St Paul's Church at St Paul’s Anglican Mission, Moa Island – May 1953

Start of Rogation Day Procession at St Paul’s, Moa Island – May 1953
Church Sergeant and Chairman, Gerain Village, Moa Island – May 1953

Women washing clothes near well at top of beach, Kubin, Moa Island – May 1953
Carved Zogo Stones, Moa Island – May 1953
View of Coen and Mt White from Exchange Hotel – May 1953

Lea and Eileen Wassell outside Exchange Hotel, Coen – May 1953
Lea Wassell on “Yarraden Station”, Cape York – May 1953

Magnetic ant hill on “Musgrave Station”, Cape York – May 1953
Mosquitoes and Memories

LOW ISLES 1954

I had met Professor Dorothy Hill, a geologist and palaeontologist, at various meetings of societies to which we both belonged, one being the Royal Society. The time I really got to know her was on a trip to Low Isles. She was then the secretary of the Great Barrier Reef Committee (GBRC) and my father may have been the chairman or vice chairman – he was certainly deeply involved. The GBRC had a particular interest in the Low Isles area of the Great Barrier Reef. It had previously collaborated with the Royal Society of London to organise an important scientific expedition to Low Isles by a Cambridge group in, I think, 1928.

In 1954 reports reaching the GBRC from Port Douglas advised that the reef at Low Isles was being destroyed. This area was the type locality for many marine creatures and it was important to have a proper scientific examination of what was happening. The GBRC therefore organised a two-week long trip to Low Isles. The Queensland Government was very concerned about the health of the reef. They assisted by organising the Railway Department to supply free second class train transport from Brisbane to Cairns and the Main Roads Department to supply tents.

Mrs Mackerras and I persuaded the Committee it was very essential that they take us. I think Mrs Mackerras went as a parasitologist and I went as an entomologist to investigate the insects on the reef. Professor Dorothy Hill was the leader of the party of about twenty.

Dr Flecker, who was a member of the Committee, had organised accommodation. We travelled as a group by train to Cairns and arrived much later than expected. We had sleepers on the train with three to a compartment. Dr Ian Mackerras, Mrs Mackerras’ husband, was Commanding Officer of a malaria control Citizens Military Forces Unit. As the Unit was on an exercise in the Cairns area at that time, they met us to supply transport to our accommodation.

The women of the party were booked into overnight accommodation in one place and the men into another. They took us to the guesthouse where our accommodation was booked but because we had arrived so late the manager thought we were not coming and had given our rooms away. So we had nowhere to stay. I had friends, Dorcia and Bob Dalgleish, who with their two small children lived in one-half of a house in Cairns. I said, “Oh well, we’ll go to Dorcia.” So Dorothy Hill, Isobel Bennett, Mrs Mackerras and I arrived on the doorstep and roused this poor couple out. They were a bit astonished but quite willing to put us up! They had to move their children around into their own bedroom but fitted us in with a minimum of fuss.

We stayed the night there and went by truck up to Port Douglas the next day. The men of the party went across to Low Isles first and erected the tents and we four women went over on a later trip. Dorothy Hill and I shared one tent and Mrs Mackerras and Isobel Bennett shared another. Dorothy Hill of course, being leader, had the first choice of tents and picked a lovely one looking southeast over the reef. It was a nice big old-fashioned tent with a fairly heavy wooden framework. During the night a southeaster wind got up and the tent blew down on top of us! The men had not anchored it fore and aft – they had only anchored it sideways! After that bit of excitement it was an excellent trip and we did get some interesting marine insects. The results of the expedition were inconclusive as to the reason for the damage to that section of the reef.
The Cay, Low Isles – August 1954

The Cay across the reef, Horsehoof and Giant Clam, Low Isles – August 1954
Edge of Cay with Chapman's House, Low Isles – August 1954

Laboratory hut, Low Isles – August 1954
Women’s tents, Low Isles – August 1954

I. Bennett (on left) photographing M. J. Mackerras photographing coral, Low Isles – August 1954
LOCKHART RIVER 1956 and 1961

In 1956, the elders at the Lockhart River Mission contacted the State Health Department as they had illness occurring among their people. Lockhart River Mission was then located on the coast at the remote Second Red Rocky Point, about fourteen kilometres south of Cape Direction.

It was decided that Mrs Mackerras should go up there in June to carry out an investigation and Dr Fryberg, who was then Director General of Health, decided to send me too. He thought she should have company and, as there was the possibility that the disease may be insect-borne, I should collect mosquitoes.

We flew from Brisbane to Cairns and then to Iron Range. We were met at Iron Range Airstrip by a “blitz buggy” (ex World War II truck) and travelled a long way to Portland Roads on the coast. We must have only gone about twelve miles and were travelling along a high ridge when the “blitz buggy” got a flat tyre. We had to spend a few hours there while they repaired the tyre and it was very boring. The area was very dry and had no nice big trees or anything. If there had been some nice trees with holes, or other places to collect mosquitoes, I would have had no trouble filling in the time!

When we finally got to Portland Roads we boarded the lugger “Yola” and we had about a four-hour trip in that. There was nothing to eat but we did get a cup of tea! We arrived at the Mission Station rather starving and the locals said, “Oh, we were going to give you steak to eat. We got the cattle in to kill one for meat but they got out again!” So our evening meal was Vita Brits or something like that! Mrs Mackerras and I never travelled without carrying a lot of dried fruit after that!

We stayed at Lockhart River for about ten days and Mrs Mackerras took blood samples while I looked for mosquitoes. I had a great time collecting. About six school-aged Aboriginal children used to come with me and they were a great help and great fun to be with. The main thing causing the illness turned out to be a deficient diet and maybe a bit of dysentery.

During the time we were there we were taken to Sherrard Island for the day. It was an interesting island with large coral outcrops. Another day we were taken to see the “Knatchbull Bell”. This was a large bell almost two feet in height. The people did not know the history of this bell but I have a theory that it would have been recovered from a ship that was wrecked in the area. I have tried to find out more about it by looking at lists of shipwrecks on the Australian coast but have been unable to come up with anything. I should give a copy of the photo to the Maritime Museum and see if they can find some history about it.

I went back to Lockhart River again in 1961 but this time we did not have to go from the Iron Range Airstrip to Portland Roads. We went down to the beach at Quintel Creek and the trip was not so long.

The old mission station out on that remote point has been abandoned and the community is now located between the Iron Range Airstrip, which has been renamed the Lockhart River Airstrip, and the coast.
Changing the tyre of the truck on the road from Iron Range to Portland Roads – June 1956

Jetty at Portland Roads – June 1956
Mosquitoes and Memories

Loading the lugger “Yola” at Portland Roads – June 1956

Lockhart River Mission from the lugger “Yola” – June 1956
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Beach and store, Lockhart River Mission – June 1956

Co-operative store, Lockhart River Mission – June 1956
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The “Knatchbull Bell”, Lockhart River Mission – June 1956

Mothers and babies waiting for finger pricks, Sister’s Kitchen, Lockhart River Mission – June 1956
M. J. Mackerras and children, Sherrard Island – June 1956

Dinghy going ashore from lugger “Yola”, Sherrard Island – June 1956
Mosquitoes and Memories

NEW GUINEA 1958 to 1978

In 1958 the Bishop Museum in Honolulu was given a grant from the United States Institute of Health for work on New Guinea mosquitoes and they invited me to go up to New Guinea to carry out fieldwork. I was there for three months working in both Papua New Guinea (PNG) and Dutch New Guinea, which is now Irian Jaya. I also collected in New Britain and New Ireland. My salary was still paid by the Queensland Government but the Bishop Museum paid the travelling expenses.

I set out the type of areas I would like to investigate and various entomologists in PNG organised where I was to go. One of these people was Dr Joe Szent-Ivany. He was the Government Entomologist and he was very good at organising trips as well as being very helpful to me. My accommodation was arranged for me and mostly I stayed with doctors or agriculturalists and their families. When I was going out into the field I was usually given a medical assistant or someone like that to help and guide me. My work in their areas was of great interest to the local indigenous people who all came to look at what I was doing. All the arrangements for my movements had to be made by radio, which was the only means of contact in those days.

I met up with people from various malaria control operations. At Minj I met Stan Christian who had been sending culicines to the University of Queensland since 1948. At Maprik I visited Wallace Peters and Harry Standfast and at Hollandia met D. Metselaar and W. J. O. M. van Dijk.

I spent most of the three months in PNG but I had two weeks in Dutch New Guinea. This had remained a Dutch colony after the remainder of the Dutch East Indies had become part of Indonesia. It was a particularly interesting part of the trip.

A young Dutch entomologist, Hans van den Assem, who was based there took me around. I was particularly interested to visit the Baliem Valley in the mountains because of my previous contact with Mrs Bonne-Wepster who was a Dutch entomologist and mosquito lady. She had described a species *Toxopeusi* from there and I wanted to collect them.

Arrangements were made for us to go and stay with some missionaries in the Baliem Valley area. We were told there had been a bit of political unrest up there but there was an army camp in the area so we should be all right. We all had to get tuberculosis certificates before we could go up to the highlands. After going to the trouble of getting these certificates, we were told that for some reason we could not stay with the missionaries. It was suggested that we could stay at the army camp so we put arrangements in train to do this. However in the end the army said they would not have us and the whole trip fell through, which was very disappointing.

We were dealing with the Resident, who was the equivalent of the District Commissioner in PNG and was in charge of the government at that time as the Governor was away. When he found we could not go up to the Baliem Valley he asked if we would like to accompany him on a trip in the government yacht “Oranje”. It was about to depart for a week on an inspection trip up the Mamberamo River to Pionierbivak at the upper limit of navigation.

The Mamberamo River is a very large river in Dutch New Guinea, which I suppose could be compared to the Sepik River in PNG. There had been no official trip up there since before the war and the area was new to research. This was a very generous offer so I was keen to accept. It
did not get me to the highlands but it did get me to an area that was new to me with good opportunities for collecting. On the trip were the Resident, his wife, one or two other Dutchmen, Hans van den Assem, his wife and myself.

It was a very nice trip. The first place we stopped at was Sarmi where there was a great celebration to meet the Resident. We went ashore there and did some collecting then we went out to an evening reception for the Resident. It was like any Government House party but in a hall. The locals spoke Dutch and when we were leaving they all said, “Goodbye” but that was really the only English they could speak!

Somewhere further along the river the people presented the Resident with a bundle of spears, each for a special use. Later on he gave the bundle to me but with the one for killing man removed! I brought them back to Brisbane and I must say that they were handy little things to carry around in an aeroplane! They would not allow them on board these days! Sometime later I gave them to the Queensland Museum.

The people along the river led a fairly primitive lifestyle but they had some modern things like pressure lamps. Apparently there were Chinese or Indonesian traders who used to travel through the area and barter with the locals. They seemed to eat well as they had good fishing from the river and grew coconuts and sago.

When we got further up the river to where the area was fairly untamed, a New Guinean soldier carrying a tommy gun escorted us as we went around collecting. This was just a precaution as there had not been any particular threats.

At one location I told the locals that I wanted to collect out of bamboos. I was told there were no bamboos growing in that area, which was a very unlikely statement as there were bamboos everywhere in New Guinea. Eventually they admitted that there were bamboos but they were in a male exclusive place where women were not allowed. However after further discussion, they told me that there were bamboos on an island where I could go to collect.

We found a number of new species of mosquitoes, which was to be expected because the New Guinea fauna had not been very well collected except around settled places such as Lae and Port Moresby. Some outlying areas were known because the Americans had collected while camped there during the war.

I do not think enough recorded information came out of the work that I carried out in New Guinea, as I got diverted doing other projects. Although I have written a report about what I found, I never sat down and described in detail some of the specimens I collected out of the sago palms and other places. I sometimes wonder if I got my priorities right – I am not sure.

I was very fortunate to have the choice of so many new things to research but it probably made it harder to concentrate on one project. What I liked doing best was collecting specimens and breeding them out but I fell down on staying at home and describing them.

I actually enjoyed describing very much. Prior to the 1950s we used to describe just the head and tail of the mosquito larva. Then it all changed when a Californian, John Belkin (whose Memorial Award was later presented to me) planned a way of describing every hair on a mosquito larva. The description listed how many branches and the type of hair. This meant it took much longer to describe one larva and it was also much more complicated to do the drawing. I did not have any laboratory assistants until years later when I was working at...
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QIMR. Maybe I could have been provided with one but being employed on a grant and not being strictly university staff, I did not think I was eligible so never asked the question. Not having an assistant made it much more difficult to have the time to describe specimens.

The following year in 1959 I attended the Malaria Conference at Port Moresby and then spent a week collecting on Daru Island. This was an unproductive trip as there was a drought in Daru and my transport plans to go to another area fell through.

In 1961 the Director of Public Health, PNG, invited me to effect the transfer of a large collection of New Guinean mosquitoes to the University of Queensland. Wallace Peters, who had collected these, was anxious to see them safely housed. I transferred them to suitable store and slide boxes, brought them back and added them to the cabinet collection.

In 1965 I went on another collecting trip to PNG financed by a grant from the Bishop Museum. We were there for a month and collected in the Lae and Wau areas. On this trip were Dr Peter Mattingly from the BM and two young entomologists from the Bishop Museum, W. A. Steffan and Yiau-Min Huang, who were along for experience. We collected a number of new species and worked out life histories.

In 1978 at the invitation of the PNG Institute of Medical Research, I visited localities on the Purari River to report on potential arbovirus vectors.

A dam to provide hydro-electricity had been proposed for the Purari River, which is about five hundred kilometres west of Port Moresby in PNG. This river carries the same run-off as the Danube but has only one-twentieth of the catchment area.

A feasibility study had been carried out investigating a site at Wabo, about one hundred kilometres inland. The study concluded that although it would be possible to construct the dam there was not enough market for the electricity to justify the construction at that time. Following this recommendation Dr Tomi Petr of the PNG Office of Environment and Conservation continued environmental studies as to how a future dam might affect the people of the Purari.

I was invited to take part in a mosquito-arbovirus study and the others in the team were Doctors Telford and Martine Work. They were arbovirologists from the University of California, Los Angeles, but at that time were on a sabbatical period at the University of Western Australia.

Port Moresby had changed since my previous visit as there were many more high buildings and the people were generally wearing European dress. We arrived in the evening and next morning, with Tomi and two human geneticists from PNG Institute of Medical Research, left Port Moresby in a chartered Nomad aircraft.

We set out northwest for Wabo flying over thick jungle of varied green shades. An occasional splash of a white creeper and light green umbrella-like tops of big trees showed above the main canopy. We followed the Purari River for some way but there was too much cloud to land so we diverted to Kerema. In the afternoon we tried again in a smaller plane, an Islander, which was able to land on an airstrip built on a former island in the river.

Wabo Camp consisted of rows of single bedrooms, with a central wash room and a big mess hut. It had been built for the feasibility study and was now unoccupied except for a caretaker.
We had comfortable beds and plenty of room for a lab in the mess hut. Tomi had brought our food on the plane with us. Across the river, about three hundred Papuans lived in Wabo Village which was built on a flat-topped alluvial bank about thirty feet above the river and deeply dissected by numerous gullies. The houses were built on top of a series of narrow ridges, their yards well swept and with gardens down the sides of the gullies. The gullies were bridged in many places by logs crossing from ridge to ridge but they were not routes that I used!

The school and homes of the two teachers were on a flatter area separated from the village by Wabo Creek and the children paddled across to school in dugout canoes. The houses, built of pandanus palm, were set on stumps about five feet above the ground. The stairway to get inside was a narrow steep log with shallow toeholds cut in it. It was interesting to see the dogs, which were miserable starved beasts, going up them.

We saw a half-grown pet cassowary in a pen and also a charming young one, the size of a turkey, following its woman owner about. Probably they were being kept for a feast. Wabo has an annual rainfall of eight metres, so the people spent a lot of time in their houses and we were often wet. These Paiwera people were nomadic and they had highlander’s feet, very broad and strong and apparently adhesive for they could walk up and down steep mud slopes that flattened me. Tomi had brought movies with him that he had taken in PNG, Australia and Africa and he gave picture shows for the locals on a couple of nights.

Man-biting collections were made at all locations with the help of the local people who were issued with vials and requested to catch any mosquitoes that were biting them. We also used light traps. The Works used light traps baited with dry ice as carbon dioxide entices the mosquitoes to come looking for a large animal. We also made larval collections taking samples from a wide range of breeding places. The local school children helped us collect. The mosquitoes were sorted from other insects then I identified them and put them into vials of separate species. Martine put the vials into liquid nitrogen and tested them for viruses after she returned to Western Australia. I also collected larvae for rearing.

Our transport was a river truck, a flat-bottomed steel barge with outboard. One day we went about fifteen miles upstream to a small village, Uraru, the only place where I saw women in grass skirts and with tapa cloth (beaten bark) cloaks.

After five days, the Works and I went downstream by river truck to Kapuna in the Purari delta. This was a fascinating trip of six hours – the first half among mountains and the last part through flat country. Kapuna was a Church Mission, with a teaching hospital run by New Zealand doctors Peter and Lin Calvert with whom we stayed. Lin gave us various native fruit, vegetables and sago biscuits to try. The pawpaws, guavas and bananas were delicious. Sago is the principal food of the people living along the Purari and its preparation takes most of the women’s time.

We went by dugout canoe powered by an outboard motor to a large village named Mapaio and stayed there for a night in a local house, sleeping on split bamboo bunks with palm leaf mats on them. We trapped one thousand four hundred and fifty mosquitoes on that one night at Mapaio. Returning to Kapuna at dusk the mangroves along the banks were like Christmas trees, glowing with fireflies.

When we left Kapuna we travelled to Baimuru by dugout, which I found a very smooth way to travel, then flew on an Aztec plane to Port Moresby and on to Wau. I spent a week at the Wau
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Ecology Institute where there were excellent laboratory facilities for rearing my larvae. I had a happy time there staying with old friends Lin and Peg Gressitt. Lin was the Director of the Institute.

Over fifty species of mosquitoes representing thirteen genera were collected on that trip. They included important malaria and filariasis vectors *Anopheles farauti*, *Anopheles koliensis* and *Anopheles punctulatus*, and filariasis vectors *Mansonina uniformis*, *Aedes kochi* and *Culex annulirostris*. Both of these diseases occurred in the area. *Culex annulirostris* was also a potential vector of MVE. Also *Mansonina papuensis*, possibly a filariasis vector, was taken in great numbers in the delta of the river.

It was concluded that alterations to the environment during the construction phase of a dam were likely to promote anopheline breeding, with increased opportunities for malaria and filariasis transmission. They would also allow large populations of dengue vectors to develop, if these species of *Aedes* were introduced.
Sepik River, looking upstream, Pagui – May 1958

First Apingai Village near Maprik. Drum and Haus Tambaran – May 1958
From left. S. van den Assem, E. Marks, J. van den Assem, Mrs Metselaar, Sentani Airport – May 1958

The Resident and Mrs Eibrink Jansen, Mamberamo River – May 1958
Sarmi Beach with war relics, jetty and “Oranje” – May 1958

Teba Village at the mouth of the Mamberamo River – May 1958
The route ashore via log, Bakoesa Village, Mamberamo River – May 1958
“Oranje” at anchor, Pionierbivak, Mamberamo River – May 1958

Pionierbivak Village, Mamberamo River – May 1958
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Village scene at Hanuabada, Port Moresby, PNG – October 1959

Otter aircraft at Baimuru, PNG – October 1959
Typical scenes Lae and Wau areas, PNG – 1965