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# **Exploration Review**

**JOURNAL OF THE IMPERIAL COLLEGE**

**EXPLORATION SOCIETY**

**FEBRUARY 1960**

*W. Loventbury.*

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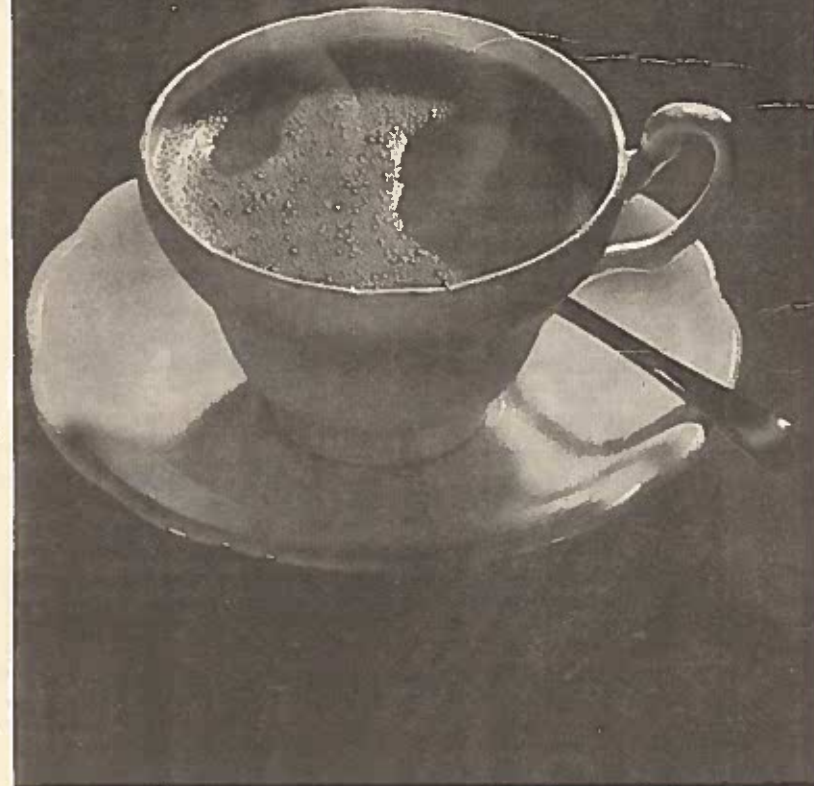
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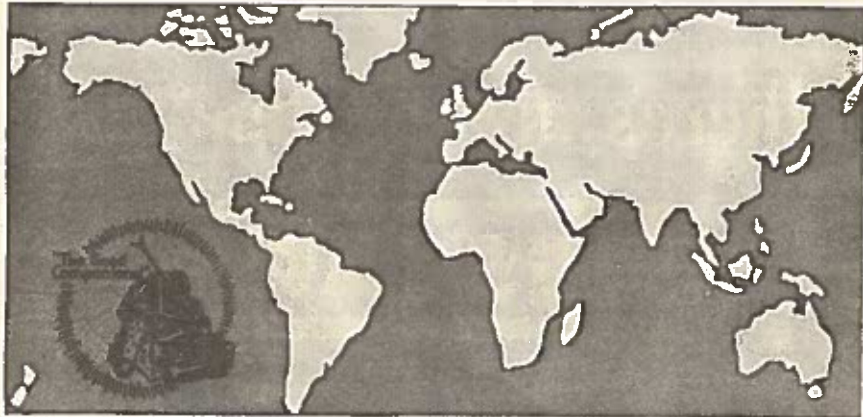
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## IMPERIAL COLLEGE EXPEDITIONS

*Since 1956, the following expeditions have departed from this College.*

- 1956 Icelandic (Eastern) Expedition.  
Carmargue (Rhone Delta) Expedition.  
Norway Expedition.  
Swiss, Himalayan (Kamkoram) Training Expedition.
- 1957 Karakorum Expedition (Led by Eric Shipton).  
Ghana Expedition.  
Arctic Norway Expedition.
- 1958 Ghana Expedition.  
Norway (Voss) Expedition.  
Icelandic Expedition.
- 1959 Apolobamba (Bolivian) Andian Expedition.  
Azores (Underwater) Expedition.  
Greece (Biological) Expedition.  
British Guiana Expedition.  
Iceland Geological Expedition.  
Jan Mayen Island (Greenland Sea) Expedition.

## EDITORIAL

Over the past decade, the scope of exploration has increased enormously with the advent of University and College expeditions. No mean part in this expansion has been played by members of this College; in fact since 1956, no less than sixteen expeditions have departed from the precincts of South Kensington to localities as widely distributed as the Arctic island of Jan Mayen and the vast uplift of the Peruvian Andes; to elevations and environs as sundered as the gleaming whiteness of the Himalayan peak and the soft, colourful half-light fifty feet below the surface of the Atlantic Ocean. Obviously, ventures to localities such as these cannot be accomplished without considerable, if not formidable, expense - even the smaller expeditions incur expenses which may well necessitate a capital of a thousand pounds or so.

That the requisite funds are raised is due to the generosity of notable scientific societies, certain industrial firms, to a lesser extent personal contributions and last, but by no means least, the Imperial College Exploration Board. The latter is now widely accepted at this College as the decisive factor in the accumulation of funds, in fact - in the existence of the expedition at all. Therefore it is important that the material benefits accorded to the College for such expensive ventures should be considered, especially as some misinformed people still choose to regard them as an excuse for "six weeks holidaymaking".

We are all members of what may be rather loosely termed a science college and consequently, the first and foremost requirement of an expedition is that useful scientific data should be accumulated. Though I refer solely to the so-called scientific expeditions, they are by no means the only form of venture undertaken by students currently - Oxford and Cambridge providing notable examples. Unfortunately and yet understandably, financial support for purely "adventure" exploration is extremely difficult to obtain, consequently a high personal contribution is necessary, out of the range of the majority of student's pockets. To revert to the question of scientific expeditions; the College, through the medium of the Exploration Board, are not going to grant assistance to every expedition that applies for it and in this context, the Board on reviewing an application for support will be looking for two principal facts. First, that the proposed expedition has submitted a definite programme for the scientific work and second, that the party has included amongst their number a member of post-graduate or higher standing in the subject concerned, within whose capabilities it is to competently analyse the results. In this way, the College is assured of obtaining some useful scientific data from the expedition.

An expedition, more particularly the highly successful one, is an asset to the College in a rather different manner. A consideration of last year's expedition to the Apolabamba will provide us with an excellent illustration. Whilst the party was in the field, numerous reports of their progress and achievements were to be found in the national press, sometime later two of the members appeared on television and, of late, a lecture on the expedition was given by its deputy leader to the Fellows of the Royal Geographical Society; in its self no small honour. Surely, publicity of this kind can do nothing but raise the non-scientific standing of the College in the public eye.

Finally, is it not logical to conclude that if students can learn something from expeditions that is likely to be of assistance to them in their chosen vocations after College, then the College has achieved an objective in that it has provided education not normally available in the everyday routine of lectures? In fact, from the academic point of view, it might be possible to consider expeditions as a form of ambitious field course.

As this is the first edition of the Review, and as always, first editions will be first editions, I should like to thank whole heartedly the many people who have helped to make the publication possible: our advertisers, typists and many others who, though unconnected with the Society as such, have all accorded invaluable assistance.

## IMPERIAL COLLEGE EXPLORATION SOCIETY

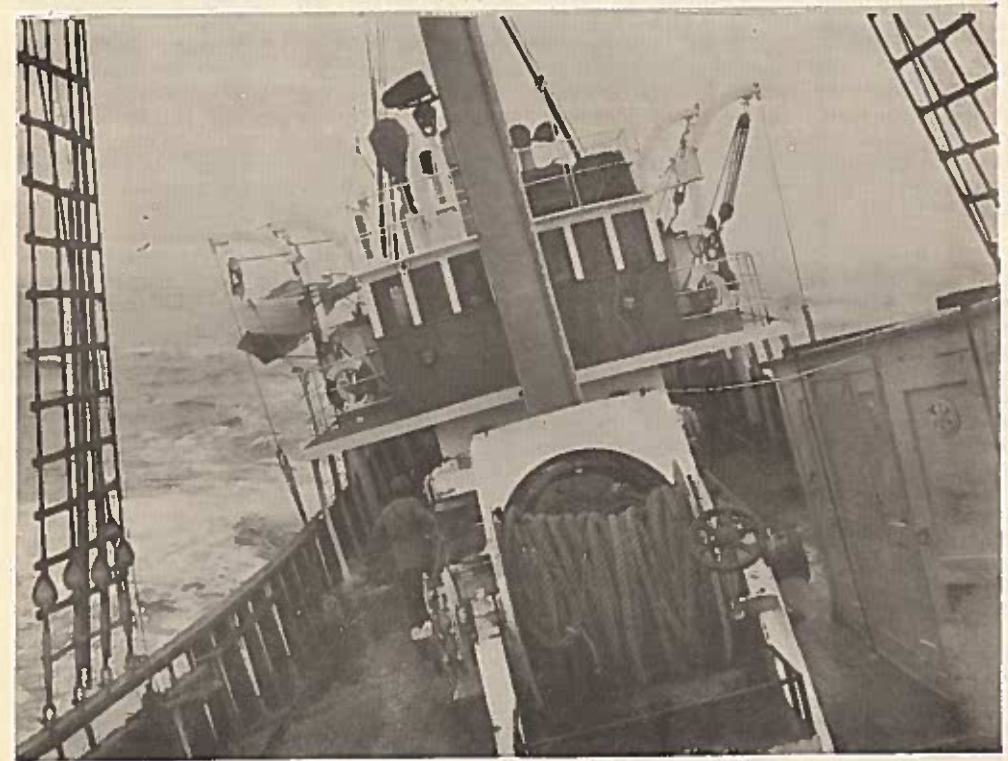
In 1955 the Exploration Board was formed at the Imperial College. This was a College body the main duty of which was to examine proposals for expeditions and distribute money to those expeditions which it thought fit to take the field. Exploration at Imperial College could not develop with this organisation alone: the true need was for an organisation which would interest the students themselves in exploration and would thus result in the formulation of more worthwhile expeditions. It was with this main objective that the Exploration Society was formed in 1957. This Society was a purely student body and had no definite attachments to the Exploration Board although both, of course, had the same ultimate objective-- that of furthering exploration in all ways within their powers. Equivalent student bodies had long existed at other British Universities, the most well known being those at Oxford and Cambridge. With the formation of these two bodies at Imperial College, exploration for the first time had a real chance to gain a foothold. In the few years of their existence this foothold has been strengthened tremendously and exploration is now an important College activity. The Rector, and through him the College, have been far reaching in their ideals in this sphere. This was recognised recently at a meeting of the Royal Geographical Society when the President commented of the excellent example set by Imperial College in the sphere of exploration.

The Exploration Society is open to all students at Imperial College: anyone interested in exploration and adventure is welcomed. An oft heard cry by many people is "why does the Exploration Society not do something towards training people to become competent expedition-men?" When the Society was first formed many people queried the need for such a society. It was argued that exploration was no more than a combination of climbing, ski-ing, sailing, general walking and camping etc., and that individual societies already existed to cater for all these requirements. Exploration is indeed a combination of some or all of these and it is within these separate specialists societies that people can obtain the practical training they require. The Exploration Society exists to help people who are ready to help themselves. There is neither the time nor the facility, whilst at College, to train a man or woman in the arts required if he or she is to become competent in the many facets of expedition life. Accepting that all its members are potential expedition members, that they are all, at least partially, competent to take the field as members of an expedition, the Society tries to give some of the further assistance required by an expedition. This assistance is normally in the form of advice and is commonly associated with organisational and financial problems and difficulties: here, the more experienced members aid the lesser experienced, those with useful contacts aid those without, those with detailed specific knowledge on any aspect give such advice as they can should it be required. Although the Society organises lectures and films for its various meetings throughout the year the main aim of these evenings is to bring together all those interested in exploration as only in this way, through frequent personal contact, can true progress be made. In reality, the lecture or film is only an excuse for everyone to get together although, of course, much can be gained from the lectures and films. The most valuable evenings held during the year are those when we have a Symposium: this truly is a 'get-together' and such evenings prove instructive and of great value to all who attend. On such evenings all respects of our field are covered and many new ideas always emerge.

The Society combines its meetings with those of other societies whenever this is possible, notably in the past with the Mountaineering, Natural History and Chemical Engineering Societies. In this manner the various societies become to some degree interdependent which is a good thing as no society should become too far removed or independent for it then begins to lose its true value. The College societies exist to bring about a closer contact amongst the students, not to separate them into little cliques which rapidly become entities in themselves. Even within one Society these cliques can develop: we have noticed it ourselves within our own Society and their formation cannot but do harm to the aims and ideals of the Society.

The Exploration Board has slowly accumulated a store of equipment for the use of College expeditions. It is proposed that the Exploration Society should maintain this equipment and thus relieve the Board of this unnecessary duty. Another proposal about to come into being is that the Society shall collect together all the various letters, maps, photographs and anything else which may be of value of the various expeditions which have gone out from the College: these shall be filed and then be available for reference by future expeditions. In this way the organisation of future expeditions will be made somewhat easier and the problems encountered may be somewhat fewer for these files will contain many of the answers! This year, for the first time, a committee is to be formed to which all requests for food will come from this year's several expeditions. Here, advice will be given on food and a check maintained on what might be considered ludicrous requests. Finally one large composite food order will be prepared: this will greatly ease the burden placed on both the Firms and the College departments which are involved. Last year, the ordering of food was somewhat chaotic and the necessary extra administrative work phenomenal. In these and various other ways the Society can best be employed and can best serve the ideals towards which it strives.

If the Exploration Society, in conjunction with the Exploration Board or any other organisation which actively supports exploration can aid anyone towards realising a long cherished hope or make possible an expedition which had seemingly been impossible, in fact if it can help in any way then its purpose will be served and it will have a reason for continuing its life.



OUTWARD BOUND

## JAN MAYEN ISLAND

by Peter Smith.

Jan Mayen Island lies in the Greenland Sea at  $71^{\circ}\text{N}$ ,  $8^{\circ}\text{W}$ . It is a small volcanic island 35 miles long with a general N.E.-S.W. orientation. Topographically it can be divided into three parts: the great extinct central volcano of the Beerenburg in the north rising to about 7,500' above sea level; a range of low mountains rising to about 2,600', with a general N.E.-S.W. trend in the south; these two are joined by a narrow isthmus of land known as central Jan Mayen.

Jan Mayen Island is notorious for its bad weather. For much of the year low mist covers it; this is only broken by frequent storms and high katabatic winds. Much of the capricious weather can be accounted for by the Island's proximity to the Polar Front, and by the cold air which often comes rolling, at tremendous speed, down from the Beerenburg ice-field under the influence of gravity. The greatest wind speed recorded on the Island since 1920 is more than 180 m.p.h !

Jan Mayen Island has had an interesting history. It was first discovered by the British Navigator Hudson in 1607, but not until the coming of Jan Mayen, a Dutch Navigator, in 1614 was any interest shown in the Island. In 1634 a wintering party of 7 Dutchmen all perished because of scurvy. By 1640 rival English and Dutch Whaling Stations were established in the southern part. The decline of whaling in the Arctic in the nineteenth century saw the Island abandoned, except for the occasional trapper. Renewed interest was shown by the Island being used by the Austrian Polar Year Expedition in 1882. This expedition made the first map of the Island. Nansen, with the Norwegian North Atlantic Expedition, sailed by the Island but did not land on "those inhospitable shores". In 1919 Norway established a meteorological station there, and by 1928 had annexed Jan Mayen as Norwegian territory. The Austrians again visited the Island in 1932 and improved upon their old map. Imperial College sent an expedition there in 1938. Studies were made of Flora and Fauna, geology and glaciology, and a further improvement in the map was made. The second world war saw the Island occupied by a British and Norwegian Force, and directly after the war an Oxford University Exploration Society Expedition visited the Island in 1947. Other visitors to Jan Mayen included William Scorsby, Jr., Lord Dufferin ("Letters from High Latitudes"), and Sir James Wordie.

The idea to visit Jan Mayen in 1959 was first conceived at I.C. in the Autumn of 1958. Enquiries about geological work done in Jan Mayen since the war resulted in Dr Dollar of Birkbeck College being contacted. Dr Dollar expressed an immediate interest in the plans and eventually asked to accompany the party in order to complete a programme of geological research on the Island. The basis of the expedition was then changed; it became a University of London one; Dr Dollar, because of his seniority and previous experience was asked to lead it; three more people from Birkbeck College made up the party to eight. Imperial College were to concentrate on the glaciological work of the expedition and Birkbeck College on the geology.

To get an expedition into the field is always a rush; there was no exception. Lights burned until late at night in member's rooms. Letter after letter was dealt with; equipment ordered, collected packed and labelled with frantic haste. Somehow most things got there but it was not entirely without tearing of hair and biting of fingernails.

The party first had to go to Norway by normal tourist transport and then on from there to Jan Mayen. The ship from Norway was the small 300 Ton wooden sealer 'Polarsel' bound for the fjords of Eastern Greenland, via Jan Mayen. The intention was to pick up a trapping expedition which had wintered there. She is the one ship which sails on this route each year, and is built primarily for use in the sea ice. She has blunt bows, a broad beam, and as a result rolls alarmingly in the open sea. Our pas-



LOOKING DOWN ONE OF THE CREYASSES  
NEAR THE EDGE OF THE SOUTH GLACIER

(Looking South)



ICE DRILLING

(300m line.)

sage was thus a rolling one, (30° maximum roll either way), and was enjoyed by some people more than others.

The bleak North Cape of Jan Mayen was picked up on the radar before it was seen. As usual it was covered in a thick blanket of mist. The whole of Jan Mayen was a blanket of mist it seemed, and our only compensation that evening was a brief glimpse of the upper slopes of the Beerenburg towering above, as the wind wafted away the cloud cover for a few minutes.

Next day the Birkbeck section of the expedition were dropped at Walrus Gat on the Northern Shore and the ship continued around the Island to the south and dropped the glaciological party at Jameson Bay. Difficulty was experienced in landing because of the swell and many people (including members of the ship's crew) were soaked from the waist downwards by the time 'Polarsel' took up her anchor and sailed westwards to Greenland; she was to have a rough time in the sea ice before we saw her again, but that is part of another story.

We were met by four of the friendly men from the Radio Station when we landed at Jameson Bay. They had come the two hour walk from the Radio Station in the north of the Island in order to tidy and clean up the old Jameson Bay Hut before our arrival. They had found the place half filled with sand and in terrible condition. When we arrived their six hours work had made the place very habitable, and even moderately waterproof. For this, and other kind hospitalities we owe a lot to the men of the Radio Station.



MAKING ELECTRICAL TEMPERATURE MEASUREMENTS OF THE ICE AT DEPTH

Unpacking took all evening and it was not until the following day that we were able to take stock of our surroundings. Then much of what we saw was mist and desolate weathered lava. Jan Mayen was indeed an eerie place on a misty day. It was exhausting too, despite its apparently small size on the map, for the lava surfaces are sharp and irregular and the sand, into which one sinks ankle deep, is difficult to make progress over.

On our first full day on Jan Mayen a trip was made from Jameson Bay to Base at Walrus. This was partially to pick up supplies and partially to get to know the country. Central Jan is the most inhabited part of Jan Mayen; it supports precisely ten men and two large dogs. Their footprints could be found in many places, but yet the high storm beaches and the lava cliffs seemed remote and desolate to us; as though this was a wild and uninhabited land. But it is a land of strange contrast, for we found later that when the sun shone, its moon like surface was indescribably beautiful. The large bulks of timber on beaches were no longer the fossilised reminders of the storms and the seas, but were a mellowing contribution to a hard rock architecture, like the influence of trees on a landscape.

Work on the nearby South Glacier started in the first week after we had become settled in. At first the weather was kind to us and we quickly plotted on to the map the boundaries of the ice edge. We found a strange thing: the glacier, one of about eighteen in Jan Mayen, had a snout which was nearer the sea than it was in 1949. That is the glacier had advanced from the position it occupied in 1949. This we thought was strange, because we had been under the impression that glaciers in the northern hemisphere were retreating at their fronts, and had been doing so for the last century. Examination of other glaciers in Jan Mayen indicated the same kind of trend, and so we concluded that the advance was general there, and not just a feature of one particular glacier. We have since discovered that the average precipitation in Jan Mayen has almost doubled, since 1920, and the mean annual temperature has fallen slightly in the last 30 years. These, presumably, are the reasons for the glacial advance in Jan Mayen, but now we are presented with another problem. How widespread is this increase in precipitation, and what are the main causes of it? It is likely that these questions will never be answered accurately, but it is known that the circulation of air currents over the pole and Greenland have been changing over the last few years, and, along with this, the distribution of sea ice off Eastern Greenland has also shown irregularities. Wooden stakes were also inserted into the glacier at intervals. By comparing the positions of the stakes, on the surface of the glacier, with fixed points on the moraines the rate of surface flow was measured. This proved to be very high, and, at a maximum on the South Glacier, (which was one of the slowest flowing glaciers in Jan Mayen) was more than four feet each day. The wooden stakes inserted near the snout of the glacier also served as useful markers to measure the rate of surface melting of the glacier. In the lowest part of the glacier the surface was lowered by more than three feet in just over twenty days. Naturally all this melting during the summer season gave rise to the discharge of an enormous volume of water from the glacier snout. On warm rainy days the whole glacier valley was in flood, and under these circumstances it was very difficult to do anything or even approach the glacier.

The work took place in rather mixed weather. Mostly it was calm and misty (Frustrating weather for surveying and finding our way about). On other days it snowed, but if the weather was going to be really bad it rained: a blowing penetrating rain, very cold and which soaked one to the skin.

About three weeks after we arrived most of the glaciological programme had been completed and it was at this point we decided to try to climb the highest mountain on the island King Haakon VII Peak on the Beerenburg. This is about 7,500 ft above sea level and is on the rim of an extinct volcano crater. A camp was put up near the South Glacier at about 2000 ft and the climb was undertaken from there. Technically the



climb was not difficult, but it was long (13 hours) and it enabled the party to see something of the ice formations high in an area like this, and for geological specimens to be collected from near the summit. The day of the climb was calm and still and once above the cloud (2,500 ft) we quickly realised that the Arctic can be uncomfortably hot as well as cold.

During the time we had been making the most of our opportunities in Jan Mayen, our ship the 'Polarsel' had sailed on to Greenland. She had encountered thick sea ice less than a day out from us and had eventually become wedged in the ice. She had remained like this for 13 days, and in the end a change in wind had broken the ice up and enabled her to continue on her way. In all, she had a rough time of it, but managed to get in and pick up all the trappers and radio operators. She was the only ship, as far as can be gathered, which managed to get into Eastern Greenland in the summer of 1959. This was largely due to the skill and seamanship of her skipper-owner, Otto Brandal.

It was a relief to see her as she sailed on to her anchorage on Jan Mayen (We had been following her fortunes, on and off, via Jan Mayen Radio); for some of us had visions of staying in Jan Mayen all winter if she could not get out of Eastern Greenland. We had liked Jan Mayen for our short stay, but we thought it too savage and capricious a place to stay for long.

#### POST SCRIPT:

The above description is necessarily vague. One can not convey in a few sentences the impression that one has gained of a place either by staying there or by a study of previous records. Into this, like all other expeditions, went months of study and preparations; out of it has come months of work too. This is not a complaint, for not one of the party regret what they have done, but it is in some measure an answer to those critics and cynics who regard expeditions as payed holidays.



## IMPERIAL COLLEGE EXPLORATION BOARD

The Imperial College Exploration Board was inaugurated in 1955 under the sponsorship of the College, the Imperial College Union, and the Imperial College Old Students Association. Before that time no such body existed; indeed there had been no cause for one because no exploring fraternity existed in the College. The Board owes its origin to the efforts of a small group of students who prepared an ambitious scheme for a climbing expedition in the Karakoram during the summer of 1957. They applied to the College and Union for money to support their venture; the governing body gave £5000 and the Union Council gave £1000. The Exploration Board was set up to administer the money. A large proportion of these initial grants were used to finance the Karakoram Expedition but after its successful completion the Board was established on a more permanent basis with annual grants of £1000 and £200 from the College and Union respectively.

Each of the sponsoring bodies are represented on the Board. The College appoints four members and the Imperial College Union, the three constituent College Unions, and the three Old Students Associations each appoint one member. The College Accountant very kindly acts as treasurer and another members of the staff acts as Secretary.

It is not part of the Board's function to organise expeditions. Its purpose is to study proposals for expeditions submitted to it by members of the College and, if they are suitable, to recognise them as official Imperial College Expeditions; in many cases recognition carries with it a cash grant. In recent years too many good expeditions have been proposed for the Board to be able to finance them all completely, but official College approval of a scheme improves the chances of the organisers raising money outside the College. The board meets two or three times a year. The most important meeting is held late in the Autumn term, for that is when the grants are made to expeditions planned for the following summer. At its other meetings the Board keeps a watchful eye on progress made with the organisation of expeditions which it is sponsoring, and gives preliminary consideration to ideas for expeditions for the following session.

Expeditions to the more remote parts of the world are very costly, so the Board has decided that it can only support them at intervals of three or four years. To enable it to be in a position to do so, part of the annual income is set aside for a reserve fund which can be used when the time comes. In fact, most of the schemes submitted are for expeditions to places not too far from this country and their cost is reasonable.

The standard of scientific work undertaken by the expeditions varies. When assessing the merits of a particular scheme the Board is concerned less with the actual standard of work than with the ability of the party to carry it out effectively; naturally age, experience and academic qualifications all have some bearing on what is reasonable for any given party. An expedition provides a unique opportunity for gaining experience in organisation, and in living and working with other people, and the benefit which the participating individuals are likely to derive is also considered. On the whole, the Board aims at supporting something between straightforward scientific research on the one hand and an adventurous holiday on the other.

## EXPLORING A NEW MEDIUM

by Tony Larkum.

Just three years ago the Imperial College underwater club was born. Like all new clubs it was nurtured in its first year by a few enthusiasts and gained recognition in 1958. A year later nine divers from the club set out on an ambitious and yet well founded expedition to the Azores. That this was a startling development, showing the need for such a club, cannot be denied but it only reflects the meteoric rise of under-water activities in general during the last decade, the principal of which was born during the war.

In 1942 French cars were being run on coal gas supplied via a reduction valve from a compressed supply. Captain Cousteau with the aid of its inventor, Gagnan, applied this reduction apparatus to his need of an underwater breathing apparatus which would enable him to satisfy, to some extent, a lifelong desire to investigate the world beneath the waves, with all its mystery and beauty. The keynote to the genius behind this apparatus is that it supplies air freely from compressed air in a cylinder to the diver, at any depth and at the required pressure: yet it is reliable without having any complicated valves, stops or gauges. The invention meant that now, many years after man had learnt to imitate the birds of the air he could swim like the fish of the sea. At last he was free to take to the water and go where he wished without any restriction other than depth, where he is limited to the first three hundred feet.

Many people were attracted by the freedom of movement in this new medium, others to the silent world below the sea's surface with its untold beauty. Photographers and spear fishermen swelled these ranks until today it is a very popular sport. In the United States it is among the most popular of activities while in Britain the British Sub-Aqua Club, which embodies all facets of this sport, has over 70 branches.

Needless to say free diving, as it is known, has other possibilities besides the new and pleasurable experiences derived from it. It has superseded the helmet diver commercially on account of the greater mobility it allows. Many companies employ a diver for salvage work, dam inspection, clearing obstructions, cable maintenance and a whole host of other jobs. Scientifically and culturally it has opened new vistas. The seven tenths of the globe which is under water can now be studied at closer quarters. Biologists can follow up their studies in the medium in which life began, in the garden of Eden. Archeologists are now able to study relics of past civilizations and relics swallowed up by the sea. Geologists can link together present land masses and test such theories as continental drift. Prospectors (even gold panners) can help in the search for the earth's diminishing mineral wealth. The oceanographer can now take a closer look at his subject. All these fields have felt a breath of fresh air as a result of this simple piece of apparatus. Each one is beginning to realise its potentialities. In fact, at a time when the world's land surface will soon be fully explored, underwater exploration is just beginning.

Such is the background to the Azores expedition. The opportunity for new scientific research using the aqualung was fully appreciated by its members but putting theory into practice needed a great amount of application - and patience, as is the case with all expeditions. Many people seemed to think an underwater expedition just about as far fetched as Plato's tales of Atlantis which are thought, by some, to be garbled mariners' versions of these enchanting isles. Others showed concern for our means of existence "on 'those rocks' where all our bad weather comes from", while still others shattered any liking for Tennyson by many repetitions of :- "In Flores in the Azores Sir Richard Grenville Lay."

Cheered by the view that if the American's could maintain an airbase there it would not be too bad a place; plans went forward to completion: in July 1959 the nine members disembarked from the Lisbon packet boat on Terceira, the chosen island.

A ZOOLOGIST  
COMPLETES HIS DIVE FOR  
SPECIMENS IN THE WATERS  
OF TERCEIRA ISLAND



The Azores represent the peaks of a volcanic mountain range which made its fiery appearance from the depths of the mid-atlantic comparatively recently. But the peaks, the highest, that on Pico, reaching 8,000 feet above sea level, as if by Nature's contempt are now cooled by sea breezes and usually enshrouded by cloud. The nine islands comprising the group vary in size from the 4 square miles of Corvo, the smallest to the forty mile long St. Michael's: while Terceira is the next largest. A humid climate and a rich soil encourage a luxuriant vegetation and the Azoreans are blessed with a very productive land, of which the only drawback, in parts, is the precipitous terrain.

The islands had many surprises for the expedition. Like many places today thrust untimely into twentieth century life it is a place of contrasts, where old and new are seen together: the ox cart with solid wooden wheels beside the sleek American limousine or the old Flemish windmill amidst the vineyards and maize fields vibrating to the roar of the jet engine. The inhabitants impressed us with their ingenuous friendliness and leisurely existence. Bullfights in the streets (and even in the sea), whaling with hand harpoons and a preoccupation for letting off homemade rockets are just three of their fascinating activities.

The islands' fascination was not diminished underwater. The Azores were an ideal choice for the expedition. Its waters were crystal clear, warm and abounding with life which hitherto had never been studied to any extent. The sea bed fell away sharply making deeper waters easily accessible. This in turn made zonation studies of sea life more facile. Also, by good fortune, nearly every rock type on Terceira was present in the small area of the bay on which we camped. Work began as soon as possible. An ideal campsite was found for us by Colonel Agostinho, the retired director of the meteorological station who gave us invaluable aid throughout, especially as regards scientific literature pertaining to the Azores, of which he had a large library.

Soon, also, our compressed air cylinders were being filled and delivered daily from the U.S. airbase and studies could begin.

The location lived up to all expectations. The divers plunged into a wonderland of strange fish and beautiful colours. The local inhabitants were much puzzled at first to see members just sitting on the harbour bottom, blowing bubbles, and picking up every strange object in sight. This was the initial stage. Later searches moved further and further afield until the fisherman were taking us out several miles in their small boats. These excursions were largely to a pair of small rocks, called the 'little brothers' several miles off shore, around which an underwater paradise existed. The rocks were topped with beautiful red seaweeds while below fish of all colours, shapes and sizes fed on fluorescent weeds. Members sported with groupers as big as themselves and were inquisitively circled by giant liche. Mackerel were abundant and barracuda roamed in packs of a hundred or more. It was unfortunate that the difficult journey limited our visits to only the calmest days. Meanwhile the geologist could be found setting up tripod and theodolite on basalt and trachyte lava flows near the volcanic ash cliffs. This preliminary mapping of the bay was to precede an attempt at tracing outcrops under the sea, by means of aqualung and echosounder; a new technique entirely.

The biologists, five zoologists and a botanist with a comprehensive collection of specimens behind them set about applying a well-tried terrestrial technique, the transect underwater; a thing which had never been done before. A hundred and twenty foot line was anchored at the bottom of an almost vertical underwater cliff-face. Two weeks work involved taking 10 x 10 centimeter 'scrapes' at intervals down this line of everything adhering to the rock surface and using this information to produce a line transect. Each small area contained tens of thousands of organisms which must be estimated in such work. Larger specimens were counted on the spot but the full picture will take many months to work out. The line transect will eventually show graphically the changing patterns of plant and animal life from the turbulent spray zone to the still depths of one hundred and twenty feet below.

Luck favoured the expedition, again, in the fact that not ten feet away from the end of the rope transect line lay a spanish cannon with six others scattered on the sandy bottom not far away. These had tumbled from the old spanish fort above, years before. They naturally attracted attention and were the site of many an unofficial 'scrape'.

Sea urchins were an ever present menace. One learns quickly to recognise the different types when this may involve some sore jabs. The half dozen, multicoloured species were, however, more closely studied to investigate their arrangement, each with its own private domain and relate this to its feeding habits. This should also have been done on the octopus, which was very common. Unfortunately he was looked on as an inestimable delicacy by the inhabitants and too often found himself at the wrong end of pole and hook to worry about trespassers on his property. A 'nest' of sting ray in a cavity under a large rock also attracted our attention. The rays some four to five feet across seemed to be mating, which involved graceful aquabatics and provided some fine cine shots.

The expedition had its shore of bad luck when the cine camera, with which we were making an underwater film, broke down once and for all. Spare parts flown from England were of no avail leaving us in the exasperating position of having taken only one fifth of our film supply in such a photogenic area. However some good still shots, both black and white were taken underwater.

The members of the expedition cannot boast of saving dangerous situations by singled-handed killings of sharks which were reported to infest these waters. We prepared for this contingency in the best possible way - we took a plentiful supply of shark repellent, to be tested for a government research station. In fact monsters of

the deep did not frighten us at all - we did not see any. Hammerhead sharks made off at the first appearance of a fin (the man-made kind), the sleek but deadly barracuda seemed too well fed to bother even when one swam through vast packs of them and last but by no means least the moray eel, the cobra of the sea, gave us no trouble at all.

In the last week, with the echosounder functioning, at long last, the underwater survey reached completion and a little mountain of rocks was packed away for the college museum. The geologist also took time off with several other members for a look at the new volcano on Fayal where, so he says, he nearly took his last breath amid sulphur fumes in the crater mouth.

The expedition returned bringing back much material to work on but many happy memories to soften the task. The full results will take several years of study and checking to work out. However while we wait for the full picture it can still be said that the expedition participated in some of the earliest attempts at underwater geology and biology: it pioneered underwater exploration in two new fields. Meanwhile we can only hope that this will act as a stimulus for greater underwater research at Imperial College and reiterate the words of Jacques-Yves Cousteau, the father of the aqualung, who said that "This is the golden age of underwater exploration."

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#### DIVING EXPEDITION

SUMMER 1961.

Following the very successful 1959 Azores expedition, a second major one is being planned for the Summer of 1961. As a large expedition of this nature requires well over a year to plan, all interested should apply immediately.

No previous experience of diving is required, members will learn at I.C.U.C. meetings during the year.

Applications to Hon. Sec. I.C.U.C.

## UNIVERSITY or COLLEGE?

That Imperial College is a College of specialists is apparent in every day of student life here: from the shockingly low attendance at any of the cultural societies' meetings, to the all-male bar. Does this effect or limit the attitude to exploration at Imperial College? To get the considerable outside backing that finances large expeditions requires a large amount of planning, and above all a high probability of success. Can Imperial students who, by the very nature of their chosen vocation, are necessarily narrow minded alone provide the required pull, or should the college concentrate on sending small expeditions, leaving the larger ones for University sponsoring - thus spreading the financial burden over the various Colleges that send members. What success does a University, such as Oxford, have with large expeditions, and how do things differ from those now planned at Imperial College?

The Oxford Exploration Society has members from all departments of the University, and as a result their expeditions can have several objects that are unlikely to be taken up at Imperial - Medical, Anthropological, Geographical, and Archeological aims can be added to the Geological or Biological bias that our expeditions almost invariably have. The tendency of several of the major expeditions sent out from Oxford is towards a fairly comprehensive investigation of little known region, rather than an intensive, but more limited, study of less inaccessible areas. A good example of this was the 1956 investigation of Socotia, where a six man expedition made a general survey, including Biology, Archeology and Medicine, of this long unvisited island in the Indian Ocean. The 1955/6 Sarawak expedition is another example of this type - the studies in this extremely difficult region took six months, and included forestation. Of course the Geological, Zoological and Botanical expeditions are also well represented. Recent examples are Turkey (in 1957), North Persia (1958), and British Guiana last year. In this type of work the value of repeatedly visiting the same site is well shown by the visits to Tangyangika (1958 and 1959), and North East Land (visited for the sixth time in 1955).

Does a University expedition have more members than one from a single college? Again let us consider the recent experience of Oxford. Although nine members went to North East Land in 1955, and only two went on the 1957 Somaliland journey, the usual number seems to be five or six. This doesn't include interpreters, or local guides, or of course the large number of porters required in the Sarawak, West Nepal, and almost all mountaineering expeditions. In practice it is the nature of the expedition that decides the number going, and not who is sponsoring it.

Similarly with transport, it is the work that is to be done and location which decides what is used. Several recent Oxford University expeditions have used trucks both for getting to the site and while there. These have rather serious drawbacks as the six members of the 1955 Morocco expedition found - they have calculated that after several breakdowns, the boat would have saved them about £100, apart from time. Yugoslav roads have taken their toll of at least two recent motorized teams from Durham University, one returning home from Crete had to abandon their vehicle, the others were less fortunate - they broke down on the way to Turkey, and their visas ran out before they could get going again. More exotic methods were used by the Oxford Sarawak expedition. Much of their local movement was in dug out canoes, and once in camp the R.A.F. from Singapore supplied them by parachute drop! This rather outshines the efforts of the two-man British Somaliland team who had an amusing time with their camels.

The finance of a large expedition is always the greatest problem, and it is here that the main difference appears between University and College Exploration. Apart from the members contributions which vary from about £25 in Durham, to anything

*(Continued on page 18)*

## GREECE EXPEDITION 1959

*by Roger Stickland.*

Early in September 1958 a small party of Botanists decided that it was time that an expedition from this College visited the Mediterranean region rather than the more traditional Cold Temperate and Alpine Areas. Accordingly, plans were made to camp at the small coastal village of Zelenika in the Bay of Kotov in Yugoslavia as the Balkan Peninsular has had relatively little attention in the biological field. At the same time it was decided to increase the party and the scope of the expedition to include two zoologists, one geologist and one ornithologist bringing the total to eleven persons.

In February 1959 however, it was apparent that restriction imposed by the Yugoslavian authorities would so severely impede the expedition programme that a change of venue was made; the new location being Pharacla near Limni on the island of Euboea in Greece. In spite of the late change, plans were completed in ample time with the help of Francis Noel-Baker Esq, M.P. and our equipment was duly despatched in the SS Kelka on the 20th June 1959.

The expedition left Great Britain on 15th July and despite one or two amusing incidents on the train through Yugoslavia all went well and the main party arrived in Pharacla on Sunday 21st July after spending one night in Athens. Two of the party changed trains at Inoi, and almost fell asleep on the platform in the heat (115°F in the shade), but eventually reached Pharacla by train and lorry on the 20th July to prepare the base camp.

Pharacla, a very poor village situated up above a seasonal river and surrounded by pine forests, has about two hundred inhabitants existing on the food they grow. In spite of their poverty they were most friendly and extremely generous, often giving us fruit and vegetables. During our stay in the village, two festivals occurred, one religious and the other political; together with a rare event in such a remote village, a visitor from Athens. On each occasion the villagers made us very welcome and introduced us to Oogo and Retzina, both acquired tastes, to the accompaniment of a three piece band.

The village is only accessible by mule paths and a track suitable for oxen carts or tanks. Most of the villagers are involved in farming, the chief crops being setana maize and beans, while a few of the men collected resin from the pine forests. The resin is used in the local wine and is also the chief export from the island.

From the base camp visits were made to the small outlying villages of Katronia, Klavisi, Pili and Katounia. Further expeditions were sent to Delphi and Lake Lagaros near Salonika where bird migration was studied. As one will have probably gathered, most of these visits are to villages and it should be mentioned that water is very scarce in Greece, even in Euboea with a less severe climate than the mainland. At Katronia they were digging new wells in the search for water, no doubt prompted by the fact that three of the few springs at Pharacla ran dry during our stay.

The scientific aims of the expedition were of a general nature and included the collection of plant specimens and insects, the accurate description of the many various Karstic Florae and an investigation of the economic plants in the area together with their diseases. Over three hundred species of plants were collected and many are still being identified at the Royal Botanical Gardens, Kew.

Most of the plant communities were described and considerable quantitative data was collected. Also, an extensive survey of the local crops was carried out and a large variety of diseases investigated, many of these being checked at the Plant Pathology Laboratory, Athens.

Large numbers of insects were collected and a check list of birds in the area produced. Over fifty new species new to the observers were seen including four vulture species, Golden Eagles and many of the more exotic Golden Orioles, Rollers and Bee-Eaters. Geographical and Geological maps have been constructed for the area and the disused magnesite workings investigated.

A Meteorological record, including hourly temperature readings, confirmed that it really was hot. The temperature never fell below 90°F during the hours of daylight, usually exceeding 100°F for the five hours around midday. The highest temperature recorded was 115°F in the shade! Before leaving Pharacla several local mountains reaching more than 4000' above sea-level were climbed, a more difficult task than one would imagine when temperature, terrain and the fact that this height is attained in less than one mile are considered.

Athens was visited by all members at various times for a few days - the Acropolis commanding much interest. Two members travelled in the luxury of deck class to Rhodes for a few days to enter a world still living as it must have done during the time of the Crusades. The main body of the expedition left Pharacla before dawn on 7th September just as the rains set in and despite being eaten alive by lice and flies in the railway carriage from Athens to Venice all arrived back in England on the 10th September without further difficulty. A few set backs were however encountered: the "approximately full" Athens bound coach at Venice; a small difference of opinion with a ticket collector in Yugoslavia and not least a serious difficulty with the customs authorities at Piraeus.

In this brief and necessarily sketchy account of the expedition only a fraction of the work involved has been mentioned, with no actual results described. However, for as little as £550 eleven students had an extremely happy and we hope fruitful two months in Greece, four countries being visited en route. This was due in no small measure to the generosity in one way or another of many friends and industrial firms, to whom we are most grateful.

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*(Continued from page 16)*

between £30 and £100 in Oxford; the University sponsored expedition has the advantage of receiving aid both from the University and from the members' individual Colleges. Another important point to consider is whether the Societies and Manufacturers that give help with cash or materials will be more prepared to supply a University - the names of Oxford, Cambridge (and even London) have more advertising value than Imperial. Several Exploration Societies are finding money is becoming tighter, and are having to turn towards scientific aims rather than pure exploration. Surely specialized scientific expeditions should be organized and financed by the department concerned, leaving University and College funds free for the more ambitious projects.

If Oxford is representative of Universities sponsoring Expeditions, it seems that their system has much to recommend itself. Unfortunately London University is run on vastly different lines - the number of students here causes the College to be the primary unit rather than the department or faculty. This means that members of different Colleges seldom meet to discuss the problems of Exploration, and plan expeditions. It would seem therefore that college expeditions will continue to flourish in London, despite the disadvantages - and even these can be overcome if the present series of successful projects continue until the name of Imperial is as well known in the world of exploration as it is in Science and Technology.

## APOLABAMBA

*by Paul Garrard.*

The Nudo de Apolobamba are a range of mountains in the Andes between 16,000ft. and 20,000ft., part of which form the border demarcation between Bolivia and Peru. The area had not been entered or explored in any detail and had been proposed as an alternative area when the possibility of re-routing the Imperial College Karakoram Expedition 1957 was considered, due to political difficulties.

Early in 1958 a committee consisting of G.C. Bratt, K. Hopkins and W.H. Melbourne started to lay the foundations of an expedition to the Apolobamba in the summer of 1959. Their detailed proposals met with support from the Imperial College Exploration Board, the Mount Everest Foundation and the Royal Geographical Society, and an enthusiastic welcome was extended from the Club Andino Boliviano. Applications from members of the Imperial College were invited over a period of four months and the selection of the team was made by a panel appointed by the Imperial College Exploration Board in October 1958. G.C. Bratt was selected as Leader with the team of W.H. Melbourne, J.W. Jenkinson, A. Ewart, A.W. Smith and P. Garrard.

From October 1958 onwards preparations began in earnest, with tentative enquiries to a large number of firms. Each member of the party was allotted particular tasks, namely the organisation of food (Smith), equipment (Jenkinson), political formalities (Ewart) and transport and freight (Garrard). Each week meetings were held to give an account of progress, Melbourne acting as overall controller since Bratt was in Patagonia.

Food, arranged on the basis of approximately two pounds per man per day included soups, dehydrated vegetables and fruit, corned beef, dried milk and egg powders and lifeboat biscuits. Interest was added to the meals in the form of curry powder, sauce etc. Several items such as sugar, rice, coffee and flour were known to be no more expensive in Bolivia than in England, which meant that freightage costs could be reduced by leaving their purchase until our arrival. Surveying equipment, including a photo-theodolite, was kindly loaned by the Royal Geographical Society. Camping equipment and much of the special clothing which it would be necessary to use at high altitudes was obtained partly from the Exploration Board, but mainly from outside firms notably Aquascutum Ltd. and Thomas Black & Sons Ltd. In all cases, with both food and equipment, the utmost generosity and helpfulness was given from the firms concerned. Mention should also be made of the comprehensive medical chest donated by Boots Pure Drug Co. Ltd. Fortunately, no major injuries were sustained by any members of the party.

In December, when the expedition was financially sound, definite orders were sent out to supplying firms and the preliminary passage bookings confirmed. The help which we received in these spheres was most gratifying. Equipment and food were delivered by the required "dead-line" and packed in steel banded tea chests which were collected for shipping on May 4th 1959. Everything seemed to be running smoothly. The members of the expedition left England in three sections, Ewart to meet up with a British Museum expedition in Peru, Bratt and Melbourne to follow up the freight and Jenkinson, Smith and Garrard to leave on June 24th after their exams.

Disaster threatened the expedition on June 9th when the Italian seamen came out on strike creating such an indescribable chaos in the travel arrangements that they had to be scrapped wholesale. Ewart was stranded in Dakar for ten days and later in a hotel in Santa Cruz, Bolivia for a week during a revolution. Bratt and Melbourne in Cannes and Smith, Jenkinson and Garrard in London were in similar predicaments - all without vessels. Only by their own efforts and negligible cooperation from the Italia Line did the members of the party manage to arrive in La Paz all within two days of the originally scheduled date of July 14th.

RIDGE MAP OF THE  
NUDO DE APOLOBAMBA



The first glimpses of La Paz, the capitol of Bolivia greatly excited us and nothing that saw subsequently did anything to diminish this feeling. Here was a world and way of life so completely different from anything which we had known that attempts to describe it in European terms would inevitably be misleading. The city of 300,000 inhabitants nestles in a great hollow a thousand feet below the plateau surface. Its modern commercial centre is surrounded by the dwellings of the natives who comprise three-quarters of the population. The buildings are brown, the landscape is brown and the two blend completely. In contrast, the native inhabitants are incredibly colourful. Native women in brilliantly coloured shawls and petticoats and each one with the inevitable bowler hat (it's colour guaranteed to raise the eyebrow of even the most stoical of City Businessmen), ply their wares at open air markets—foodstuffs, clothes, a poncho made from tough llama wool, a guitar backed with the skin of an armadillo. All too soon with our own foodstuffs purchased and the truck waiting, it was necessary to leave for the mountains; but the sight of snow-capped Illimani (21,000ft) twenty-five miles distant and yet seemingly so near that one might reach out and touch it, promised of great things to come.



CAMPING ON GLACIAL MORAINES AT 17,000 FT.  
LEFT TO RIGHT; W.H. MELBOURNE; A.W. SMITH; G.C. BRATT; AND J.W. JENKINSON

The arrival of Jenkinson, Smith and myself in La Paz had been delayed and the others were already four days in the mountains when we eventually met them. The metalled road gave way to a beaten earth track a mile out of La Paz and along this we bowled at speed raising clouds of dust. The sudden shore of Lake Titicaca was seen in the distance. After a night spent at Ulla Ulla, the truck laboured its way to the top of Pelechuco Pass, where, for the first time the party was united.

Almost immediately, we split up again, Ewart and myself with Venancio, the native porter, moved off north westwards across the frontier into Peru, leaving the others to take mules and equipment over a pass to the foot of the West Sora glacier. An amusing tale attaches to the hiring of the mules. Melbourne and Caraffa (a member of the Club Andino Boliviano) had gone down to the village of Pelechuco on July 14th. and were surprised to find that folk from surrounding areas were all coming into the village. No mules were available at all. That evening the inhabitants began a fiesta, with dancing and drinking. It was only courteous that Melbourne should drink with them and even though their 'alcohol' tasted like raw methylated spirits he continued to swallow the appropriate amount; but it took unusual bravery to face a mugful of chicha, a potion fermented with human saliva. With a sickly grin he accepted. More fiesta followed and a children's sports day at which Melbourne was asked to give away the prizes --- it was 1p.m. on July 16th. before the villagers decided to bring out seven of their mules which had been there all the time.

At Camp Three, at the foot of the West Sorral glacier, a supply dump was established by burying surplus stores. The five-man party of Bratt, Melbourne, Jenkinson, Smith and Caraffa then moved up to Camp Four on the North side of the Matchu Suchi Coochi range. Most of the minor ailments which attended our rushed entry to the mountains had by now disappeared. The chief of these were vomiting and headaches. The thin air caused us to breathe with open mouths and we were to bless the inventor of pastilles to soothe a sore throat.

The base map from which we worked had been produced by a Royal Geographical Society Boundary Commission in 1911-13. Ewart and myself in Peru found it sufficiently accurate for our purpose of reconnaissance geology, but the others, whose job it was to 'fill in the gap' left by the Commission had initial difficulty in re-locating triangulated points. This problem was eventually solved by climbing to the summits of peaks, an action with twofold result, since it combined business with pleasure and hastened the recognition of prominent peaks from all sides. Indeed, all survey stations were hereafter sighted as high as possible since resection was easier and the field of view enlarged, thus reducing the number of stations required. Mapping on a scale of 1:50,000, was accomplished using an 18" x 12" plane-table with Abrey clinometer and oil-filled prismatic compass.

Glaciological observations were made by Bratt and Jenkinson who employed the photo-theodolite to fix snout positions. No overall picture of glacier advance or retreat can be given, a fact which is almost certainly due to the absence of a central icefield. The West Sorral glacier, for instance, was advancing on its northern front, static in the centre and retreating on its southern front. It was found to have three separate sources of ice. One very noticeable feature was the difference between north facing and south facing glaciers --- a difference in kind rather than degree. Those on north facing slopes were chiefly small corrie glaciers whilst their counterparts from the same ridge, but flowing south, were valley glaciers extending 1-2000 feet lower.

During the period spent at Camp Four, July 21st.-31st. seven peaks of the Matchu Suchi Coochi range were climbed including the impressive ice pyramid Azucarani (5,580 metres) and full geological and topographical surveys carried out. On July 26th. further supplies were brought up from the food dump. Five days later the four man party, now minus Caraffa, who had returned to La Paz; set off across the Azucarani glacier to establish Camp Five at the head of the Rio Sanches-Cuchu valley. This was a tedious journey. The glacier was heavily crevassed in a peculiar manner such that the clefts had opened out and each had to be negotiated separately. At one stage Smith handed his pack down to Melbourne standing on the surface of an ice-covered pool and Melbourne was driven through the ice like a nail through a piece of wood. A reconnaissance by Bratt and Jenkinson of the East Sorals to the north showed that an attempt from the south side would be hopeless. Accordingly a very long trek round the end of the range saw Camps Six and Seven established on the north side of the ridge. In six days, from these bases, the five summits of the East Sorals were climbed and surveys completed of the Rio Sanches-Cuchu valley. The climbs were among the most satisfying attempted by the expedition, for they entailed a combination of strenuous plodding in the snow and delicate rock and ice work. Experience on the Matchu Suchi Coochi peaks had shown that the powdery south facing snow was to be avoided and the route was held as far as possible to the northern slopes where the ice surface had been partially melted by the sun and fashioned by the wind into small steps and grooves which provided safe walking. On August the 11th., the main party returned to Camp Three and unearthed the remainder of their food dump. Then they proceeded down the valley to the San Antonio mine.

To go back in time, Ewart, Venancio and myself had split off from the main party at Pelechuco Pass on July 17th. and did not meet them again until nearly a month later. During this period we completed two ten-day traverses in Peru, the first from



THE EAST SORAL PEAK

Poto to Pinuni (a distance of about 25 miles) and the second from Lake Suches to Sina (about twenty miles). The geology of this area was interesting from two aspects - those of geomorphology and structures. The first of these deals with land form and the reason for the existence of various topographical features in terms of causative agents such as frost splitting and glacier erosion.

Of particular interest was the Moraine Belt which formed hummocky foothills on the south-west side of the mountain range. This Belt provided a transition to the extreme flatness of the 'Pampa', which is a high-level surface similar to, but higher than, the Altiplano surrounding La Paz. The underground structures of the area have not yet been fully elucidated but it appears that they have suffered much compression and are of a complexity approaching that of the Southern Uplands of Scotland.

Venancio's presence, instead of with the main party, did much to enlarge the scope of our work. Proportionately a greater weight of food could be carried and we could thus travel further and longer on each trip. His surreptitious attempts to teach us how to live off the country had little success, and we must have seemed exceedingly ungrateful when, after he had spent all morning standing in a glacial stream, he presented us with his right shoe containing fifteen small fish which did not appeal to our palates. However, no objections were raised to the two handsome lake trout which he obtained by the barter of three empty porridge tins.

Returning to the base at Suches Mine, we shouldered as much food and equipment as possible and moved off up the valley in readiness to meet the others. A few days were spent geologising at the lakes end, after which the two parties united at San Antonio Mine. The others were indescribably dirty and protested that it was all due to camping on moraine which we doubted. Smith had a token wash with little improvement thereafter.

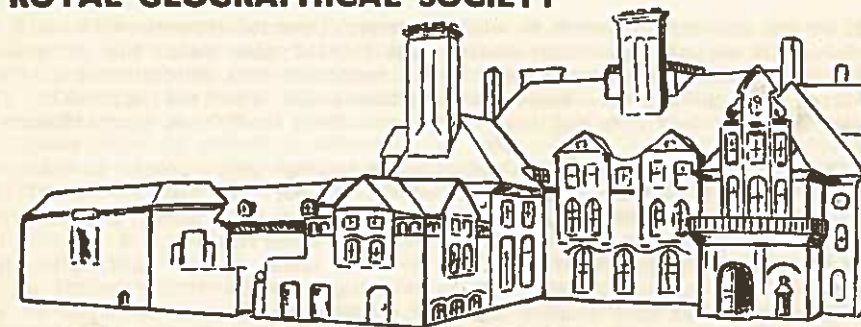
The energies of the whole party were now directed to the conquest of the West Soral Peak on which two abortive attempts had already been made. Bratt and Jenkinson moved off to establish a high camp (10) on the glacier and were followed a day later by Melbourne, Ewart and Garrard with twenty man/day stores. These three, left the tents as early as possible on the morning of August 15th. in cloudless weather and with the sun just warming the thin air, but not yet melting the glacier crust. Even so, Ewart, with a higher weight:foot-area ratio than the others frequently broke through to his knees. A ridge-walk ended in a steep 200 feet pitch and some necessary step-cutting to reach the summit. To Ewart and myself who had been working at lower altitudes for a month, the view was breath-taking. Through the thin clear air one could see for mile upon mile the snow-tipped peaks of the Cordillera, To the north, puffy clouds were beginning to boil up from the Amazon jungles. We could look at them with detached interest now, although we had soundly cursed them when they had rolled up and blotted out our view. Descending in thigh-deep snow we reached the tents. Descent was had enough - we felt all sympathy with the others who had tried to ascend in such conditions.

THE PHOTO THEODOLITE ON THE SUMMIT OF MATCHU SUCHI COOCHI 18,6000 FT.



(Continued on page 26)

## THE ROYAL GEOGRAPHICAL SOCIETY



The Royal Geographical Society has its home in a pleasant quiet building at the junction of Exhibition Road and Kensington Gore, S.W.7. Built by Norman Shaw in 1874 as the private house of a Mr William Lowther, it is now fitted out with library, map rooms and galleries and to it has been added an excellent lecture theatre. In this, besides lectures on travel and exploration one hears papers on all aspects of modern geography, physical and human, for this is the task of the "R.G.S." - to promote the scientific study of man's environment and his adaption to it.

The Society was started in 1830 and since then much of its work has been connected with exploration; in its early days it sponsored expeditions to set out and map unknown areas of the earth. Only a hundred years ago an expedition went out to survey in the unmapped western region of what is now the United States of America and expeditions like those of Livingstone and Stanley were venturing into unknown Africa. Today we know roughly what most of the earth's land surface looks like and have maps of most of it, so that expeditions which set out now are limited to more detailed studies of smaller areas. Exceptions of course are seen in the Antarctic, but there exploration has to be done on so large a scale that only Governments can finance it.

The Royal Geographical Society has naturally taken a very active interest in Antarctic exploration, and over the last year this has provided the main working theme for the Society. Previous years have had as their main themes the ascent of Everest and the work of the International Geophysical Year, but at the moment the theme seems to be swinging from large scale spectacular expeditions to smaller, less expensive scientific expeditions.

Since the war there has been a great increase in the number of small scale expeditions setting out, and a great increase in numbers of expeditions turning to the R.G.S. for support. Many of these have been from Universities, Colleges and Medical Schools, from students wishing to spend their long vacations doing research work in the open air; most have had some scientific objective. This is a trend which the Society wishes to encourage and it is in a good position to do this with its great experience in exploration and its facilities of maps and books. The policy that the Council of the Society is taking is one of recognising a national and moral obligation to help and advise all expeditions and travellers, but helping to finance only those expeditions with a geographical content.

The method of doing this is through the Research and Expedition Committee, with Professor Steers as Chairman, which receives applications from projected expeditions wanting support or approval. The Committee examines the planning, organisation and technique of the projects, matters in which it is well equipped to advise, but the approval in these matters does not necessarily imply the approval of the scientific aims of an expedition, for where botanical, geological or other specialised plans are involved it would be beyond their competence to comment on the value of the work. The



approval of the Society, although it will not mean financial support will help expeditions to obtain support from other bodies, and it will also help the organisations which are generously supporting exploration to recognise bona fide projects. Last year forty-three applications were dealt with and twenty-one received approval; nine of these were helped financially and instruments were lent to fifteen expeditions.

The aim of this policy is to assist and encourage young people to take part in expeditions, not only for the value of the scientific work but also in the belief that adventure and exploration is an adventure in itself. As Lord Nathan said recently in his Presidential address to the Society "Initiative, unselfishness, a better understanding of other lands and peoples - these are only some of the invaluable lessons expedition life can teach. To encourage by every means this latent spirit of adventure among the youth of this country and of the Commonwealth, and to guide it along the right lines, seems to me to be a duty most appropriate to our society in this new Elizabethan age". Naturally, an expedition must have a theme of study if it is to be described as exploration, and it is exploration, not adventure which the Society has a duty to patronize; a well run expedition is itself, by most definitions of the word, an adventure.

In the working of this policy, scientists as well as geographers are given the chance to study their geographical environment, and in these days of scientific advancement scientists are developing new ways to control the human environment. If the policy encourages the application of new methods to change or improve man's way of life, the Society can participate in the making of geography as well as in its study.

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(Continued from page 24)

Back at San Antonio, the party set about tying up the loose ends of the scientific work. After a few days in the Palomani Basin, Bratt and Melbourne moved over to the Pelechuco Pass, Ewart and Smith made an unsuccessful attempt on Katantica, Jenkinson and Venancio carried the surplus stores to Suches Mine and Garrard moved off to Lake Cololo. August 23rd. saw us once again united this time at Suches Mine. Many pleasant memories are held by me attaching to this and previous short stays at the Mine. The Bolivian owner, St. Jordan, had perfect command of English, which he had picked up by extensive reading and by contact with the cosmopolitan mining communities of Bolivia, Peru and Chile. We would sit for hours in the evenings talking in the candlelight about mining, about revolutions and governments, about the world in general and Bolivia in particular.

On August 24th., by incredible manoeuvring and coaxing, the President of the Club Andino Boliviano, St. Farwig, managed to drive a small bus into the mountains as far as Suches Mine. The next day we loaded everything on to it and began the 200 mile journey back to the Capital. During our six weeks stay in the Apolobamba, we had completed a geological survey of about 500 square miles, an accurate topographical survey of 170 square miles and had reached the summits of fourteen previously unclimbed peaks each over 18,500 feet.

The story should end here. That it does not is once again due to the Italian seamen who had decided this time to break off their strike. With bewildering rapidity schedules were issued, revised, withdrawn and re-issued. At the last minute we had to chase a ship up the Pacific coast by flying to Lima and then to be quartered in squalid conditions at the bottom of the ship. However, the most fitting end to the expedition must have been the so-typically English garden party given to six scruffy, bearded individuals by the British Consul and his wife in La Paz on our return from the mountains.

## OPINION

The word 'exploration' has, during the last three or four years, become one of common usage in and around Imperial College. It has come to mean something tangible, for within this period two organisations for the furtherment of exploration have been formed - the Exploration Board and the Exploration Society. To many people 'exploration' was almost a 'rude' word at its inception for it seemed to exhibit that lack of definitiveness which is indeed so abhorrent to many of the hyperlogical minds active within the Union of scientists and embryo-scientists. 'Exploration' may be broken down into its constituent parts and is then seen to consist of activities which are far from new to the College. Much exploration is found to include a greater or lesser amount of the activities classed together as 'mountaineering' - snow and ice climbing and rock climbing; yet other fields of activity included within this composite term, are skiing and snow travel, sailing and boat-work, camping and living under all conceivable kinds of conditions - all these, together with the vast field of scientific exploration. This latter - scientific exploration - may of course, cover any field whatsoever. These and more besides constitute exploration, and thus it is obvious that the qualities and capabilities demanded of an explorer are very great.

During the last few years several expeditions have gone out from Imperial College and all have been successful in their varying degrees. There are many yardsticks with which to measure success and commonly the greatest successes of an expedition are not those which can be recorded on paper. Perhaps the most valuable exploration carried out by anyone involved in an expedition is the exploration of oneself. During all phases of an expedition opportunities and situations arise which are new to some or all of the individual members, and it is in the accepting or rejecting of these opportunities, in the solving or failing to solve of these problems that one may truly explore virgin ground, ground over which one has never travelled, nor indeed had need to travel before. When confronted with a new problem it is common to find within oneself qualities and capabilities which have never seen light of day before, and once exposed, these qualities and capabilities should be exercised and not allowed to lapse into the inner recesses from whence they emerged. Equally commonly one finds one's own limitations and there too is a good thing, for a man who knows his limitations, who knows the limits to which he can trust himself and his reactions implicitly, is a truly valuable man. Many accidents are solely the result of people trying to accomplish those things which are really beyond their powers: this may stem from ignorance of oneself or from a refusal to acknowledge the limitations which one knows one bears. Knowing our limitations, they must at first be accepted, for to ignore them may well prove disastrous: a determined person will, in time, be able to go a long way toward making the limitations less limiting.

In our present day society the call for personal initiative, in fact, even the desire for any personal initiative to exist at all, is very small. The opportunities for such are dreadfully few now that so much of our life is organised for us: we can pass the whole day without having recourse to such qualities if we so desire.

An expedition is a test of initiative from the very beginning: the initial project, and its subsequent organisation and administration, commonly tax to the limits the initiative of those people involved. This is an excellent thing, and for anyone who wishes to find an exercise in initiative then the organisation of an expedition would prove a first rate example.

These, and many other ideas and observations have come to light during the two symposia held by the Exploration Society. Of the many controversial problems which have been raised, perhaps a few may with value be included here. Selection of members for an expedition is a topic on which most people seem to have positive ideas. A need is felt for a more open method of selection such as that used for the 1959 Andean Expedition, although this "wide-open" method of selection would not be applicable to all

expeditions. A more closed method would have to be used for, say, a botanical expedition, most of the members of which would necessarily need to be botanists. The present, almost closed method by which the majority of expeditions seem to select their members is felt by many people to be rather unethical. If expeditions expect support from the Exploration Board, which is an organisation broadly representative of the whole of Imperial College, then too, the expeditions themselves should be drawn from the whole of Imperial College, and the only conceivable method by which this could be attained is open selection. Closely associated with selection of individuals is selection of the number of people required on an expedition. This will be dictated largely by the programme of work being undertaken and by the financial support expected. Enough personnel must be taken to achieve the objects of the expedition but otherwise the best guide is "the fewer the better": large expeditions become unwieldy, especially so when in the hands of those who cannot claim long experience in the sphere of organisation. Choice of personnel in some circumstances involves acceptance or otherwise of applications from both sexes: this seems to be a tender point with many of the speakers at the symposia. The majority of expeditions are all-male affairs and in most expeditions the presence of female members would be regarded as an intrusion - this compels one to ponder as to whether all explorers are escapists! That women should occupy what is largely regarded as an all-male field of activity is a right and proper thing but the problem at times seems to become purely one of degree. On the whole, the presence of the 'fair sex' is not easily accepted in the expedition sphere, a common attitude being "I have no objection to women going on expeditions as long as they do not come on mine"! Perhaps their presence would be accepted if they were more pressing and forthright in that urge for recognisance and equality in yet another field of activity?

A few of the ideas, problems and observations recorded from the symposia have been entered here in no more than summary form, but even so they may prove of interest and value. If they only cause the reader to ponder a while they will not have been written in vain.



TWO OF THE MEMBERS WITH THE EXPEDITION VEHICLE

## BRITISH GUIANA

by Jan C. Taylor.

To most people the tropical jungles would not list very high among the places to spend the summer vacation; but if one takes an aesthetic delight in the tropical extravagances of nature, and can merge oneself into the life of the forest, enjoyment is boundless. One must not remain a temperate "square", viewing exotic life as vulgar and bizarre as one might at Kew or the Zoo, where it is out of context: for it is only in the natural surroundings that one can appreciate its meaning. You may ask, how can one become reconciled to the hazards of the jungle; venomous snakes and ferocious animals waiting to take life at every turn, while vampires, insect and mammal, take blood before one falls prey to the inevitable ferine beast? Fear in animals, as in man, will provoke merciless action, and to most animals man inspires more terror than any other beast. It is this terror which makes them attack man and so the rule is to mind your own business and the animals will mind theirs.

The insect menace, like the "terrors" of the jungle, is largely psychological in origin, but on occasion it becomes intolerably real, and this is the time to take refuge in repellants and nets. The unfortunate without these comforts may gain a quota of relief by thinking of the people within the Arctic circle being bitten by their superior mosquito population.

The anticipated strangeness of a tropical country is always coloured by the approaches; palms, desert, salt-pans, and paddy-fields espied perhaps from the air. The sea approaches to British Guiana were equally premonitory with rocketing squids and flying-fish, portuguese men-o'-war, and, nearing Trinidad, pelicans flying past the bows. However the first introduction to British Guiana was rather a disappointment: we came to anchor in the muddy Demerara river with a few palms and houses visible, but little was to be seen beyond the waterfront; Georgetown being several feet below sea level and the first hills many miles inland. Our appreciation was not enhanced by the immigration authorities who proved at first unwilling to let us enter the country at all. However the three of us: Don Dietlein, John Parnell and myself, were soon accepted into the community of Georgetown, a community compounded of peoples of many races living together in apparent harmony. Georgetown is a most picturesque city with many reminders of the Dutch colonists. The trees and flowers of the streets immediately arrest the eye and make up for what the town lacks in relief. There are the flamboyant trees with their delicate leaves, replaced at intervals by a conflagration of flowers, the palms, Hibiscus, Bougainvillea, all adding colour and beauty.

After just over a week we left Georgetown late at night on a barge drawn along by the tug "Blackheart". Early morning found us labouring against the tide on the great Essequibo river. The sun was bright, the air cool with flecks of mist still clinging to the forest on the distant banks: the water was in a peaceful mood, but obscuring with its vegetable debris the life below, which made its presence known by small hatchet-fish skating over the surface, shattering the inverted junglescape in an effort to lose their tormentors. The captain of the tug was full of the old days, and as our destination, Bartica, loomed closer over the waters, he related in the flowery language one meets every so often in negroes how he captained boats going up the hazardous stretch of the Masaruni river between Bartica and Issano, braving the numerous rapids before the overland road was constructed, and how he served on the boundary commission going through unexplored territory with Brazillians and Venezuelans determining the limits of British Guiana. We settled quietly against the quay and our kit was hastily unloaded over two barges and a piece of scaffolding by the crew of the tug, trying to race an approaching storm, mercifully without accident. The storm broke as Don was accompanying a donkey cartload of our baggage along the muddy mainstreet, between sleepy stores, green verges and forlorn cattle.

The next day we piled onto a heavy lorry and set off on a two day journey to Issano, jolting and bumping over rocks and logs at an average of 6mph. and shivering



THE AUTHOR MAKES AN ACQUAINTANCE

in the dank water-saturated jungle air. But this dreary scene was broken by glimpses of brilliant flowers, great lapislazuli morpho butterflies, turkey-sized pous, and birds like guinea-fowl. Even above the roar of the engine there was a strange sound picture painted by thousands of insects and birds up in the tree-tops. Issano is a small community scratching a living from the traffic of diamond prospectors going up the Mazaruni river. Beside our government rest-house, overlooking the mirror-like river on which indian boys played up and down in their wood-skin canoes, were some orange trees which were being defoliated by parasol ants in their thousands. The next day we joined the diamond prospectors on their way up the river on the weekly motor launch. This proved a most welcome rest from the previous two days, sitting back in comfort and watching the jungles slip by, with glimpses of forest life: families of red howler monkeys pausing to watch us pass, exotic orchids, butterflies, and the glistening coils of a 15ft. anaconda sunning itself on a fallen tree ("tacouba").

Everybody on board greeted the moment of arrival at Kamacusa with a stampede to pick the red fruit of the many cashew-nut trees. After a night of rain and frog choruses, we set off again in a heavy storm bound for Tumureng. Soon after midday we heard blaring "pop" music, and on rounding a bend in the river, came on Tumureng: a rubbish dump of shanties clustered together on the only bit of high ground in the area, smelling of animals and all that is bad in human nature; here we stayed for a week, exploring the island. Due to the rains being heavy and late the river was about 20ft. above average and had flooded the forest floor for miles inland, surrounding Tumureng. There were other forms of life which had sought escape from the flood in the island: stinging ants in their hords and a small boa constrictor we found sheltering in our wash-house. Many birds collected in the flooded grazing grounds, such as the curra-curra (black ibis) and species of heron. Exploring the forest was quite an experience, pushing a small boat between the trees at the unaccustomed level of the epiphytes. Many times a compass saved the day by finding the open river again.

To escape the flooded forest we set off for the hills, first to the Eping mountains where we followed the tracks of a tapir, caught a giant tarantula and watched the ethereal dances of fireflies, while diamond prospectors, sitting round smouldering embers, were in the never-never land, picking up diamonds the size of marbles. Secondly we went up the Kurupung river as far as we could by boat, and then continued on foot over a 2000ft. ridge with it's Wellsian precipitous edges. In our travels we came across the Kamarau falls: three times as high as Niagara, with the tea coloured water turning into foam and then spray, which, blowing over the forest, had produced a jungle of water drenched growths. These were ten foot bromeliads; luscious plants, ready to drench any passer-by with the water collected in their leaves.

Above the falls we were able to row our way up the swift river for a few miles before we came to another cascade, where we had to get out and walk again. Eventually the diamond prospectors camp we were visiting loomed up with it's overlapping leaf roofs and smell of coffee; but most welcome of all was a swim in the pool at the base of the torrent where all the diamond prospectors were working. The brown waters were so sweet and cooling, while little fishes added amusement by nibbling our legs. Back at Seroun, where we had left the boat on the lower Kurupung river, we set up our own camp with a polythene roof in the forest beside the Seroun river; and as often as not we would follow the river up to a raging torrent amongst huge boulders, where we would watch out for the cock-of-the-rock and follow the flashing colours of the morphos. Sometimes 8in. wingspan butterflies would float lazily down the ravine: the advantages of broad wings were known long before man ever wanted to join the birds.

A month after leaving Georgetown we were on our way back again on the mail boat, cleaving the waters of the Mazaruni river: more peaceful waters I have never seen. The trees were in brilliant bloom and from time to time blue and red macaws flew over with their echoing screeches. The lorry journey proved to be even more of a bone shaking ride, there being no load to smooth out the bumps; however we had the excitement of seeing a puma cross the track in front of us.

After a short respite in Georgetown, sleeping in beds and seeing the advantages of civilisation, we were off again into the wilderness; this time by air. Our British Guiana (Govt.) Airways Dakota set off along the Demerara river, passing near the bauxite works of Mackensie, then over the island-ridden Essequibo river, over the forest covered hills of the Pakaraima range, recently drenched by a storm and billowing out contorted mists, then to the savannahs, the Brazillian border and Lethem, our destination. We arrived in the heat of the afternoon to be made welcome by the District Commissioner. Outside Lethem one came to a vast open plain with blue mountains in the distance. Picking one's way between the stiff grasses and stepping on bare sandy earth, there was to be found much of interest: all the early morning flowers, red, yellow, blue and violet, reminiscent of the chalk downs; the sandpaper trees, knarled shrubs, named through the texture of their leaves; and further afield, flushing some quails and passing between 8ft. termite castles, one may come to a happy little stream bordered by the ite palms with pools of clear water in which float water lilies and dart little fish. However all is not joy here for this is the breeding ground of the Kaboura fly, which attacks in such persistant swarms that before long one has to throw all pride to the winds and run from the menace.

The savannah is full of the unexpected; it is a community apart from the rest of British Guiana., having in many ways more connection with Brazil. Lethem itself being a nicely laid out modern settlement in the middle of country which has remained unchanged for countless years, being roamed over by a few nomadic amerindians. Driving along the tracks which connect the few ranches one may come across anything: we passed over grave-yard-like hills scattered with termite pillars, chased a giant anteater, killed a rattle-snake, and nearer the hills watched hundreds of little white monkeys moving to their night quarters in the ite palms, while giant storks flew over. At night

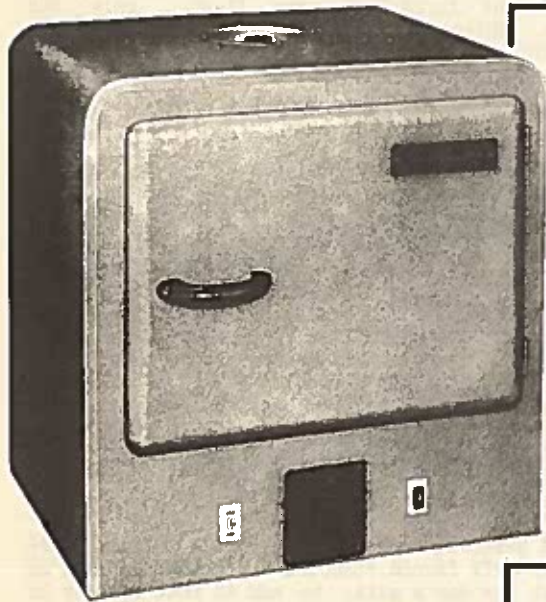


FIELD PHOTOGRAPHY

the savannah comes to life, all the insects start up with their varied songs, the kaboura fly sleeps, the vampire bat wakes. In the torch-beam eyes flash: owls and phantom-like nightjars; toads and opossums; while at ground level are the twinkling eyes of spiders on their nightly prow. The parasol ants are busy again, taking grass leaves into their palaces, while the well disciplined phalanxes of termites set about their nightly tasks, protected from their enemies, the ants, by their chemical defence weapon.

From Lethem, two of us went to stay at Good Hope ranch, Don having had to leave British Guiana early. Here we were amongst trees and cacti, eagles and vultures circled overhead while below there were many other birds such as lily-trotters, humming-birds, trupioles, and scarlet fly-catchers. For a while we had a pet capybara and one day an unexpected guest: a six foot rat snake in our bedroom. When tired of recording tarrestrial noises, we went fishing and recorded noises made by the perai. Regretfully we returned to Georgetown, but were soon to move again; this time by train to the Abary river, a small muddy river flowing most of it's navigable length through the coastal plains. We went about 25 miles up the river on a small launch, disturbing many birds; egrets, anis, boat-tailed grackles, and the hoatzin as we went up. Two sleepless nights were spent in a rice barn, mosquitos preventing us from leaving our nets during the hours of darkness, while cats, dogs, chickens, rats and owls made well timed noises to prevent sleep. However during the day we enjoyed ourselves photographing birds, especially the hoatzin (the bird whose young have claws on the wings), and the small alligators (cayman) which sunned themselves on the banks.

Returning to Georgetown was a most peaceful ending to our visits to the interior. Sitting back on the roof of the daily milk launch, stopping every now and then as indian farmers came out in their boats with the day's milk, to add to that already in the churns. Back in Georgetown we thouroughly appreciated the social life before departing on September 17th to the luxuries of the Norwegian vessel "Suncliff".



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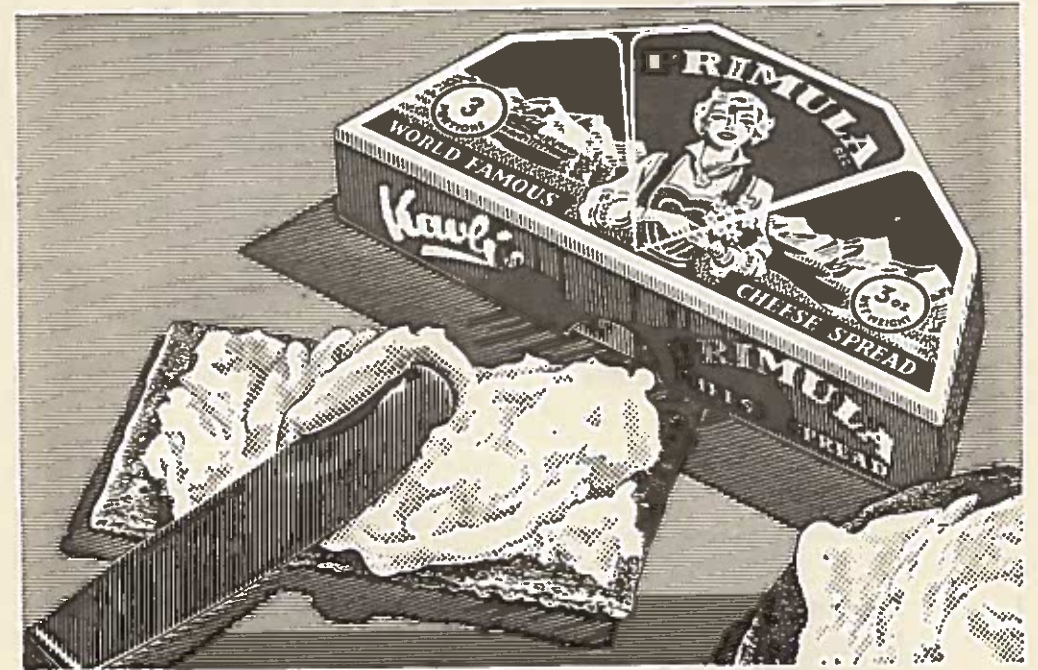
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