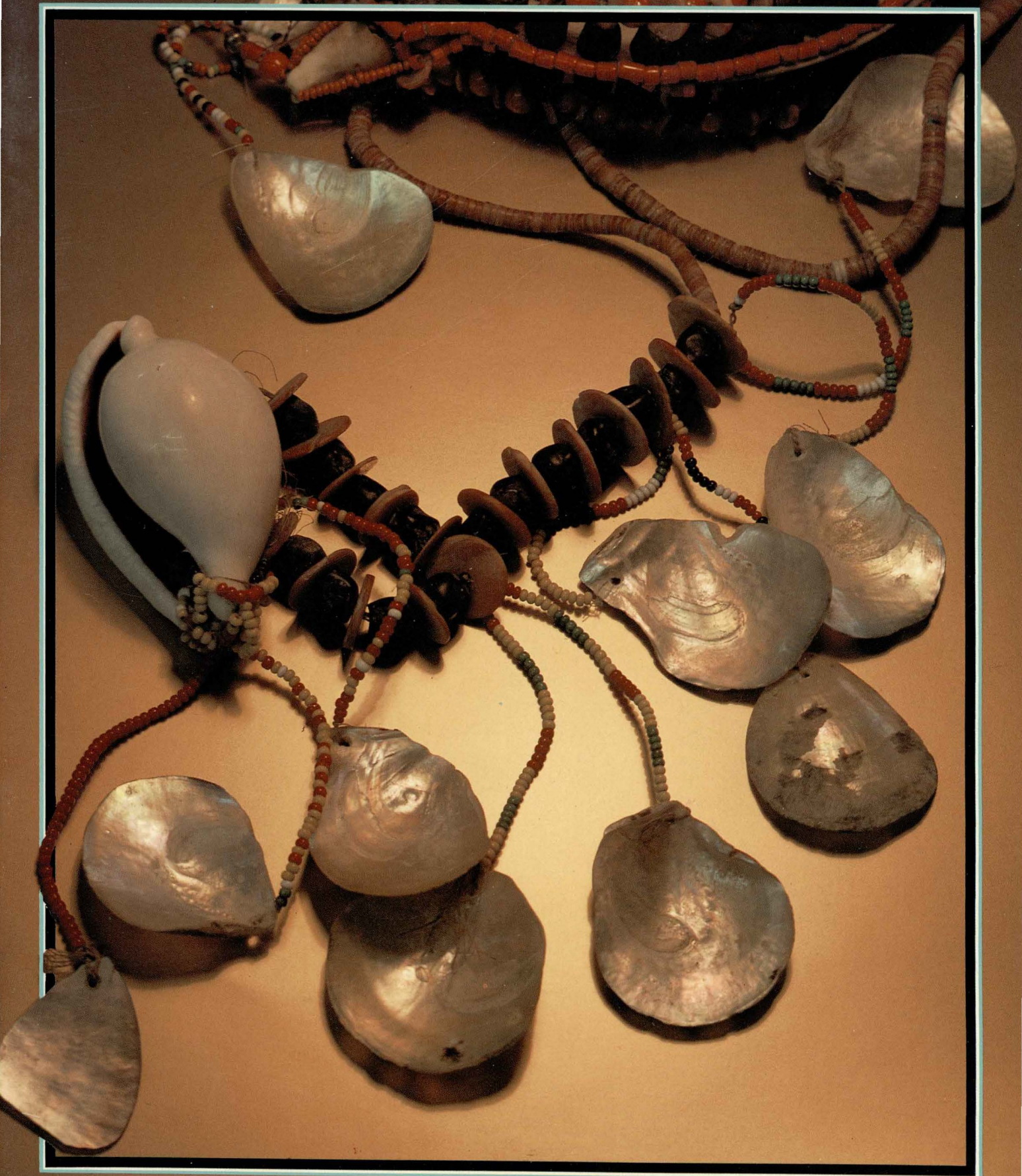


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Guy Laroche
Paris

DRAKKAR
NOIR

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d'un parfum d'homme.



paradise

Welcome aboard.

It is my pleasant duty to again welcome you on board your Air Niugini flight, sit back enjoy your flight and through this edition of Paradise experience some of the natural wonders of Papua New Guinea and two of our special people, Gickmai Kundun who has made the transition from his Chimbu village to international acclaim at the International Biennale Exhibition in Sydney and Ben Probert from the British army to the Southern Highlands of Papua New Guinea as a kiap.

Have a pleasant flight.

Masket Iangalio
General Manager

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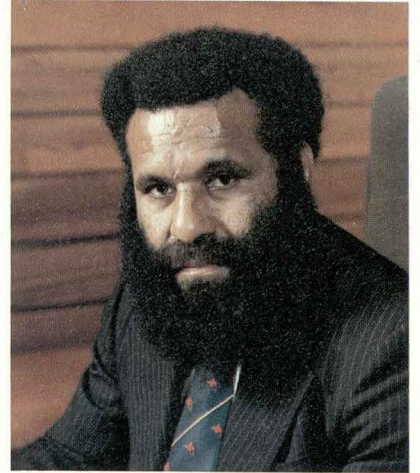
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Above right: Mr Masket Iangalio, general manager of Air Niugini.

Cover: A valuable seashell necklace (soulava) used in the exchange of wealth by kula traders.
Photography Tom Cooke

No. 59 October 1986

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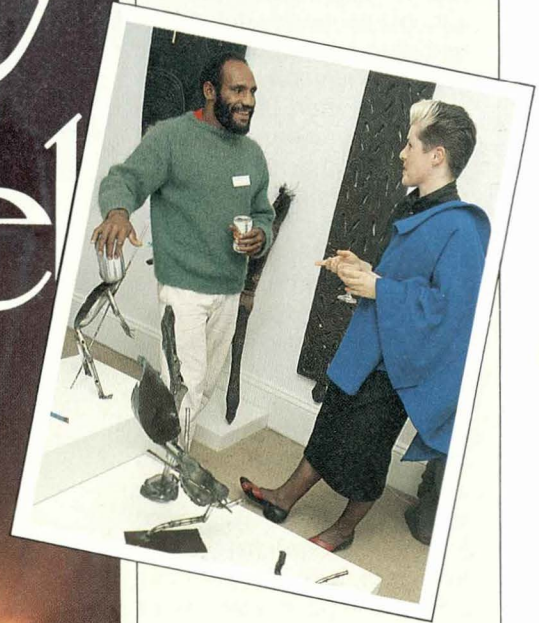
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Artistry in Steel



Spark plugs, bumpers and hub caps in a city dump inspired a man from the country, Gickmai Kundun, to become a sculptor. He used them to create startling images that have earned him an international reputation in the world of art. His talent was recognised again this year when he was invited to exhibit at Sydney's Biennale, an important show that gathers works from great living artists around the globe.

Kundun is the first Papua New Guinea artist to be so honored and "was the only representative from the South Pacific region this year. His progress from a remote Highlands village to the rarefied atmosphere of the western art world's Biennale had a Cinderella quality. He almost turned down the opportunity because of his innate modesty. "I received a letter of invitation from the Biennale but I didn't reply," said Kundun, now assistant lecturer in sculpture at the National Arts School, Port Moresby. "I was nervous. I thought to myself: 'I am just Gickmai at the Arts School; why do they want me?'" A second invitation convinced him that he should accept and Gickmai Kundun, from Omobondo village in Simbu Province, flew south to rub shoulders with members of the arts and culture community in Sydney.

In spite of his modesty and

Sculptor Gickmai Kundun in his workshop studio at the National Arts School left. The artist meets the public at a Sydney gallery above.

in spite of his age (he is only 31) Kundun has experienced the attentions of admirers before. His artistry adorns the magnificent buildings of PNG's National Parliament, churches, offices, hotels and the National Museum and Art Gallery. His version of the national emblem, worked in metal, decorates the PNG High Commission in Canberra, Australia's capital. And in 1983 he visited Australian art galleries and schools as the winner of an Australian Cultural Award.

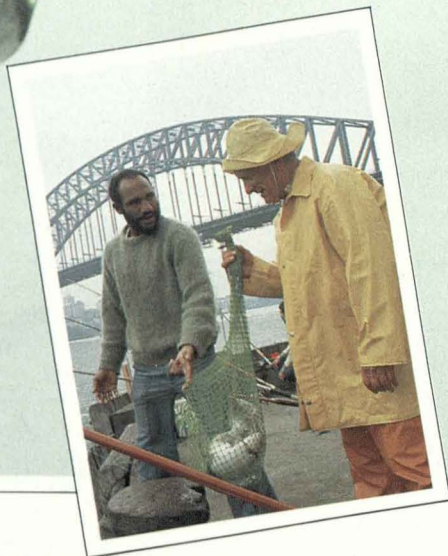
Kundun first received recognition as an artist at primary school in Konapina, in Western Highlands Province, where his family had moved in a land resettlement scheme. "The teachers asked me to do small drawings on the board during recess or lunch so that other students could do composition," he said. He drew from folklore themes to which he was to return occasionally in the future. His artistic development received a boost at Mt Hagen High School in 1973.

Story by Anthony Stuart
Pictures by Rob Walls

"The art teacher saw I had some talent and I joined the art club," he said. "I did some small water colors, some small copper beatings. That led to murals around the school, on walls and doors, using oil-based house paints." Eventually one whole wall of the library was covered by a Kundun mural of traditional designs. "It was a work of design rather than a story board."

A scholarship to the Creative Arts Centre (now the National Arts School) took Kundun from the mountains to the country's capital, Port Moresby. The move was to have a profound effect on the direction of his artistry, not all of it inspirational. The result however was that Kundun put down his brushes and took up the welding torch - the painter became a sculptor. "Port Moresby was very hot you see and sometimes after lunch at Arts School, when my stomach was full of rice, I would get tired and fall asleep at my painting. I thought then I should do something tougher that would keep me awake."

*Powerful imagery in welded steel by Gickmai Kundun **right**. The artist takes a break from the Sydney Biennale exhibition to talk to a fisherman **inset**.*

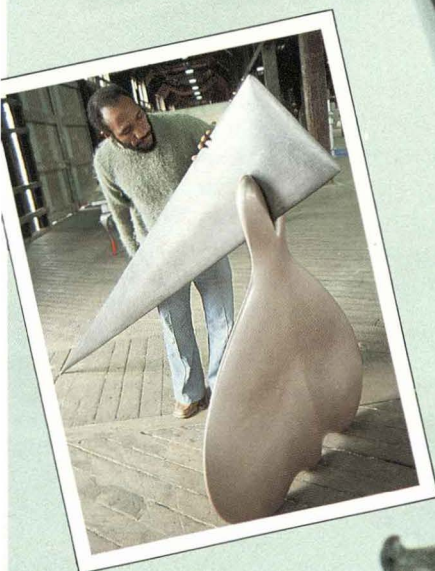


So when the school director Tom Greg asked me if I would help him with some welding, I said yes. I never fell asleep after that.

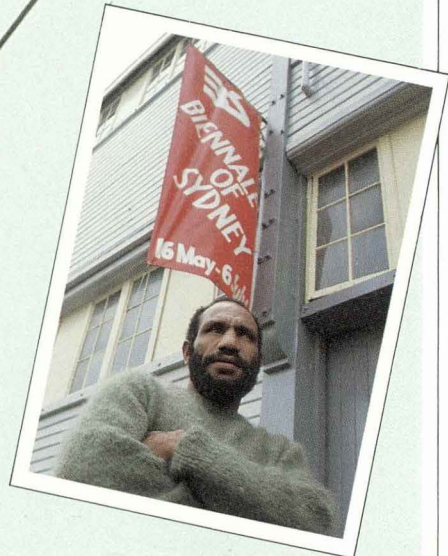
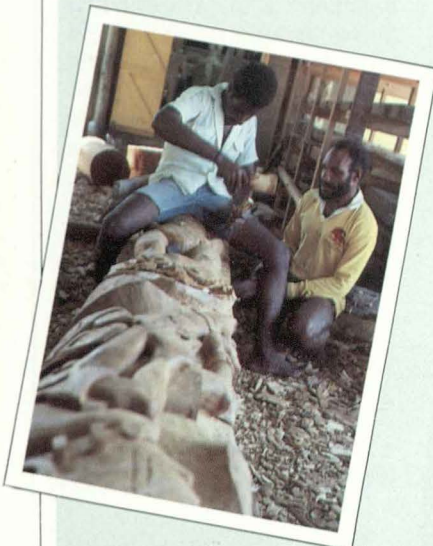
"I had an idea once when I came across a rubbish dump - about working with car bumpers, spark plugs, beer cans and things like that and I figured that there would be lots of raw material around on the dump." In homage to the source of their materials, Kundun and fellow artist Benny More mounted a joint exhibition in 1978 called "Garbage". It didn't deter government and business interests from commissioning Kundun for major works. That led in 1983 to the task of rendering a traditional story on a 10 metre by 8 metre wall in the new National Parliament wrought in steel rods. It illustrates a rather grim legend of his fellow tribesmen, the Chimbu.

The story is of a family; father, mother, son and daughter who are moving home to another village. To have water for the journey the father prepares two bamboo poles as containers. His son is his favorite child so he plugs the end of the bamboo for the son who quickly fills it from a nearby creek, leaving his sister behind as her unplugged bamboo vessel keeps draining empty. The family set off without the

Scrap metal brought to life by the hands of the sculptor left. Gickmai Kundun examines the work of a fellow artist inset.

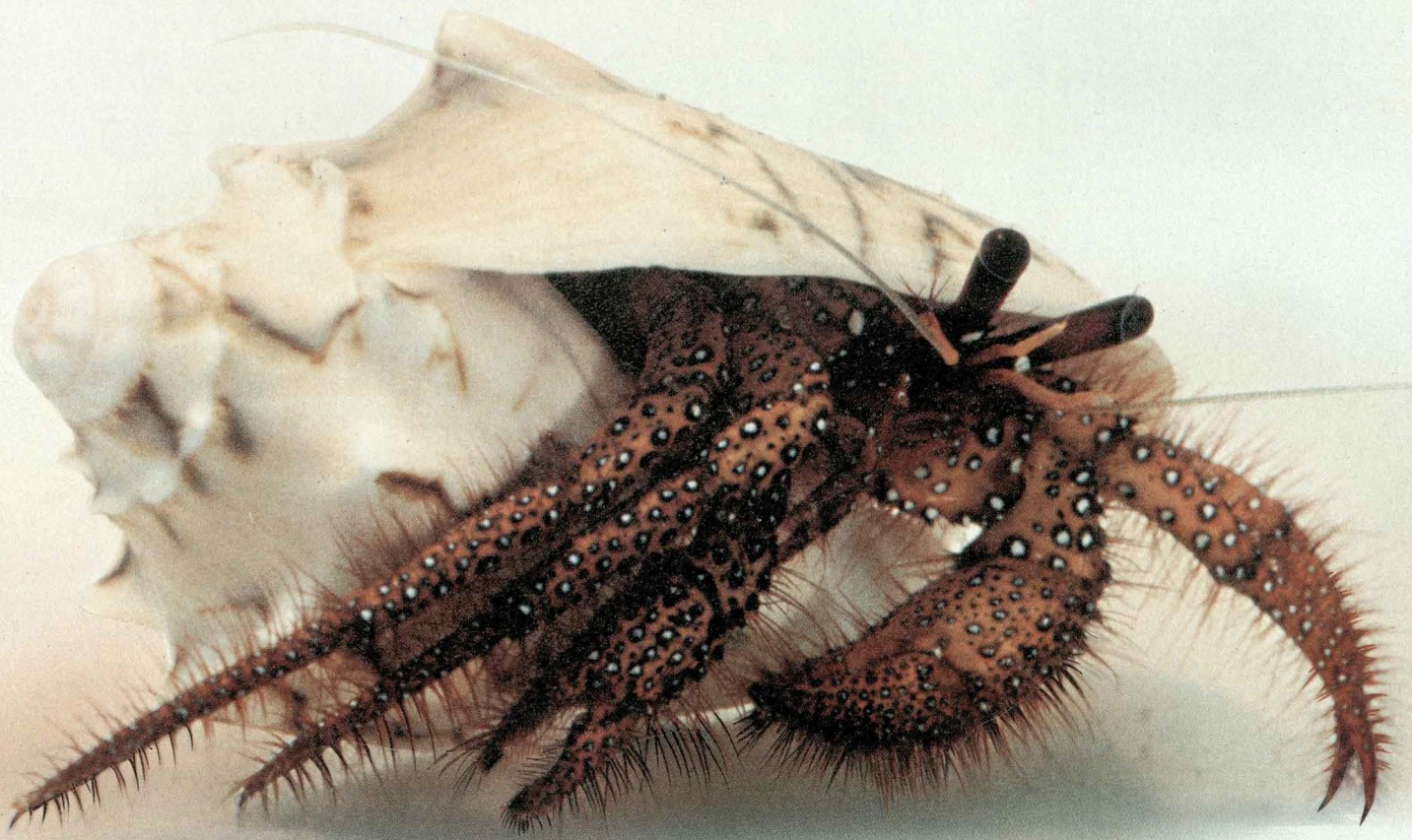


daughter, but she catches them up as they cross a fast flowing river. First the father helps the mother then the son across the river, but when he reaches the middle with the daughter he pushes her away and she disappears downstream. The son, upset and saddened by the loss of his sister, cuts off a finger from his hand as a token of his loss and the three people continue on and in time settle in the new village. However they do not know the daughter is rescued by an old lady from another village who pulls her from the river. Some years later there is a singing and the two villages come together for the occasion. The son dances and is seen by the girl. They fall in love. When they clasp hands she notices his missing finger. She asks and he tells the story of his lost sister. She realises that this is her brother but says nothing and in time they become man and



A Papua New Guinea bowman wrought in chrome and steel **centre**. Gickmai Kundun with student carver at the National Arts School **left** and outside the Biennale exhibition **right**.

wife and have many children. That sculpture is in a permanent place whereas other of Kundun's works are making their way from his Port Moresby studio to collections around the world. Tourists, recognising its merit, have bought his pieces as have gallery owners, in Europe, North America and Australia. With the honor of being PNG's first artist to exhibit at the Biennale, his future as an artist is secure.



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Helicopters, the workhorses in the search for oil, lined up at the Tari base camp of Niugini Gulf Oil right. Drilling bits **below** and helicopters at work and being serviced **right**.

Story and photographs by David Eastburn



OIL SEARCH



Seepages of crude oil occur in many parts of Papua New Guinea. Traditionally, oil from some of these soaks was used as a cosmetic for the skin and hair and as a treatment for wounds and infections. But today the search is on for this precious fossil fuel which could become an important export for the country.

The search for commercial quantities of crude oil began in PNG 75 years ago. The first

exploratory well was drilled by the British New Guinea Development Company at Upoia near the Vailala River, west of Kerema, in the Gulf Province. Since then numerous companies have spent several hundred million kina on oil exploration. Despite promising finds of gas and condensate (equivalent to light grade crude oil), no commercial oil fields have yet been discovered. However, this situation could



change at any time.

Niugini Gulf Oil, a part of the American Chevron Company, is carrying out an intensive search for oil along the southern edge of the Highlands, between the Strickland River and Lake Kutubu. It is a particularly rugged and isolated area. A series of appraisal wells, drilled to a depth of 3,600 metres at Juha and Baia sites at the base of the Muller Range on the Southern Highlands - West-



tern Provincial border, have revealed very significant reserves of condensate. Another well is being drilled at Iagifu, south of Lake Kutubu and the search is continuing eastward.

Petroleum prospecting in

this part of PNG is not new. An Australasian Petroleum Company (A.P.C.) geological survey team, with an Australian Administration escort, searched the land between Lake Kutubu and the Strickland River in 1954. At that time, the country between Tari and the Strickland was classified as "uncontrolled" and for many locals, the "oil patrol" was their first contact with Europeans.

Exploratory drilling also

took place around Komo in the Southern Highlands in the late 1960s and the early 1970s.

The search for oil along the southern edge of the Highlands was originally sparked off in July 1953. An observant Assistant District Officer at Tari, William Murdock, recognised the contents of two gourds brought into the station for sale as being crude oil rather than the usual tigasso tree oil. A small band of Huli men brought the oil from near Koroba, west of Tari. Murdock purchased the gourds and sent oil samples to Port Moresby for analysis by A.P.C. Results were so promising that the company made immediate plans to survey the country between Lake Kutubu, Tari and the Strickland River.

The survey team was escorted by an Administration patrol, as the area to be searched was restricted to the land between Tari and the Strickland, virtually unknown to Europeans. The patrol was led by Assistant District Officer Des Clancy and consisted of 13 members of the Royal Papua and New Guinea Constabulary and 150 carriers. The A.P.C. survey team consisted of two geologists, Keith Llewellyn and John Zehnder, and a field assistant, Frank Duke.

The patrol began from Lake Kutubu in late March 1954 and made its way to Tari, arriving 22 days later. Progress was slow as the geologists closely examined the country through which they passed and often made short trips to either side of the route. The patrol left Tari on 20 April accompanied by two influential Huli fight leaders, Punga and Piru, to travel to the Strickland via the Tumbudu Valley and Lake Kopiago.

On 3 May, John Zehnder left the main patrol to visit a valley reported to be the source of the oil which Murdock had sent to Port Moresby 10 months earlier. The valley, called Lavani by its Huli inhabitants and the

surrounding land, received world-wide publicity when its existence was first announced.

Following an aerial survey of the country through which the "oil patrol" was passing, the Director of Native Affairs, Mr Alan Roberts, reported locating a very large population of uncontacted people and also the sighting of a spectacular basin completely surrounded by cliffs. He described the latter as a "new Shangri la" and reports about its discovery captured the imaginations of newspaper readers around the world. When Zehnder returned to Port Moresby he found, to his astonishment, that as the first European to enter "Shangri la", he was almost a folk hero.

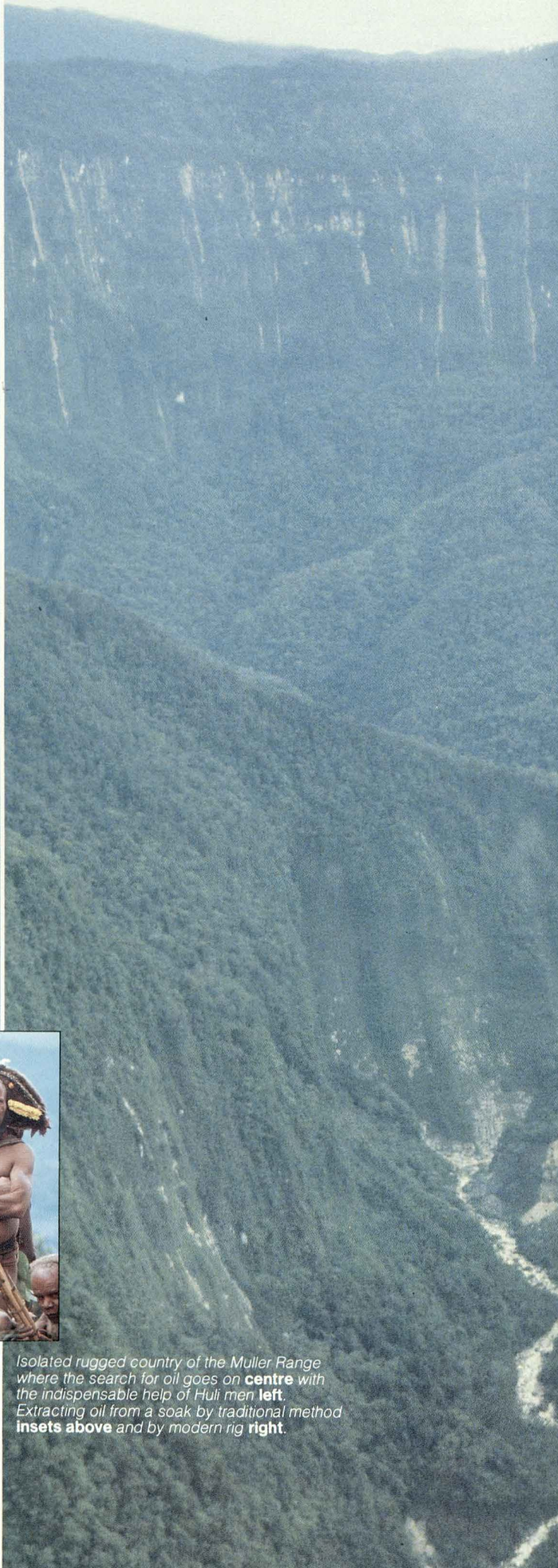
The Lavani Valley, with its limestone cliffs reflected in lakes, rivers disappearing underground and lush green floor, is spectacular and beautiful, particularly from the air. However, at an altitude of 2,100 metres, it is very cold and much of its lush green floor is marsh. Few Huli people live permanently in the valley. After shivering through one night in the Lavani, Zehnder was glad to return to the main patrol.

The patrol continued down the Tumbudu Valley and after a brief stop at Lake Kopiago,

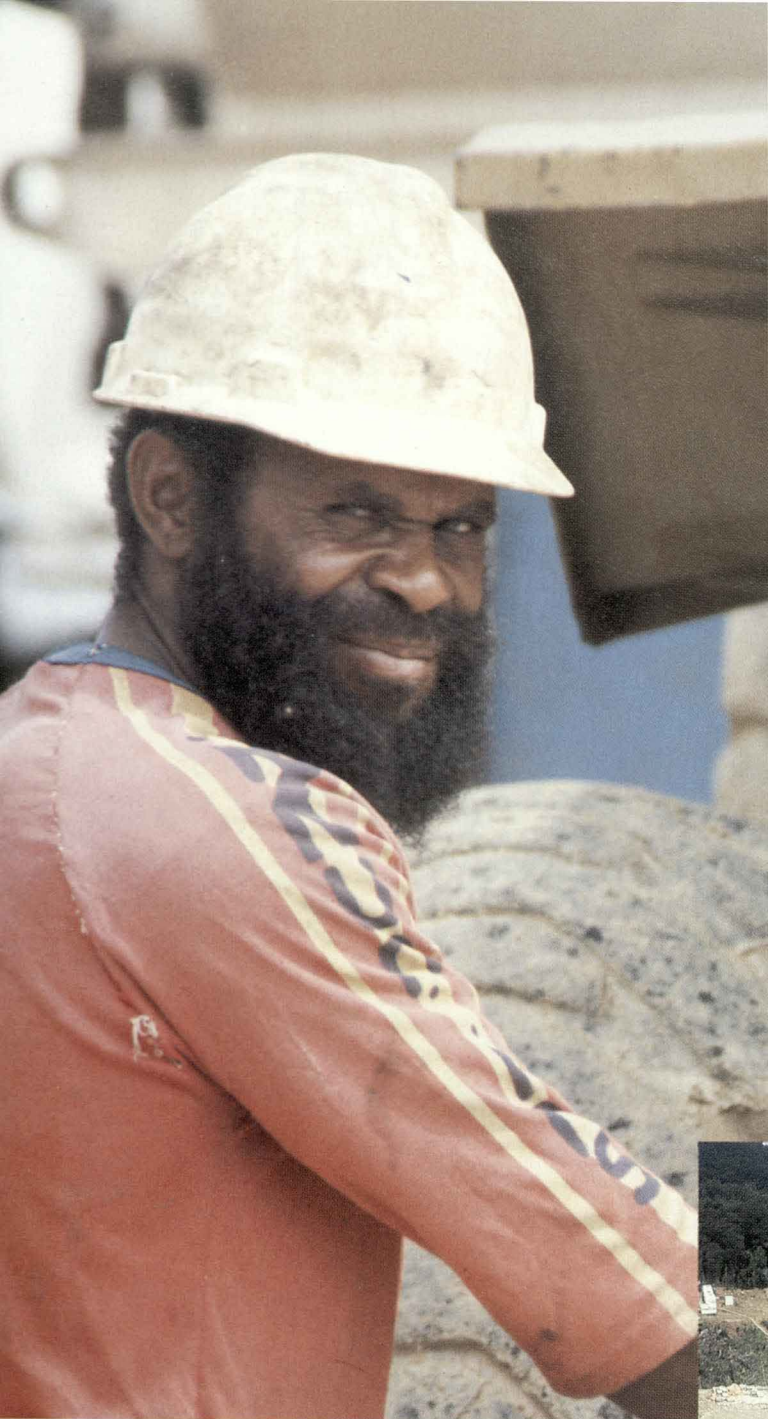


entered the dreaded Strickland Gorge. Progress through the Gorge was painfully slow, on some days less than three kilometres were covered. It was impossible to follow the river and the patrol was forced to make its way along

*Isolated rugged country of the Muller Range where the search for oil goes on **centre** with the indispensable help of Huli men **left**. Extracting oil from a soak by traditional method **insets above** and by modern rig **right**.*







narrow cliff ledges above the raging torrent.

After the patrol had passed through the Gorge, it was decided to give the exhausted carriers a rest. Canoes were built with which to complete the journey to the Fly, where the A.P.C. vessel was waiting. Tragedy struck after less than two kilometres on the river. One of the canoes was sucked into a whirlpool and the policeman in charge and eight Huli carriers drowned. The shaken members of the patrol abandoned the canoes and continued on foot, but three more men were lost before the patrol was completed.

Oil search in PNG today is a different story. It is a highly organised and very expensive multi-national operation. Helicopters are the carriers of modern oil explorers and the lifelines of the isolated drilling sites. Everything required at the sites, from bacon to bulldozers, is ferried by helicopter from base camps. Cargo is usually transported in huge nets slung on steel cable beneath the machines.



Niugini Gulf Oil, operating out of Tari and Poroma in the Southern Highlands Province, employs two twin rotor Boeing Vertol 107 helicopters, two Aerospatiale SA 330 Puma machines and several Hughes 500s to service its rigs.

The drilling sites appear as tiny white islands surrounded by stormy seas of rainforest. Each site is manned by a core of specialists with international experience and is equipped with its own electricity generating plant, earth-moving equipment, mini laboratory for preliminary analysis of samples and airconditioned portable accommodation and mess for the workers.

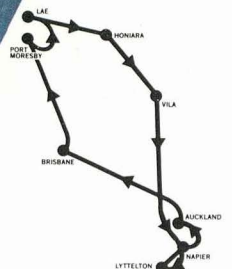
The technology and organisation involved in modern oil exploration in PNG contrasts with the simple traditional method still used by the Hulis to extract oil from soaks in the Lavani Valley.

Flower tufts, snapped from the tops of pitpit canegrass, are swirled in the soak to absorb the oil. It is then stripped from them between the thumb and forefinger into a gourd container via a pandanus leaf funnel. The only concession to modern technology is the occasional use of plastic bottles, instead of gourds, in which to transport the collected oil.



An oil rig worker **top** on the lagifu drilling site **inset** Poroma villagers inspecting a newly arrived helicopter.

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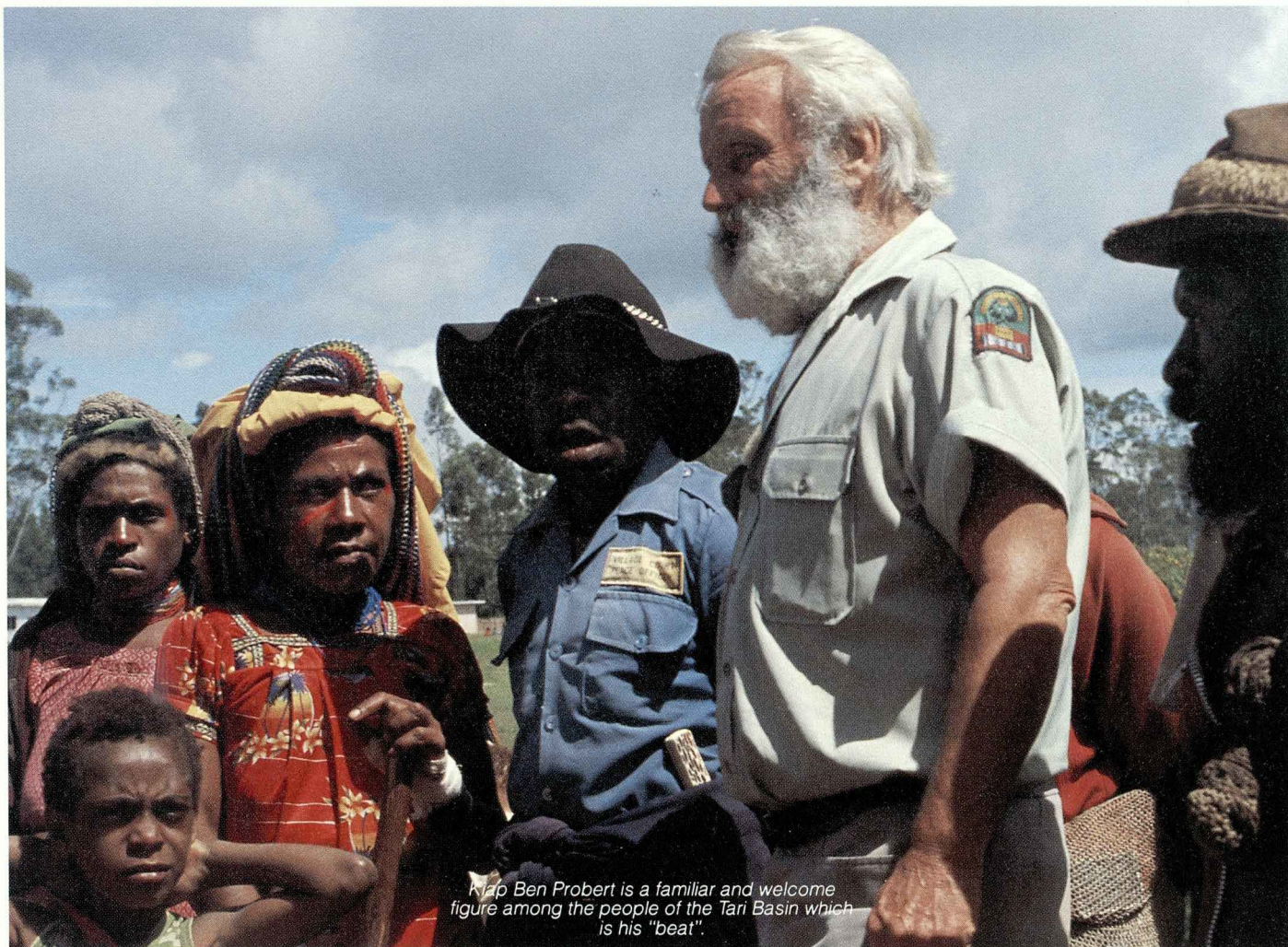


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Kiap Ben Probert is a familiar and welcome figure among the people of the Tari Basin which is his "beat".

Last of the Kiaps

Kiap Ben Probert was often in no man's land between warring Huli clans in the Southern Highlands but never carried a weapon and never suffered an injury.

"I was well known I suppose," he said by way of explanation. "I have never been threatened with violence except by people who were out of their minds." The fact is that after 18 years in the province, the muscular Probert with his grey hair and beard, has become not only well known but highly respected. Huli warriors, steeped in the traditions of war and ever ready to attack each other, never felt the urge to turn their enmity on Probert.

He is one of an almost extinct breed, the kiaps, the white men of district officer rank who ran much of Papua New Guinea before

Story and photographs by Max Austin

independence. Only he and one other are still in the field. Probert's job has been to keep the peace among the 48 thousand people in the Tari Basin which is his jurisdiction. It gave him more pleasure than pain, but occasionally required traditional police officer duties.

We met him at his office in Tari one Monday after a weekend of skirmishing between two groups of warriors in the countryside. Probert's intervention had brought a cessation in hostilities. "I took a leaf out of Henry Kissinger's book for negotiating fights," he said. "I don't ask them what the problem is because it could go back to

grievances of 20 years' standing. Instead I find out what each side has in common. I get them talking.

"In this last incident the two sides asked for three or four days to settle their differences with bows and arrows and stone axes. I said 'no'. Then I reminded them of a similar feud years ago when I sent in a mobile squad." The threat of heavy intervention by Probert's officers was enough to get the two sides talking.

Such incidents are isolated and unusual these days. The preferred way for young men to let off steam is on the rugby field where Hull players have distinguished themselves. Probert was happy to join in. "I'm a rugby fanatic; I played until I was 50," he said.

Some men, instead of playing rugby, stage mock battles for

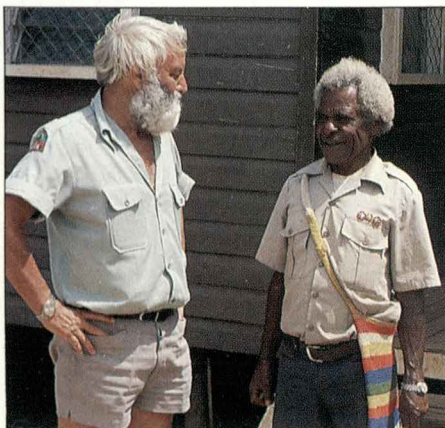


tourists, providing dramatic scenes for the cameras.

Maintaining law and order is but one aspect of being a kiap. Adjudicating disputes, grievances and arguments on all sorts of matters, down to the ownership of a single plant, comes within his brief. "Villagers often are waiting outside my office in the morning and I listen to them no matter how trivial the problem may seem," he said. "Some may have walked 12 miles to talk to me."

"When I was first here I ran the whole bloody shop," he said. "I was magistrate, arresting officer, prosecutor, defending counsel and warder. When people were locked up they went into my calaboose. In my spare time I did things like the census, recording land purchases and overseeing elections."

Many kiaps left after independence but Probert, who regards the Tari Basin as a sort of paradise, remained. "I was the equivalent of a single man, divorced, with a grown up family and I love the job," he said. He has



Huli warriors get ready to enact a battle with a rival clan **above**. Kiap Ben Probert with an interpreter, Togobe, and surveying his domain from the front porch of his Tari home.

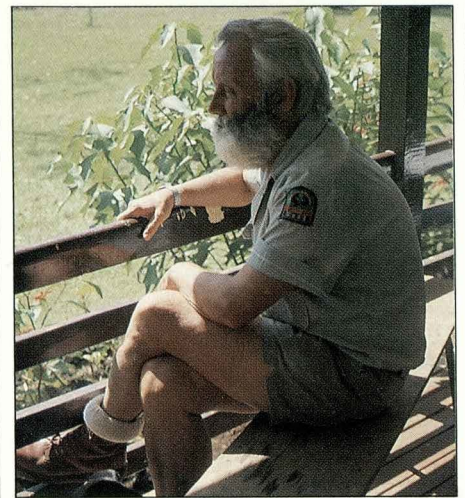
respect and affection for the Hulis who are the largest of the 700 language groups in PNG.

His district encompasses five other language groups including Otoro which is spoken by only six people.

Probert makes do with English and Pidgin, which he said is a mixture of German (the original European colonists), English and Melanesian. "Kiap, originally a slang word, is from the German 'kapitan'," he said.

Travellers find the Hulis very friendly and hospitable. But they were among the last of PNG's people to meet Europeans and the Tari Basin was declared "uncontrolled" (unsafe) until a couple of decades ago. "The Hulis can be difficult and volatile people," said Probert. "They are aware of the economic potential of their land and they want development. But they want it on their terms. When I came here it was the most undeveloped province in PNG. That's not the case now."

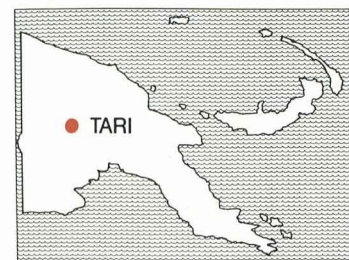
Probert, 56, did a building trade apprenticeship in his native Bristol, England, before joining the Royal Engineers of the British Army and shipping out to Hong Kong in 1950. After the break-up of his marriage he emigrated to Australia and worked at a satellite tracking station in Arnhem Land. Then he



answered a newspaper advertisement and became a kiap in PNG. His original contract was for six years. Soon he will retire after 20 years.

His plans are to return to Bristol, going home by way of Hong Kong. "I never regretted settling in Tari and I have never been homesick," he said. "But I do miss Bristol."

Probert will take back to that English port city a collection of beautiful artefacts that are gifts given to him by Huli people over the years. They will be ever-present reminders of his life in the Tari Basin as one of the last of the kiaps.



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Mt Hagen

Kundiawa

Vanimo Goroka

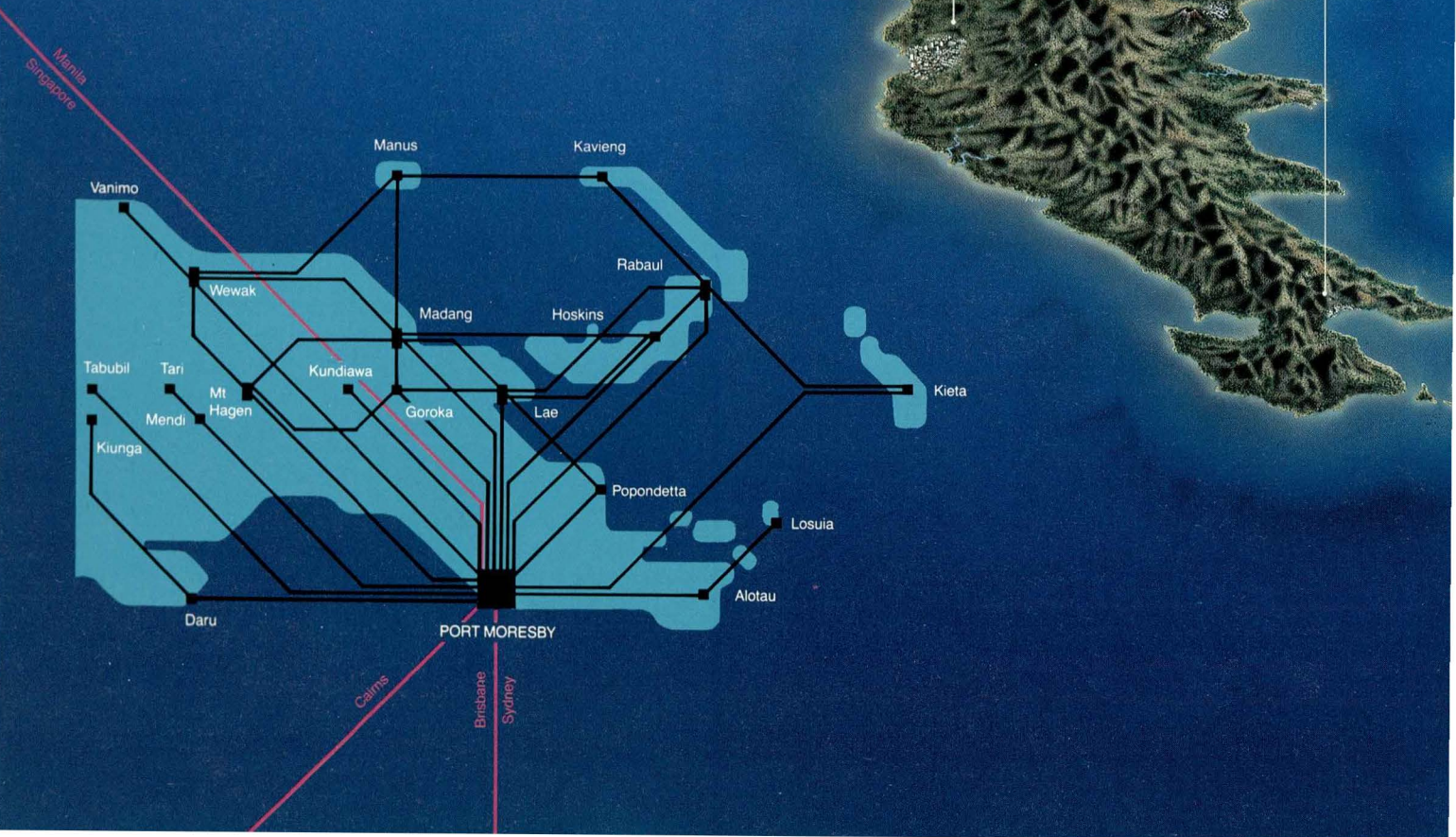
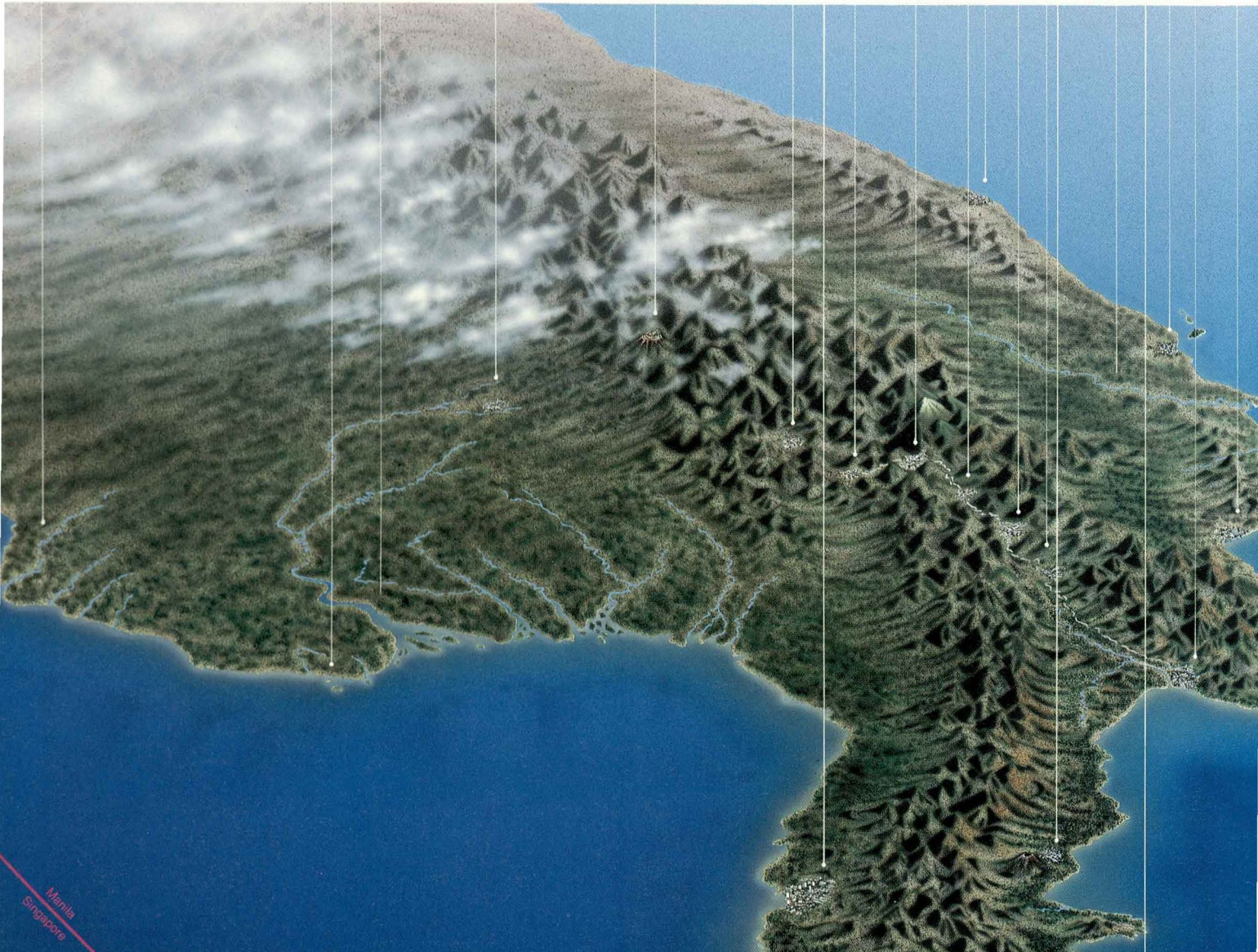
Kainantu

POPONDETTA SEPIK RIVER

Alotau

Wewak

Lae



Losuia

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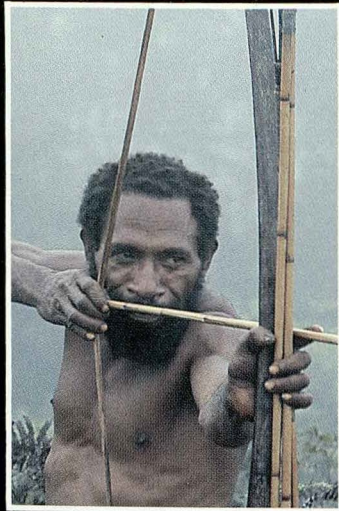
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Living Fossils

Story by Dr. Tim Flannery and Gary Steer
Photographs by Gary Steer

We were flying over a landscape that looked primeval. Way below there were pyramid-shaped peaks covered in tropical forest. We knew that in those highland forests there were many "primitive" animals.

Going into the forests of Papua New Guinea today is like taking a trip back in time to Australia 15 million years ago. Then, even in the central desert, there were permanent rivers and lakes surrounded by tropical veg-



A Telefomin hunter takes aim with bow and arrow **above**. Black-eared giant rat **bottom**.

etation. Dolphins and crocodiles lived in the waters, flamingoes fed in the shallows of the shores and opossums and other arboreal animals inhabited the forests of the area. Many animals that today live in the highland forests of PNG are closely related to the forest-dwellers of Australia in prehistoric times. They have very primitive features, similar to fossils found in arid Australia. They are PNG's living fossils.

It is believed the reason for



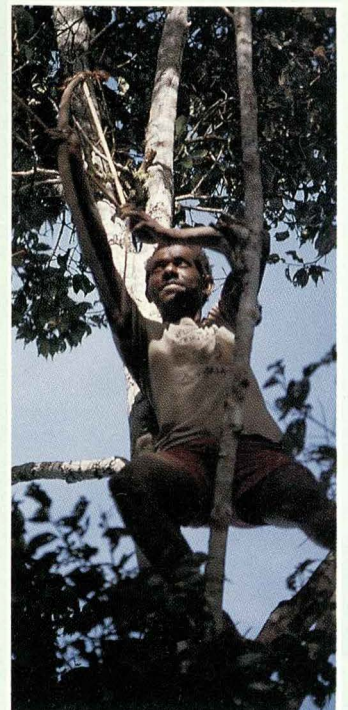


this is that about 15 million years ago a land bridge formed between Australia and the island of New Guinea. When the two lands met there was an interchange of animal species with many marsupials migrating north to PNG.

However, many of the primitive animal species in Australia have become extinct. Contrary to what might be expected, during the Ice Ages, the world grew drier. Water was tied up in ice at the poles, causing decreased rainfall and severe droughts in Australia. The country's interior forests dried out and the animals died with them. A few of their descendants survived in the north-east Australian rainforests, but most of Australia's primitive animal species now live in the mountains of PNG.

The purpose of my visit to PNG was to find these animals and collect specimens for the Australian museum. My companion, Gary Steer, was interested in filming them for a series tracing the history and pre-history of Australian and PNG wildlife.

As we flew at three thousand metres there was hardly a cloud in the sky. This was not the PNG I knew. A normal



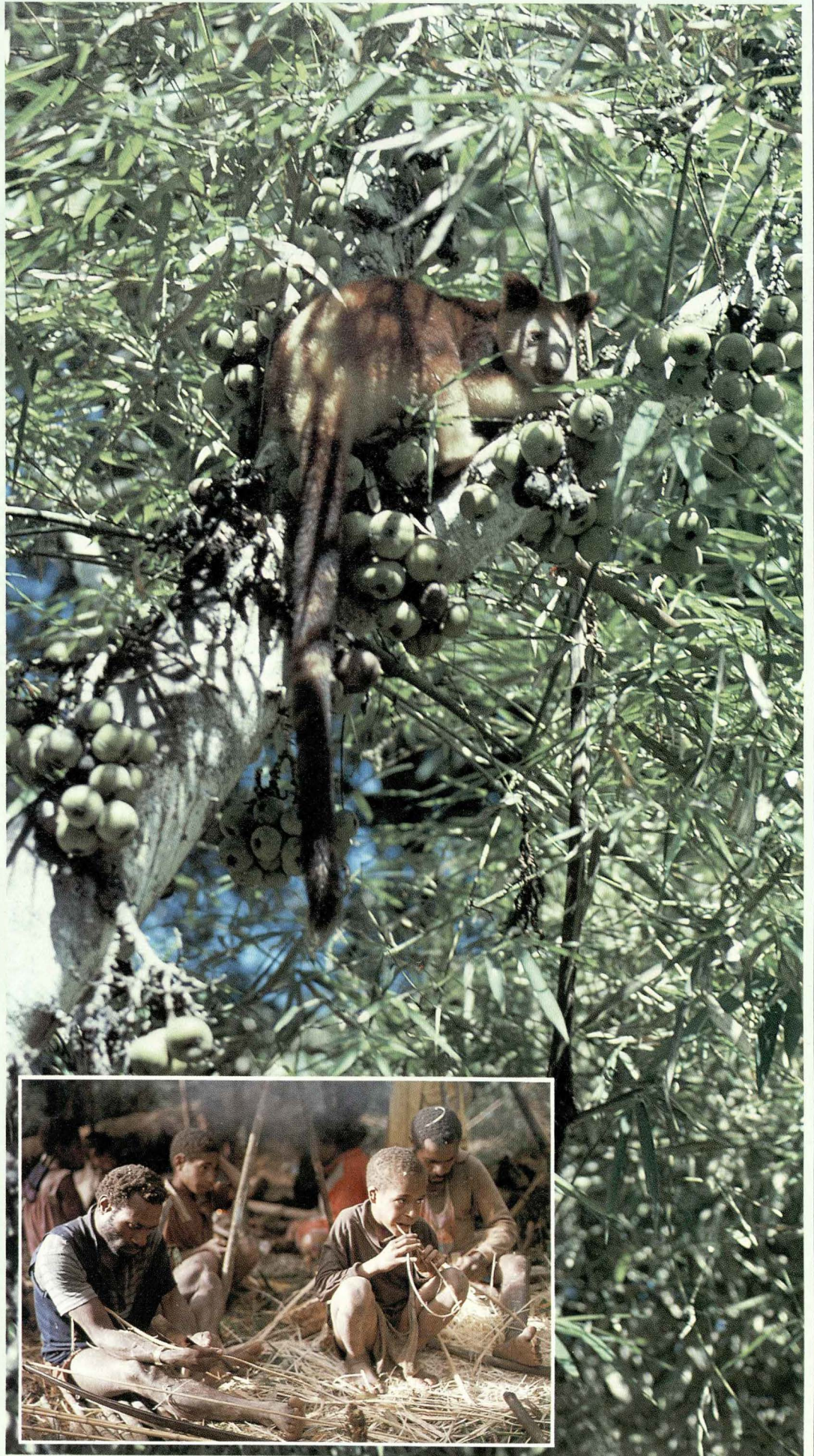


day for this part of the world would be cloud, mist in the valleys and rain. We were not far from the Irian Jaya border and just ahead was the majestic Hindenburg Wall. This is one of the wettest areas in the world.

We flew over the Wall. Although it hid its face in shadow, we could see the slashes of limestone scars on it, a past legacy of enormous landslides. To the west, high above all, stood Mt. Juliana, her ice and snow-covered head glittering like a diamond-studded crown in the clear sunlight.

We crossed another mossy-looking ridge and the beautiful valley of Telefomin came into view. Our plane rapidly dropped into the valley and I could make out the thatched houses of friends I had made on a previous visit.

On landing we were met by Tony Friend, one of the few Europeans to make Telefomin home. He had exciting news. The oak forest in the valley of the River Nong was fruiting and we would have an excellent opportunity to photograph and collect information on many rare mammals. My project of surveying PNG's mammals had been running since 1981 and, with the indispensable help of the local Division of



Pygmy ringtail peers out from its nest **far left**, safe for the moment from Telefomin hunters **left**. Hunters return with their catch **top**. Goodfellow's tree kangaroo **top right** and hunters making bow strings **bottom right**.

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A section of Rouna 4 Penstock, near Port Moresby. 2.2 metres diameter, 300 metres long. Internal surfaces treated with 400 micron film thickness of Tarsel, Standard tar epoxy. External surfaces 75 micron film thickness of Dimetcote 5, inorganic zinc silicate and 75 micron of Unilite 400, poly vinyl chloride. Application by: Hornibrook Constructions Pty Ltd.

Wildlife, much had been found out about the island's fauna. Now a very special opportunity presented itself. Large areas of undisturbed oak forest are rare commodities indeed but to work in such an area, while abundant and nutritious acorns attracted all sorts of animals, was too good a chance to miss.

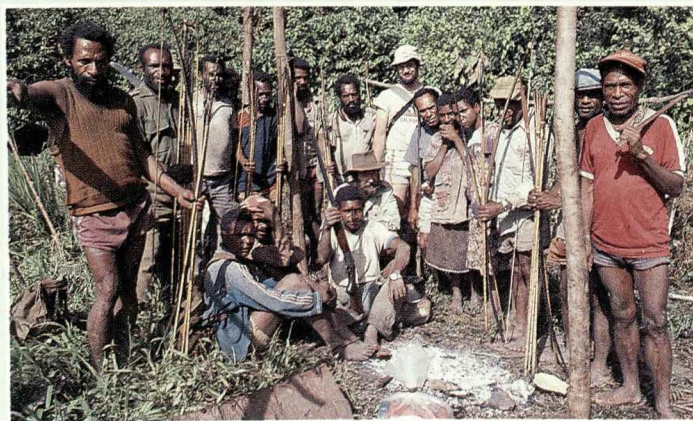
Luckily, one of the most important "big men" of Telefomin had befriended me on a previous expedition. He had arranged in advance for the owners of Wara Nong and some of the area's best hunters to accompany us to the seldom-visited valley.

By early morning our carriers, who were also hunters and guides, had arrived and were ready to start the trek. Looking at our topographic map sheets, we realised we would have to make a thousand-metre ascent of a mountain ridge called Miptigin. The ascent took all day and we were only too pleased to rest at the top and admire the view in the last light of dusk.

Our Telefomin helpers immediately set to work to make a camp and cook dinner. Then they were off on the hunt. We were astounded at the endurance of these men who thought nothing of carrying heavy loads all day and then, after a meal of rice and tinned fish, would set out for a full night of hunting.

When I awoke, Miptigin was a grey shadowy world, for a mist had settled, softening the pre-dawn light - but what activity! The men were returning from the hunt, all carrying animals, many alive, some I had never seen before. Immediately I began recording the precious information I had come for "What is this animal's name?" "Where did you find it?" "What does it eat?" "Where does it sleep?" And many more questions. Questions that every Telefomin could answer from early youth.

Later in the day as the light improved, our work increased



Field laboratory top and the expedition members at Wara Nong.

for there was filming, photography, measuring and a hundred other tasks to perform.

After this, we packed up the gear and walked down to a campsite near Wara Nong, our home for eight days.

Shortly after setting up camp, I was delighted when a hunter brought in a live Stein's cuscus, PNG's rarest cuscus. It had been collected only a few times before. Delight changed to disbelief when the following morning four more of them arrived on my doorstep! Before the end of our stay I realised that Stein's cuscus was the most abundant game animal in the

area. It appears that Stein's cuscus favors undisturbed oak forest which, throughout much of PNG, has been cleared for agriculture. Special places, such as the Wara Nong, need to be carefully managed if large numbers of this animal are to survive.

The Nong River flows through limestone for part of its course and this opened up another possibility for work - cave dwelling bats. The closest caves were only 15 minutes from camp, a place the hunters referred to as the "head" of the Wara Nong. Curious as to what this "head" could be, we made the journey down towards the river next morning. I soon found myself crossing a dry river bed but, strangely, I could hear the roar of rushing water. The mystery was

solved further on when I saw, erupting like a giant fountain, the "head" of the Nong. The country was all limestone, including the dry bed of the river. Wara Nong had dissolved through the rock in its headwaters, forming huge caverns. The "head" was where it resurfaced, spilling out of the ground in a spectacular resurgence.

A brief reconnoitre upstream revealed more caves. We crawled through a small passage and into a hidden chasm. Eerie green light filtered through from the rainforest above, revealing a smaller cave mouth. We clambered over large boulders to gain access and what a cave it was! We found ourselves in a chamber the size of a cathedral. The floor was sand and, high above, jammed in the roof, were massive logs. Past floods must have completely filled the cavern.

As we progressed deeper into the cave, I became aware of a distant, guttural roar while an ever-thickening mist obscured our view. The roar became deafening and we realised that at the end of the chasm there must be a huge waterfall, unseen because of the mist it created, and potentially dangerous. We



realised that, with our small torches and the almost palpable mist, we could have stumbled into an underground chasm and could have been swept away.

We retreated, and on our way out I glanced into a pool of water where, as a reminder of the danger of the place, lay a human bone. I thought better of showing it to our Telefomin hosts.

Near the cave entrance we found a side chamber and in it what we were seeking, bats. They were tiny, black creatures. They were torpid and hung in small clusters in the most inaccessible parts of the cave roosts. I nearly gave up the thought of obtaining some when two young Telefomin boys clambered up the wet and slippery cave walls. They soon filled their pockets with the little, almost immobile bats.

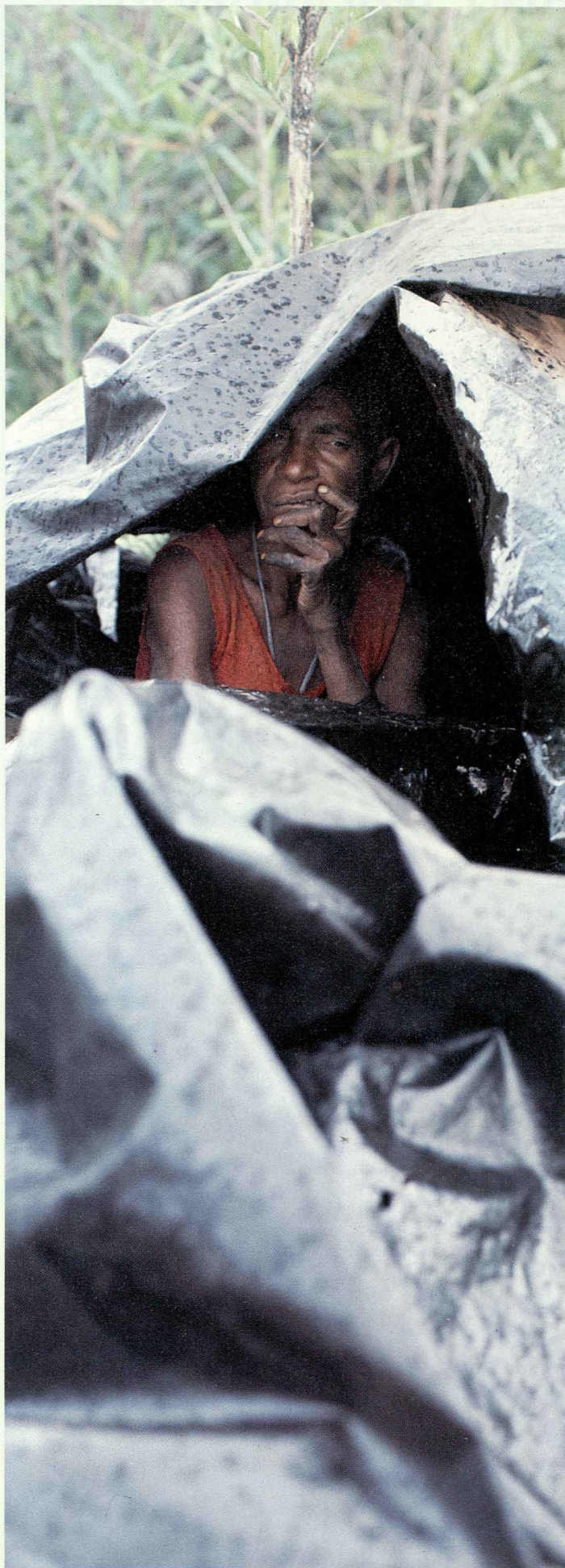
On returning to camp, we found more bats waiting for us. Some of the hunters had found bats elsewhere. A total of four species had been collected, one which was new to science.

It was a unique leaf-nosed bat.

PNG is such an enormous country that there are still large mammals which have

Head of the Nara Wong left. Spotted cuscus below left and striped opossum below right. Sheltering from the cold rain right, long beaked echidna top right, and silky cuscus below.





not been scientifically described. The Telefomin people brought in a large cuscus, another species that is completely new to science. It has not yet been named. So far seven known species of cuscus exist.

One of the largest is the spotted cuscus, an animal found in the steaming lowland jungles. It adapts well to captivity and is often raised in villages for food or even kept as a pet.

Another cuscus is not what you would expect of a tropical animal. It is covered in luxurious, silky, chocolate colored fur. It needs this good fur coat because it lives

at high altitudes where the temperature regularly drops below freezing point at night.

Ring-tail possums are a very ancient group of animals that evolved in rainforest so it is not surprising that eight species occur in PNG. One of the most attractive is the moss forest ring-tail. The smallest of the group is the appealing pygmy ring-tail. Both the moss forest and the pygmy ring-tails build nests of twigs, moss and leaves to protect themselves from the cold of the high rainforests.

The largest of all the marsupials in PNG's rainforests are the tree kangaroos. As many as six species may exist whereas only two species managed to survive in Australian rainforests.

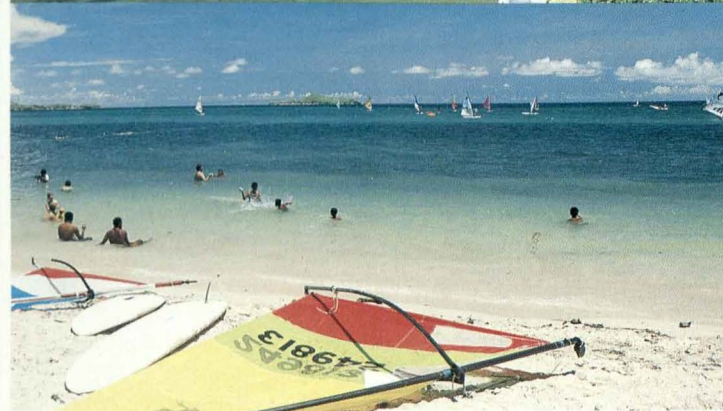
Almost every day at the Wara Nong brought us new discoveries and insight into the lives of the country's unique mammals. But with such a vast area, there is much more work to be done to know exactly what the dense forests of the mountains contain.



Dr Tim Flannery is Curator of Mammals at the Australian Museum, Sydney. Since 1981 he has been carrying out a survey of mammals of PNG. He has been on three collecting expeditions to the country.

Gary Steer is a film producer who has made four television documentaries in PNG on a Highlands patrol, caving, canoeing and rafting and trekking. Currently he is producing a series on the animals of Australia and PNG.

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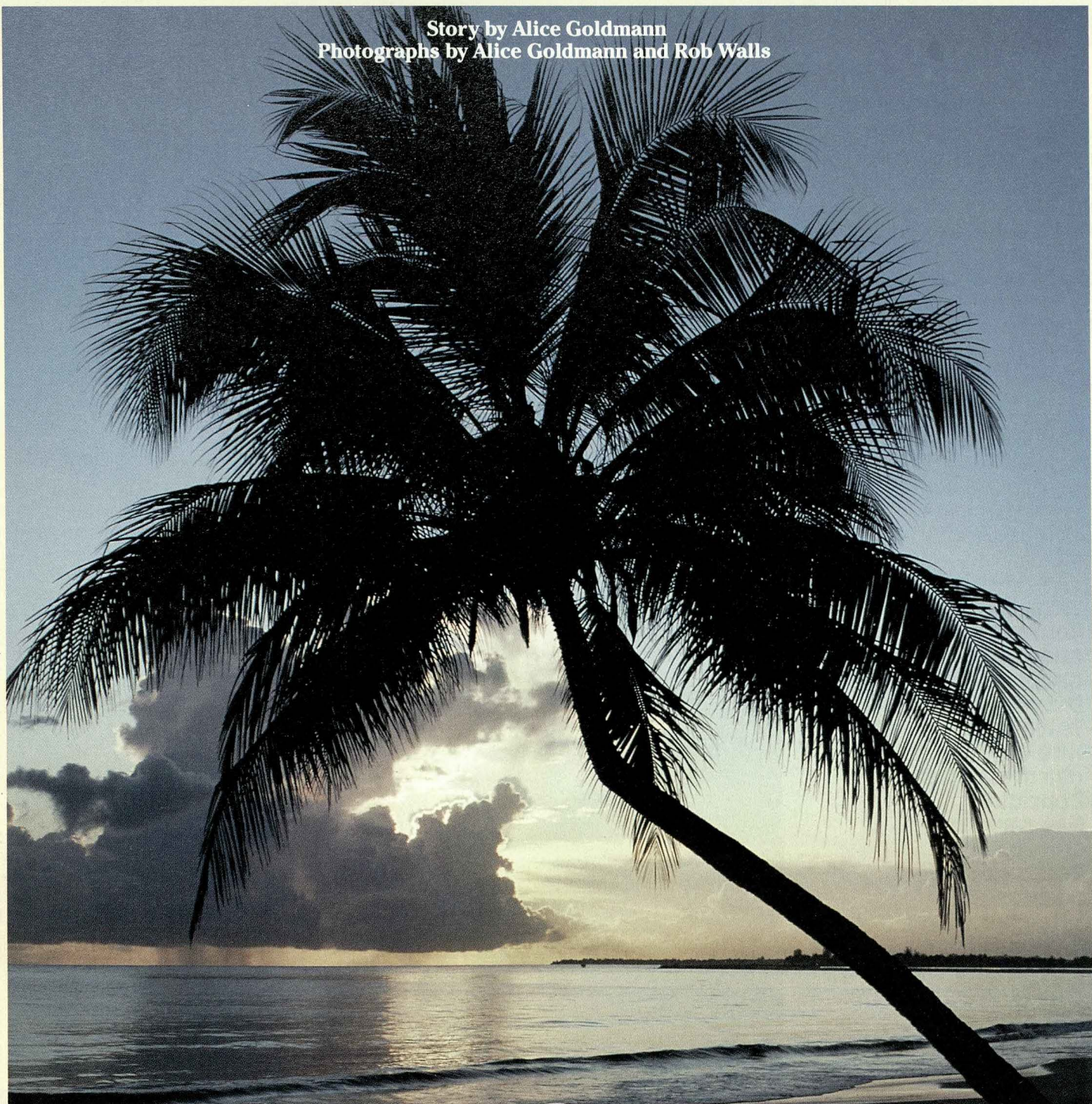
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Story by Alice Goldmann
Photographs by Alice Goldmann and Rob Walls



RESTING PLACE

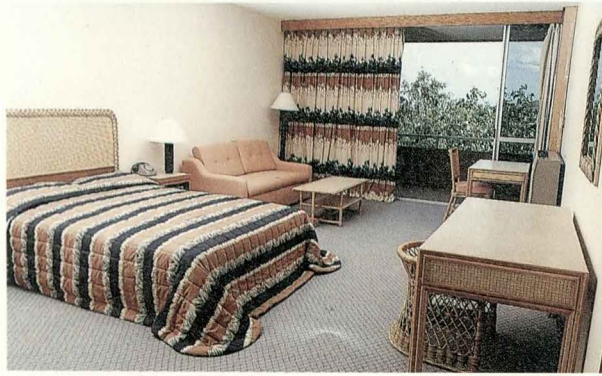
Jais Aben in the language of the Riwo people means "resting place". Jais Aben is also a unique resort near Madang which belies its name by being a hive of activity.

It is a hotel and research institute combined, where vacationers and scientists share facilities and the na-



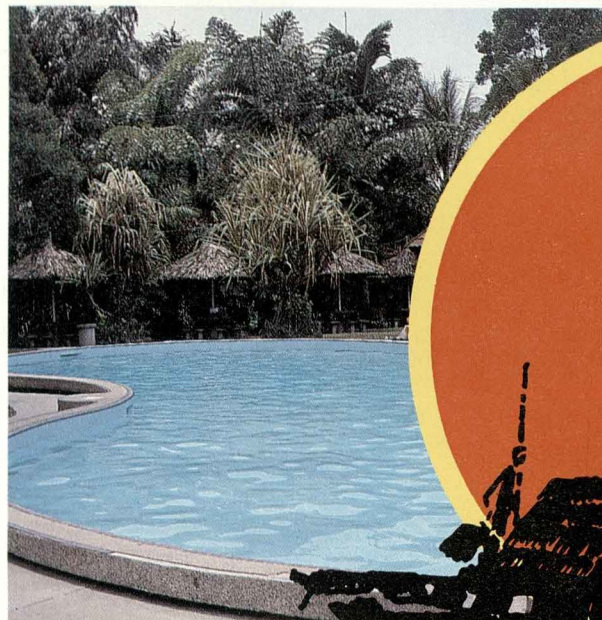
tural wonders of the Madang Province. Jais Aben attracts scuba diving tourists who are drawn to the famous warm, clear waters of the Bismarck Sea on Papua New Guinea's north coast. Its adjunct, the Christensen Research Institute, attracts scientists, particularly biologists, drawn by its facilities and fellowships.

Set In 10 acres of landscaped gardens, The Islander is located midway between the airport and the City Centre, within 5 minutes drive of Central Government Offices, Parliament House and the National Museum.



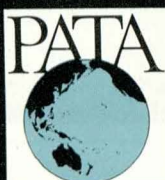
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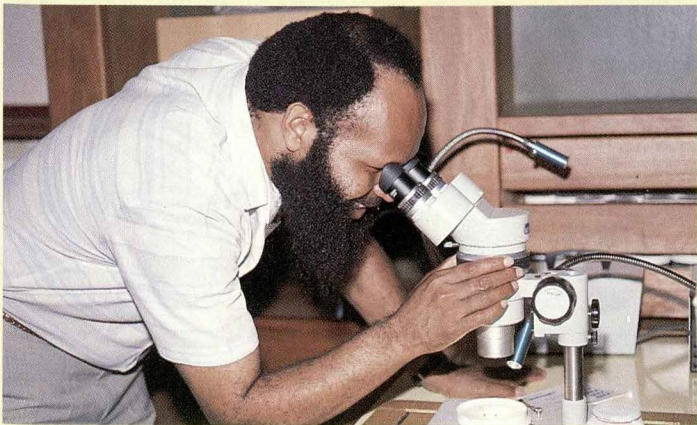


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Scientists and tourists share the luxury of Jais Aben's amenities **top**. Guests at the official opening **centre** included, from left, Mr Karol Kisokau, Secretary of Environment and Conservation; Mr Bernard Baloiloi, Prime Minister's secretary; Dr Ted Henzell, CSIRO; Prime Minister, Mr Paias Wingti; Dr Lance Hill, University of PNG. Prime Minister, Mr Paias Wingti, at the microscope in the laboratories **bottom**.

The unlikely pairing of a pleasure resort and research station on a 22-acre coconut plantation on a small peninsula in Astrolabe Bay is the result of the foresight of an unusual man, Dr Allen Christensen. He founded the Christensen Fund in California 30 years ago to promote education, science and culture and the fund paid for Jais Aben. It is also paying for the first five years of the research program.

Dr Christensen's daughter, Diane, is director of the institute and managing director of the resort company. "My father was involved for many years in Australia with the mining company, Utah International until it was bought out by BHP," she said. "His interest in art and natural sciences brought him to PNG and he and my husband dreamed up the Jais Aben project in 1982." It was opened this year by the Prime Minister of PNG, Mr Paias Wingti.

Diane's husband was manager of a Belgian research centre in Madang until he became involved with his father-in-law's project. Diane, the mother of two young

children, a hotelier, business-woman and scientist, has an academic background. She has a Ph.D. from Columbia University, New York, is a specialist in the history of Portuguese Africa and taught African History at Tufts University, Boston.

Madang is a far cry from the big American cities which were once her home and running a resort is very different from life as an academic, but she made the transition easily. She is equally at ease whether giving guided tours of the laboratories or the bedrooms in the bungalows.

"As long as the resort stays small I don't see any conflict between the scientific and commercial sides of Jais Aben," she said. "And as tourism develops in PNG and Madang we hope that income from the resort will make Jais Aben self-supporting with no need for other funding."

So far the mixing of tourism and science has not caused problems and in fact each has complemented the other. "Scuba divers can help in the collection of marine specimens," she said. "That helps the scientists and gives



A typical Madang dawn breaks over the coast **top** before newly arrived visitors explore the bays **bottom**.



Air Niugini has daily flights linking Madang to Port Moresby and other centres.

the holidaying diver a sense of satisfaction. Unfortunately scientific diving can be very boring, with many separate dives made to just one place. For tourists, one dive per site is usually enough."

The aims of the Christensen Research Institute program are to further the knowledge of the land and marine plants and animals of PNG, in particular those of the Madang Province. One of the first projects is to compile an index and map of all the plant and animal species and

to make this information available to planners at the Provincial and National Government levels. Detailed knowledge of natural resources is essential for orderly development and for assessing the impact development has on the resources.

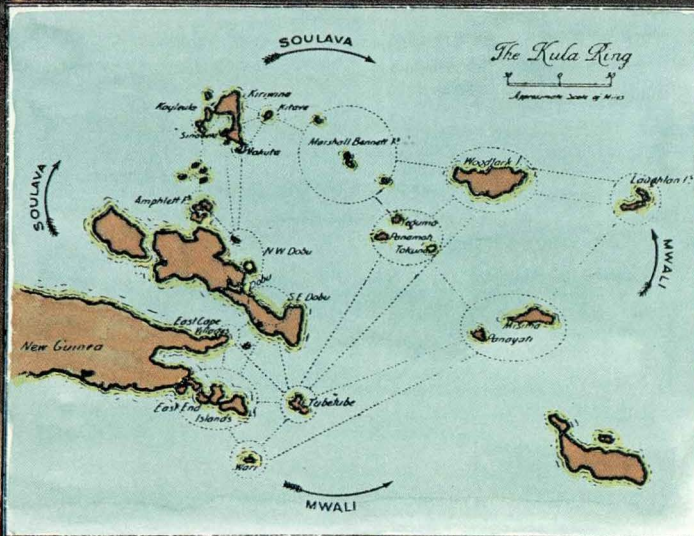
"All scientists receiving fellowships to work at the institute are required to contribute to the mapping and indexing project," said Miss Christensen. "Each of CRI's sponsoring institutions and universities, including the University of PNG, receives a grant to cover the costs of having research fellows at the Madang Laboratory. These grants include air fares, accommodation, meals and full use of the laboratory and other facilities.

"The first research fellow, Dr Daphne Fautin of the California Academy of Sciences, did studies on anemones and anemone-fish on nearby reefs. She gave two public lectures on her work

and prepared a guidebook on anemones."

Scientists like her live in the main building and take their meals in the restaurant with the tourists.

The people of nearby Riwo village may be the first to benefit from Jais Aben research. One of the projects under way is a mariculture pilot scheme involving the spawning of giant clams and their possible cultivation as a food supply by the villagers.



Story by Carol Ruff

The Kula Ring

Sparkling Milne Bay, set deep in the tail of the great island of New Guinea, houses the town of Alotau, administrative headquarters for Milne Bay Province. But the province is more than just a beautiful sleepy town. The real Milne Bay Province is the islands of the Louisiade and D'Entrecasteaux archipelagoes and the Woodlark and Kiriwina (Trobriand) groups, splayed out beyond the tail of New Guinea like glittering gems over the Coral Sea. For a thousand generations the picturesque sand and coral fringed lagoons have been the centres of life for the people. Seafarers, they are as at home on the ocean and the reefs as on the land. Their lives revolve around fishing, yam gardening, and the making of a unique form of wealth, the famous bagi shell valuables.

The Air Niugini flight from Port Moresby to Gurney airport which serves Alotau, is a quick link with the outside world. But travel within the province is most usually by slow chugging coastal boats, or by the traditional canoes which for

An elaborate seashell necklace (soulava), a measure of wealth and influence among the kula traders of Milne Bay left. Necklaces are always traded for seashell armbands (mwali) and vice versa as they pass from hand to hand in opposite directions around the kula ring of islands inset.

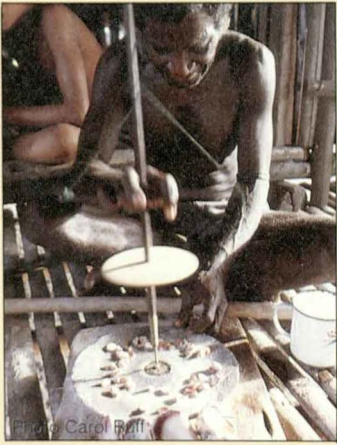


Photo Carol Ruff

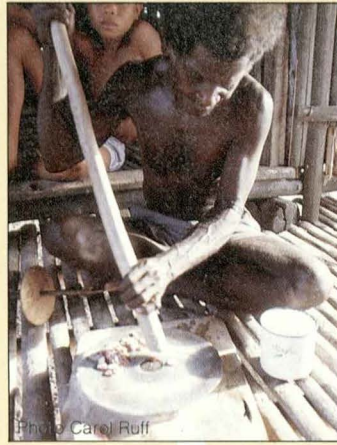


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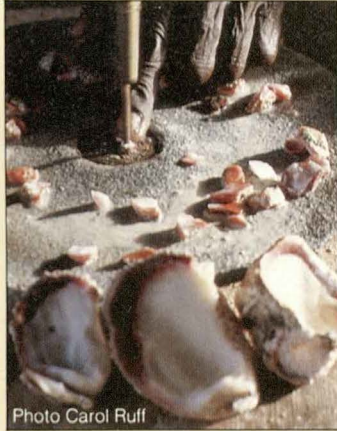
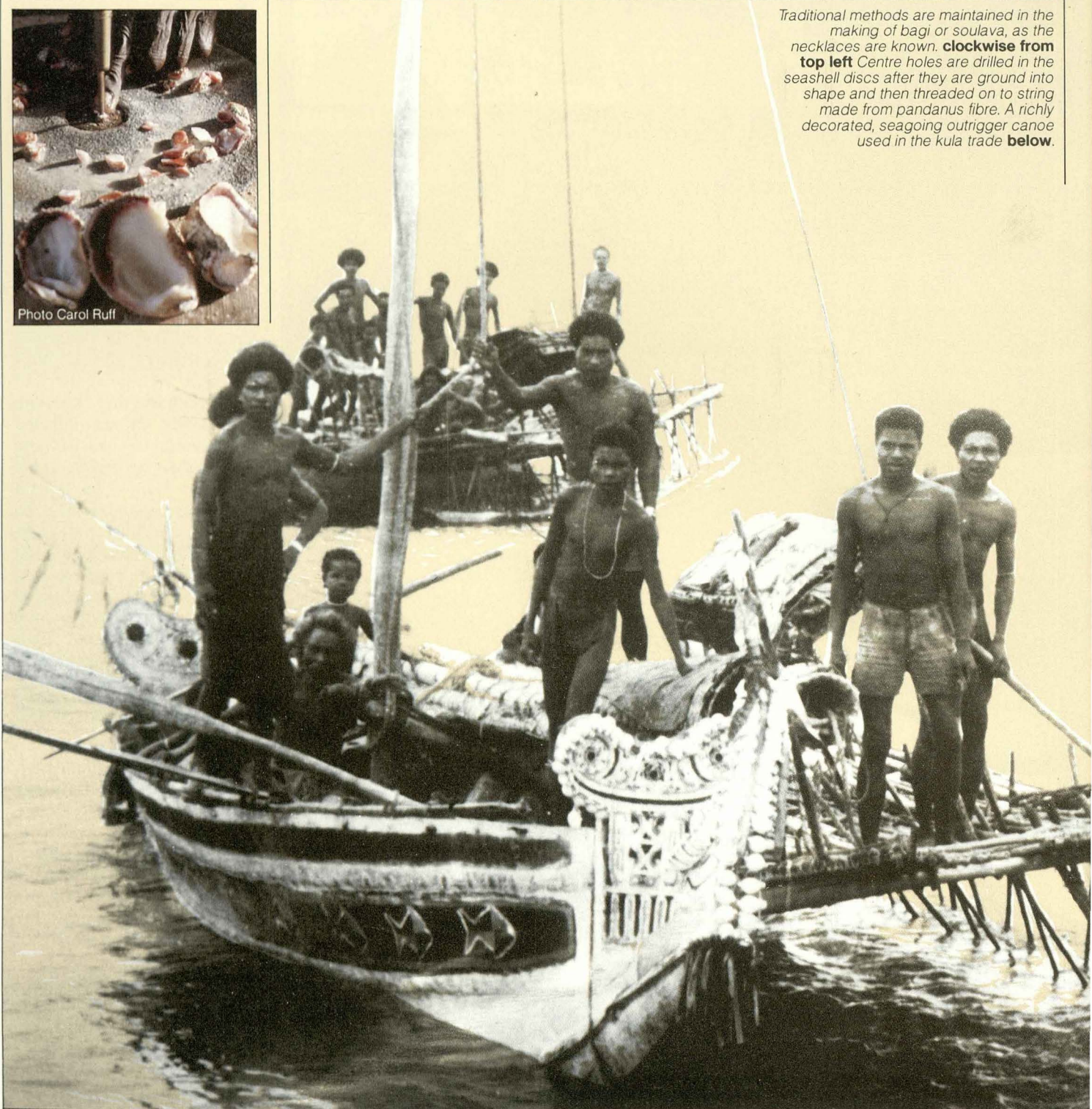


Photo Carol Ruff

Traditional methods are maintained in the making of *bagi* or *soulava*, as the necklaces are known. **clockwise from top left** Centre holes are drilled in the seashell discs after they are ground into shape and then threaded on to string made from pandanus fibre. A richly decorated, seagoing outrigger canoe used in the *kula* trade **below**.



countless generations have served as the link between the islands.

A coastal or inter-island journey can take the best part of a week, as goods are dropped off at remote outposts and villages, gossip is exchanged, and a leisurely pace pursued. The motorised boats have by-and-large replaced the canoes for long voyages, but the people of the province are still expert seafarers and the kula trade, during which *bagi* and shell valuables are exchanged, still provides the main focus for life in the islands.

The most famous and highly valued treasures of the islands are the shell necklaces commonly known as the *bagi*. These supreme symbols of wealth and prestige are often seen in the form

of short necklaces, worn by young boys and girls. They are made of hundreds of bright red shell disks, but they are far more than just pretty decorations. *Bagi*, white arm shells and occasionally large green stone axe blades are central to the kula system of ceremonial gift-exchange in the area of Milne Bay Province.

The kula is a men's affair only and each kind of valuable is moved constantly in a wide circuit from island to island in a series of annual exchanges. The necklaces always move in a clockwise direction, while the arm shells are exchanged in the opposite direction, so that the valuables are kept in constant circulation around the ring of islands. Each transaction of kula articles is

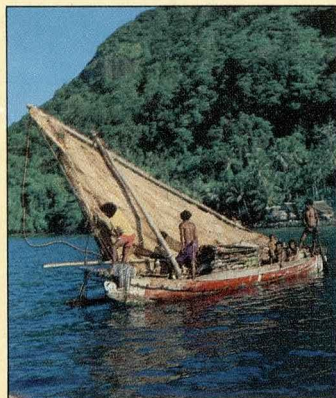
accompanied by traditional rules and conventions, many of which are associated with magic rituals and public ceremonies. On every island and in every village only a limited number of men take part in the kula. They form long-lasting relationships with their kula partners from neighboring islands, receiving the valuable items and passing them on to their partners. A chief, an old man of standing or a headman of a village may possess hundreds of kula trade items, while less important men have very few.

A man in the kula ring never keeps a valuable article for longer than a year or two. Hoarding of the valuables is

quires great skill. The shells used are found spread over the reefs, often at considerable depths. They have a white exterior, and are only distinguishable as *bagi* shells by a thin red line showing where the two sides of the shell meet. The best *bagi* are found at a depth of about three fathoms. At lower depths they often are spoiled by worm holes and closer to the surface the colors are likely to be bleached. *Bagi* have many different shades, from red to brown and white, and the most highly prized, though extremely rare, are yellow.

The real *bagi*, such as used in the kula trade is very long, measuring from two to five metres, and only displayed on very special occasions.

The first step in the



The decorations on canoes **above from left** are part of the magic lore in kula trading but for long voyages tradition is giving way to motorised craft.

discouraged and is considered bad luck. A man who is slow in passing on kula articles will be reproached for being miserly.

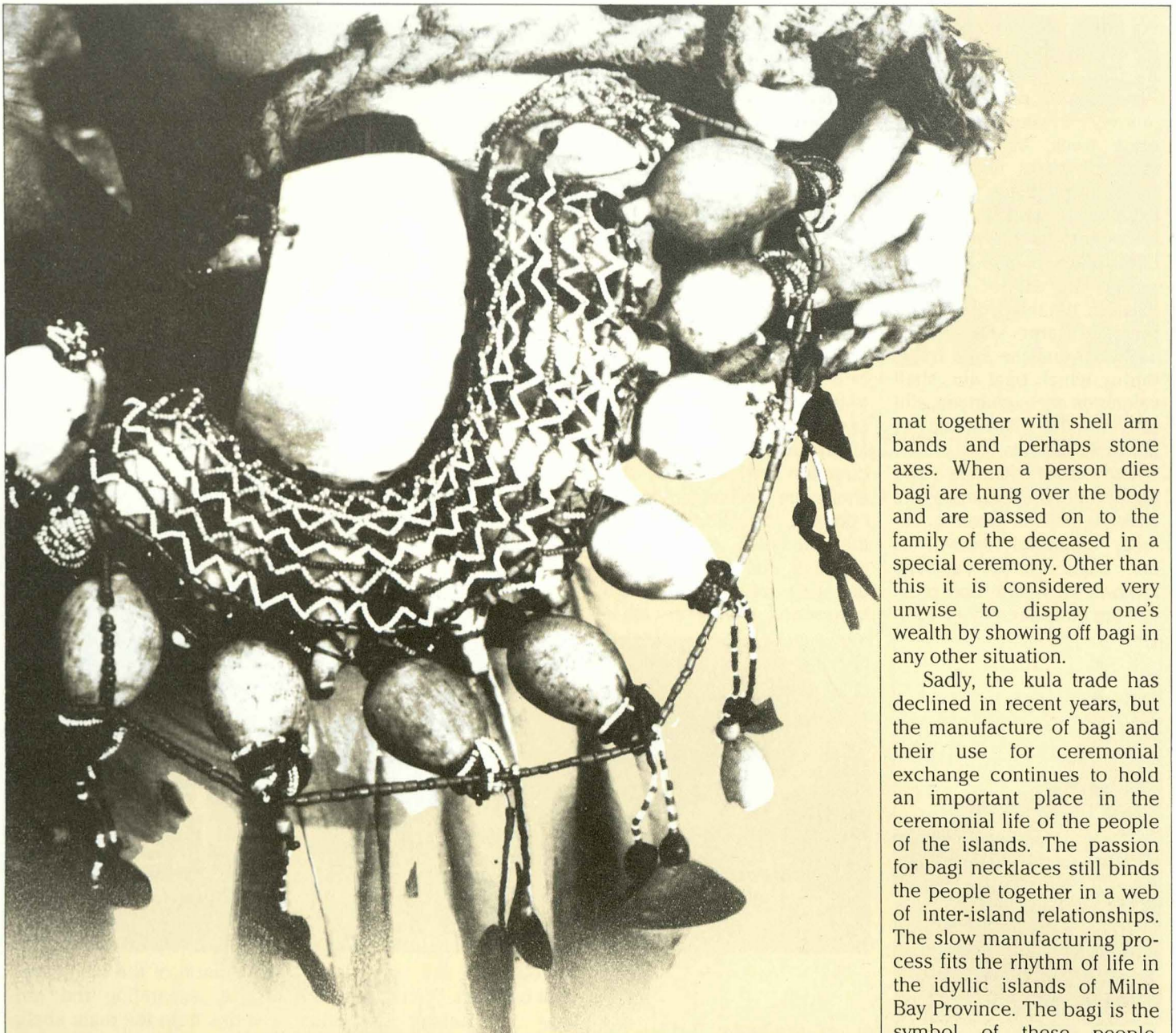
Each item takes about 10 years to complete the circuit and return to its original location. The kula is also far more than just the circulation of shell valuables. The exchange is accompanied by activities such as the building of sea-going canoes for use on the expeditions, and extensive mortuary ceremonies. The inter-island expeditions are both collective and competitive, uniting men of many different tribes and creating formal friendships between potentially hostile islands.

The making of *bagi* beads is a difficult and time-consuming process which re-

preparation of the *bagi*, after roughly separating the red sections from the main shell, is to break them up into pieces about the size of a finger nail. Traditionally this was done with a stone, but modern cutting equipment is now used to shape them into rough circles. Next, small holes are drilled through the centres with a simple but effective tool.

The drill operates something like a spinning top with a wooden upright which is turned by pulling a string which causes it to spin first one way and then the other. The *bagi* are ground down on a flat stone using sand and water as an abrasive. They are then threaded on string made of pandanus roots and finally the resultant shell disks are smoothed and





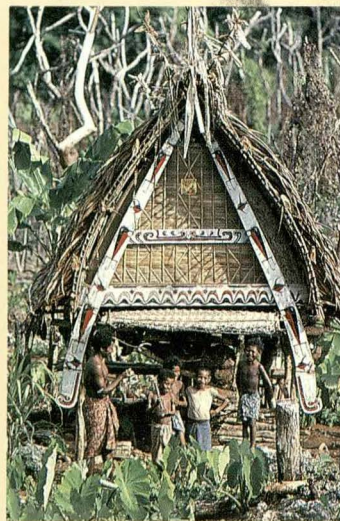
mat together with shell arm bands and perhaps stone axes. When a person dies bagi are hung over the body and are passed on to the family of the deceased in a special ceremony. Other than this it is considered very unwise to display one's wealth by showing off bagi in any other situation.

Sadly, the kula trade has declined in recent years, but the manufacture of bagi and their use for ceremonial exchange continues to hold an important place in the ceremonial life of the people of the islands. The passion for bagi necklaces still binds the people together in a web of inter-island relationships. The slow manufacturing process fits the rhythm of life in the idyllic islands of Milne Bay Province. The bagi is the symbol of these people, widely known and treasured not only in the province but throughout Papua New Guinea.

reduced to a uniform size by being rubbed lengthwise.

The finished bagi have a large shell pendant in the centre of the necklace, edged with black wild banana seeds and adorned with mother-of-pearl and cowrie shells.

It may seem surprising, but apart from the small necklaces, and another common form of bagi made into a small ear chain attached to the lobe, bagi are never displayed publicly or used as everyday ornaments. Their display is limited to very important ceremonial dances, great feasts when representatives from several villages are present, and at funerals. On great festive occasions they are spread out on a new



A magnificent arm band, or mwali **top** which for generations has passed counter-clockwise around the islands in exchange for necklaces like the one **above right**. Kula trade runs parallel with

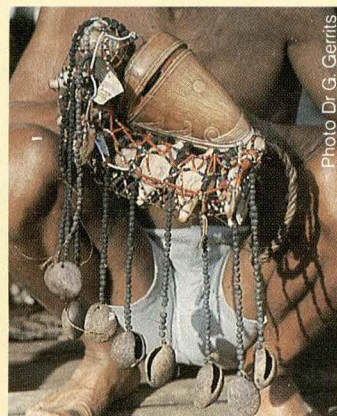
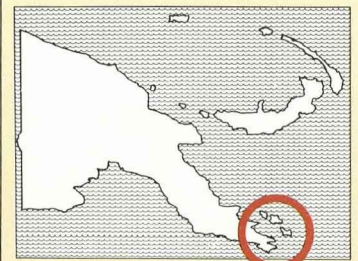


Photo Dr G. Gerrits

mercantile trade but is not part of it. Food and other good bartered by travellers in the kula ring are stored in traditional buildings **left**.



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