



IMPERIAL COLLEGE EXPEDITION TO PAPUA NEW GUINEA 1990



APPROVED AND SUPPORTED BY: THE ROYAL GEOGRAPHICAL SOCIETY, IMPERIAL COLLEGE
EXPLORATION BOARD, THE ROYAL ENTOMOLOGICAL SOCIETY.
ASSISTED BY: THE BRITISH ECOLOGICAL SOCIETY.

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PAPER F

PRELIMINARY REPORT

Introduction

Papua New Guinea has long attracted adventurers from all over the world. The incredible diversity of cultures, landscape and immense natural resources acted as an irresistible lure for the early prospectors and missionaries who first opened the country up to the Western world. Despite the early trade in bird of paradise skins it was much later before proper scientific investigations of the country's biota were made. The vast areas of rainforest remaining, together with the inaccessibility of many areas mean that even today little is known of the flora and fauna. This is particularly true of "unfashionable" groups such as fungi and the more primitive insect orders where there are few workers possessing the specialised knowledge required. To further knowledge of Papua New Guinean fungi and cockroaches we began planning an undergraduate expedition in the summer of 1989.

Papua New Guinea - "the last unknown"

Stuck in the interminable traffic jam on the outskirts of Heathrow airport we began to question whether we would ever reach our flight in time. At last we drew up in front of the terminal building and bundled our considerable luggage out of the cars in preparation for a last minute check-in with our carriers, Singapore Airlines. We heaved a sigh of relief when we managed to get away without incurring a penalty for the 35 kgs of excess baggage we were carrying. Once in the aircraft we settled back for the 13 hour direct flight to Singapore. After a 5 hour wait in Singapore airport we were then to board the Air Niugini service to the capital, Port Moresby (POM).

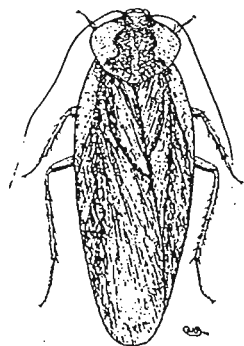
As the plane began its descent the parched savanna surrounding POM came into view. Once on the tarmac of Jackson's International Airport our senses were assaulted by a wall of heat and humidity which seemed designed to make life as uncomfortable as possible without causing permanent disablement. We cleared customs and set about looking for our contact at the University of Papua New Guinea, Dr. Mike Hopkins. Mike was the perfect host. During the weekend we spent in POM he gave us free use of both his house and his car (actually an essential requirement for life in Port Moresby as the city is thinly spread over an area of many square miles).

Whilst in Port Moresby we had a taste of what was to come in the shape of a trip to Varirata National Park. Some 48 kms east of the city, this is one of only two national parks in PNG. Situated on the Varirata Plateau it boasts an enviable

diversity of habitat types. This has led to intensive research programs into the various systems found there. Current investigations include a study of the Raggiana bird of paradise, *Paradisea raggiana*, the country's emblem. Members of the expedition were more than content with the pitcher plants, ant plants and multitudinous fungi growing there. An added bonus came in the shape of the juvenile dwarf cassowary (*Casuarius bennetti*) which we glimpsed before it fled into the undergrowth.

Wau and beyond

After Varirata, Wau came as something of a shock. From the aircraft the landscape below seemed to be comprised entirely of Hoop pine or coffee plantations. Faced with this we began to question whether we had been wise in deciding to spend over half of our research time there. On landing we made our way to the Wau Ecology Institute. This was to be our base for much of the coming month. Originally set up as a field station by the Bernice P. Bishop museum, Hawaii, the Institute is now run by Papuan staff. Our accommodation was comprised of the Institute hostel.



Stictolampra trilineata. This sub-aquatic cockroach was found at Wau Creek (life size)

In the succeeding weeks at Wau we found that to some extent our initial fears had been confirmed. Extensive deforestation had occurred in the area and large areas of hillside, clothed only in kunai grass, were undergoing rapid erosion. One such

area, Mount Kaindi (2,350 m), has been the site of much important scientific work, including the pioneering studies of *Gymnopholus lichenifer*, a weevil remarkable for the epizootic associations it exhibits, and is the only known locality for several other species of weevil. Unfortunately it has been invaded by subsistence farmers and squatters from outside the region and these have embarked on a course of clear-felling and ring-barking all the remaining trees. Sixty years of mining activity mean that the southern side of the mountain has largely been removed in the quest for gold, only brick red earth remaining. Attempts to save the forests appear to be a case of too little, too late. The locals have agreed to a management plan only this year.

In pleasant contrast to the devastation of Kaindi, Mount Missim (Mission) on the northern side of Wau valley, remains almost intact. We had the good fortune to camp for 2 nights at Camp 3 (2,000 m), one of the bases from which much of the ornithological knowledge of the region has been gathered. Partly as a result of this work, negotiations are in progress to turn Missim and the surrounding mountain range into a World Heritage Area. It is a sad comment on the traditional land ownership system that this designation may now be in doubt because of inter-tribal land disputes. On our descent one of our Papuan companions presented us with a

small marsupial. We initially thought that this was the pygmy ring-tail, *Pseudocheirus mayeri*, a species never previously recorded east of Mount Hagen. However consultation with an Australian expert confirmed that it was in fact a juvenile painted ring-tail, *P. forbesi*, which had been previously recorded from the area.

Much of our work centred upon the W.E.I. grounds. These have been largely reforested due to a concerted effort by Bishop museum staff and consequently most of the vegetation found there is secondary regrowth. This has proved ideal for many species of insect and hence provided plenty of potential for our projects. In addition to our successful collection of *Perisphaerus*, a cockroach which may suckle its young, the leader of the expedition, (alerted by reports from a previous visitor), obtained specimens of what is likely to prove a new species of stick insect (i.e. a phasmid of the genus *Extatosoma*). A previously unstudied sub-aquatic cockroach in the genus *Stictolampra* was discovered living under rocks on the banks of Wau Creek. This species appears to forage for food in the water at night and is the only sub-aquatic cockroach recorded from the Australasian region. The grounds yielded few fungal specimens although excursions to Mts. Kaindi and Missim produced more than enough material. The Institute also acted as a base from which members travelled to nearby villages. Here interviews were conducted to determine the locals' traditional uses of fungi. Any free time was taken up with wildlife sound recording (for the National Sound Archives), the collection of insects for the Natural History Museum or the collection of lichen specimens for a specialist in the group.

Although much of the valley around Wau has been cleared, there remain some areas of original vegetation and these are "protected" under provisions such as such as McAdams National Park. Here it is still possible to see huge *Araucaria* trees and gain some idea of what the region was like pre-contact. Expedition members took the opportunity to investigate the area during a day visit. Although much of the area appears pristine from the outside, from within the park it was easy to see the effects of the 300 or so squatters who now live here. Clearly, with one full-time ranger and few funds available from an over-stretched central government, the park's future must be in doubt.

If the situation in the park was disturbing then we soon discovered that all was not rosy at the Institute either. Rumours of "wantok" corruption (unsubstantiated) were rife and couldn't have done a great deal for morale. We were more worried by the wanton clearance of the arboretum for firewood, the hunting of the supposedly "protected" birds and the poor sanitation experienced by animals in the zoo (which led to the death of one of the inmates during our stay).

If the experiences at Wau had saddened and disillusioned us then our visit to Bulolo's Insect Farming and Trading Agency did much to set the record straight. PNG remains the only country in the world with a centrally controlled insect export industry. The benefits of such a system were immediately obvious. The Organisation employs 40 full-time workers and records a turnover of in excess of £250,000 p.a. Much of this filters back down the line to the hundreds of insect farmers and collectors in villages all over PNG.

Goroka and the Eastern Highlands

After a month at Wau we were ready to move on. Travelling by Public Motor Vehicle (P.M.V.) we embarked on the long journey to Lae, PNG's second city. Once there we had the opportunity of a day looking around the new Forestry Research Institute. Funded by Japan, this huge development houses the collections of the Lae Herbarium and the old Bulolo Forestry Research Centre. We had an interesting if tiring day in the company of the staff learning about some of the problems and challenges facing PNG forestry.

The next day we departed for the Markham Valley en route for Goroka, gateway to the Highlands. Here we had arranged a guided tour of Mount Gahavisuka Provincial Park in the care of the park's founder, Canon Norman Cruttwell. As well having a love of plants Canon Cruttwell was one of the first Anglican missionaries to the Milne Bay area in southern PNG. We spent a fascinating evening sharing his reminiscences. After an all too rapid visit to the park we began the long journey to Keglsugl and Mount Wilhelm.

Mount Wilhelm, PNG's tallest mountain

Getting to Keglsugl entailed catching a PMV to Kundiawa (capital of Chimbu Province) and then getting another to Keglsugl itself. Bad weather delayed the first leg of this journey and so we were lucky to get the last PMV of the evening for the next stage. The journey up the 38 kms of road was one of the worst we undertook. The skies opened and the occupants of the pick-up (20 people and one pig) got soaked to the skin. In other circumstances this would not have been too bad, but the increase in altitude meant a pronounced drop in temperature. When we finally arrived at Herman's guest house we were freezing cold and grateful for the roaring fire that greeted us.

The next day was Sunday. We decided to begin our assault on Mount Wilhelm and so started to obtain the necessary provisions. This entailed waiting until the villagers had returned from church so that one of the two "stoas" could be opened. (Sunday opening in PNG is the rule rather than the exception.) After a memorable meal of the famous Highlands strawberries we began what we had been assured would be a 3 hour walk to the National Parks Department's hut on the shores of Lake Piunde. As we followed the path it began to pour and the

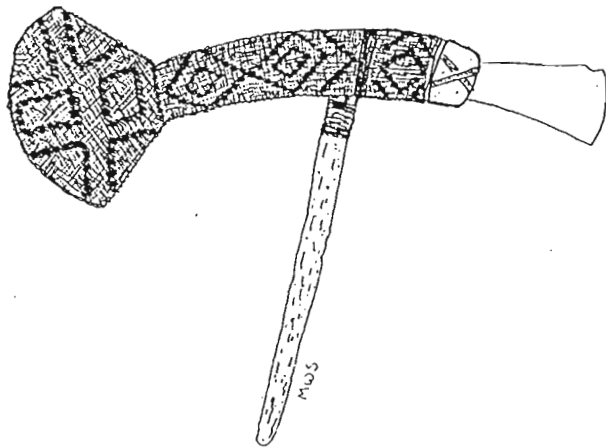


Northern Cassowary *Casuaris unappendicularis*. Cassowaries are kept in many areas as items of wealth and for food.

track disappeared, concealed both by the gloom that had descended and by the patchwork of pools that had taken its place. After about four hours of walking we emerged from the forest into an open valley. The landscape before us was one of the most extraordinary we had yet seen, consisting as it did of alpine grassland clothed with *Cyathea* treeferns. These were the only arborescent plants in the valley basin although the hillsides were covered with moss forest (predominantly *Nothofagus* spp.). After further two hours of trudging through the quagmire that was the path (trying not to sink up to our waists in the concealed hollows) we passed the waterfall that denoted that the hut was nearby.

The hut provided basic but adequate accommodation. It contained foam mattresses, pillows and a kerosene-powered stove, there being no lamps. We felt glad of the shelter it provided as we had arrived at about 6 pm. This only left us with approximately 15 minutes of daylight.

The next morning was beautiful. Rising first Fernley scanned the lake for evidence of Salvadori's teal *Anas waiginensis*, one of the rarest wildfowl in the world and endemic to New Guinea. A previous expedition which had visited the area to try and obtain specimens for the Wildfowl and Wetlands Trust had not even sighted



Stone axe. These are sometimes kept in memory of ancestors. We encountered them in the Keglsugl area where villagers once traded with the Bundi to obtain the stone required.

the bird. He was therefore somewhat elated to observe a pair swimming across the lake in front of him. The other members of the expedition saw the birds when they reappeared at dusk. (The species appears to be largely nocturnal in habit as the birds were absent from the lake between the hours of 8.30 am and 5 pm). The rest of the day was spent investigating the local alpine vegetation and resting in preparation for the ascent the next day. It was interesting to note the familiar genera of plants growing at that altitude. In particular there were species of *Gentiana*, *Saxifraga*, *Olearia* and small orchids of the

genus *Bulbophyllum*. Birds were prominent, there being an abundance of honeyeaters (Meliphagidae), island thrushes (*Turdus poliocephala*) and plum-throated lorikeets (*Oreopsittacus arfaki*). With the exception of some zygoterans obtained by the expedition, few insects were in evidence. (At this altitude most shrubs are bird-pollinated although some are pollinated by sphingids). Fully rested we arose at 2 am the next morning to depart one hour later. The early start was necessary to attain the summit before the mist came down, obscuring the view. At 7.40 am, after a stiff climb up the hazardous path, we at last reached the top. Ice coated the rocks and it was hard to believe that we were in the tropics. Through the gathering cloud we had brief glimpses of the south coast and the Ramu River, before the cold forced us to leave. The descent was far more rapid than the ascent and we paused only to examine the B24-D Liberator USAF bomber which had

crashed on a ridge above the second lake (Aunde). The crash, in 1943, was attributed to poor visibility encountered whilst en route to Mt. Hagen. The explosion of the bombs when the plane hit the ridge catapulted the bodies of the 11 crew members (none of whom survived) as far as the lake below. Little of the plane remains intact, those parts which are recognisable having been bleached by the sun.

After a hurried retrieval of our gear we continued on to Keglsugl. Here we learnt that riots had taken place in Kundiawa. Despite this we desperately needed money from the bank there. Luckily there was no trouble when 2 of the party made the trip, although we later heard that violence flared up again after our departure. We had in any case arranged to travel to Bundi, a journey which took us along the road leading around the back of Mt. Wilhelm, so escaping any trouble.

Laing Island

After a night at Bundi we were lucky to get a lift to the main Lae - Madang highway. From there it was simple matter to get a PMV to Madang itself. The next problem was to contact the King Leopold III Research Station on Laing Island where we were to spend much of the remainder of the expedition. Luckily they were expecting us and so it wasn't long before we were being driven at ferocious speed along the 200 kms of road to Awar village, the departure point for the island.

The island proved an excellent base from which to pursue our field work. The presence of a team of visiting Belgian mycologists allowed a useful exchange of information. Our trips to the mainland villages encircling Hansa Bay also yielded the discovery of a previously unrecognised pest cockroach (*Lupparia notulata*). Useful fungal collections were made in the riverine forests of the surrounding area. Less pleasant were the endless copra (*Cocos nucifera*) plantations which had lined the road from Madang. These were a byproduct of German colonial rule and are now under the control of the locals. A glut on the market had meant that the price of copra was at an all-time low, uneconomic to harvest. Despite this we saw several husband and wife teams dehusking coconuts on spear points by the road sides.

By now the end of the expedition was approaching. We had decided to spend a little of the remaining time at a village near Usino on the Ramu river. Here an eccentric Dutch artifact dealer had built his house. At his invitation we began the journey back along the Lae - Madang highway towards "Camp bilong Martin."

Camp bilong Martin

Martin Borkent had been working as a soil surveyor when he came to PNG. Some 20 years on he now lives in a remote village and works as an artifact dealer. Many of his pieces are sold in the major towns although he exports some to his native Holland. We were to be his paying guests for the next 2 days.

Early the next morning we hired a guide to lead us to the Ramu River. The walk took us through several small villages, where we were surprised at the local people's generosity in giving us food. On reaching the river we boarded a motorised canoe and travelled upstream to a small village whose inhabitants had seen few white visitors. In the distance we could see the start of the Bismarck range. Concealed from sight on the other side of the nearest mountain lay the lush forests of Bundi. On our side the hillsides had suffered almost complete deforestation and burning was in progress. It was after dark when we returned to camp.

Our last day included a visit to what were euphemistically termed "swamps". Only about 15 minutes walk away through the forest, these were more like forest pools. The journey was unremarkable except for hearing the so-called "Garuda birds", Victoria's crowned pigeons (*Goura victoria*), the largest in the world. At the pools we saw introduced carp and were informed that introduced tilapia were also present. On the journey back we collected an extraordinary spider with grossly elongated chelicerae (*Bathippus papueanus*).

Shortly after returning we packed up our equipment and began the hour walk to the Usino Junction. A local sporting event meant that the PMV's were crowded and it was several hours before we finally caught a lift to Madang.

POM and the end of the expedition

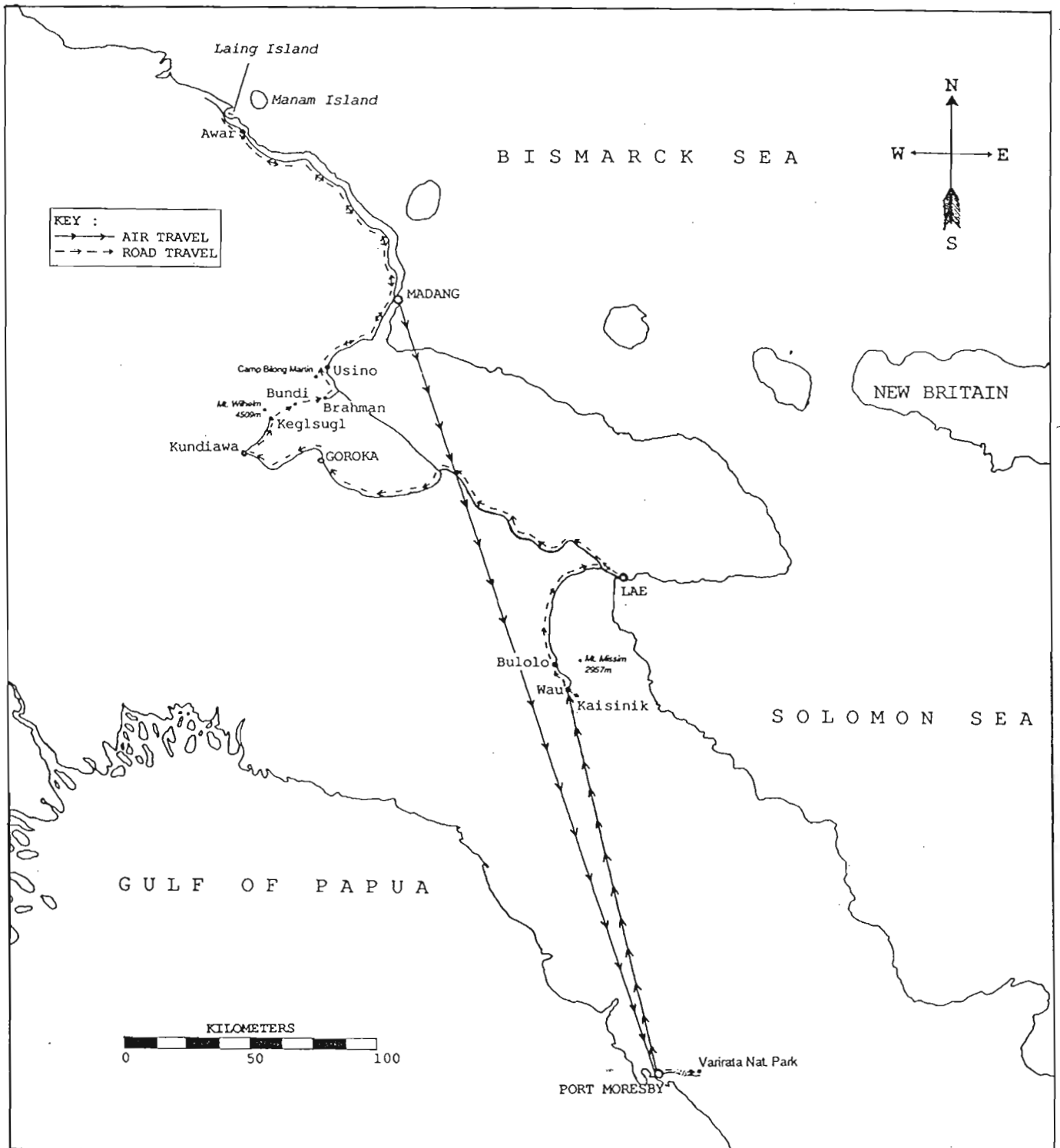
After a day in Madang, during which final posting of specimens etc. was undertaken; members retired to the Christensen Research Institute for the night. The next morning saw our departure from CRI in order to catch the 9.30 am plane to Port Moresby. As we were unable to contact Dr. Hopkins who had offered us accommodation in POM we were forced to spend the night in the expensive Salvation Army hostel. After a morning visit to the National Parliament building and National Museum, expedition members went their separate ways, one member departing for Singapore and Sumatra whilst the others awaited flights to north Queensland, Australia.

Other Research

The expedition did much to further the study of cockroaches and wood-rotting macrofungi in PNG. Several hundred specimens of macrofungi were collected and a special collection of the Corticiaceae was undertaken. Interviews were undertaken to determine the traditional uses of fungi in the areas visited. A culture of *Perisphaerus* cockroaches was obtained and this is being studied to elucidate the exact nature of the mother - offspring relationship. Useful data was gathered on domiciliary cockroaches. Numerous specimens of Panesthine cockroaches were obtained and data were obtained on their ecology. In addition the expedition made several interesting observations of the avifauna including the recording of an

Australian vagrant (*Artamus cinereus*) and 2 new altitudinal records for lowland species. The final results of all research will be found in relevant journals or in the expedition's final report.

ITINERARY



June	27	Expedition leaves London, Heathrow for Port Moresby via Singapore
	29	Expedition arrives at Jackson's Airport, Port Moresby (POM)
July	1	All day visit to Varirata National Park
	2	Expedition flies from POM to Wau. On arrival members install at the Wau Ecology Institute (W.E.I.)
	3 - 10	Work in the W.E.I. grounds and vicinity
	11	Visit to the Insect Farming and Trading Agency, Bulolo
	13	<i>Perisphaerus</i> discovered in the W.E.I. grounds
	14	Specimens of ?new species of <i>Extatosoma</i> obtained
	15	Discovery of sub-aquatic stictolamprine cockroach in Wau Creek
	16 - 17	Work in the vicinity of W.E.I.
	18	Visit to McAdams National Park, Bulolo region
	19 - 20	Work on Mount Missim (Mission)
	21	Discovery of painted ring-tail during descent from Mt. Missim
	22 - 29	Work at W.E.I.
	30	Visit to New Guinea Gold's Golden Ridges Mine, Wau valley
	31 -	
August	1	Work at W.E.I.
	2	Travel to Lae by P.M.V.
	3	Travel to Goroka, Eastern Highlands Province by P.M.V.
	4	Guided tour of Mt. Gahavisuka Provincial Park. In the afternoon the expedition travels to Kundiawa and Keglsugl by P.M.V.
	5	Expedition walks to the hut at Lake Piunde, in preparation for an ascent of Mt. Wilhelm
	6	Members spend a day acclimatising at the lakes
	7	Expedition begins Mt. Wilhelm ascent at 3 A.M. , reaching the summit at 7.40 A.M. The expedition then descends to Keglsugl
	10	Journey by truck to Pandebai
	11	Expedition walks to Bundi
	12	Expedition departs for Braham Mission by truck, continuing to Madang by P.M.V.
	14	Expedition travels to the King Leopold III Biological Station on Laing Island, Hansa Bay
	15 - 21	Work on Laing Island and at nearby mainland villages
	22	Expedition departs Laing Island for Madang
	23	Expedition travels to Usino Junction by P.M.V. and then walks to "Camp bilong Martin"
	24	Canoe trip up the Ramu river
25	Last day at "Camp bilong Martin." Expedition leaves for Madang	
28	Expedition flies from Madang to POM	
29	Expedition ends; members depart for Singapore or Australia	

EXPEDITION BUDGET

INCOME

	£
Personal contributions @ £400	1200
Sponsorship from institutions	2000
Donations from individuals	415
Donations from companies	500
Fund - raising events	80.50
TOTAL INCOME	6529.50

EXPENDITURE

A) UNITED KINGDOM

		£
Administration		
Expedition reports	279.12	
Photocopying	40.33	
Postage	143.70	
Prospectus printing	48.53	
Stationery	28.14	
Telephone	23.10	
		562.92
Equipment		672.98
Medical supplies		67.43
Training (R.G.S. seminar, First Aid Course)		35.50
Travel		
3 Return flights to PNG	2550	
U.K. travel	53.55	
		2603.55
Visas & legal		382.51
Miscellaneous expenses		157.75
SUB - TOTAL		4482.64

B) PAPUA NEW GUINEA

£

Accommodation		941.23
Administration		
Bank charges	28.06	
Postage	101.71	
Stationery	27.19	
		156.96
Equipment		141.25
Food		331.36
Travel		
3 flights POM to Wau	114	
3 flights Madang to POM	166.53	
P.M.V.s	127.83	
		408.36
Miscellaneous expenses		67.70
SUB - TOTAL		2046.86
TOTAL EXPENDITURE		6529.50

Sponsorship

We would like to thank the following individuals and organisations for their generous financial support .

Institutions

The British Ecological Society, Dorset County Council, the Explorer's Club of New York, the Gilchrist Educational Trust, the Gregory Fund, Imperial College Explorations Board, the Natural History Museum (Godman Fund), the Royal College of Science Association, the Royal Entomological Society, the Royal Geographical Society (Goldsmith's Company funds).

Companies

Glaxo Pharmaceuticals Ltd.

Individuals

Mr & Mrs M. E. Baron, Mr & Mrs. A. E. Bastow, Mr G. Beccaloni, Miss J. Burridge, Sir Cyril A. Clarke (patron), Mr S. C. Collins, Mr J. B. Douglas, Mrs A. Jones, Mrs E. Magarshack, Mr M. G. Pidoux, Mr & Mrs P. T. Scot - Simmonds, Mrs J. G. A. Schoeman, Mr C. H. B. Smith, Mr & Mrs R. Steer, Revd. F. R. Symons.

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a) Expedition planning

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b) PNG

Mr W. Glynn, Dr. M. Hopkins, Canon N. Cruttwell, Dr. H. Robbarts, Mr B. Volgei, Dr. M. Jebb, Mr J.- M. LePonce, Mr M. Borkent, Mr H. Sakulas.

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ERRATA

PAGE	LINE	
1	6	"...is known of the flora and flora." should read "is known of the flora and fauna."
1	6	"...of many areas mean that..." should read "...of many areas, mean that..."
2	9	"...seemed to comprised entirely..." should read "...seemed to comprise entirely..."
2	18	"Our accommodation was comprised of the Institute hostel" read "We stayed in the Institute hostel"
3	25-26	"...such as such as..." should read "...such as..."
4	10-11	"As well having a love of plants Canon..." should read "As well as having a love of plants, Canon..."
10		Under "EXPEDITION BUDGET - Income" the figure for "Sponsorship from institutions" should be amended to £2234 and the category "Trust funds £2100 should be added (thus making the prescribed total of £6529.50).
12		Under "a) Expedition planning" "Mr. R. Middleton" should read "Mr M. Middleton".

We apologise for the above errors.