blue domed roof sparkling in the afternoon sun. Few vehicles, except for Russian jeeps and construction lorries, drove down the wide dusty streets. The local equivalent of taxis were light two-wheeled horse-drawn carriages. Small shops, little bigger than cupboards, lined the main street and we watched fascinated as bread was baked in bell-shaped ovens below floor level. The dough was slapped on to the glowing walls of the ovens, taken out with long iron hooks, and hung up to cool. As the sun was setting we visited the great mosque. Little groups of turbanned figures were saying their evening prayers, obviously at their own speed and timing, unlike the regimented congregations of the western religions.

After leaving Herat, we came upon an excellent concrete road, built through the desert by the Russians. The summer temperatures were so high that work could only proceed during the night. Traffic was very light and there was little to alleviate the monotony of the desert. We had been told that there was only one source of mediocre petrol in some 400 miles of road so we had filled every container before leaving Herat. In the middle of the desert stretch was a new motel, built by the Russians to cater for the almost non-existent tourist traffic. A brand new swimming pool stood behind the motel, and we decided that a swim was required to wash off the dust collected during the morning. After persuading the Russian C.O. of the construction gang that we were Angliski and not Americanski, we were permitted to have a five minute swim. The C.O. stood at the end of the pool, stopwatch in hand to time our swim, as we plunged into the water. Our five minutes were soon up and much refreshed, we carried on. Later that day we came upon a small maintenance camp with a water tank standing invitingly in the yard. We will never know whether permission was given to us, but we had a very short and enjoyable swim.

As the afternoon drew on, we came to the town of Girishk on the Helmund river, which is now being harnessed for irrigation and hydro-electric power. Centuries ago the Helmund valley enjoyed what was then one of Asia's great civilizations, and it now seems that life will slowly return towards its past greatness. Mike had been given the address of an Afgan who was concerned with the administration of the Helmund Valley Authority, and was told to contact him by phone from Girishk. Mike and I found the telephone situated in a small dark room. A small balding man ran the small switchboard, from which wires ran everywhere, finally bunching together and leaving by the glassless window. Eventually an English speaker was contacted at the other end, but to no avail, as our contact was ill and in Kabul.

We drank tea in a small hotel and drove into the desert to camp. The evening was calm but after nightfall the wind rose and we camped in a small sandstorm. Next morning quantities of sand had to be brushed out of the car and shaken from our sleeping bags.

The Russian road continued as far as Kandahar, while as far as Kabul the Americans took over responsibility for construction. Quantities of American tinned milk and cigarettes were on sale, probably obtained illegally from the large American construction camp outside the town. Flies swarmed thickly over carcasses of meat

in the market and the quality of vegetable produce was appalling. Hordes of small children pestered us for baksheesh (alms), as we wandered back to the car.

The American stretch of the road was still under construction, and for most of the way we followed the old battered road, which had been used for centuries. The old Afghan bridges are safe only for camels and donkeys, so all motor traffic uses the fords. The water level was always low during the summer, but in the spring when the snows melt up in the Hindu Kush, the water level must be deep enough to make crossing difficult. Towards evening we followed a construction road beside the American highway and saw, by the roadside, the ruins of a fortified village. We pulled off the road and squeezed through the narrow opening leading into the village where we camped, away from the wind and sand. There was no evidence of recent habitation, and no reason was visible for the desertion of the village.

Soon after leaving the fortified village we managed to get on the new road and soon reached Kabul. The city is a fascinating mixture of new and old, Western and Asian, and settled and nomadic. A few ten-storey buildings vie with low, flat-roofed, mud houses, American buses push their way through herds of sheep and goats being driven through the town centre, while the river is the main sewer in which children play. Men in western dress brush past women covered in ankle length black shrouds. Small crocheted grilles provided their only contact with the outside world. Although attempts have been made to emancipate women in western Asia, the majority of women remain in purdah all their lives.

The hotel we stayed in had sanitary arrangements, which had to be seen to be believed, but was very cheap. We ate in a new restaurant, whose main customers were embassy staff and families, and the crowd of students, who like ourselves had reached Afghanistan. Because of the cholera epidemic it was, at that time, impossible to go westwards from Pakistan and Afghanistan to Iran, and a slow build up of returning expeditions had started.

A couple of days were spent in visiting the limited number of places of interest to tourists, and in haggling over fur hats in the markets. We purchased our money for India and Pakistan at very good rates in the bazaar in a series of dealings made interesting by their secrecy. The final transactions were usually accomplished in a small room at the back of the cloth market.

It was necessary, at this point, to carry out some minor repairs to the Land Rover and, to our surprise we found a very well equipped workshop, whose equipment we borrowed to complete the job. After finishing all necessary tasks, we decided to head north into the Hindu Kush for a short time. A superbly engineered Russian built, road wound its way up to a tunnel under the mountain top at an altitude of something over 11,000 ft. Heavily loaded lorries struggled up the pass on their way to the north while in the other direction petrol tankers from the oil fields of Russia, headed towards Kabul.

Afghan lorries are built on American chassis, with home designed bodies, gaudily painted with scenes suspiciously like Lake Geneva. Bus services are few, and over distances greater than a few miles the lorries are the recognized form of transport. Most of the lorries have small pens on their cabs in which several peasants, usually accompanied by a goat or a few hens, ride. The lorries usually had a crew of four or five up the mountains. There was of course the driver, and standing on the outside of him was a man whose duty was to inform the driver of the closeness of the road's edge. On a platform built around the engine sat a man whose duty was



to replenish the ever boiling radiator. At the rear of the vehicle another man hung precariously, a large wooden wedge by his side, ready to jump down and push the wedge under the rear wheels when the lorry stopped, as the brakes were never reliable. Sometimes a fifth man would sit on top of the load, earning his ride by warning the driver of overtaking vehicles.

We drove about 10 miles the other side of the pass and later returned towards Kabul. We camped by the side of a stream for the night, and next day the car had its first real clean since leaving England, nearly a month before. Equipment was scattered around the car, and clothes hung out to dry in the hot sun. About three that afternoon we repacked and drove towards Jalalabad. Our final night in Afghanistan was spent by the roadside to the East of Kabul. Next morning Malcolm managed to get us up very early, by our standards, and although our clutch was slipping somewhat owing to an oil leak, we drove towards Torkam and the Punjab.

The road over the Lataband pass was atrocious and progress was slow. A pair of Deux Chevaux passed us on the way back to France, bouncing over the corrugations and potholes, but apparently untroubled. After Jalalabad the countryside began to get greener but was still relatively barren. We passed a dam and hydro-electric plant, which was one of the few signs of industrialization that we saw in Afghanistan. We nearly missed the police post at the border, but a soldier waved us into the yard for checking. Formalities were as usual slow but eventually, with more scrawls and stamps, we drove through the gate.

A large sign said "Drive on the Left" as we drove into Pakistan. Immaculately dressed soldiers stood guard. An observation post allowed visitors to look into Afghanistan. We drank tea in a shaded enclosure while we waited patiently for our passports to be dealt with. The signs were in a mixture of English and Urdu, and the formalities were completed in the same mixture.

A tarmac road led to the Khyber Pass, lined with signs indicating that camels and donkeys should take the path down the valley rather than follow the road. A few miles later we came to the pass itself. The road winds down between arid hills to the verdant, flat plain of the Punjab. At the road side are plaques commemorating the army units (British and Indian) which have, at one time or another, tried to keep the peace in the tribal area along the North West Frontier. After 18 years of independence tribal troubles still occur in this area, and fortified police posts command the road, which for reasons of safety is open only during the hours of daylight. Farmers could be seen, with rifles on their backs, driving their oxen over the stony soil.

In the late afternoon we reached Peshawar, once an important British military cantonment, and now a large Pakistani defence centre. During the evening it rained as the monsoons were in mid-season, which to us was a welcome change from the aridity of the Afghan plateau. We continued our trip up to Kashmir and on to Delhi. We returned via Iran, the Middle East, and Eastern Europe. On October 22nd we just caught the boat from Calais, and 3½ months after leaving England we reached home.

In all we drove a total of nearly 17,000 miles, a great deal of it over very bad roads and did not have a single puncture and very little mechanical trouble, due in part to our Michelin XY tyres, and partly to regular maintenance throughout the duration of the trip.



*Surveying the forts*



*The Labour Force*



ETHIOPIA 1965



*Reed Boat Construction*



*Some of the Waito people*

GHANA 1965



*The Census*

MOROCCO 1965





Unfortunately, there were several chores which must necessarily be performed in order to support a peaceful existence during a one thousand mile journey like this. For instance, everyone went on watch for three hours per day. This involved steering a compass course, missing the continuous stream of oncoming oil-tankers and watching for land in the day, or lights at night. This was relatively easy during the fair weather which accompanied us most of the time and there was considerable competition to avoid the day watch as this involved the loss of valuable sun-bathing time. However, there was one task which was not at all popular. This was the cooking and washing-up. There were nineteen of us on board during this period, two gas rings of distinctly mediocre performance, a sink with a hand pump producing precious water and virtually no room to put anything down. The rota gave the job of cooking the two daily meals—breakfast/lunch and dinner—to two of the company at a time, and the whole job would take eight or ten hours a day. However, every one of us carried this task out with a conscientiousness which exceeded all normal limits and we made the best of our very restricted food budget.

This brings us to another most important factor. We spent about one pound per head per week on food, and even remembering that considerable quantities were generously supplied free, this was not nearly enough. A full diet was only made possible by eating the local food in Morocco and by missing the 'luxury' items out of our menus. In retrospect, we were never, by any considerations, short of food to the extent of physical deterioration, but we would definitely have liked a little more variety, and at time, quantity. While residing on our diving anchorage at Punta Pescadores we existed on five-pence per head per day. This bought many kilos of excellent fish, for protein, a varied selection of fruit and vegetables, and bread which we ate at breakfast. This first meal of the day was definitely the one which suffered most and it consisted of a monotonous porridge followed by bread, butter and jam. This was incredibly dry and weighed heavily inside ones stomach after six hours or so of perspiring sleep. Our lunch of bread and jam again followed at 1 p.m., then our evening meal at seven o'clock. This was generally completely satisfying to the tired diver, to the extent that there was always something left over, but the attraction of even the best roast fish and onion salad palls after a few weeks. For the interest of future expeditions, we spent approximately 70% of the money available for food at 'European' sources of supply. This included all our margarine, coffee and everyday needs for the whole trip and complete meals for all during the two long journeys through the Atlantic Ocean. The remainder went on fish, meat and fruit during our stay on the Moroccan coast.

Now let us mention the people of Morocco whom we met. It must be remembered that these were the inhabitants of the short Mediterranean coast and in all probability, those of the Atlantic are entirely different. However, in general, all the Moroccans with whom we made acquaintance were extremely generous, friendly and helpful. Among the more educated classes, the languages spoken were French and Spanish, and we had little difficulty in communicating. The ordinary people speak an Arabic which is liberally sprinkled with words taken from other languages. In El Jebha, the village by which we were anchored most of the time, the people were apparently quite well off and lived in regularly whitewashed homes around a road system which rarely felt the passage of motor vehicles. Even the most poverty stricken seemed to make a living out of fishing. To illustrate the two main occupations of these people, a certain pitch black night comes to mind. We were travelling from our base town Al Hoceima to El Jebha and were about ten miles from the nearest land, when a tiny red light low on the sea was sighted by Erich, and we approached this unusual

phenomenon carefully. It was a tiny oarless dinghy supporting a lone emaciated fisherman. He was dangling his line over a thousand feet of water and smoking hashish and did not appear to notice the approach of the 'Boy Mark', which could so easily have crushed the cockleshell dinghy without so much as a shudder through herself. He would appear to be quite a common product of the society along this coast. Being forbidden to drink alcohol by their religious beliefs, the people take to drugs and whether the poorer fisherman and peasants take them to alleviate their misery or whether their poverty is a result of years of addiction, is a matter of conjecture. Although there is a law prohibiting the taking of these dangerous drugs, there is little chance of enforcing it when the plants from which they are obtained can be grown locally.

Once while we were anchored at El Jebha, the annual fête and market took place and the tiny village became a centre of commerce. 'Riff' Arabs descended from the foothills of the Atlas Mountains while traders came from the large cities like Casablanca. Iron-work, leather-goods and multi-coloured carpets and blankets were sold. Entertainment for the visitors was always in progress, in the form of dancing and singing, and we occasionally made visits to these establishments. For instance one night we decided to visit the famous belly-dancer about whom everyone seemed to be talking. The performance was in a quadrangle enclosed by a thick leafy wall and we were given seats just next to the six-man band, squatting along one of the shorter sides. To anyone who has heard Moroccan/Arabic music, it will be clear that this was an excruciating experience for us. To counteract the humid heat of the occasion we were inundated with supplies of the local mint tea. Apart from considerations of the flavour of this beverage, it contains six spoons of sugar per glass, which remains in a fine suspension, making it a little difficult to drink in quantity. However, the company consisted of murderous 'Riff' Arabs who were obviously enjoying the annual spectacle and we deemed it injudicious to decline the offers. Then the belly-dancer appeared. He was about twenty, and through the tens of yards of coloured cloth with which he was covered, one could just discern two glinting eyes sunk into a stubble covered face. He danced very well indeed and extracted a dirham or two from every one of us. We were also indisposed by the attacks of Arabs outside the enclosure, who persistently poked sticks at us from behind . . .

Now to say a few words about our diving and scientific work. We studied the animal population of sea-weed around a bay called Cala Pescadores (Fisherman's Bay). The resulting figures will be compared with the measurements taken of temperature, etc., and an attempt to correlate them made. This work involved us in a considerable amount of diving and it is certain that little could have been accomplished without the 'Boy Mark'. We completed an extremely comprehensive survey of this bay above and below water, and hope that it may again be of use to someone. We also transported (from England) the personnel and equipment necessary for a land-party to camp in Al Hoceima bay.

In conclusion; the journey and the scientific work were completely successful. Due to the diligence of everyone on board, we completed everything we set out to do, and we returned, (well and healthy) to England after three months away.

## CAVE EXPLORATION IN JAMAICA

By Edwin Herbert

**M**OST English cavers, fettered by problems of access and overcrowding, would find the caving potential in Jamaica enormous. Due to its massive beds of White Limestone, the island is honeycombed with cavities of all shapes and sizes. Although a number of severe systems are known, Jamaican caves tend to be easier in standard than English ones. This is partly due to the greater solubility of limestone under tropical conditions, which gives rise to large, tunnel-like passages. Another contributing factor is the warmth; even prolonged trips in wet caves have little exposure effect. Unlike other Caribbean islands, poisonous insects and reptiles are absent and furthermore the bats are not carriers of rabies or histoplasmosis. According to "Ian Fleming Introduces Jamaica" there is always the lure of hidden pirate treasure in caves—surprisingly enough, an old Spanish coin was found by a caver a few months ago. In view of these advantages, it is strange that systematic cave exploration in Jamaica has begun only recently. The pioneer of speleology in Jamaica was Allan Cunningham, who had led several expeditions to the Columbian Andes. His efforts led to the formation of the Jamaica Caving Club in 1958 and since then caving on the island has gradually progressed. In 1962 the University Caving Club was formed. The 1963 Leeds Hydrological expedition mapped 10,000 ft. of cave passage in Fluidas Vale and the 1965-66 Karst Hydrology expedition has already surveyed some 21,000 ft. of passage in north-central Jamaica. To give the reader an idea of current speleology on the island, I should like to describe briefly four caves that have been visited in the past year by the Jamaica Caving Club.

We begin with one of the longest penetrable caves in Jamaica—St. Clair Cave in the parish of St. Catherine. Descent of a sinkhole by means of some convenient tree roots leads to a lofty tunnel. After 700 ft. this opens up into a large chamber, the steep and slippery floor of which descends to a former stream bed. On the left, a small water course joins the main trend of the cave; this is the renowned south-west extension. The passage swarms with bats and their droppings rain down continuously from the roof. Below are deep pools of black slime, pulsating with the bodies of bats in every stage of decomposition. Clouds of small insects envelop all lights and an occasional rat is seen on the mud-covered side ledges. The atmosphere is hot and humid and the smell abominable. Right at the end of the alley, which is 1,600 ft. long, is the "bats' maternity home", where many bats litter the dirt floor. Not without reason has this extension been dubbed "Inferno Passage". Water is presumed to flow into the passage through a boulder choke in times of flood but so far no one has been keen on forcing the obstruction. At the junction of the main passage and the south-west extension are found deposits of the interesting material 'rock milk', the only reported location in Jamaica. The main streamway, composed of jagged rocks (echinoliths) and a dark quartzose sand, emerges after 1½ miles at Lemon Ridge in a small cockpit. Nearby is a tight cave called the Lemon Squeeze.

A more complex system, Rock Spring Caverns in St. Mary, was opened up in 1963 with the help of the Leeds expedition and has proved a popular caving attraction for the last two years. Entry was first affected by descending a large sloping

shaft which after 200 ft. ended in an overhang above a stream passage. The ladder descent proved difficult due to the loose rock and the preferred way in now is via a duck at the stream resurgence. After passing the duck a short swim leads to some fine tufaceous cascades, down which the stream falls from a confusing wet labyrinth containing frequent crossroads and junctions. Not without difficulty in finding the way, the Grand Gallery is reached. From here, a high rift passage leads to a series of imposing chambers and in places light streams in faintly from holes in the ceiling 250 ft. above. A survey of the caverns by the Leeds expedition showed that the stream rises and sumps no less than six times, not counting the terminal sump. However, all the sumps can be bypassed by loops or by passages at higher levels. There is still further exploration to be done in the system, particularly in the high levels above the Grand Gallery. The cave, like other Jamaican caves, appears to be subject to occasional heavy floods. It is one of the few examples known in Jamaica where a deep vertical shaft leads to an active horizontal system.

During the drought conditions prevailing in April of 1965 it became possible to extend the well-known Riverhead Grand Cave in St. Catherine by nearly a mile. From this cavern in the rains emerges the Black River, which is almost certainly a flood resurgence of the Rio Cobre sinking three miles to the west at Worthy Park. Previous exploration in the cave had been halted by a sump ¼ mile inside the cave but on this occasion seven of us were able to swim through a small gap that had been revealed by the drop in water level. We reached a muddy passage, in which ran a shallow stream, presumably the Rio Cobre. We waded through the water to a T-junction and took the right-hand fork towards Worthy Park. Shortly afterwards, a most unexpected hazard occurred. Almost simultaneously, all the carbide lamps went out. Three of the party pressed on with torches. After an uncomfortable length of time one of them returned, gasping from exertion and nearly fainting and it was with great relief that we saw the lights of the other two cavers soon afterwards. I have since read that an acetylene lamp goes out at a concentration of 9% carbon dioxide; danger is extreme at this point and above 10% there is rapid loss of consciousness. Although no analysis of the bad air was carried out, it is the opinion of two medical cavers in the group that the symptoms could be ascribed to oxygen lack rather than excess carbon dioxide. It is interesting to note that the Leeds expedition encountered bad air much nearer the entrance in flood conditions. Probably the rotting banana trash blocking the Worthy Park sink is responsible. Ten days later, we returned to the cave to explore the left-hand fork. As we progressed along a large muddy tunnel we noticed tide-marks on the walls, indicating a seasonal variation in water level of at least seventy feet! Huge stalactites had been hurled from the roof, possibly in the last earthquake. After a further swim into a low bedding-plane passage we climbed an underground summit and returned without completing the system. As we swam back through the small gap into the old part of the cave, we reflected on how easily a sudden rainstorm could seal off the new catacombs. To add to our dislike of Riverhead Grand Cave, we later found that two members of the party had developed mild fungal infections on the tongue and elbow.

The biggest assault of the Club last year (1965) was on the Great Cave at Jackson's Bay on the south coast. With remarkably little curiosity, the people of this peaceful fishing village have witnessed, Sunday after Sunday, the strange sight of behelmed foreigners, carrying ropes, ladders, and hydrogen balloons, disappearing into the bush and periodically reappearing. For with this cave, the main problem was finding it. One weekend camp we decided to fix the position of one of the entrances accurately and although we had been there with a local guide several



times before, it took many hours of shouting and whistling in the thick cactus scrub before we could hoist a marker above the cave entrance. Bearings showed that this hole was only 300 yds. from the coastal strip and we were then able to locate other entrances on an aerial photograph. The Great Cave was first visited by the Club in September 1964 but it was not until the following March that Paddy Hodgson and I discovered a 180 ft. crawl that led into a beautifully decorated passage and from there into an impressive array of boulder-strewn chambers up to 100 ft. high. Certainly for formations, this is the best known cave in Jamaica. Despite the surface aridity, the underground grottoes contain sparkingly active speleothems of great variety. An account of the cave, with a survey plan, has appeared in the *Speleologist* (Vol.1, No. 4, 1965) and we hope to publish further results soon. After 150 man-days of exploration and survey, 8,850 ft. of passage have been mapped and it is estimated that the cave contains another 3,000 ft. The National Trust Commission of Jamaica has expressed an interest in developing the Great Cave, but because of its inaccessibility it is unlikely that the cave will become a tourist attraction. Fortunately, the best formations can be reached only by the properly equipped speleologist and we hope that no extensive vandalism will occur in the cave. One of the fringe benefits of the area is a fine sandy beach further along the coast where tired cavers can luxuriate in the warm blue waters of the Caribbean.

The Jamaica Caving Club is also active in spheres related to speleology, such as surface exploration, cave zoology, and cave archaeology. In 1964 a party under Mike Ashcroft crossed the John Crow Mountains in Portland. From dawn to dusk they struggled for three days over rifts in the jagged and unstable rocks, smothered in a tangle of rotting vegetation. On the second day the terrain was so bad that they covered little more than a mile. Not the least of their discomforts were the omnipresent mosquitoes. Small groups have also explored the south coast of Portland Ridge, a wilderness of thorn scrub and eroded limestone pinnacles. Recent cave zoological work has included the capture in Jackson's Bay Great Cave of a blind cave fish, the first recorded from Jamaica; it is almost certainly a new species and probably a new genus. There is plenty of scope on the island for cave archaeology, as the Arawak Indians made use of caves for religious purposes. There are several known petroglyph sites, including Jackson's Bay Great Cave, where crude representations of the human face have been laboriously carved on pillars or stalagmites. One of the best cave sites I mapped last year was on Abingdon property in Hanover. An easy squeeze leads into a small chamber containing large Arawak pots full of bones and there appear to be undisturbed burials in the cave earth.

There are of course many more systems in Jamaica besides the four I have mentioned. Quashies River Sink in Trelawny, currently being explored by the Karst Hydrology expedition led by Mike Boon, has some fine wet pitches; Noisy Water in St. Ann leads to a river passage that can be explored for two miles before it sumps; Chesterfield Cave in the same parish has a lower chamber with numerous helictites; Runaway Bay Cave on the north coast is a complex labyrinthic system that has been turned into a tourist cave. There are undoubtedly many more caves as yet undiscovered, especially in the Cockpit Country, a region of almost impenetrable karst covered with dense forest. At present only the more accessible caves have been explored and for a team that wants a really hard caving expedition, Jamaica offers much promise.

## GHANA 1965

By John Cawson

IT was getting cooler now, in the last couple of hours the temperature had fallen to 120°F and it would soon be time to move. We tried to clean the billy in which we had mixed up some Ostermilk, the only food that we felt able to eat in the heat. It was difficult because of the little water that we could spare. Baby food is surprisingly greasy and the sand stuck to it. The sand which was everywhere, was blowing in through the end of the old hut. We were in the middle of the Sahara and it was July, one of the worst months for crossing the desert. In an hours time we would be trying to free the Land Rover from the sand drift outside the huts, which were all that remained of the old French petrol dump, and to set off again with the oddly assorted group of vehicles, which formed our convoy.

There was our Land Rover carrying the five of us which was grossly overladen, the little Citroen 2CV with its two Frenchmen and one woman, and the Peugeot. It was the Peugeot that had stopped the crossing from being just a tough drive and was adding the element of danger. It was an old pick-up truck that the Algerian had bought off the French Air Force when they had considered it worn out. Laden beyond belief, it was being taken by Mahommed, its Algerian owner, on its first desert crossing. It had been overweight before the eight passengers climbed aboard and now it looked as though its springs had been put on upside down. We had been only five miles out of Adrar on the Northern edge of the desert when we had had to stop for the first time to replace one of its wheels which had been running eccentrically. After that we had settled down to the routine of stopping every twenty minutes to let its engine stop boiling.

At five o'clock when the convoy pulled out from the deserted huts and silted up petrol pumps of Bidon V the sand was still blowing. Two hours later when it was dark a fully fledged sandstorm had reduced visibility to zero. The members of the expedition rolled out of the vehicle and tried to find shelter behind the wheels or wrapped themselves in sheets of polythene in an attempt to stop the sand from filling their lungs.

Several hours later the expedition was on its way again only to be halted when the Peugeot broke its propshaft. This meant that for the last hundred miles or so it had to be towed by the Land Rover.

In contrast the return crossing was simple in the extreme. The Mali Authorities who control the Southern part of the Sahara do not insist on convoys and in September the temperature is very much lower. Commercial traffic was by then running regularly backwards and forwards across the desert, bringing dates from Algeria to Mali and returning with cargoes of sheep and firewood—two commodities which sell well in Algeria. This meant that all we had to do was to wait for a lorry to leave and then to go with it. This we did and finally set off with a lorry carrying one hundred and fifty live sheep on two decks. Once we had travelled about two hundred miles with it and knew that it was definitely on its way we pushed on ahead and made the crossing easily and quickly.



The trouble on the return journey was not that there was too little water but rather that there was too much. In September the northern parts of Nigeria and the territories which border the desert have their rains. As a result we suffered from broken bridges and flooded roads. It took us a full week to cover the stretch from Niamey, the capital of the ex-French colony of Niger which looks like a little piece of France set down in Africa, to Gao in Mali. A stretch which had taken two days on the way South. At one stage we had to disconnect the exhaust at the manifold after we had got stuck in two or three feet of water. Further along the road we came on the forlorn sight of several large lorries which were stuck in the mud and several more which were queuing up to get stuck. Confidant of the powers of our Land Rover we set out in low-transfer gears to drive cockily round them and demonstrate our superiority. Unfortunately we had passed just about half of them when the Rover came to an ignominious standstill where it remained for the next twenty four hours whilst we replaced its half-shaft.

Whilst we were in Ghana we attempted to study the effects which the Volta Dam has been having on the people who had to move as a result of the flooding. We went into the towns to see what the material conditions were like after one years occupation and to try to find out how the people felt about the move.

The Volta Dam itself appears small and almost insignificant but the lake behind covers three per cent of the total area of Ghana and has displaced eighty thousand people. Most of these were illiterate farmers and it was important that they should agree to, and understand the move before the dam was completed if they were to settle down again in their new homes.

In the late fifties the Ghana Government had tried one piece of resettlement which had had disastrous results. A new township had been built at Tema for the people displaced by the construction of a port. The government had built houses for the inhabitants of the fishing villages who had occupied the site and had then attempted to move the people in. As no educational programme had been attempted the people refused to move and force was used to make them; for two years resentment and resistance continued. Eventually a mass team of education officers had to be sent in, but it was a long time before they settled into their new homes. This proved to be a very valuable rehearsal for the much larger Volta project. The lessons were well learnt and a mass education assistant was appointed to each village before any other work was commenced. These assistants were mainly young men with the Middle School Leaving Certificate and they went to live with the villagers quite a long time before evacuation was due to commence. It is no use providing people with new, well-built houses, and modern farms if you cannot secure their active co-operation.

The aim was to group villages and small towns together in larger settlements. These settlements were chosen mainly by the settlers themselves. Each village was asked to select suitable sites and to suggest which villages they would like to be grouped with. These suggested sites were then inspected by the surveyors of the Volta River Authority who tried to assess their suitability for modern townships and farm sites. Many had to be rejected on the grounds of poor communications, or poor agricultural prospects. In these cases The Authority suggested alternatives which were put to the villagers. In this way most of the sites were chosen. A few, six out of the total number of fifty-two had to be virtually forced onto the people. It is from these that most of the people who opted out of the scheme and claimed cash compensation came.

Each householder from the old villages gets one room with an enormous verandah, roofed with aluminium and with a concrete floor. This verandah can then be walled off by the occupants to form two more rooms. Eventually more extensions would turn the house into a compound. It was decided that each householder would get one core house irrespective of the size of his original house. For the Kwahus this meant hardship, their houses had often been home to a large extended family, fifteen or so strong; they only had one room to house the family when they moved. On the other hand the Ewes were much better off. Their temporary houses were far inferior to the new ones, the landcrete walls and aluminium roofs of the new houses give far better shelter than their old houses made of matting.

How have these people got on after the move? This was the question that we tried to get an answer to. By the use of questionnaires and visual inspection we attempted to evaluate the conditions of the settlers in the two towns and compare them with those of some others who had set up their own villages after electing to take cash compensation.

Although a lot of the future residents had not yet moved into the two towns of Mpaem and Amate most of those who were living there at the time of the survey had been there for almost one year. In this time the two towns had developed along different lines. Mpaem was suffering from several serious problems but Amate was becoming a viable community. In neither case had the farmland been cleared when the people moved in.

The people of Mpaem were mainly Kwahus with a small number of Ewes. Both sets of people had lost their livelihood. It was no longer possible for the Ewes to fish as they had been doing and a series of delays in starting the farming programme had meant that all of the people were without serious occupations. The town manager (a kind of mayor appointed by the Volta River Authority) had shared what little land was available amongst the people so that could carry out a limited programme of traditional farming until the machinery became available. As it was thought that the tractors would arrive shortly they were only allowed to plant corn and tobacco, both short term crops. Unfortunately the tractors had not come and two crops of corn had already been harvested. As all the farmers were producing corn this meant that in the markets the price of corn had dropped, whereas that of other foodstuffs had risen to astronomical levels. Free food was still being distributed from donations by the World Health Organisation although this was meant to cease after the towns had been occupied for six months.

This lack of employment for the men in the town was causing serious social problems. With time on their hands quarrels were growing up amongst the settlers from different villages. The settlers had come from two large towns and several small villages. The two chiefs would not agree on precedence. One of them was an old man and the other much younger. According to the traditional pattern of Kwahu chieftancy the younger man would have taken the senior post because of the siting of his old town but the older man was not prepared to take orders from the younger one. It was, therefore impossible for the town manager to start any real programmes of community development. The two chiefs would not even sit together in the same room when visitors came to the town. The frequent quarrels were leading to a great many fights. This made Mpaem an unhappy town; none of the people had had sufficient confidence in the future to open any shops in it, despite the great tradition of trading that the Kwahu people have.



Amate, however, was a very different place; the settlers from many different villages were moulding together under the direction of the Chief of Oworubong, one of the original towns. Bars and shops had sprung up all along the main street and Saturday night had been accepted as dance night with three local bands. The market at Amate was becoming a large and important one in the district with lorries bringing people and their goods from forty or more miles away.

The town manager at Amate appeared to be managing the farming programme much better than his counterpart at Mpaem. Although working to the same instructions, he had permitted a wider range of short term crops to be grown. The people at Amate would have liked to have more land for traditional farming at this stage but were not in a desperate position and could afford to wait a short time for the tractors to arrive. They were also fortunate in having several existing farms nearby which had not been flooded by the lake.

It was obvious in each of the two towns that if a co-ordinated programme of mechanised farming is to be introduced it will have to be done soon, before the settlers become too firmly committed to new traditional farms.

After farming, housing was the most serious problem that the new residents were facing. Each of the Kwahu families consisted of ten to twenty people and they were only provided with one room to each family. A lot of them had had to send relatives to stay with others in towns not affected by the flooding. Others did as best they could crowding into the one room and sleeping on the verandah, which is not ideal in a climate subject to heavy driving rains. In order to achieve a uniformly high standard of housing eventually permanent extensions were only being permitted in the original landcrete, a form of concrete made with local materials and cement. As the cement was not yet available in sufficient quantities for all the settlers, many temporary extensions made from corrugated iron salvaged from their old homes had sprung up. Here again the people of Amate were the more fortunate ones. Their houses had been within walking distance of the new site and so they were able to bring such items with them to the site. This had not been possible at Mpaem.

One of the other settlements that we visited was the village of Kam. This is one of the places where those people who took cash compensation have gone. It had already contained several houses in an existing village before the fifty or so immigrants came and built a new village alongside. The people who moved to Kam were from Pitiko, one of the few places that had not been able to suggest a suitable site to the Volta River Authority for a proper resettlement town. They had refused to follow the rest of the inhabitants of Pitiko to their official site, a long way away on the other side of the lake. They were mainly older, pagan people who wished to stay with the fetish shrines which had tabos on long movements. Kam was an obvious choice for them as it lies under the scarp of the Kwahu Plateau. A large rock looks down on the new village. This rock, called Buruku, is considered to be the most powerful fetish of the Kwahu people and so it was a natural place for the war-shrines displaced from Pitiko to go.

In the short time that these people had been there, (only a few months), they had built themselves large compound houses on the traditional pattern. Most of these were made of wattle and daub with either aluminium or iron roofs. The newcomers had set to and cleared land for their farms. Even after this short time most of them had got quite large plots under cultivation and by next year their farming patterns should be back to normal.

Thus it appears in the short term that those who elected to take cash compensation are better off. They have houses large enough to take their whole family and plenty of work to keep them occupied. Their foodcrops were being sold and so there were few cases of serious shortages of money. They were helped in this by the creation of the official new towns because the new towns were ready to take as much food as they could produce.

In the long term, however, they will probably suffer. If the new mechanised farms get going as well as they should then they will find their markets dwindling and, being a smaller unit, they will find it hard to achieve an efficient form of marketing. At the moment they are much better housed with little overcrowding but when the houses in the resettlement towns have been fully extended their wattle and daub houses will appear grossly inferior.

J. CAWSON

Leader, IC & UC Expedition to Ghana 1965.

## R.G.S. Exploration 1966

The following are among the 37 expeditions approved by the Royal Geographical Society, out of the 75 that applied.

### *Africa.*

Air Mountains, Sahara—University College—Botany and Zoology.  
Lake Ruspoli, Ethiopia—Sandhurst—Biology and Archeology.  
Ife, Nigeria—Imperial College—Zoology.  
Kidepo Valley, Uganda—Oxford University—Biology and Conservation.  
Kambui Hills, Sierra Leone—Durham University—Land use, Botany.

### *The Americas.*

Barbados—Hull University—Biogeography and Ecology.  
Cordillera Real, Bolivia—U.C. Bangor—Mountain exploration and Mapping.  
Cihuaton, El Salvador—Oxford University Women—Archeology.  
Maya Mountains, British Honduras—Edinburgh University—Land capability studies.  
Matto Grosso, Central Brazil—Biology.

### *Asia.*

Seistan, S. Afghanistan—Cambridge University—Archeological exploration.  
Hindu Kush, Afghanistan—Manchester University—Mountain exploration.  
Central Turkey, International Map of Roman Empire.  
Lazistan, Turkey—Yorkshire Schools—Mapping and Geology.

### *Australasia.*

West Central Australia—Joint Services—Geography and Geology.

### *Europe.*

Greece—Epirus Research Group—History of landscape.  
Benbecula—Outer Hebrides—Meteorology and Ecology.

### *Greenland.*

Mt. Forel, East Greenland—Imperial College—Glaciology and Mountaineering.  
West Schweizerland, East Greenland—Royal Navy—Mountain Exploration.

### *Iceland.*

Drangajokull ice cap—Westminster School—Biology and Glaciology.  
N.W. Iceland—Cranleigh School—Botanical training.  
S. Thorvaldsdalur—John Colet School—Mapping training.  
Tungnahryggjokull—Mapping.

### *Scandinavia.*

Kemijoki, N. Finland—Tauntons School—Valley settlement study.  
Lapland—Withywood School—Glacier exploration.  
Lyngen Peninsular, Norway—British Girls Expl. Soc.—Hydrology and Glaciology.  
Svartisen, Norway—Reading University—Glaciology and Meteorology.  
Norrbotten, N. Sweden—King Edward's School, Bath—Biology and Geography.

### *Mediterranean.*

Ibiza, Balearic Islands—Newcastle University—Marine Biology.  
N.W. Libya—Land use studies.  
Sabratha, Libya—Cambridge University—Study of submerged Roman harbour.  
Malta—Imperial College—Underwater cave exploration.  
Malta—Oxford University—Marine Biology and Geology.  
Marseilles—London University Sub-Aqua Club—New underwater techniques.  
Safi, Morocco—University College—Irrigation and canal reclamation.  
Chios, Aegean Sea—Marine Biology and Geology.

# BOOK REVIEWS

## EXPLORATION MEDICINE

*Edited by O. G. Edholm*

**J. WRIGHT & SONS PRICE 47/6**

This book is the result of a symposium on Exploration Medicine organised by the Royal Geographical Society in 1962. Papers were read by a wide variety of contributors, each an expert in his own field. These papers are now presented as separate chapters of the book. A few of the contributions are worthy of special note; M. M. Lewis' chapter on "Provision and Prevention" and P. Whittingham on "Problems of Survival" being particularly valuable.

The title is somewhat misleading—that of the R.G.S. earlier book "Advice to Travellers" would probably have been more descriptive, since the subjects covered are by no means exclusively medical, ranging as they do from the effects of nitrogen on divers to the distinction between various sorts of bedbugs.

The book is intended primarily for the young non-medical explorer, especially as the great majority of expeditions from this country do not include a medical officer. I strongly recommend anyone who is contemplating going anywhere to at least read the book; better still take a copy with him.

*PETER FRANCIS*

## PHOTOGRAPHY ON EXPEDITIONS

*By D. H. O. John*

**FOCAL PRESS PRICE 63/-**

Photography plays a large part in any expedition and most expeditions use it as one means of making and keeping records. As expeditions often operate in extreme conditions, such as the ice of Greenland or the heat of the Sahara, which are outside the photographers' normal experience it becomes vitally important to find out about any special techniques that may be necessary.

Mr. John's book "*Photography on Expeditions*" goes a long way towards filling these needs. The book deals with the difficulties which various climates present and methods of overcoming them. The book is divided into four sections: cold conditions, mountain and arctic; tropical and desert; underground; and underwater. In it he gives extensive information and advice on the most suitable equipment, storage and maintenance. For those people who like to process their films on the spot he discusses the special problems presented and techniques required; though it is unlikely that many will want to work at the lowest temperatures which he gives—at  $-10^{\circ}\text{F}$ —development time works out to about 280 min. and prints could be dried by allowing the water to freeze and then brushing it off.

The author has used the papers of a symposium of "Photography on Expeditions" held by the Royal Photographic Society and the Royal Geographical Society as a basis for the book which leads to a well documented work.

Unlike most authors of books on photography Mr. John does not attempt to try and teach what pictures to take. He concentrates on the technical problems, assuming that the explorer knows what pictures he wants.

*JOHN CAWSON*



# JOURNEY THROUGH A FORGOTTEN EMPIRE

By Mark Howell

GEOFFREY BLES Price 25/-

For those of us tied to mundane jobs, "Journey Through a Forgotten Empire" by Mark Howell, provides a welcome escape, and students of South America, too, will find much to interest them in this account of extensive exploration in Peru and Bolivia.

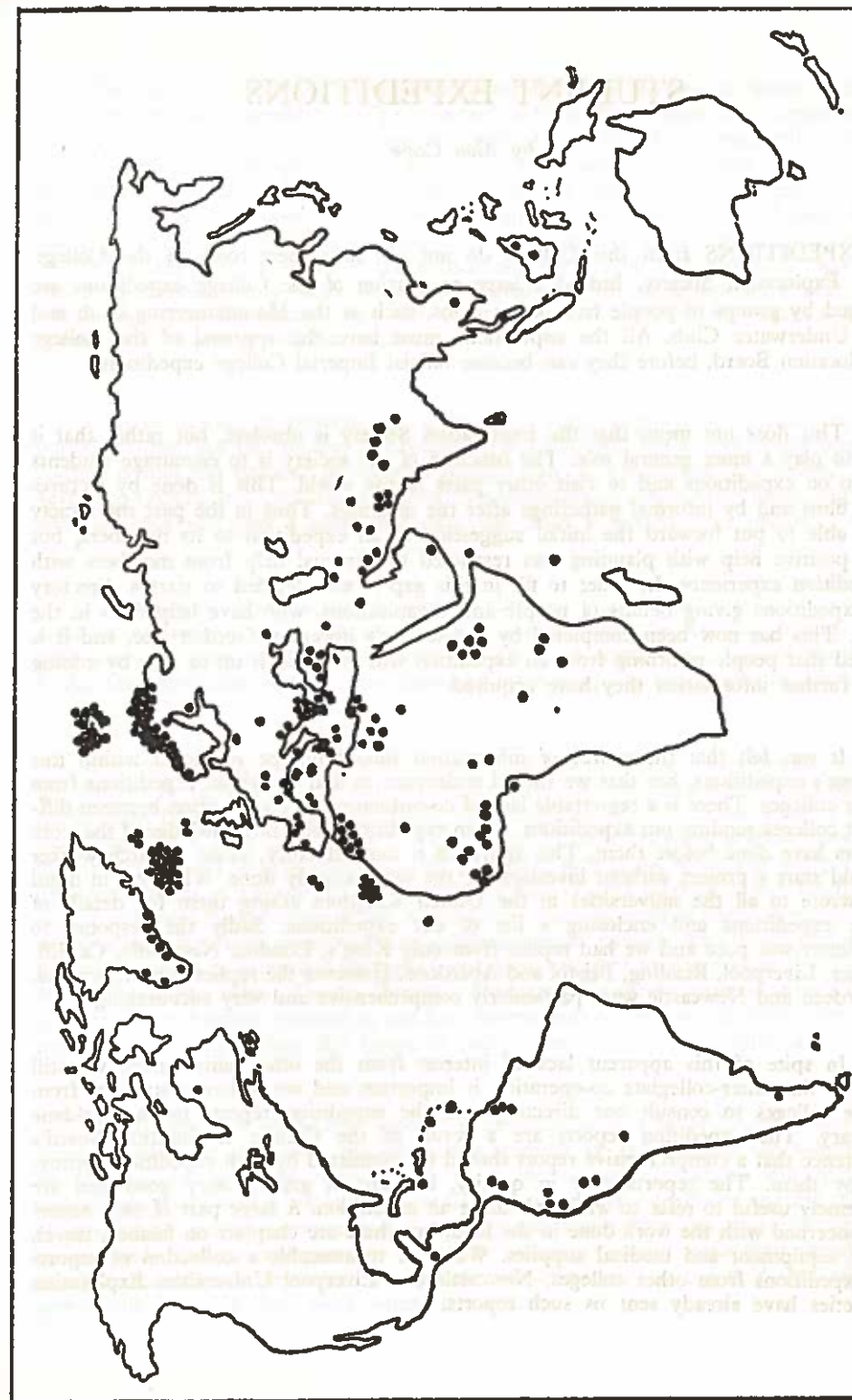
The author, with Tony Morrison and Allan Reditt, was engaged to make a series of films on South America for the B.B.C., and in a lively (and for the most part) well-written book, Mr. Howell recounts their adventures, from the chaotic preparations for the trip, to the discovery of an ancient cathedral containing priceless treasures in San Antonio, a small town in Bolivia whose only inhabitants were an old man and his wife. Viewers of B.B.C. Television may remember seeing the film of this part of the expedition.

The book is packed with events and encounters which are often amusing, and always interesting. A wedding party in Peruvian Chinchero ended with two members of the party being forced to join in a 'handkerchief' dance. After refusing 'persuasion' by "an elderly, gnarled-featured woman in enormous orange skirts and a flat, intricately decorated hat", the author managed to escape, to watch the self-conscious gyrations of his friends. A meeting in the Peruvian desert with a German scientist, Doctor Maria Reiche, led to the photographing of the amazing 'Nazca lines', a system of lines, many in the shape of animals and birds, traced out on a barren hillside centuries ago. Doctor Reiche's explanation was that the lines are the result of some kind of astronomical survey by the ancient people of the area. All the events and meetings in the book reveal the author's interest in, and respect for, the so-called primitive peoples of 'under-developed' countries.

Although most of "Journey Through a Forgotten Empire" is written in a light-hearted vein, the dangers the expedition faced were only too real. In an unsuccessful attempt to reach a remote Bolivian village which was reputed to be the home of the Kallawayas, Indian medicine men, the party found themselves in danger of exposure when cold, torrential rain made the almost imaginary road impassable and they had to turn back. Their three-ton Commer truck had to be dug out of deep mud every few yards, so that a hill one hundred yards long took four and a half hours to climb. Later, they crossed a vast area of floating salt called the Salar of Uyuni, a few feet beneath which were water-filled caverns, which had been the graves of several trucks.

Mr. Howell's entertaining style, together with Tony Morrison's superb photographs, most of which are unique, and the variety of incident and character encountered, makes this book one more easily picked up than put down.

BARRY EDWARDS



Student expeditions over the last ten years.

## STUDENT EXPEDITIONS

by Alan Cope

**E**XPEDITIONS from this College do not all have their roots in the College Exploration Society. Indeed a large proportion of the College expeditions are formed by groups of people from other clubs, such as the Mountaineering Club and the Underwater Club. All the expeditions must have the approval of the College Exploration Board, before they can become official Imperial College expeditions.

This does not mean that the Exploration Society is obsolete, but rather that it has to play a more general role. The function of the society is to encourage students to go on expeditions and to visit other parts of the world. This is done by lectures and films and by informal gatherings after the meetings. Thus in the past the society was able to put forward the initial suggestion of an expedition to its members, but any positive help with planning was restricted to personal help from members with expedition experience. In order to fill in this gap it was decided to start a directory of expeditions giving details of people and organisations, who have helped us in the past. This has now been completed by the society's librarian, Gordon Lee, and it is hoped that people returning from an expedition will maintain it up to date by adding any further information they have acquired.

It was felt that the source of information should not be restricted within this college's expeditions, but that we should endeavour to find out about expeditions from other colleges. There is a regrettable lack of co-ordination or co-operation between different colleges sending out expeditions. Often expeditions have no knowledge of the work others have done before them. This approach is unsatisfactory, as no research worker should start a project without investigating the work already done. With this in mind we wrote to all the universities in the United Kingdom asking them for details of their expeditions and enclosing a list of our expeditions. Sadly the response to our letter was poor and we had replies from only King's, London, Newcastle, Cardiff, Exeter, Liverpool, Reading, Bristol and Aberdeen. However the replies from Liverpool, Aberdeen and Newcastle were particularly comprehensive and very encouraging.

In spite of this apparent lack of interest from the other universities, we still believe that inter-collegiate co-operation is important and we welcome students from other colleges to consult our directory and the expedition reports in the Haldane Library. The expedition reports are a result of the College Exploration Board's insistence that a comprehensive report should be submitted by each expedition approved by them. The reports vary in quality, but are in general very good and are extremely useful to refer to whilst planning an expedition. A large part of each report is concerned with the work done in the field, but there are chapters on finance, travel, food, equipment and medical supplies. We hope to assemble a collection of reports of expeditions from other colleges. Newcastle and Liverpool Universities Exploration Societies have already sent us such reports.

The replies from these universities prompted us to investigate where students have been on their expeditions. The information from these replies was supplemented by the lists of approved expeditions included in the Royal Geographical Society's Annual Reports. Although the information at hand was by no means complete, we were able to get a fair idea of the number of student expeditions. The period studied was the ten years 1955-64 and the final result is shown on the World map. Each dot represents one expedition, but the dot is only placed within the country visited and not at the exact location of the expedition. Areas such as Iceland, Norway and the Mediterranean have been frequently visited due to the comparative ease with which they may be reached. On the other hand Central America, Eastern South America, India and South East Asia are rarely visited.

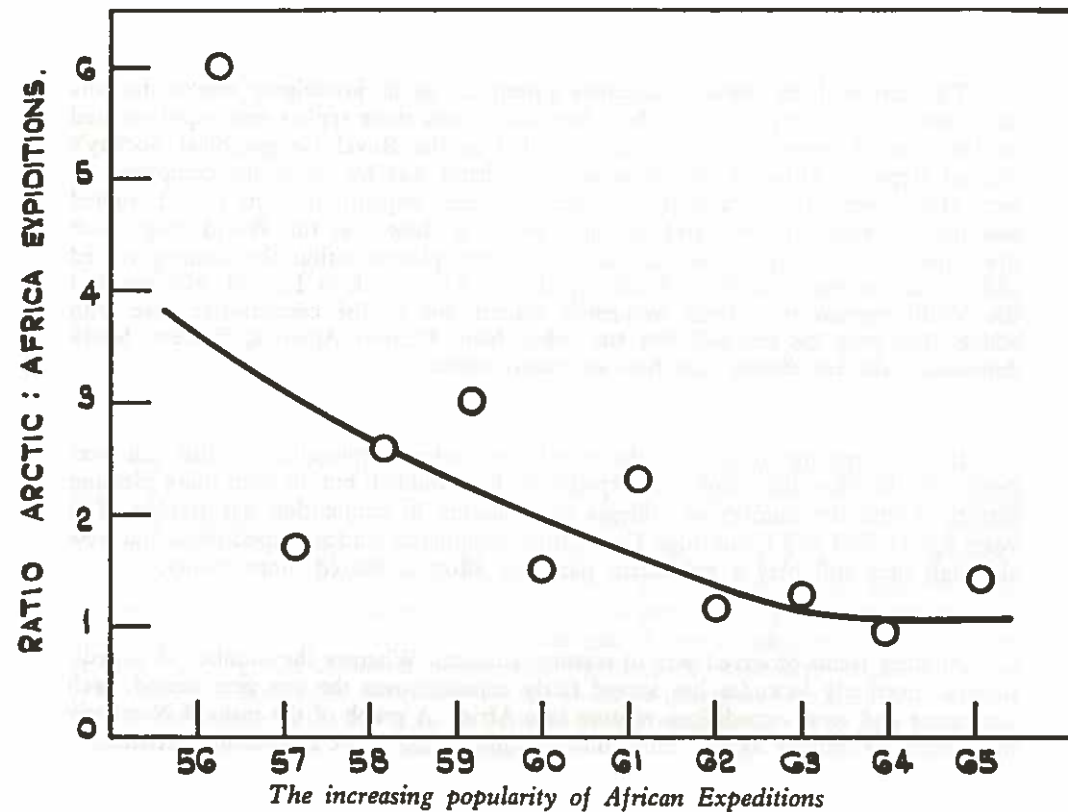
It is interesting to observe the trends in student exploration in this ten year period. In this time the number of expeditions has doubled, but an even more pleasing feature is that the number of colleges participating in exploration has trebled. Ten years ago Oxford and Cambridge Universities dominated student expeditions, but now although they still play a prominent part, the effort is shared more evenly.

Another trend observed was to warmer climates. Whereas the number of expeditions to northerly latitudes has stayed fairly constant over the ten year period, each year more and more expeditions venture into Africa. A graph of the ratio of Northerly to African expeditions against time shows an interesting curve in favour of Africa.

A record number of ninety expeditions applied to the Royal Geographical Society for support in 1965 and forty four were successful. Out of these approximately two-thirds came from the universities, whilst seven originated from schools. Four of these expeditions came from this college and an account of their activities is given elsewhere in this magazine. The following examples give some idea of the work that was planned by other colleges. A Cambridge expedition to Dutch Guiana planned to live among the almost unknown Paramaccans, Bush Negro descendants of escaped slaves living in such isolation that they have preserved their original African culture. An Oxford expedition received support to carry out geological and archaeological exploration in the Tibesti Mountains in the Sahara Desert. Finally a Newcastle University expedition to Chitral in North West Pakistan planned to conduct experiments to increase the meltwater from tropical glaciers by adding thin layers of dust to absorb more solar radiation.

In conclusion, it seems that student exploration is in a fairly healthy condition. Some people fear that with the increasing number of expeditions, the sources of finance will dry up. This need not be so as increase in expeditions will result in greater selectivity with a consequent rise in the standard of expeditions. As the quality of expeditions is seen to improve, it is a reasonable assumption that more money will be provided. Student explorers owe it to those whose generosity made their expedition possible, not only to carry out their project conscientiously in the field, but also to give a full report of their work when they return.





## GEOGRAPHICAL HANDBOOK SERIES

These Handbooks were compiled for the Geographical Section of the Naval Intelligence Division of the Admiralty between 1942-46, and are of the greatest value to geographers, anthropologists, economists and all interested in overseas territories. Each (ca 500pp.) is complete in itself with index, bibliography and many maps and diagrams.

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