



POLYNESIA ~ AN OCEAN REALM

Underwater Exploration In The South Pacific

- Pete Atkinson -

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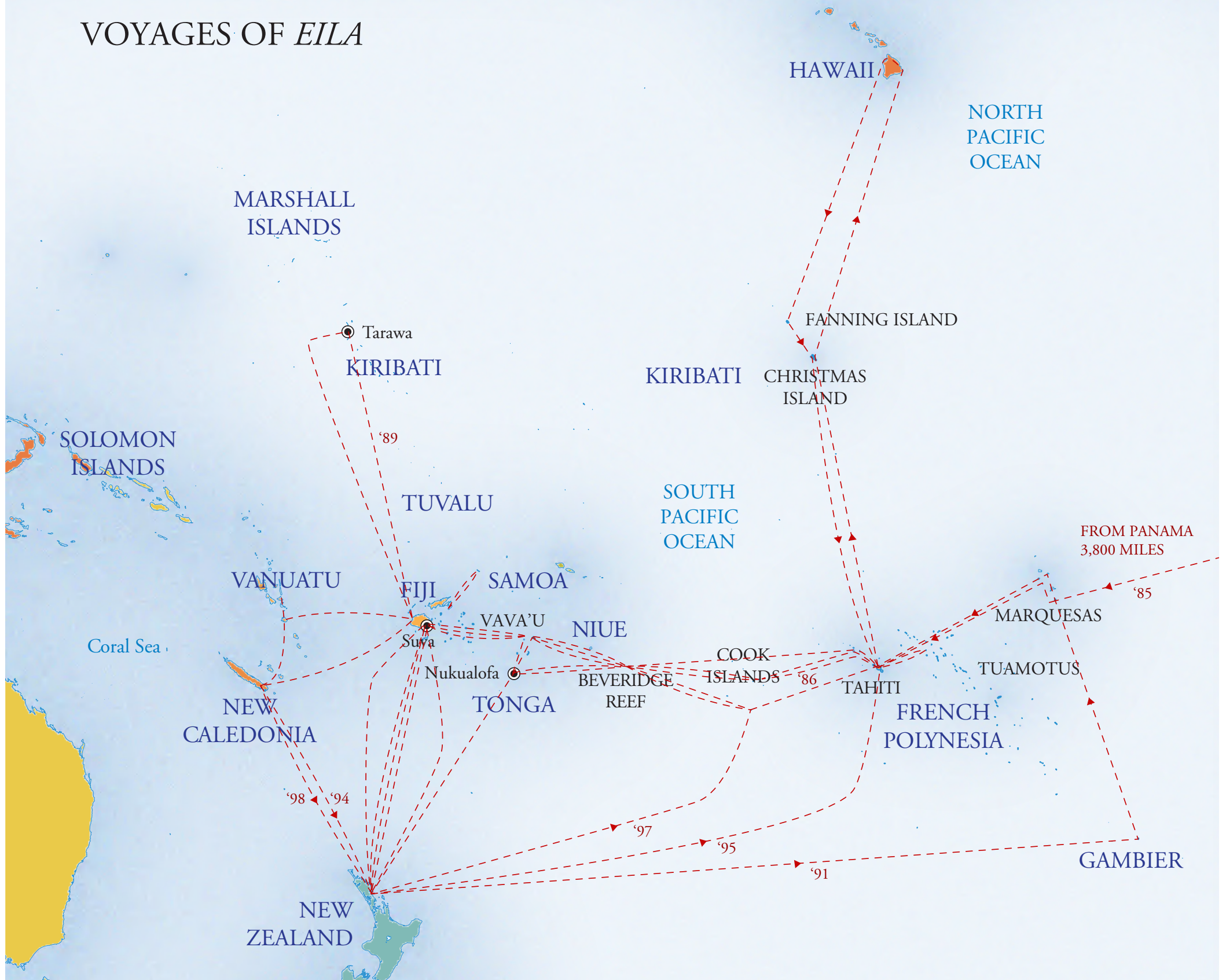
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VOYAGES OF *EILA*







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DEDICATION

To my parents, for freedom

To Matt Murphy, for faith.



ACKNOWLEDGEMENTS

I would like to thank Mike Buky, Tim Chamberlain, Florence Cox, Wade Doak, Matthew Ruglys, Paddy Ryan, Kim Westerskov and Andrea Siera for reading various drafts of this book. They suggested many ways to make it more comprehensible and questioned many aspects of Polynesian life I had begun to take for granted. The responsibility for any errors (and for words such as atavistic and plangent) is mine alone.

Vicki Allen, with whom I sailed for eight years, provided invaluable logistical support and unconditional love, sometimes under trying conditions. Although she seldom dives, her help and tolerance made the photographs in this book possible.



INTRODUCTION

The English summer of 1976 was unusually long and hot. Grass pollen makes summers in temperate latitudes a misery for me, so I spent much of my time indoors nurturing a dream.

I had just finished the first year of a degree in marine zoology at Bangor University and had learned to dive in the cold and murky kelp forests of North Wales. The memories of these dives I gladly relinquished to thoughts of coral reefs, diving with whales and dolphins, and sharks.

The problem was, how could I afford to live and dive in the tropics? I don't now recall just when the idea of an ocean sailing yacht came to mind, but that summer I read all the books I could find about cruising and the design of cruising yachts. I had no sailing experience and knew nothing about navigation or maintaining a wooden yacht. But the books of Eric Hiscock made a great impression on me. He made the whole business seem incredibly straightforward, which it turned out to be.

I also had no background in photography. While still at school I built an acrylic underwater housing for a Kodak Instamatic camera. During my second year at Bangor I built another acrylic housing, for a Fujica SLR, which worked well. My early attempts were encouraged by a success in a British Society of Underwater Photographers competition and by an extraordinary individual, Matt Murphy. On the strength of some pictures I had sent him, he invited me to Sherkin Island Marine Station in Ireland to take underwater photographs. Documenting the animals and plants of Roaringwater Bay is an endless task so I returned frequently. Matt Murphy does not know the meaning of "impossible" and his infectious enthusiasm and encouragement led me to believe that life on an ocean sailing yacht might be supported by underwater photography.

After finishing my degree I worked as a technician in the zoology department at Bangor. I bought a dilapidated wreck of a house which I completely renovated in my spare time. When this eventually sold, I looked for a yacht which fitted Hiscock's idea of a good cruising yacht.

Eila was lying ashore in Lymington. I spent several months making her habitable then sailed alone to Ireland. I returned to Lymington for the winter, worked on a dredging barge and made the few alterations to *Eila* that my shake-down cruise had shown were required.

The following year I spent three months in the Scilly Isles accumulating photographs to submit to a picture agent. In September I sailed for Portugal where I was joined by my girlfriend. We sailed to the Caribbean where we worked for a year aboard a charter yacht. She chose to remain in Antigua, so I sailed alone for Panama and the Pacific.

As I have visited most of the islands I describe more than once, sometimes alone, sometimes with my companion Vicki Allen (whom I met in the Cook Islands), I have taken the liberty of braiding stories from different visits into a single strand.



PELAGIC

I came alone to the Pacific Ocean with an old boat and the memories of the girl who remained behind. I was 28 years old.

In darkness, *Eila* divested herself of four line handlers and one neophytic pilot at Balboa Yacht Club. With them went the anxieties of the Panama Canal transit and in the calm I motored the few miles to the island of Taboga.

Dawn, clear air and sparkling sunshine swept the cobwebs of a fortnight in Colon well into the past.

I went ashore with little purpose other than to walk on the land, to see the shadows and brightly painted houses in the hedged and flowered lanes, to look across the sea, at *Eila*, tiny and precarious. I had a look at the dugout *cayacos* on the beach and exchanged smiles and nods with the few people I met. I bought a pineapple – there was little else I wanted – stowed the dinghy and sailed away.

With little sea and a fresh breeze astern – a remnant of the northeast trade from the other side of the isthmus – *Eila* flew along luxuriating in something I knew would not last. There were ships making their way to Panama in the haze, purple at dusk.

The sea here seemed cooler than the Caribbean, green and full of little bits of life.

Seabirds – cormorants, pelicans and frigates – were everywhere. At night the sea glowed with bioluminescence, each bursting crest with a light of its own. *Eila's* wake cut a swath of light through the darkness, the servo-paddle of the Aries self-steering gear hurrying, restless, leaving a comet tail of its own.

When a few days were behind me, I lost the tenseness that comes with land, with the proximity of ships, and people.

Though there were swells from north and south, there was little wind. What there was seemed mostly from the southwest, where I wanted to go. I hung on the port tack, thinking that one day the wind would back to the southeast, a vestige of the southeast trade. Often the gentle breeze died with the dusk. I would take down the sails and sleep with the boat. Between the sounds of rope on wood, the silence was profound. Usually I would wake up to a gentle hum. A ship was always my first thought, but it would only be the wind generator in the new zephyr.

By day the glassy surface was scattered with debris from the nearby continent: pieces of wood, roots and trunks from trees, islands for terns and boobies, havens for goose barnacles.

The Peru Current was an adversary I had no wish to tangle with in the light southwesterly. I held the port tack, gaining southing when the wind swung to the south and southeast, as it did more frequently as the days passed. At the confluence of these great ocean rivers, huge areas of sea were popped into standing waves like prints by the Japanese artist Hokusai. By night I could hear them; a talking sea.

Occasionally there were rain squalls. I relished the wind while it lasted, savouring the almost forgotten feeling of *Eila* sailing well. I rolled a reef in the mainsail, not because of the wind but to catch the rain that cascaded off the forward end of the boom and – by way of a bucket and funnel – into the tank and jerry cans. The rain and wind brought a clarity to mind and body, an atavistic alertness as *Eila* rushed along, sea sluicing through the scuppers.

Motoring in the calm of morning I saw a frigate bird, the first since the Gulf of Panama. Below were 20 or 30 dolphins, which converged and took a parallel course a stone's throw away. They came

no closer, so I stopped the motor and drifted. Curiosity aroused, they lost the vigour of the swim and meandered – tail slapping, rolling and turning – to within a boat length.

I hung the mainsheet over the side, donned mask and fins, and slipped into the water. I waited clutching the mainsheet, my rapid heartbeat pounding in my ears.

Salps, medusae and ctenophores were everywhere. Below, only dark water. The dolphins, dissecting me minutely with their sonar, were reluctant to come within my visual range. I wasn't sorry to pull myself back on board.

On some mornings I woke feeling in an organized, almost clinical mood. I would do the usual things with a meticulousness that seemed out of character; working with quiet contentment on the woodwork for the new chart table, or spending hours carving *Eila* on the teak light boards. These simple, almost subconsciously controlled activities, gave me the same satisfaction as writing or playing a piano.

Usually, I slept all night. If I woke I'd go on deck, have a look round and go back to my bed. Often I was awoken by a bombardment of squeaks and whistles. Sometimes the noise was like a rodent in the forepeak, a clear asthmatic wheeze. Outside in the darkness I would make my bleary way to the bowsprit. There, I saw the telltale vapour trails of dolphins etched in luminescence. Disturbed by them, pelagic animals the size of dinner plates continued to glow, long into the wake.

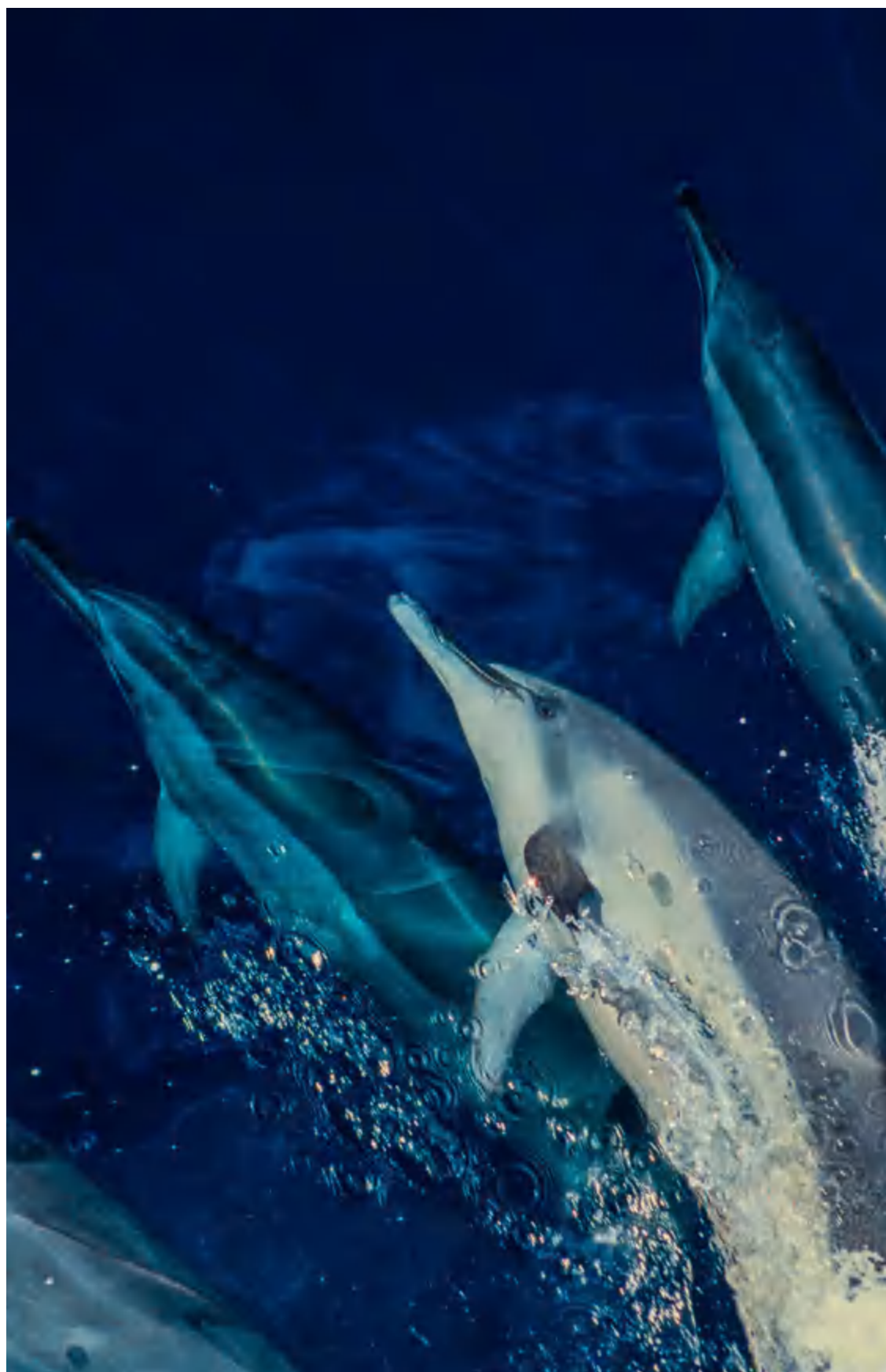
Usually the dolphins would stay for a few minutes and then leave. Wondering whether they were bored by a mere human and a boat, one night I sat in the pulpit with a torch to illuminate myself, to show them that there was a living thing there. They stayed. When I tried to catch them in the beam of my torch, they used every manoeuvre to evade its wandering beam. I put on Bach's violin concerto in A minor, thinking that the first violin would be about on their wavelength. In this way their boredom was appeased for almost an hour.

A spinner dolphin suspended in the glassy ocean.





Calm at sea, in the absence of swell,
can be transcendent.







Running dead downwind
wing a wing becomes
intolerably rolly on *Eila*
in much more than 15 knots.

One evening, when the air was particularly crisp, Isla Pinta materialized to the south. It didn't much matter whether *Eila* passed the Galapagos Islands to the north or south, so long as it didn't involve tacking. We passed to the north in the dark. The following dawn sights put me west of Wenman and Culpepper Islands and into clear water again.

In the evenings, after the sun had disappeared off the starboard bow, I would sit on the bridge deck with a mug of cocoa. Here in the remains of the Peru Current, with a heavy dew and daytime haze, it actually felt cold.

With the Equator we left the light winds and calms behind and *Eila* settled into her stride. The southeast trade came to stay and *Eila*, with the wind on her port quarter, left the miles steadily in her wake. I seldom touched the sheets, sometimes clacking the Aries gear a notch or two. The off-blue water of the Peru Current near the Galapagos was replaced by the indigo of the open ocean; the blue desert. Though there were flying fish as usual, I saw none of the squid that used to come on deck. At night the luminescence was a glimmer of its former self. With a full moon, I would sit in the cockpit, still half asleep, *Eila* rushing headlong through tumbling wave crests and flashing swells.

Though the wind was mostly from the southeast or east-southeast, a long deep swell came always from the south-southeast. There is something exhilarating about a long ocean swell, a messenger from another place.

A few noddies and boobies visited, along with the ever-present storm petrels skipping across the sea like butterflies. At night *Eila* would disturb these birds from the surface. It was hypnotic to sit in the pulpit watching the rise and fall of the bow wave as *Eila* surged down the swells with consummate ease and power.

Dawn is one of the best times at sea. A madman with an air-brush goes wild with apricot, mauve and pale green. Against this backdrop hangs the ring of grey trade wind cloud. Soon the sun takes the flavour from that early sky. Each day, puffy trade wind clouds crowded the horizon, but never seemed to cast a shadow. Evening sunsets were never spectacular; the after-glow with a fan of orange and blue simply burnished the clouds with pink.

Most days I would take a sun sight in the morning and another at midday. I crossed the morning position line with the later sight without bringing it forward the distance travelled. That might have been 20 miles or so, but precision here seemed particularly inappropriate. Slowly, an insignificant necklace of crosses stretched out across the enormity of the chart.





Further south the wind came more from astern, and *Eila* rolled along with vang'd mainsail and poled genoa. I slept behind a lee cloth to remain in bed. Twice when the lurching was too wild, the gimball'd table emptied its contents – a collection of homeless junk including the kerosene pressure lamp – on top of me.

Lying on the foredeck watching the sea go past, I saw many pelagic animals including the Portuguese man-of-war jellyfish, a type of by-the-wind sailor, and the violet sea snail *Janthina* which secretes a float of bubbles.

Nearer land, rain and squalls reappeared, though they rarely required a reduction in sail. And more birds came: white-necked petrels treated the swells with contemptuous ease, sidling albatross-like low over the sea, lifting high into the air at each crest and side-slipping into the next trough. Noddies and boobies harried shoals of fish, picking at the spoils from some conflict below.

On my penultimate dawn at sea a solitary frigate came, the first since the vicinity of the Galapagos. High in the air, it slid effortlessly to the east, wings bent like scimitars.

At noon with my position fixed, I trailed the log. In the afternoon the wind increased to match the large and crested swells. By dusk, squall followed squall; twilight came early, the sun falling behind a thick bank of grey cloud. The clear dome of sky above was fired red by the obscured sun and reflected in the wilderness of sea, surreal and magnificent against the grey backdrop. Down below I was isolated from the desolation. Only noises of *Eila*; wood on wood, rope on wood. Home just jangled around a bit more than usual. I felt the urgent hurrying as *Eila* slid down each swell, heard the dull thud as a wave hit the topsides and the tinny patter as spray scattered on deck.

Thirty-four days after leaving Panama I sighted land fine off the starboard bow, a heavier greyness among the clouds. Soon the peaks of Fatu Hiva rose to the south. I sailed on, between Hiva Oa and the uninhabited island of Motane. The wind and swell seemed to subside within the confines of the Marquesas. I could smell the fragrance of land, earth and rain.

I anchored in Baie Tahauku near the village of Atuona on Hiva Oa. A long twilight came with the dusk from the fairytale mountains to the west. I felt as bewildered as if I had been dropped on another planet.

The next day as I was walking into Atuona, overshadowed by the abrupt peak of Mount Temeti, a truck full of children offered me a lift. I declined; I was walking for the forgotten pleasure of it.





MARQUESAS

Imagine a convoluted and twisted volcanic island with jagged peaks carved by erosion from some primeval ash heap. Soften with rain and wind and clothe in a rich carpet of vegetation. Perfume with gardenia and wood smoke and rain. Cap the highest peaks with cloud and lace the valleys with crystal streams and waterfalls.

Arrival in the Marquesas after a month on the ocean, or a 36 day passage from New Zealand – as Vicki and I made some years later in 1991 – is akin to arrival in Eden itself. Most aspects of the Marquesas epitomise the exotic South Seas of the imagination; the high ragged mountains of stunning beauty, rocky shores and palm fringed bays, folded hillsides covered with extravagant rain forest. Nestled in the valleys are villages, some so isolated by the mountains and rainforest that only horses or elegant canoes connect them with the outside world. And the people; some of the men of superb physique and women of remarkable beauty.

The first European to sight these remote islands – which lie 900 miles northeast of Tahiti – was the Spanish explorer Alvaro de Mendaña in 1595. He named them Islas de Marquesas de Mendoça, in honour of the Viceroy of Peru.

The southernmost island, Fatu Hiva, is one of the most dramatically beautiful islands in Polynesia. It was formed from two concentric volcanic calderas, of which now only the eastern halves remain.

There are two villages on the leeward side of Fatu Hiva, in Baie d'Omoa and in Baie Hanavave. The latter is the better anchorage, less exposed to swell. The dark waters of this rocky bay are overhung by grotesque and twisted monuments to volcanic madness. Demented squalls rush down from the ragged mountains with uncoordinated fury. Behind the fringe of palms along the beach pokes the roof of a church. When *Eila* ghosted into the bay there were children playing in the stream where it tumbled across the black cobble beach.

The houses in the village were set in small plots by the muddy red track where pamplemousse, limes, oranges, and papaya grew in abundance. There were no cars; there was nowhere to go. A road had been completed (at great expense) across the mountains between the two villages but it was seldom used. Transport between them was in outrigger canoes powered by outboard motors.



Hana Vave in Fatu Hiva is the most dramatically beautiful anchorage in the South Pacific.





In the village some lads were playing a game of *boules* on the rocky ground, using a lime for the jack. Among the onlookers were three young men playing the intoxicating rhythms of the South Seas with two guitars and a ukulele; an amalgam of wood, goatskin and fishing line.

Leaving the last of the houses behind Vicki and I followed a faint trail through thick rainforest – which obscured any view of the mountains – to the waterfall; the water refreshing after the walk. In the pools below were long-armed *Macrobrachium* shrimps the size of a finger. At night the Polynesians hunt them with a multi pointed spear by the light of a kerosene lantern.

The clouds, which had piled up all day over the mountains, broke in torrential rain. We hurried back to Hana Vave. At a friend's house we stood around doing very little, chatting over unimportant things under the open-sided iron-roofed shed. Outside, the colours were greyed by the failing light and the falling rain as we ate doughnuts made by the village gendarme.

After the rain, with the new smells and the pervading dampness, we returned along the muddy track to the ramp to launch the dinghy. The swell sucked and sighed along the black rocks, plastered in places with fallen fronds like wet feathers.

That evening we had a meal ashore with our friend. A gecko on the ceiling, American country music from the rastabox, coffee from glass bowls. In the corner of the modest room a carved wooden tiki with a grotesque face shared a small table with a statue of the Madonna and trophies from football games.

In the days before TV from Tahiti was beamed in, the village would turn out each evening after church for a video in the village hall. We arrived late, it was already darkened inside. I gave the appropriate coins to the girl by the door but even in the gloom could sense her surprise, and to my embarrassment I discovered that she had nothing to do with collecting the money. We sat on the concrete floor with forty others. The dubbing, the language and the acoustics made the film about the war in Vietnam completely unintelligible. I spent the time watching the people laughing at the violence, the well behaved children and my friend Les Jones yawning.



Hana Vave from the seldom used road south to Omoa.

With the first sunshine, Les (from the yacht *Mithra*) and I took his dinghy south to the first precipitous point for a dive. Any reservations I might have had about what we might discover (or what might find us) beneath the surface were dispelled by Les's surfeit of confidence.

Where this point joins the cliff it is pierced by a tunnel called Matautua. We drifted down this cleft to 22m where we found a huge puffer fish. Another large tunnel cut through into the pale green of the open sea. Anchoring the dinghy was tricky; the cliffs plunge vertically to more than 50m. At the point we just threw the anchor ashore. The water was clearer here, but still the visibility was only about 20m. The run-off from the island causes year-round plankton growth and subsequently very rich fish life. There was a

strange *Pseudanthias* species I could not identify. As the islands are young the fringing reef is barely developed; the volcanic rock is scantily clad with coral.

Almost immediately we came across a moray in its hole, as thick as my thigh. We saw morays as long as a man swimming in the open, mobbed by surgeonfish like passerines round a raptor.

Les found a small cave under an overhang at 25m. He crawled inside to retrieve one of a number of spiny lobsters with exquisite colouring: pale mauve, maroon and white.

We resolved to dive this drop-off with the necessary equipment to make a small dent in this particular lobster population. We returned next day with a sail bag, and thick gloves.

We dropped straight down to the business level where Les, with his usual joyful disregard, stuck his head in the cave and came eyeball to eyeball with a huge moray eel which had taken up temporary residence.

So abandoning the lobsters we drifted down to 50m, where the cliff broke into rough scree. Shoals of giant trevally and small barracuda encircled us as we ascended with our bubbles through the green plankton consommé towards the light above.

By the next day Les had decided that the moray might just have moved house and that we could have a crack at the lobsters again. Apathy isn't in his vocabulary. So off we zoomed to the point, and down to the cave. No moray; so Les climbed in and passed out lobsters, which I popped in the sail bag. A whitetip reef shark turned up. Unlike other sharks we had seen, this one behaved more brazenly, patrolling back and forth under the overhang. Another joined it, synergising their agitation. I thought the dinghy might be a good place to be so yanked on Les' fins until the rest of him emerged from the cave. Just to tip the balance in the favour of

discretion, another two sharks turned up as we ascended.

This, I thought, will have cured Les of his cave full of lobsters. It did; for about 24 hours.

And so back again to the cave. This time Les managed to secure half a dozen before the first sharks turned up. They seemed no more friendly this time so we hastily departed.

Over the years since this event I have thought about it frequently. I concluded that the sharks were in fact docile and my interpretation of their behaviour was the result of inexperience. So I was pleased, in a way, when I returned to the same cave six years later and found the whitetip reef sharks to be very brazen, approaching within a couple of feet of a diver without qualms. I have observed similar behaviour in Mopelia, another area rarely dived.

There were no changes underwater that I could detect since my first visit, but very few divers explore these coasts. There is some collecting of the rare endemic cone shell *Conus gauguini* and the high price of frozen lobster in Papeete ensures a heavy fishing pressure, particularly in those islands with air connections to Tahiti. On land, however, the changes were more apparent. As colonists go, the French do a good job in my view, though there was a lot of talk about separatism, particularly among the young raised on a diet of videos. From an outside perspective, the French seem to do things tastefully, with style and some discretion. Their officials are usually exemplary. But in Hana Vave I had the feeling that the changes had been wrought by the decree of some administrator in a distant office, an official who had no idea what Fatu Hiva was like. Imagine the village; the rutted red track, the small plots with simple houses surrounded by breadfruit and mango trees, bananas, bougainvillea, frangipani, citrus trees; and the rainforest pressing in. And now add thick powerline poles along the track with festoons of heavy cables and streetlights. Add a huge satellite dish painted white. (Elsewhere in French Polynesia there are cryptic khaki dishes.) And the crowning achievement, an aluminium and glass telephone kiosk – a card phone no less – looking as incongruous as a billboard in the Serengeti.

It seems ironic that in the old days, cruising yachts might visit remote islands like these to visit primitive societies of monetarily

Pseudanthias regalis
is endemic to
French Polynesia.





poor people. Today, in French Polynesia, it is likely that some of the people ashore are better informed and have more money than many voyagers. Personally I prefer this to the gross economic disparity in poor countries where the visitor is regarded only as a source of revenue.

But trading for carved tikis and tapa and fruit still occupied many hours. Tapa cloth is a coarse fabric made from the beaten

inner bark of the paper mulberry tree, usually decorated with vegetable dye drawings of a traditional nature. I had a sense that this new culture was largely a reiteration of the old without the context.

The favoured media of exchange were Bob Marley cassettes, Gripfast nails and illegal .22 bullets for hunting wild pigs. Perfume and earrings were popular with the women.

Whitetip reef sharks, *Triaenodon obesus* are harmless, but the ones we met in Fatu Hiva were remarkably bold.



Bones of the medicine man lie among the volcanic cobbles on the subterranean lake bottom.

One of the yachts, *Asynja*, had a tall blond moustached Viking on board called Jonas. He had a Swedish copy of Thor Heyerdahl's book "Fatu Hiva" – written after a two year stay more than forty years ago – in which Heyerdahl describes the exploration of an underground lake known as Vai Po (Water of the Night) with a Marquesan man in an outrigger canoe. The Marquesan told him of the legend associated with the cave. Many years ago, on the fringe of the community in Taiokai valley, there lived a medicine man in a cave by the sea. But one day in this valley in the shadow of death there was a huge landslide; part of the mountain behind crashed down into the valley burying houses and people. Today the scar left by the collapse of a huge piece of mountain is still clearly visible. Along the shore at the edge of the new scree are a few remaining paepae, stone platforms on which the houses were built. The legend told of an underwater tunnel leading from the subterranean lake to a dry chamber where there was an altar and the remains of the medicine man sitting in a stone chair.

Jonas suggested that we might try and find the lake and investigate the legend. I thought a diving companion might be good for this. Divers were suddenly thin on the ground. I didn't get much sleep the night before. I was thinking of sharks which had lived in the lake and hadn't eaten for hundreds of years, and of giant morays equally peckish. I imagined oxtail soup visibility and things that tap you on the shoulder.

The crowd from the yachts gathered on *Asynja* and we motored north along the spectacular coast looking for tumbledown mountains. The description in Heyerdahl's book is hazy, and on the Admiralty chart, the whole of Fatu Hiva is only an inch long. There is no anchorage, so we took two dinghies ashore at a place which looked promising. Landing in surf on the boulder beach was enough excitement for one day. But we tipped the water out and explored along the cliff and scree where we could imagine the landslide had been. Soon, at the base of the cliff, we found a cave with a low entrance. Inside, there was a beach of black sand and a lake – about the size of a tennis court – beneath a low ceiling of rock. It was damp, cool and very still; silent, in spite of the people.

To my relief the water was crystal clear, though there was little ambient light. I put on my diving gear and very gingerly eased myself into the water. I lay on the surface breathing rapidly, my torch flicking from object to obscure object until I had assured myself that the lake was devoid of serious forms of life. I finned slowly round the undercut walls searching the rock overhead for signs of a tunnel. Towards the bottom, in about 5m, lay a marked thermocline, but the water below was warm. It took me a moment to realise the water below was the sea, that above was fresh. My tongue confirmed these suspicions. Where I disturbed the boundary layer my vision was distorted by the swirling halocline.

Looking at the rock above I suddenly saw my reflection thrown back in ghastly contortion. There was air above, a hole a metre across. I thought about it for a moment, then stuck my head through the dancing meniscus. It was only a blind air pocket.

I continued round where the domed ceiling met the lake bottom of cobbles, rock and sediment.

A human skull appeared in my torch beam. Nearby, in some disarray, lay the remains of a skeleton, brown with a patina of years. I felt strangely unperturbed.

I rose slowly through the water. There was light coming from the entrance through the copper blue water, through distorted layers. The surface was silvery, disturbed by drips from the ceiling, rings of expanding silver. The air was cold. I could hear the drips now, and the hushed voices of the others. The cave seemed to demand whispers, like a darkened auditorium. "I have found a human skeleton," I said quietly.

I returned below to show them the skull, but the delicate bone round the orbit disintegrated as I tried to lift it, so I took the tibia instead. We examined the old bone in the light comparing it with our shins to ascertain that the medicine man – if this is who it belonged to – was about 1.7m tall. Perhaps the remains were those of an earlier explorer who failed to find the legendary tunnel but without the benefit of scuba gear. I returned the bone to its peaceful resting place in the soft sand. The disturbed sediment hung between the water layers like sheets of smoke in a vacant room.



Taiohae is the main town of Nuku Hiva and lies on the edge of a former volcanic crater. The anchorage is open to the south and is usually rolly, like most anchorages in the Marquesas.

From Fatu Hiva we sailed north to Tahuata and Hiva Oa. At the village of Atuona we climbed up to the cemetery to look at the tomb of Paul Gauguin who died in Atuona in 1903, and that of the Belgian singer Jacques Brel whose grave lay nearby. In the stillness, as the trade paused for breath at dusk you could hear the deep chorus of endless surf on the black beach of Baie Taaoa below.

We anchored briefly in Baie Hanamenu on the north-west side of Hiva Oa. The larger Marquesan islands have extensive areas of rain shadow on the west coasts; the landscape of the Terre Desert of Nuku Hiva is almost lunar. Hanamenu lies at the end of a long dry valley looking like a canyon in a Spaghetti Western. On the east side of the valley is a stream. There were land crabs and their burrows along the muddy bank, fish and *Macrobrachium* shrimps in the shallows. Our sandals picked up small gastropods with short spines. On the west side of the valley is a clear spring of cool groundwater. We spoke briefly with a shy beautiful girl who was sweeping one of the fenced paddocks round a cluster of simple houses; a new community of five families.

We left before dark for Taiohae, the main village of Nuku Hiva and the administrative centre for the Marquesas. Baie de Taiohae can be distinguished in daylight by a vertical intrusion of white igneous rock in the cliff just east of the entrance.

Anchoring fore and aft kept *Eila* end-on to the swell which sometimes entered the bay. One morning we walked up the road behind Taiohae which goes to the airport and Taipivai. A truck stopped and offered us a lift to the summit overlooking the bay where it was delightfully cool in the breeze. We were told that the French had installed powerlines across such forbidding terrain using some kind of gun to send a messenger wire. For the microwave relay station they were obliged to use a helicopter.

At the modern Cathedral de Notre Dame we were given mangoes by some schoolchildren who were catching them as they were tossed down by their pals in the trees. As we sat on the grass in the sun with the tart juice running down our chins I marvelled at that lovely bilaterally symmetrical shape which sits so softly in the hand like a breast; the green skin spotted with white; the blush riddled with broken capillaries like the cheek of an old man.



That Sunday Vicki went to church – I sat outside – to listen to the beautiful singing and the warbling replies to the litany. The car park was filled with shiny Toyota Land Cruisers, Subarus and Land Rovers.

Taiohae is the middle of three bays which indent the south coast of Nuku Hiva. The easternmost is Baie du Contrôleur which itself is divided into three smaller bays. During the First World War the German ships *Scharnhorst* and *Gneisenau*, which bombarded Papeete, used this bay as a base. At the head of the middle bay is Anse Hanga Haa, not far from the village of Taipivai where Herman Melville lived in 1842 after deserting a whaling ship. Melville's book "Typee" is the account of his sojourn here.

The village is set back half a mile from the beach which was clouded by no-nos, small sand flies with irritating bites. The track led past a mangrove swamp which – like mangrove swamps in many places – had become the local rubbish dump. Most conspicuous were green bottles and boxes from "the beer that reaches the parts that other beers don't reach". This seemed particularly crass since the Tahiti beer Hinano – which is excellent – has a large deposit (and a Tahitian girl) on all their bottles.

Daniel's Bay (Hakatea Bay), Nuku Hiva. From here you can walk up to the Vaipo waterfall which falls 350m.



Taipivai village lies in the wide valley by a stream where three girls of exceptional beauty were bathing in tee-shirts and shorts. There were Chinese genes behind their almond-shaped eyes. Along the road were old gnarled trees and frangipani and eroded tikis. Returning along the track by the mangroves there were geckos on each purple bud of the banana plants, their tongues lapping the sweet sap which hung like a pendant pearl from the tip.

The western bay along the south coast is Baie Hakatea. The valley leads inland, overshadowed by high cliffs to the west eroded like molten wax. Our guide, young Daniel, led the way at a furious pace in flip-flops and rain. The track was mud but for miles there were the remains of an old stone road and paepae (stone house platforms) and worn tikis (stone sculptures of Polynesian gods) and marae with their stands of goblinsque Polynesian chestnut trees. As we scurried along I reflected that the rash of French civil engineering in French Polynesia is nothing more than a reiteration of traditional Marquesan culture. At the head of the valley we found the thin waterfall of Vaipo falling 350m, shredded by the turbulent wind into sheets of spray.

Eila had the fresh trade abeam on the sail across to Ua Pou 30 miles to the south. We anchored in Baie Hakahau. As dusk closed over the fairytale basalt spires which dominate the interior, the sound of drumming came from the shore. Like moths to the flame we were drawn. One Tahitian dance was performed with twirling bamboos, a flaming torch at each end. In the red light, coffee brown skins glistened with sweat, the dancers' faces frozen in some hypnotic trance. The percussion guided them like marionettes. Flames and grass skirts, in hazardous proximity, twirled to the visceral beat of the tall tiki drum, the Marquesan rhythms finely honed to trigger a thrilling euphoria. The girls swayed their hips at lightning speed while their torsos remained tranquil and their delicate fingers told stories in the air.

Eila on a beam reach
for the trip south to
Ua Pou from Nuku Hiva.



Bastille Day, July 14th followed. The Tricolour was raised, the Mayor and his adjutants wore suits and their sashes of office, the gendarmes in their uniforms. Groups of children clutching kite strings sang the Marseillaise and the anthem of French Polynesia while their kites danced in the breeze.

It was quiet in the village. We entered the church, the air thick with the perfume of a thousand leis of frangipani and tiare Tahiti. The pulpit decorated with lizards and netted fish seemed carved from the standing butt of a tree.

Later that evening we sat on the stone wall by the church. The plangent voices came clear to us in the dark, with the bass hum of the generator and the chirping of the cicadas in counterpoint. The almost full moon silhouetted the palms, and fell silently in silver shards among the fronds. The Polynesian harmonies drew cold fingers down my spine, and I felt the remoteness of this tiny speck in the Pacific, the isolation of these people.

The combination of Tahitian drumming and the tamure dance is utterly entrancing.



TUAMOTU ARCHIPELAGO

In the days before GPS, cruising yachts viewed the voyage through the atolls of the Tuamotus with trepidation. Many had ended their cruises prematurely on the labyrinth of reefs which form this archipelago. The 78 islands spread diagonally across 950 miles of French Polynesia neatly transect the path between the Marquesas and Tahiti. They are beset by strong currents of variable direction and their palms are invisible more than about eight miles away from the deck of a small yacht. From seaward they are almost indistinguishable; coral islands fringed with palms carry no title.

We had a fast passage from the Marquesas with the full moon which, we hoped, might help us avoid running into any atolls in the dark. Running along the moonlit ribbon the sails were white, the rig in crisp silhouette, the wet deck silver. As my star sights tried to convince me *Eila* was making over seven knots, I assumed there was at least a knot of current. Fortunately the sky was clear enough to take sights of dawn and dusk stars (having no GPS ourselves) prior to our arrival, so the soft pencil line of palms appeared on the horizon not too long after I hoped it would. Mast steps are a great help in relieving landfall anxiety, almost doubling the distance at which you can sight atolls.

We chose Takaroa as a landfall as it can be readily identified by the two distinctive wrecks which lie on the north coast. Though we could see neither, we sailed along in flat water where the lazy swell was uplifted by the trade to curl onto the reef in a continuous roar of broken white and turquoise.

From the crosstrees I could see right across the indigo lagoon to the thin line of palms along the southern *motus*. As we rounded a point, the huge ruin of the *County of Roxburgh* came into view. Wrecked during a cyclone in 1906, much of the iron hull plating still appears intact from seaward.

There was, according to the Sailing Directions, a temporary anchorage outside the pass at Teavaroa, should we need one. From the time of moonrise and set one can calculate when slack water ought to occur, though if there is a heavy swell from the southwest there may be a continuous outflow through the pass from water thrown over the reef between the palm-covered *motus* (coral islands on the atoll rim). In some atolls of the Tuamotus this current can reach 12 knots, and is frequently five knots, so this is of more than academic interest.

From the swirls past the two beacons at the entrance to the pass the flooding current seemed relaxed so we motored slowly in while Vicki prepared lines fore and aft. We managed to secure *Eila* alongside the wharf in the pass without making complete fools of ourselves before the gathering crowd. Like reversing a car into a tight spot, coming alongside is a spectator sport. We looked into a mass of smiling faces, chattering to each other in the dialect of the Tuamotus, Paumotu. I amused them with my rudimentary French.

Soon *Eila* was awash with children who, with uncanny sagacity, discovered the lump of plasticine which, moulded round the anchor chain, prevents water going down the navel pipe at sea. I handed round small blobs of the stuff to eager hands and shining

eyes, but hands soon outnumbered blobs.

In the six years since my previous visit there had been many changes in Takaroa.

There was evidence of more money, more construction and more vehicles; by-products of the expanding pearl industry. This had attracted more people from other islands; the population had tripled to about 450. By the shore lay huge piles of black plastic leis used to catch the oyster spat. The lagoon surface was dotted with floats marking pearl culture activity.

A new airport had been built. Before the airstrip the inhabitants had to take a small boat several miles to the neighbouring atoll of Takapoto before they could be airlifted for medical treatment.



Eila tied alongside
the wharf at Takaroa.

There were new roads too, from which all the new scars of construction could be seen. In the atolls the scars heal slowly. The soil, where it exists at all, is poor. Breadfruit trees and bananas can be grown but fruits and vegetables are scarce. In some atolls, pits are dug where watermelons and taro can be cultivated with the brackish groundwater. The diet of coconuts and fish, pigs and chickens is supplemented by imported rice, onions and corned beef. Some people think corned beef consumption in the Pacific is terrible; I can't help thinking of all the fish that are saved.

Topographically, the atolls of the Tuamotus are similar to one another. The central lagoon is encircled by a coral reef topped in places by low *motus* of coral rock and sand often crowned with palms. The reef is usually cut by one or more passes, but much water enters the lagoon at high tide over the reef between the *motus* through shallow *hoas*.

Atolls have a wonderful feel to them. One is continually aware of the precariousness of that thin ribbon of land; you feel the exhilaration of tenuous existence; and there is that immensity of sky, an infinite horizon.

The houses in Teavaroa were much the same as those in the Marquesas, with a predominance of corrugated iron, plywood and hardboard in their construction. My old friend Tahiri Pamati still lived in his turquoise house on stilts in the lagoon. His house is a little different. It is set a stone's throw from the beach in the lagoon shallows so one is obliged to wade or take a boat to reach it. The shallows are thick with sea cucumbers; we avoid standing on them since some species eject phenomenally sticky Cuvierian tubules from the anus as a defense mechanism. The foundation posts are set in kerosene drums filled with coral rocks. The floor is plywood, the roof iron and the walls are hardboard, painted turquoise. A short ladder gives access to a wooden verandah cluttered with potted plants. The windows – like many in the South Pacific – are hardboard panes set in softwood frames hinged horizontally on a couple of nails. A stick props them up when the view and the wind are required inside. There was little furniture; a sun lounger, a table – on which lay a thick book of black and white photographs of old Tahiti, romantic and riddled with woodworm holes to



Pearl farmer, Tahiri Pamati in his turquoise house in the lagoon.

the core – a bench and paraffin cooker with a single huge aluminium pot. There was also a marked lack of cockroaches and geckos.

Before becoming one of the new pearl barons, Tahiri, like most of the able-bodied men, cut copra – the dried flesh of the coconut – when cash was short. The *motus* are crowded with coconut palms which have been extensively planted for the production of copra. The fallen nuts are split with an axe. After a day or so in the sun, when the flesh has started to separate from the shell, it is scooped out with a narrow tongue of steel. The copra is further dried on racks and bagged for shipment to Papeete. This hard physical labour – which is reflected in the physique of the men – contrasts sharply with the effort required to catch one type of fish.

At the head of the pass in the coral shallows are a pattern of low coral-rock walls which form a *parc à poisson*, in plan like a section through a snail shell. This is an elaborate fish trap of concentric two-dimensional funnels which, like a lobster pot, allow the animals to enter, but not find their way out. The final, smallest enclosure at the apex is little more than the size of a card table.



Tahiri with a handful of black pearls he had cultured in the lagoon



On the flood tide, huge shoals of *operu* (*Decapterus macarellus*) are trapped, and once herded into the smallest enclave the village people can take what they require with a net or even bare hands.

Dogs also hunt on the reef top. Hunting in the shallows, packs of village mongrels are able to catch blacktip reef sharks which often swim with their dorsal fins exposed like cartoon caricatures. Unfortunately I never witnessed the conclusion of this bizarre combat. Occasionally the dogs also found themselves as food items. South Seas dogs seem to subsist on coconuts. Other odd aspects of their behaviour came to light when Vicki picked up a stick to throw for one. The dog cowered, tucked its tail between its legs, and ran away.

While we were visiting the fish trap the ship *Manava II* came nosing slowly in the pass to tie up astern of *Eila*. The village came to the quay for the day while drums of fuel, kerosene, boxes of goods and building materials were unloaded. The kids, wandering aimlessly, managed to find amusement by bombarding *Eila* with rubbery bits of copra from the foredeck of *Manava II*. Finally, bored with us, they leapt into the pass where they swam in a three knot current, heedless of the sharks.

As the light gelled with the end of day the cloying sacks of copra and sacks of pearl shell were winched aboard. With their backs against the still warm wall of the copra shed three lads riffled through old Tahitian songs accompanied by two guitars and a ukulele. Along the quay, two beamy women and a teenage girl fished long into the dark with handlines.

Shoals of *Decapterus macarellus* are trapped by the *parc à poisson* in the pass at Takaroa.



At midnight, with the first of the ebb, the silent crew of the *Manava II* slipped the bow line, let the current turn the bow to face the sea and were off to do their business at some other atoll remote from the world.



Sacks of copra on the dock awaiting the arrival of the *Manava II*.



Plastic mesh is woven into baggywrinkle for catching pearl oyster spat in the lagoon.

Having no copra to attend to, one of the wharf rats came aboard through the dorade vent in the counterstern. To reach the galley it was obliged to scamper over our sleeping bodies. We woke in a hurry and I confronted the animal briefly but unsuccessfully. I bought a Chinese rat trap from the store, a horrifying contraption equally adept at crushing fingers or rodents. Before it was successful our intruder had taken a shine to plastic and chewed a hole in the bottom of a film processing tank.

Although the price of copra is subsidised in French Polynesia (in '85 it was about 30p/kg (US50¢) now the big money earner is black pearl cultivation. The pearl oyster *Pinctata margaritifera* has two slightly convex circular shells up to 30cm in diameter. Between October and February these hermaphroditic animals release eggs and sperm. The spat – the initial shell developed once the larva has settled from the plankton – were collected at one time on bundles of leafy branches from *mikimiki* trees. Now they are collected on festoons of black plastic netting leis, like baggywrinkle. Takaroa spat are rated highly, and are sold to many other islands in the archipelago for spectacular prices. In 1991 these leis of young oysters fetched almost £50 (US\$80) a metre. When the animals are larger they are removed from the baggy-wrinkle, drilled by the hinge and suspended from a rope on a short length of monofilament fishing line. This optimises pearl growth by reducing the development of byssus threads which normally attach the animal to the bottom.

When the oysters reach maturity in three years they are seeded by Japanese experts. Using a stand to hold the shell in the correct orientation and a tool like circlip pliers with a platypus beak they open the shell just enough insert a piece of mantle from another oyster, then a sphere of Mississippi river mussel shell. The mantle grows round the sphere, forming a pearl sac which secretes layers of nacreous material. After two years of further growth the pearls are harvested. Only 20% of the animals will yield pearls of marketable quality, and of these 5% will be perfect. Sometimes the same oysters are reseeded and of these, half will yield pearls. Black pearl oysters produce pearls of several hues; blue, brown, yellow and green, grey and even pink are seen.

The shell of mother of pearl is sold for the manufacture of knife handles, tuna fishing lures, buttons, necklaces and as a source of calcium carbonate.

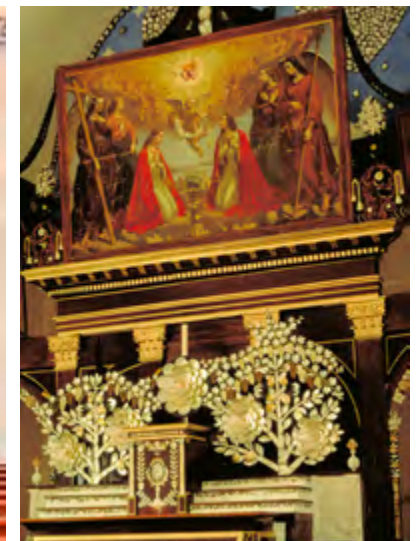
One of the principal islands of the Tuamotus engaged in pearl culture is Mangareva. Unlike other islands in the Tuamotus which are atolls, it shares a single barrier reef with seven other high volcanic islands known collectively as Îles Gambier. They lie at the southeast corner of the archipelago barely within the tropic of Capricorn.

We arrived there on another visit after a gruelling 36 day passage from New Zealand. In theory, one sails south from New Zealand to pick up the westerlies of the Roaring Forties. Averaging weather statistics produces nonsense. The systems need to be understood. The depressions which track across the Southern Ocean have favourable winds to the north of the track, and headwinds on the south side. Without good weather information we found ourselves on the south side of the depressions as they were tracking further north than we expected. After two weeks of gale-force headwinds and having made only 800 miles of easting we gave up; Tonga sounded pretty good just then. Once we gained some northing the depressions passed south of us and so we were able to resume our course in tolerable comfort.

We cleared customs at Rikitea on Mangareva, a town so small it has no bank. This suited us well; it meant we were not able to pay the bond required (which amounts to the price of a ticket home) until we reached the Marquesas. There are two flights each month which land on the airstrip on the *motu* of Totegegigie; a remnant from the days when Gambier was used as an observation point for the atmospheric nuclear testing on the atoll of Mururoa.

One of the distinctive features of Mangareva is the cathedral, lavishly decorated with pearl shell. The altar of carved dark wood is intricately inlaid with shaped mother of pearl and other shells. The white vaulted ceilings are stencilled with blue. There were the trappings of Catholicism; pictures of Christ, plaster effigies, crosses, a burning lamp. A plaque on the wall commemorates the missionaries Laval and Caret.

During the nineteenth century Mangareva was a Catholic



theocracy. In 1834 le Pere Honoré Laval and François d'Assise Caret arrived courtesy of the Picpus fathers. By 1855 Laval was the boss. At the expense of many lives he succeeded in harnessing the labour of his converts to build churches, a rectory, paved roads and the largest cathedral in French Polynesia. Laval was constantly at odds with the French administration and was eventually deported to Papeete in 1871.

Much of the interior of the cathedral at Rikitea is decorated with pearl shell.



Other islands in the group contain the ruins of churches and other ecclesiastical buildings; testaments to the fervour of Laval.

The church at Akamaru is slowly falling apart. Its asymmetrical twin towers are reminiscent of the Gothic cathedral of Chartres which dominated the Catholicism of Laval's youth. The grass is cut by an elderly couple and a young boy who were the only inhabitants during our visit. The wooden floor is steadily consumed by termites while vegetation embraces a shrine and the old school. At the weekend, people come from Mangareva to gather oranges in the hills.

Lying so far south, Îles Gambier receives the brunt of each trough which passes during the winter. We hid in a tiny bay at the head of Baie de Gatavake during one trough. The wind outside was not particularly fierce, but the squalls which tore down Mount Duff and Mount Mokoto ripped the surface of the bay to shreds.

As thunder cannoned off the hillsides and the rain poured down we filled the tanks and filled the sinks. Naked, we did the washing listening to Verdi's Requiem. But drying the washing in 60 knot squalls as the wind staggered over the mountains left most of the pegs on the beach. One squall put the rail in the water and breakfast coffee and papaya all over the starboard bunk and the newly folded washing!

Between the troughs the weather allowed us to explore the barrier reef with its luxuriant stands of *Acropora* plate coral in the cool, clear water. The sharks were plentiful and seemed curious; divers were a rarity on the barrier reef although scuba is used to tend the pearl oysters within the lagoon. Fish were prolific; but then ciguatera poisoning was prevalent in the lagoon. The dinoflagellate (called *Gambierdiscus toxicus*) which causes ciguatera proliferates particularly where coral has been damaged either by cyclones, blasting or dredging, but also grows on any bare surface, a rock, a wreck or even on algae. The cumulative ciguatoxin enters the food chain via algal and coral grazers such as parrotfish but tends to be most virulent in predators such as grouper, snapper, moray eels and barracuda, particularly in large individuals, making them inedible.

Parts of the barrier at Îles Gambier are submerged to some extent. On the flood I could watch eagle rays hanging motionless in

the narrow channels which cut through the barrier reef.

Within the lagoon *Halimeda* algae grew amongst the coral, creating beaches of calcium carbonate oat flakes. The visibility was poor; partly because we were there in May with the remains of the summer plankton bloom. By the time we reached Takaroa, winter had set in, and the atoll lagoons were clearer.





Lush *Acropora* formations line the gulley through the submerged barrier reef at Île Gambier, where this eagle ray was almost stationary in the current.



The wreck of the *County of Roxburgh* lies about four miles east of the main village on Takaroa. Before the airport and road were built it was a torrid walk over difficult terrain. The riveted hull is largely intact except where it lies burst like a watermelon against the reef. Parts of the iron masts remain in the undergrowth. We crept inside the cathedral-like hull where I took some pictures for the Clyde Maritime Trust which hopes to resurrect the *County of Peebles*, an earlier and slightly smaller sister ship, currently lying at Punta Arenas in Chile.



Before returning to the village we slaked our thirst with coconut milk. Sometimes the milk in the green coconuts is slightly fizzy; a carbonated drink in a biodegradable container.

Another day we walked along the ocean beach, across the coral clinkers with tinny charcoal sounds underfoot, to the wreck of a Japanese fishing boat. With the flooding tide across the reef flat came morays, triggerfish, parrotfish and blacktip reef sharks to distract us from the pockmarked rock of the reef top.

On our chart the closest sounding along this piece of coast is 273 fathoms. We were curious to snorkel here and, for convenient access, there was a sandy indentation in the reef just beyond the wreck. Like many of the atolls the spur and groove surge channels in shallow water give way to a gentle slope covered with sturdy forms of corals such as *Acropora* and *Pocillopora*. Here, at about 10m the slope fell away steeply into the ocean blue. A small shark came out of the depths with unfamiliar boldness. The white margins on dorsal and pectorals identified it as a silvertip. It came very close and was reluctant to be shooed away. Another joined it so we decided to swim back to the beach. Like a yappy dog, one animal followed tight behind us in spite of my turning repeatedly to confront it. I imagine this was its first encounter with a human (as it was my first with a silvertip) as Tahiri had told us that ciguatera fish poisoning was a problem outside, so most spearfishing was undertaken within the lagoon and pass.

During my first visit to Takaroa I had only a two metre rowing dinghy (built of plywood in the Marquesas) from which to dive, so I restricted myself to the pass. In the absence of a large swell, the three knot current in the pass flows tidally, changing direction every six hours. The pass—which is about a mile long—lies east-west so invariably the fresh trade blows out of the pass towards the sea. When the tide was flooding I would load up the dinghy with my gear and row with the wind down to the mouth of the pass. There I hung my camera housing and tank over the side on a rope. I had about 35m of thin line tied to the dinghy, the other end was attached to me. Over the bow I hung a bucket (as a sea anchor) which meant that the shallow draft dinghy was borne towards the

lagoon with the current, against the wind. I could climb over the transom without shipping much water. Once in the water I'd put on my tank, pick up my housing, and after checking the line was free of the coral, proceed with the current up the pass. Because the wind retarded the dinghy's progress slightly I could stop now and then to take photographs and never be out of step with the dinghy 20m above.

The pass is about 70m wide and often, drifting in the middle I could see the coral walls both sides. At its swiftest, the current would billow sand from the ridges across the bottom like a sand-storm in the desert. It was a bit like looking out of the windows of a train. Always I saw sharks, blacktip reef sharks, whitetips, greys and nurse sharks. There were Napoleon wrasse, green jobfish, milkfish and eagle rays too.

Sometimes mantas would come gracefully up the pass with the new water. By the time I was out of air, or chilled, I had drifted well past *Eila*, up the pass towards the lagoon. After clambering aboard the dinghy and pulling my gear back on board I had an easy row back to *Eila* with the wind.

But taking good pictures here was tricky; with a rigid-hull inflatable boat with an outboard on our second visit I preferred to find mantas outside the pass where, on one occasion, a single animal soared around me for twenty minutes, so close I could reach up and let its silky belly drift across my fingertips. Alone, the intimacy of these encounters seemed enhanced.

I wondered why remoras attached themselves to mantas; they can hardly be picking up scraps of plankton. More likely they feed on ectoparasites and manta excrement; or perhaps they're just there for the ride. Remoras also attach themselves to humpback whales, which don't even feed in the tropics.

For a week I could find only a few sharks outside the reef simply because I was looking in the wrong place; along the reef slope and drop-off. In two metres of water where the waves were heaping over the reef top, I saw 20 blacktip reef sharks and a dozen greys in a single dive. Here I had to dive early in the morning, otherwise sun-warmed lagoon water would spill into the ocean,



disturbing my vision with dancing haloclines and thermoclines.

Many of my dives were in deeper water where shoals of parrotfish – major producers of sand in the tropics – were ejecting curtains of faecal debris. Perched in the branches of Pocilloporids I noticed yellow forms of hawkfish which I later discovered were *Paracirrhites xanthus*. I also saw *Paracirrhites nesus*, another rare hawkfish found only in French Polynesia and the Cook Islands. The clefts between the *Pocillopora* branches are havens for numerous fish including blennies and flame hawkfish.

Tahiri knew of my obsession with sharks and manta rays so he suggested we should visit Toau which, in addition, had clear water and few people. But once we left the lee of Takaroa and felt the full weight of the southeast trade, we knew Toau would be a difficult and wet destination for us. So we lay without sail behind Takapoto till after dark then set off for Apataki with eased sheets, knowing that we couldn't reach the atoll before dawn. Apataki was a lucky choice; the scene of a unique encounter.



Paracirrhites xanthus above and *Paracirrhites nesus* below.



BOJANGLES

It is one of those rare halcyon days when I'm feeling serene and *Eila* is at rest. I sit in the cockpit with a beer, sundown on the way. It has been a hard day.

A fish jumps about half a mile away breaking the calm atoll lagoon. With the binoculars I take a better look. It's not a fish at all, but a dolphin – I can see its arching back glinting in the low sun.

Vicki grabs the snorkelling gear. I pull out my camera case and we pile into the dinghy. Planing, we cover the distance in no time. We stop the motor at a discreet distance and I snap on a 300mm lens with the idea of taking "dolphin barrel rolling against the sunset" pictures. Not that unlikely since we can see it is a spinner dolphin. But where are the others? Spinners are intensely social animals usually living in groups of thirty or more.

Vicki rows the dinghy towards the dolphin who seems curious about us, moving closer with each pass. I slip into the water, naked except for snorkelling gear.

Suddenly, there it is, streaking past at the limit of visibility, about 20 metres away.

Instead of swimming towards the sleek animal, I feign some indifference, snorkel diving down, doing barrel rolls of my own, keeping a watch from the corner of my eye. With my palate I make sequences of clicking sounds, mumbo jumbo to the dolphin, but conversation nevertheless. When I can see the dolphin, I half look away in appeasement, to show in the universal language of animals that there is nothing to fear.

I swim dolphin style, neither towards nor away. Within minutes she is swimming past, just a dolphin length between us. Vicki joins us in the water. It is only a few metres deep with a few coral heads. The sand between them reflects what little remains of the light.

The dolphin's behaviour is reminiscent of a puppy, pleased to see us after a long absence. (The dolphin no doubt describing our behaviour as reminiscent of a couple of lunatics.) She swims away only to come skidding back, veering away at the last moment, bombarding us with clicks and whistles, tossing her head as though sniffing out a clearer sonic view.

Finally, as the colours become muted with the end of the day, a grey reef shark appears. I am hoping to see the much written-about “Dolphin Kills Shark” scenario where the dolphin ruptures the shark’s internal organs with its beak. This may happen in the confines of an aquarium but in the ocean, as elsewhere in nature, animals usually establish hierarchies without resorting to violence. The dolphin and shark are indifferent to one another; the shark more interested in the aliens – us.

Cold and the gathering dusk persuade us to leave. Not wishing

to shatter the calm, we row back to *Eila*, the dolphin leading the way by a dinghy length.

This, we think, is the conclusion of a unique encounter. In fact it is just the beginning.

We hadn’t intended to come to Apataki at all. But the frenetic trade blowing when we left Takaroa easily persuaded us that Toau would be a grim slog to windward. I love the freedom to change plans at a moment’s notice, so we declined the challenge and chose Apataki instead.

Vicki snorkelling
in the anchorage at
Rotoava.





Vicki named the dolphin “Bojangles” on account of her jagged dorsal fin.



This rectangular ring of coral fifteen miles long has a single village of 250 people at the southwest corner. Elsewhere are miles of uninhabited, palm-covered *motus* encircling the lagoon.

There are two passes, one by the village and another near the northwest corner. There we found anchorage off the *motu* of Rotoava. Not a soul; just the birds, terrestrial crabs, a shallow brackish lake amongst the palms and *Coenobita* terrestrial hermits on the lagoon sand.

The next day we explore the *motus* further afield, taking the dinghy a couple of miles east across the calm lagoon.

Of the dolphin, which Vicki has named Bojangles on account

of her ragged dorsal fin, there is no sign. Later, I spend long interludes up the mast searching the glassy lagoon surface for telltale activity.

At about four in the afternoon, we take the dinghy down towards the pass. Vicki catches a glimpse of something – Bojangles has returned.

Again we stop the motor and row close. I slip into the water, this time with the camera in its underwater housing. The light is poor and the flashguns seem to disturb the dolphin, so I return it to the dinghy. She leads us into shallow water, a sandy bottom five metres deep, studded with beautiful coral heads reaching towards



The coral in the anchorage at Rotoava is in excellent condition.



Bojangles seemed to love this particular coral head.

the surface. Here she plays games with us for half an hour. Dark falls and she is gone, but as we plane back to *Eila*, Bojangles appears alongside; her low, powerful leaps effortlessly matching our 14 knots.

In the morning we take the dinghy to the pass again, thinking perhaps she spends the night outside, feeding in deep water in the usual spinner fashion on small fish and squid. Although it is calm and easy to see any surface disturbance, there is no sign of her at all. Not until mid-afternoon do we find her, amongst the same pretty coral heads as yesterday. This time we are able to spend two hours with her, sometimes just an arm's length apart.

Often Vicki and Bojangles swim leisurely circles side by side around one particular coral head. They drift towards one another till almost touching. Bojangles seems entranced, her eyes closing. Then her eyes pop open and she thrusts forward, only to slip back into the same mesmerized torpor.

Vicki runs her pendant along her chain necklace and Bojangles goes crazy, rushing away to throw herself half out of the water a few times, then zooming back, as if to make sure we are still there. When Vicki is cold she sits in the dinghy, gleaning what little

warmth remains in the low sun. She whistles and talks to Bojangles who swims very slowly, blowhole and head high out of the water for long periods. I quietly take pictures with natural light. When I am cold Vicki and I change places. I talk to Bojangles too and whistle a Maori tune we learned in New Zealand. It feels good and reassuring to watch this communion of two species.

When, finally, we both leave the water, Bojangles does back flips and rushes around the dinghy. We return to *Eila* for film, intending to take some topside shots of her barrel-rolling against the sunset. But she is sedate now and not inclined to play games to order. The evening is perfectly calm, the interface of sky and lagoon absolutely seamless.

After dark she comes to visit *Eila*; we can easily hear her breathing from down below. We go outside to talk with her, thinking the chat itself is more important than what is said.

In the past we have had good responses from dolphins with Bach, so we try the double violin concerto on the cassette player. This time her behaviour seems unchanged.

During the night Bojangles visits us three more times; each time I feel obliged to go outside for a chat, to show her that she hasn't been forgotten.

In the morning we spot her at about 0930. At last this is the kind of light I need for reasonable pictures. We make her acquaintance in her usual spot. Today her behaviour is more playful, more intimate. Often as she swims past she shifts a muddy jet plane vapour trail. Thus we can see the anus right next to the ventral slit which allows us to sex her. Male cetaceans have a gap between the anus and ventral slit. We spend two and a half hours with her, just frolicking in the shallows.

Often she shows us her ventral surface, often throws herself half out of the water and dashes away only to return. I try peek-a-boo with her but she gives no response. I use a wetsuit this time, and scuba gear intermittently. Surprisingly the bubbles don't upset her; underwater exhalations are sometimes used as warnings by cetaceans.

Human-dolphin interactions are common, but this may have been the first recorded with a solitary spinner dolphin.





Vicki snorkelling with Bojangles in the calm lagoon at Apataki.

Then, there is the leaf. An old leaf the size of a hand, drifting on the surface.

Suddenly it is caught on her flipper. Now it is adrift. I grasp the leaf, swim with it and release it. Bojangles glides up to the leaf, nods at it with her beak and it is caught on her flipper again. Vicki and I exchange elated smiles behind our masks – which instantly flood! Four times the dolphin catches and releases the leaf. At last we are cold, out of film and emotionally frazzled. We return slowly to *Eila*, the dolphin following all the way. She does a couple of circuits around *Eila* and returns to the shallows.

After lunch and changing films we return, finding her in a different place, where the water around the coral is turbid with zooplankton. She seems reluctant to interact at first and is more sedate



now. Often she swims out towards deeper water, but the dinghy is anchored and we are reluctant to follow. She returns each time and passes close by as if to ask “Why?”

Finally she disappears into deeper water and does not return. On our way back to *Eila* we see no sign of her. The wind, however, almost absent over these past four days, has begun – the southeast trade. We have no protection here from the southeast and ten miles of fetch across the lagoon is too much for comfort so we prepare ourselves for leaving.

As a last farewell, she visits us that night – just once – and we go outside to say our goodbyes.

By morning the anchorage is marginal. I take the dinghy to her favourite coral heads but I cannot see her. I motor reluctantly back to *Eila* against the chop kicked up by the new trade. Vicki and I are silent as we stow the outboard below and the dinghy on deck, exchanging long glances to which words would be a precarious addition. By mid-morning we are under sail, on our way to Tahiti.

At dawn, against a backdrop of grey cloud, I watched the air-brush green, purple and orange colour the east. To the southwest, the first touch of colour and relief came to Tahiti.

While in Papeete I was able to correspond with Wade Doak in New Zealand, a leading authority on extended encounters between humans and cetaceans and the author of numerous books on whales and dolphins. Although there have been interlocks with groups of spinner dolphins in Brazil, this is the first extended interaction with a solitary spinner dolphin of which he is aware.





GODS NO LONGER

Once the dawn had cracked the grey overcast you could see the sharks there, bellies blushed in death, slabs of meat on the cold concrete boat ramp.

Last evening the slip had been the hub of a small remote world; the day for emptying the fish traps, gutting fish and stringing them for market in Papeete. The tiny basin in which *Eila* lay adjacent to the atoll pass was thick with blood then. Up the ebbing tide flowed the sharks – blacktip reef sharks, greys and blacktips (*Carcharhinus limbatus*). This latter shark, like the grey, is an adept predator. Feared by Tuamotuan spearfishermen, especially in the more turbid lagoon water, it has accounted in Apataki for three maimings in recent years. In the basin the blacktip reigns supreme, snatching debris and damaged fish from the surface

before any other species.

Historically sharks were revered as gods in French Polynesia which probably accounts for their abundance; the Cook Islands, Tonga and Fiji have few sharks in comparison. Even today there are many Polynesians who believe that their ancestors take the form of sharks.

In recent years, even the remotest islands of French Polynesia bloom with satellite dishes both for television and for telecommunications. Ancient traditions wither under the onslaught of TV from France and Tahiti. And so the sharks are killed, some only to have their fins hacked off for soup, their bodies discarded. Sometimes the jaws are taken, to be sold as curios to tourists.



Surgeonfish of different species and a filefish caught in a wire netting fish trap on the reef top by the pass at Niutahi.



Coral reef fish caught in wire netting traps are prepared for export to Tahiti.



Fishing for export in Apataki is by means of fish traps; a sequence of two-dimensional wire netting funnels set on the reef, often bordering the pass; modern versions of the coral rock trap in Takaroa. Bagatelle, with fish for ball bearings. The fish swim in but can't find their way out. Sharks are seen as constant competitors for this resource and are treated accordingly.

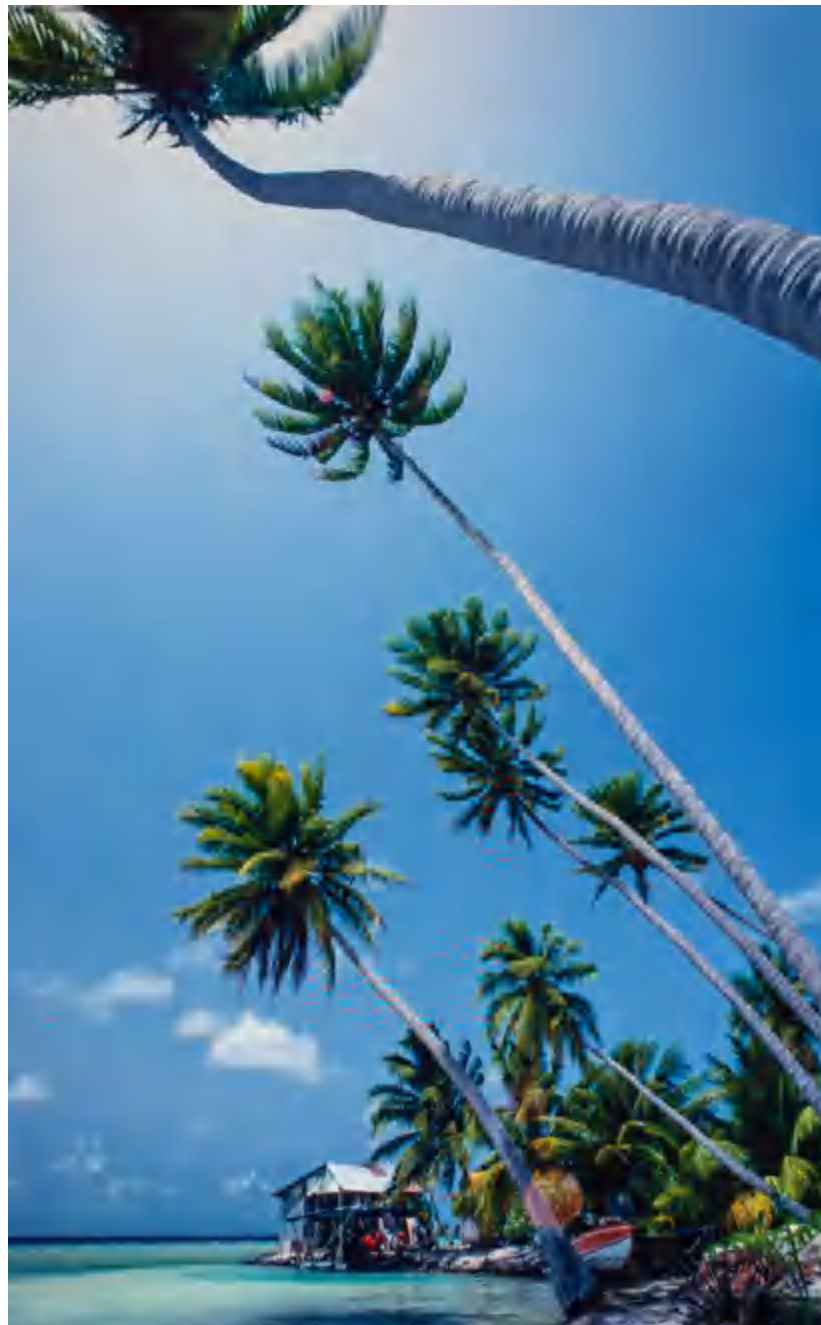
I wondered if the distribution of sharks in Apataki reflected their territorial nature. During numerous dives in the pass by the village of Nuihahi I saw only one shark; at the only other pass to the atoll 15 miles to the north in a virtually uninhabited area, I saw a dozen on a single dive.

We returned to Apataki from Tahiti with the intention of spending more time with the spinner dolphin Bojangles. Luckily, we had light northwesterlies for the trip, so we could lay the course. In normal trade wind conditions with both wind and current to battle against, it would be a grim passage. We should have suspected that the unusual weather was a portent of worse to come.

Bellies blushed in death, blacktip reef sharks lie on the boat ramp.



We anchored at Rotoava late in the afternoon. Within an hour leaden clouds had rolled up from the southeast and brought what at first we thought was a squall. From the southeast there is ten miles of fetch across the lagoon; soon it was rough and it appeared the anchor was dragging. At times like this a reliable engine is indispensable. I could not decide whether to re-anchor and hope we could hold on, or try and escape through the pass in the fast approaching dark. There was only one shallow spot on the



way to the pass, and I thought we would probably miss it. I decided to leave. By the time we reached the pass it was black, the palms on the *motus* marginally blacker, allowing us to see a way through. Once outside we were in the lee, in flat water. We lay a-hull and let *Eila* drift out to sea. We had several miles between us and the next atoll to leeward, Arutua. Once we were far enough offshore for the sea to be rough, we slowly motored a compass course into the lee of Apataki and repeated the process all night. Rain blotted out everything. At dawn we crept down the coast in the lee to the village of Nuihahi, entering the southern pass and finding an excellent sheltered anchorage in the small basin adjacent to the pass.

In the sand shallows, people were shovelling sand into skiffs, to be added to the pile ashore. This was shipped to Papeete for the cimetière which I thought might be a cement factory. It took me a while to realise it was in fact for the cemeteries; they cover the graves with sand. The weather kept us there for two weeks, though I was able to dive the pass and outside the reef.

On the outside of the atoll where the endless ocean swell breaks, spurs and grooves are carved in the reef by wave action and coral boulders. Surgeonfish and two-spot darts surge back and forth too, but the hypnotic swell tires my patience. Then there is a gradual slope, evenly covered with Pocilloporid corals, their size determined by the interval since they were last wiped out in one of the infrequent cyclones. Between 6-10m the slope breaks away in places as though a god of megalodonic proportions has taken a bite, leaving basins filled with coral rubble and interesting fish. Beyond is the drop-off. Atoll sections in books are always drawn as though the sides are almost vertical. If you plot the atoll section to scale using the soundings shown on the chart it is usually much less impressive, a 45° slope or less. But here, just outside the pass, it is almost vertical, just dropping down into the blue. I hop down to 20m to wait out my air crouching in a rocky niche, back to the wall.

Coconut palms line
the beach at Niutahi.



Eila tied into the small
boat harbour at Niutahi.







Way down below in the cooler water I can see grey reef sharks milling about. I tap the flat of my knife against my tank to attract attention. Two come swiftly up to check me out, peeling off about a shark's length away. A large dog-tooth tuna appears from nowhere, obliged to move for eternity by its ram-jet ventilation; one look and then gone. Some sharks are also ram-jet ventilators and are obliged to swim continually; others, like whitetip reef sharks and lemon sharks, can pump water across their gills with their buccal cavities and so are able to rest on the bottom.

The blue-bar jacks are more curious, cascading towards me in an apparently endless stream. In the distance I see ghostly silver threadfin jacks trailing long filaments from dorsal and anal fins.

Returning to the surface I see a manta ray in the distance, deceptively languid; from breathless experience I know how rarely I can keep up with their effortless flight.

Occasionally, with the current flooding towards the pass, the mantas will hang close to the bottom, water flowing through their gaping mouths, rostral paddles cupped. Relaxed like this, they can be amenable to the approach of a diver.

Once the weather had improved, we decided to explore the lagoon with the intention of ending up at Rotoava to see if we could find Bojangles again.

Motoring across the atoll lagoon on a calm day we could see the flickering pointed wingtips of manta rays breaking the surface. Sometimes they will throw themselves out of the water, landing with a monstrous splash. But here the visibility is about 15-20m, poor for French Polynesia. On the windward side of Apataki there is no formal pass – nothing you could take even a small boat through in one piece – but there is a shallow *hoa*; a gap between the palm-covered *motus* through which clear ocean water floods into the lagoon. There is no one living here, but there are sharks; lots of sharks. Lemon sharks, greys and blacktip reef sharks. Some of the latter are pups a foot long. Shallow water is their niche; in the brief tropical evenings one can see blacktip reef sharks hunting in water so shallow their black dorsal fins knife the surface.



The *hoa* has less than 3m of water at high tide and the current is swift. I hide behind a barrel of *Porites* coral, tucking my legs into the cave underneath. A dead grouper hidden under a rock in the current ensures the sharks will come. Once I made the mistake of tying a dead fish to a rock with rope. Adult blacktips, then a grey and finally a two metre lemon shark came in to grab the bait and drag the rock all over the place, clouding the visibility until the rope was severed.

This time the first to arrive are the blacktip reef sharks – adults 1.5m long.

Excited, they weave up the smell corridor but are reluctant to come close. In knee deep water, these sharks are more confident, hardly wary of a diver at all. Off in the distance I can see a shy lemon shark indifferent to the fuss. Now a grey appears.

Although considered more dangerous than blacktip reef sharks, I trust them more; they always seem in control. This one makes a single deliberate pass up the smell corridor, flips up the stone with her nose and grabs the fish. She is very close to me as she turns back to the turbid lagoon water.

For the blacktip pups I put some fish in about 15cm of water. Although adults are fairly brazen in the shallows, the pups will make repeated passes, always bailing out at the last moment. A tank is not required here; sometimes I lie on the beach with just my head and shoulders in the water, the flashguns jammed under coral rocks to give me more freedom of movement with the camera housing. Not something you would call a dive.

Before leaving Apataki for Tahiti the wind shifted to the northeast, allowing us to return to the northwest corner of the atoll, and dive Passe Tehere. Unfortunately, we saw no sign of the spinner dolphin Bojangles. The anchorage at the *motu* of Rotoava is rimmed with coral in good condition due to the influx of ocean water through the pass and several *hoas*. Passe Tehere was a surprise. Often the atoll passes have steep walls covered with coral and a sand and gravel bottom. Passe Tehere was all topography; slabs of coral rock tossed in all directions on a gigantic scale down to the bottom at 40m, like strewn bricks the size of houses. Fissures and caves everywhere. As in other places that almost never see a diver, the fish were curious and big.

Towards the end of my final dive in the pass, the high water slack succumbed to the ebb, lagoon water sighed back to the ocean. Up this turbid river came the sharks; greys slicing through the current to check me out and a large whitetip reef shark. The gods returning to their inner sanctum.



Vicki snorkelling among the coral heads at Rotoava, at the north end of the lagoon.



THE SOCIETY ISLANDS ÎLES DU VENT

The word Tahiti carries with it so much excess baggage that to write about the modern French territory without reiterating romantic nonsense of fifty or a hundred years ago is almost impossible. And then there's another problem. A lot of this romantic nonsense seems to be true.

Not long after Captain Samuel Wallis discovered the island on 18th June 1767, there were people saying it had been spoiled, it wasn't a patch on the good old days. Nostalgia is a terrible thing. Paul Gauguin arrived in 1891 and was disappointed. Sixty years ago the French navigator Alain Gerbault said that it was spoiled and beyond hope; many writers have echoed his sentiments in the years since. But it's unfair to make comparisons with some romantic notion of the past; better to compare with other places now. I can't think of anywhere I'd rather live than Tahiti or Moorea. And to live in an era without the shadow of

elephantiasis or leprosy is a privilege.

For many people, Tahiti acts as a heaven substitute; a place where the climate is sublime, the geography stunning and the girls accommodating and attractive beyond belief. I find it difficult to believe that every ship of the early navigators did not have a mutiny on their hands when they tried to leave. Imagine the scene: the crew from some dilapidated backwater of England, months at sea under appalling conditions, the beat around the Horn, the terrible food. Anchoring in Matavai Bay under that blue dome flocked with trade clouds, the pirogues coming out and these goddesses with a beauty unknown in England coming aboard dressed with smiles and not much else. And for the price of a nail (to make fish hooks) they were eager. Bougainville aptly named the island New Cythera after the island birthplace of the Greek goddess of love, Aphrodite.





Although the first European explorers came from the east, colonisation of the Pacific is said to have originally occurred from the west; people from the Malaya/Borneo region diffusing eastwards. This thesis might gain even more credence if anthropologists emulated some of these ocean passages against the trades and currents in double-hulled canoes. Thor Heyerdahl's theory of migration from the east is unfashionable now, although the sweet potato arrived in Polynesia from South America somehow. Some ocean sailors are sympathetic towards Heyerdahl's theory because they appreciate the difficulty of beating to windward under trade wind conditions even in a modern boat. Perhaps the wind systems are different now, but the poles were cold then, and the earth rotated the same way, so I doubt it. Early voyagers may have sailed eastward on those occasions when the trade failed, knowing they could readily return home when the trades resumed.

Long voyages in small boats are still made in Polynesia today; invariably when the outboard motor breaks down and always to the west with the prevailing winds.

Bonitier fishing boats line the quay at Papeete.



Supporting the conventional view of migration from west to east is the fact that tropical islands smell; we have smelled land more than 100 miles away. Sailing upwind makes the discovery of fragrant islands easy; they act like pheromone traps for moths. Just tack up the smell corridor like a shark. Sailing downwind, the nose gives no indication of anything ahead.

As a place to live, at least for the transient yachtsman, Tahiti has many qualities which are not immediately apparent. The people have money, they are sophisticated and know what is going on in the world – which is more than you can say about some people on yachts. In poorer countries there is the awkwardness of the gap in wealth between the yacht person and the indigents. Sometimes the yachtie is viewed as a source of revenue or trade, which can be a nuisance or mutually beneficial: either way it distorts any kind of relationship. But in French Polynesia, we are no more wealthy than many of the inhabitants, generally we have little they want, and are less well informed about world events. So you can have tranquility if you desire. Away from the city and hotels you can still make easy friendships with Polynesians but without the embarrassment of wealth.

Another great thing about French Polynesia – indeed all French islands – is their officials; yacht paperwork is efficient and almost a pleasure.

For the traveller, a command of French is a double-edged sword. To be thought of as French rarely endears you to Tahitians. An ability to read the newspapers and understand the intricacies of Tahitian political life would only make you despair, yet more than schoolboy French is required for any kind of dialogue with Tahitians. At least they speak French slowly and clearly enough to be understood.

I was alone when I first came to Tahiti in 1985. To some extent it represented the culmination of the dream. Being single in French Polynesia is a mixed blessing. You are regarded as aberrant; young men in French Polynesia do not abandon their family and relations and live alone, and few understand those foreigners who do. There is a curiosity, but little more than curiosity for a

freak. I was fortunate, during *Eila's* first visit, in finding a Tahitian soulmate to distract me, and reveal subtleties of life there I would otherwise have missed.

As cities go in the Pacific, Papeete has to be the best we have visited. It has a vibrancy which is particularly French. Suva in Fiji is about the same size, but although exotic, it just hasn't the style. But then the French injected huge amounts of money during the period of nuclear testing on Mururoa; and it shows. In spite of French Polynesia's reputation for being expensive, it is possible to live quite cheaply. Many basic foodstuffs are subsidised, and coffee, rice, chicken, pasta and bread are less expensive than elsewhere in Polynesia. Until 1993 there was no income tax, revenue being raised by import duties. As the prices of fruit and vegetables at the market are artificially inflated, the poor can make a living from a few trees or a small plantation. Dining out, night clubs and hotels tend to be costly. Wages are high, so the high cost of taking a holiday in French Polynesia can be viewed as a topography tax. What they are selling are some of the most stunningly beautiful islands in the world.

Geographically, Papeete is just about perfect. It lies on the northwest side of Tahiti somewhat in the rainshadow of the 2000m green and convoluted mountains, which means that although it gets plenty of sun, water is also plentiful, supporting extravagant vegetation around the city and trees and flowers within. The view to seaward is dominated by Moorea, providing each evening with a breathtaking backdrop at sunset. Those enchanting fairytale spires cleave each sunset while the liquid gold lagoon is traced with outrigger pirogues.

For exploring the inhabited parts of Tahiti, the public bus service with its brightly painted *trucks* is exceptionally efficient. Many times we would leave *Eila* tied stern-to by the Protestant church at Paofai – where women in white dresses and wide hats, men in blue suits and white shirts, would congregate on Sundays – and take *le truck* along the coast road, to the museum, or the Harrison Smith Botanical Garden in Papeari.

Also known as trucks are *les roulottes*, a bunch of thirty or more vans selling food in the evenings along the quay. Steaks,





Flower sellers
in the
Papeete
market.

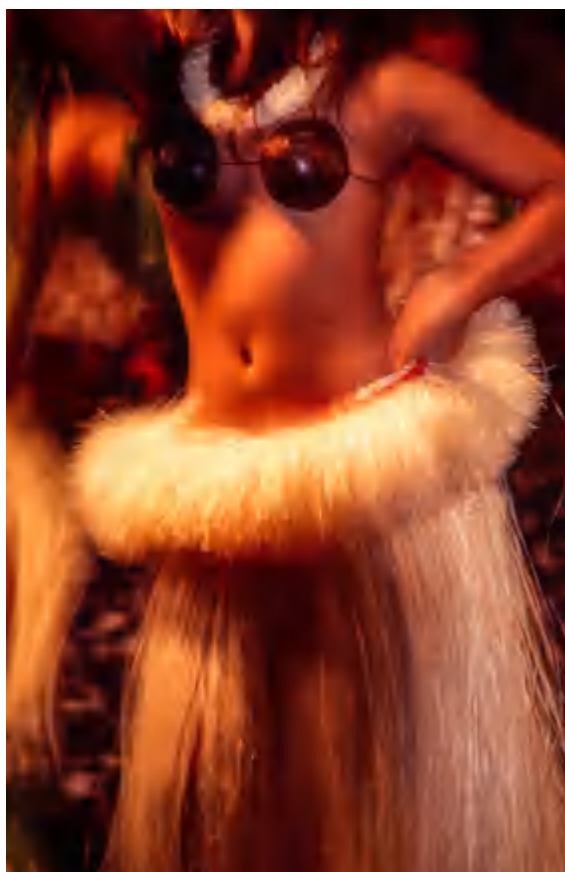
burgers, Chinese and Tahitian food could be had here at reasonable cost amongst the smoke and smell of steaks cooked over hibachis. Often after dinner we would wander down there with some pals to imbibe the fragrant air, have an ice cream and admire the scenery.

During the Bastille Festival (*Heiva* in Tahitian) the ambience from the *les roulottes* spreads throughout the city. Bougainville Park is filled with stalls and booths selling food or fairground games. By Place Tarahoi, where the dancing competitions are held, are dodgems, roundabouts, a ferris wheel and other fairground attractions.

During the day, Place Tarahoi hosts copra cutting and rock lifting competitions, Obelix style. Down the road at the Willy Bambridge Stadium there is javelin throwing. This was a surprise. A coconut – complete with husk – sits at the top of a 10m pole. The competitors stand about 30m away. The javelins are bowed wooden poles with metal tips made from reinforcing-bar. The javelin is loosely supported at 45° in the left hand. The butt sits low on a fingertip of the right hand. The curved spear is then wobbled and spun and launched by an upswing of the right arm. The whole thing looks utterly improbable; accuracy seemed out of the question. Yet after the contestants had thrown, the coconut looked like a pincushion. The eldest, wizened men seemed to achieve most success.

At night, Avenue du Général de Gaulle behind Bougainville Park is filled with the suppressed excitement of musicians and dancers restlessly waiting for their turn to perform in Place Tarahoi.

Inside, in the best seats, the dancers face you, illuminated from the front. In the cheap seats you sit to the rear of the dancers who are then side or back lit. Their extravagant costumes are made for backlighting. Two hundred dancers crowd the sand, almost spilling into the stalls. Here you can see the sweat on their faces, feel the stamp of their feet on the sand. The girls' breasts are cupped in polished coconut shells, their black hair adorned with high headdresses of pandanus, feathers and flowers. Below a sash of flowers shimmers their grass skirts. You can smell the frangipani, tiare Tahiti and coconut oil. And then there is the music. To hear Tahitian percussionists for the first time is akin to taking some fantastic drug.



The synergy of Tahitian drumming and tamure dancers is intoxicating.







To regain some semblance of mental tranquility Vicki and I sailed the few miles to our favourite anchorage near the city, the sand flat behind the barrier reef at Maeva Beach. Though the coral was largely dead – killed by the rise in sea water temperature and five cyclones during the El Niño years of '82-'83 – there was pretty snorkelling.

There were some interesting animals here, including the black-finned snake eel (*Ophichthus altipennis*) which seemed to swim beneath the sand leaving a sine wave tail trail and an oriental sea robin with its huge and ornate pectoral fins. This fish is able to make sounds by rubbing its jaw bones together. The sand is traced with tracks of *Terebra* gastropods. We watched pairs of longhorn



cowfish display to one another. To reveal hidden invertebrates they would blow a jet of water to waft the sand away. There are often Moorish idols in this habitat; so called because in parts of the Islamic world they are venerated. Schools of the largest surgeonfish in French Polynesia, *Acanthurus xanthopterus*, blue-grey and yellow, would come looking for scraps after breakfast. Among the broken coral rock we found snowflake morays, lionfish *Dendrochirus biocellatus* and stonefish reluctant to show us the beautiful red-orange undersides to their pectorals. Spaced from each other with precision on the coarse coral sand were groups of the black *Echinothrix diadema* urchins flashed with rays of fluorescent blue. In Fiji I saw these animals accompanied by sea-slugs of equal blackness with streaks of the same intense blue. Were they feeding on them? Elsewhere we have seen stingrays shadowed by blue-bar jacks. Here we saw them shadowed by smooth cornetfish. Were they waiting for the ray to disturb a fish from the sand?

Between Papeete and Maeva Beach just off the international airport at Faaa lie two wrecks, a PBY flying boat and a trading schooner. They lie not far apart in about 20m of water inside the barrier reef, so they can be explored in a single dive. The visibility here rarely exceeds 20m so finding them can be tricky on a bad day. In sunshine we could see the ghostly outline of the flying boat from up the mast.

After each day of gentle vestiges of the trade in the lee of Tahiti, the evenings were still. On the seaward horizon, a line of white surf along the barrier reef against a grey sky, the darker grey of Moorea and the pewter turquoise of the lagoon. Rarely, a fish broke the surface. Apart from the reef, there were the noises of occasional outboards, cars on the road behind the hotel and the constricted sound of far-off chatter on some of the boats. The surface sheen was broken by rafts of current-borne debris; weed, pieces of wood, coconuts. Low on the shore were lights. Back towards the mountain, a haze of dust and smoke. Higher still, they were embraced by cloud.

I slept on deck. I gazed for a long time at the stars, the Milky Way smeared faintly across the heavens in the moonlight and listened to the sounds of the water against the hull; and the reef. Always the reef.



During my first visit I sailed alone from Maeva Beach across to Afareaitu on the southeast coast of Moorea where a group of spinner dolphins frequented the lagoon.

Shortly after I anchored, a young girl wielding an outboard-powered aluminium skiff came to visit me with some smaller friends and relations. Thereafter Dorothea would visit a couple of times a day, bringing me good things to eat, and more relatives – even mother – to see this eccentric foreigner. The kids were – as elsewhere – utterly fascinated by knives (perhaps they were amused by my dinky diving knife after swinging a machete all day), binoculars and my typewriter. I acquired a little French and a lot of sticky fingermarks on the varnish.

The most frequent question was, “*Pas de femme?*” I had to say no in such a way that they knew I wasn’t averse to the idea; at all.

On my final day at Afareaitu I was invited to lunch *chez* Chavez, her house. Mother carefully explained how young Dorothea was and I agreed in my most chivalrous French, expressing the utmost honourability of my intentions.

On the wall hung the ubiquitous emblem of the Pacific, a worn guitar – with a machine head and two strings missing. A coffee table had been created from a cable drum, a relic from the time Moorea got a central generator. The wiring of the house hung in festoons, like Christmas decorations. Father and another man came in for lunch. He was here to fix the Lister generator; like the guitar, a feature of the South Pacific.

Although I watched the spinner dolphins for two weeks, I could not discern any pattern in their behaviour. Six years later Vicki and I met Michael Poole who was doing his PhD on spinners at the Berkeley University marine station in Cook’s Bay – one of two fjord-like bays which indent the north coast of Moorea. He told us that they preferred the leeward side of the island, their movements being determined by the wind direction.

Here we also met Professor Hal Whitehead and Dr Linda Weilgart who were doing sperm whale transects across the Pacific in their yacht *Balena*. They listened at intervals with a towed array hydrophone, had a directional hydrophone for tracking individual

whales and had side-scan sonar gear which could be lowered through the bow. For a 12m yacht they had a lot of gear and a lot of crew.

The other deep bay is Baie d’Opunohu. During one visit, *Eila* spent many weeks of the wet season anchored in Robinson’s Cove at the head of the bay. I have never been anywhere so beautiful as Opunohu. The long twilight evenings from the encircling mountains, the breathless calm with the yellow evening flowers of *Hibiscus tiliaceus* drifting on the surface and the cool mountain air whispering down into the valleys at night. A monochromatic stillness of old sepia photographs.

The octagonal church built by the London Missionary Society in Papetoai at the mouth of Opunohu is the oldest European building still in use in the South Pacific. Between here and the Beachcomber Park Royale Hotel is our favourite kind of anchorage; sand with barely a foot beneath the keel at low water. From here Vicki and I could keep an eye on humpback whale activity outside the reef and have dinghy access to good diving.

The popular dive sites between here and the northwest corner have numerous blacktip reef sharks which are quite bold and familiar with shark feeds. These blacktips are often hassled by rainbow runners. Predators are often mobbed by smaller, prey animals, possibly to distract them from feeding. There are also a number of huge lemon sharks – I’d guess 3m long – which will sometimes come in to feed (a heart-stopping experience) but more usually stay on the periphery of any disturbance. Grey reef sharks are rare on the north coast, more common on the west, almost as though the blacktips have displaced them from their usual niche. As usual in French Polynesia, there are lots of big moray eels. Feeding times are difficult for photography here; as soon as food makes an appearance so do huge shoals of blue-lined snappers and blue and black triggerfish.

At the northwest corner I found a Napoleon wrasse overcome with curiosity (or hunger). It would approach slowly, quizzically, then grab the food with its massive rubbery lips and flee, eventually returning for more.



Blacktip reef sharks are regularly fed on the north coast of Moorea. Outside the reef the water is clear.



Most dive operators in Polynesia feed the fish. It certainly makes things interesting. But the balance of nature is upset and diving in those frequented sites is a different experience. For a photographer the odds are improved but some animals become so bolshie that they are a danger. In some diving areas of the world (such as the Red Sea) feeding is now banned, but there are few areas where nature is also untouched by fishing.

Inside the barrier reef lies a shallow sand flat with coral heads, then the deep lagoon channel. The visibility in the channel is never very good but this is the niche of whitetip reef sharks. In places there are fire gobies, fairy basslets and the strange grey-brown coral-limorpharian anemones, *Amplexidiscus*, which can fold into a hollow sphere. There are thickets of staghorn *Acropora*, new on top, dead, algae-covered and guarded by belligerent damselfish, below. Both *Stegastes* and *Hemiglyphidodon* damsels farm filamentous green algae, weeding out undesirable species, which allows favoured species to flourish. Wrasse and surgeonfish sneak in to crop the algae, warned off by the “thok thok” of the damsels in distress.

By the *Acropora* thicket were shoals of goatfish. The personalities of fish are projected, or we anthropomorphise their behaviour to relate to them on an almost human level. My favourite – the fish I have the hardest time dragging myself away from – is the batfish *Platax teira*. But goatfish too, have a shy but open demeanour. In undived areas they follow you around, peeping shyly round the coral heads like children.

From this anchorage near Papetoai we could occasionally see humpback whales breaching and frolicking just outside the barrier reef.

At dawn one calm October morning we took *Eila* out to see if we could find any whales. After clearing Baie de Opunohu we motored northwest for an hour and a half, soon leaving behind the more turbid coastal water and finding the ocean blue. Soon Vicki sighted a disturbance near the horizon. She slowly motored *Eila* to within about half a mile of a pair of humpbacks. We left *Eila* to her own devices and followed the whales in our 2.5m rigid-hull inflatable. They were travelling sedately east. Vicki would run the

inflatable ahead of the whales at a discreet distance and I would slip into the water with snorkelling gear and camera. She left the motor idling so the whales would know where we were and I would swim slowly towards them. Only once however could I see them underwater, their white bellies faint at the limit of visibility. The undersides of these southern hemisphere humpbacks are mostly white, which makes them more interesting photographically than

their more uniformly grey northern hemisphere counterparts. Like the Hawaiian humpbacks, these animals of the South Pacific feed in polar waters, in this case Antarctic seas, and spend the southern winter in the tropics breeding. There is thought to be no mixing of these populations across the equator.

From up the mast, I have a great view of this whale rolling onto its back.



With these two humpback whales were a hundred melonhead whales and a handful of roughtooth dolphins and oceanic whitetip sharks.

Returning to *Eila* in the inflatable we encountered a small group of dolphins. Being unable to identify them, I dropped quietly into the water to get a better look. Strange animals, like a cross between a dolphin and a plesiosaurus. With their distinctive cone-shaped heads and white splotched sides we could see they were rough-toothed dolphins. The calves had pink bellies. They were shy, but when I ignored them and snorkelled down into the blue, curiosity

overcame a couple of animals and they zoomed in for at least an acoustic look, making a lot of noise with their sonar.

Towards midday the wind picked up, making it difficult to find cetaceans in the chop, so we returned to Baie de Opunohu.

The next morning is perfectly calm so we take *Eila* out again. *Eila* is ideal for finding whales. While Vicki steers, I sit at the upper spreaders which gives a huge horizon. This time we find



whales before 0800. They are diving – about 17 minutes between dives. When they submerge we take the dinghy to the oily slick of their footprint and wait. The minutes tick by. Each of us lost in private thoughts; wondering where they will emerge. More minutes; we glance at our watches. Like submarine-launched missiles they erupt 25m away and scare the living daylights out of us! They soon submerge again but we can see them about 30m down just drifting. But they surface again, so Vicki manoeuvres the dinghy to a likely intercept point where I slip into the water. They come towards me, not at all ponderous but sedate and graceful.

They are aware of me and pass 10m away. A solitary rough-toothed dolphin joins them and takes up station at the nose of one of the humpbacks, bow-riding the pressure wave.

After a while *Eila* is nowhere in sight. We plane inshore for an anxious ten minutes before spotting her. It was fortunate that the outboard water pump impeller waited a couple of days before disintegrating; we could have found ourselves in an awkward spot.

We motor *Eila* out to where we had left the whales, finding them after half an hour. It now looks as though there are several whales; a convention. This time Vicki takes care of *Eila* while I take the dinghy in. There are only two humpback whales but with them are about a hundred melonhead whales; small whales about 2.5m long, very similar to pygmy killer whales. Motoring very slowly I am able to get amongst them before easing myself into the water.

What greets me is an unforgettable sight; cetacean soup. Groups of melonhead whales come to inspect me noisily as I fin towards the humpbacks. I start taking pictures, the autofocus and auto-exposure working well in this situation, relieving my mind of extraneous considerations.

When they meander away, I intercept their likely path with the dinghy and slip over the side. One of the humpbacks is heading directly towards me. At first I think that the monstrous thing dangling underneath is its penis – it reminded me of a killer whale I had seen in Vancouver Aquarium – but it is only a flipper seen edge on.



As this whale rolled over to submerge, I felt the dinghy was too vulnerable a vantage point.



Wherever I look there are whales. Through the viewfinder with a 24mm lens there are often fifty animals.

I am engrossed in taking pictures when out of the side-window of my mask I catch an almost subliminal impression of a fish, instantly recognisable as an oceanic whitetip shark. There are two, about the same size as the melonheads. These animals are outside my experience and alone in the water several miles offshore doesn't seem an appropriate time to expand my knowledge. I am back in the dinghy fast. I pop my head over the side to have a look at the smudgy beige animals, all features, but I feel quite vulnerable with such restricted vision. I hold the camera over the side but unable to see through the viewfinder I can't get the autofocus to lock onto anything.

I know this is a once-in-a-lifetime opportunity, but I don't want to guarantee this by being eaten.

So I return to *Eila* to remove the camera from its housing. With the 24mm lens, the dinghy has to be quite close to the whales for useful topside pictures. One rolls over on its back so close that I think it will take the dinghy with it as it submerges. Later I switch to the 105mm and a higher viewpoint up the mast. But this is a poor substitute for being amongst them underwater.

I needed a dive buddy, someone who would share the odds with the oceanic whitetips. So later we went back to see Michael Poole at the Berkeley University marine station. He was keen to dive with the whales but not with the oceanic whitetips. I couldn't understand this at all, until later, when we met his Tahitian wife.

"There's a lot of things still to live for," Michael said. Reluctantly, I had to agree.





THE SOCIETY ISLANDS ÎLES SOUS-LE-VENT

Apart from a fish aggregation device best avoided a few miles off Club Med, the overnight sail from Moorea to Huahine is without surprises, and watching the profile of Huahine become an island in the fading pallor of dawn is ample recompense for a night without much sleep.

A young humpback whale overcome with curiosity approached *Eila* as we sailed round the northern reef. Like Raiatea which shares a barrier reef with Tahaa, the two islands which comprise Huahine also share a common barrier reef. A road connects them.

In common with most of the Society Islands (so named by Cook as “they lie contiguous to each other”) Huahine is mountainous, lush and beautiful; the same kind of stomach-clenching beauty one can see any afternoon in Papeete.

We anchored off the sleepy village of Fare, not far from the Bali Hai Hotel where the oldest remains in the Society Islands were unearthed during its construction. Huahine was believed to have been settled between 650 and 850 A.D.

Archaeologically, Huahine is the richest of the Society Islands. We hired bicycles and rode round to the village of Maeva at the northeast corner of Huahine Nui where there are sixteen restored temples or marae. Walking up the hillside to Paepae Ofata, we passed through a plantation of white vanilla orchids. From this stone platform we could look down over the narrows which connect Maeva Lake with the sea where there are nine ancient stone fish traps, some restored and in use today.

Although the islands are mountainous, the coast roads are usually flat. Cycling here, smiling at the pretty girls, getting soaked in a tropical downpour which steams off the black tarmac in lazy sheets and feeling the breeze beneath the palms, is an immense joy. On the roads a smile is a social obligation, to be repeated along with a primate eyebrow flash and a truncated wave for every passing car. To cycle round Huahine Nui we followed the road that leaves the coast at Faie and heads inland across the mountains. One long unmade section was so steep it was impossible to cycle down; with the coaster-brake locked (the only brake there was) the bikes still skidded on down, out of control.



Looking south from the marae at Maeva, Huahine.

In Fare, we cycled slowly down the main street, where the paint is peeling off the old wooden buildings with their rickety verandahs, to the quay where the *Taporo IV* was unloading and the *bonitier* fishing boats had their catch of skipjack tuna displayed for sale.

We took the dinghy across to the shallows inside the barrier reef. I am always amazed by the differences in the marine life from

island to island. Here there were grey and turquoise damselfish – a variety I have seen nowhere else – in an environment which seemed identical to many we had snorkelled in French Polynesia. There were several *Culcita* cushion stars. Often they have tiny *Periclimenes* shrimps living on them. In some places these cushion stars have a commensal pearlfish *Carapus mourlani* living inside their gastric cavities. Most pearlfish live inside sea cucumbers which they enter tail-first through the anus. One species is parasitic on the gonads and respiratory tree of its host; another species lives inside pearl oysters.

In the dying light of evening, the waves galloping along the barrier captured the last of the red from the sun in their manes.

Twenty miles west of Huahine lie the islands of Raiatea and Tahaa. Raiatea is the largest of the Society Islands and the main town, Uturoa, is the administrative centre for the Îles Sous-le-Vent. Much of the old town is being knocked down and replaced with modern, but tasteful buildings.

Halfway down the east coast of Raiatea is Faaroa Bay, a deep inlet where there is a yacht charter base. At the head of the bay is a river, somewhat extravagantly described – if you ignore the sunken trees – as the only “navigable river” in French Polynesia. The first navigators to colonise New Zealand are believed to have originated in this valley.

Not far south of here near the village of Opoa, is Taputaputea, traditionally the most important marae in French Polynesia.

Just east of Uturoa lies Teavapiti Pass, bordered by two *motus*. When I dived there the visibility was indifferent but the fish life was prolific. There were thousands of the butterflyfish *Chaetodon kleinii*, used to being fed by the local dive operation; they followed me like the children of Hamelin. The *Distichophora* lace corals on the steep walls were soft shades of fawn and grey. In Tonga or Fiji you would find many feather stars in this habitat, but they are rare in French Polynesia. There were a few grey reef sharks too, wondering if I had (or was) food for them. On the north side, the walls of the pass were vertical down to 20 metres where they sloped off into the depths.



A street scene in Fare, Huahine.



The day's catch of skipjack tuna are sold fresh on the quay in Fare.

The view of Tahaa, and in the distance, Bora Bora, from Uturoa, Raiatea.

We sailed inside the barrier to Tahaa, an emerald so precious you want to cup it in your hand. Past verdant folded hillsides and deep bays till we found anchorage off the village of Tiva on the west side; a *motu* and the silhouette of Bora Bora straddling the sunset. Next morning, being Sunday, we went ashore. Once the stragglers had disappeared into the Catholic church we approached the newly painted building with its tall steeple and sat nearby beneath a tree

to listen to the singing. Some children in their Sunday best came to chat with us. In 1863 a Chilean ship was wrecked near Tiva. Some of the crew hid in the village, married Tiva girls and formed a Spanish clan.

Subsequent generations of Spanish/Polynesian girls were renowned for their beauty.





Bora Bora has a reputation for being the most beautiful island in the world, thanks largely to James Michener. Subjective beauty is hard to dispute, but personally I regard Moorea as the most beautiful island I have seen. Structure is important; Huahine has a softer beauty, Fatu Hiva has a dramatic, shocking aspect which grabs you by the throat. Moorea has a beauty you can live with.

During the Second World War 6000 Americans were stationed on Bora Bora. They left behind the guns, the debris, the Jeeps and genes of war.

Half the lagoon at Bora Bora is rimmed by *motu*. The reef which rings the rest is cut by a single deep pass on the west side. Here the lagoon is deep and, in places, poorly ventilated, whereas on the east side it is shallow. To gain access to the southeast corner it is necessary to pilot through coral heads and shallows. On my first visit I rigged up lines from the tiller and engine control up to the lower spreaders, so I could sit up there with Polaroid sunglasses and navigate through the obstructions on my own. With two people it is easier. The view is fantastic: you can see many stingrays, eagle rays and mantas. Occasionally the mantas jump clear of the water, perhaps to rearrange some irritating remora, or, as marine biologist Dr Richard Chesher speculated, "because they like it". It has also been suggested that they leap prior to giving birth.

At the south end of *motu* Piti Aau at a place called Taurere the trade wind pushes clean ocean water over the barrier reef. The lagoon is shallow and the coral is in good condition. The hotels

bring visitors to feed the butterflyfish and the blacktip reef sharks.

We stop the boat and find a patch of sand for the anchor. From all directions come the butterflyfish. We swing our legs over the side and they scatter then rebound towards us. It is like dropping into an aquarium; it seems as though you can see forever. Immediately the turquoise *Chromis* and double-saddle butterflyfish with their eye-stripe of disruptive colouration surround us. Vicki feeds them. They nibble her hands, her legs, her hair. Her mask floods with mirth. On the periphery, in yellow livery, a trumpetfish looks on with sardonic reserve. Food overcomes its caution and Vicki reaches out with an offering. In a flash the jaws are trumpeted and the food gone.

I shoo the butterflies away so I don't get too many blurred ones in the foreground of my pictures. When the food has gone we explore the coral gardens of *Acropora*, *Porites* and *Millepora*. There are big black *Atrina* pen shells half-buried in the sand. The *Chromis* are breeding. Hundreds of them are fluttering and swooping, each pair over a rock or a patch of coarse coral sand. A penis-like ovipositor protrudes from the bellies of the females. Gangs of

Eila anchored in the lee of Motu Toopua, Bora Bora.

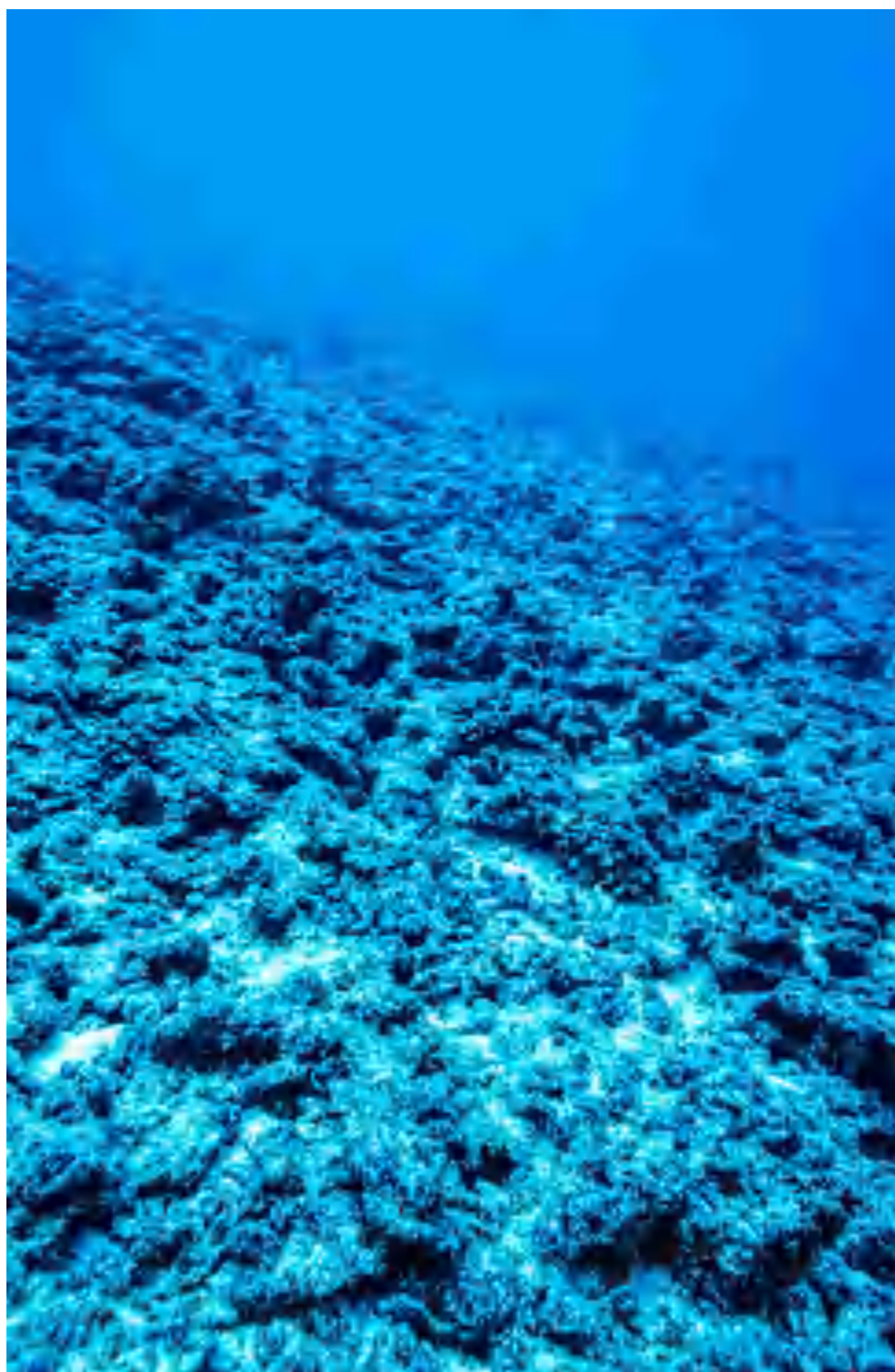


blue-bar jacks hang around, suddenly hurtling through the shoal, so fast it's impossible to tell if any *Chromis* dived for the floor too late.

Outboard-powered outriggers bring tourists from the hotels. On one dive I swam over to see what was happening. Behind a rope were a dozen Japanese snorkellers. A few metres in front of them were 30 blacktip reef sharks in a feeding frenzy.

Vagabond scouts encountered me; they were frisky and bold, perfect for photography. In stark contrast to this profusion I dived outside the barrier reef north of the only pass, Te Ava Nui. It was so utterly bland I took a couple of pictures in amazement. At 15m there were huge areas with no live coral at all. With less water it could have been a car park. I imagine it suffered not only from the rise in water temperature during the El Niño, but from the numerous





Outside the main pass at Bora Bora the reef had very little live coral.



Vicki feeding double saddle butterflyfish in the southeast corner of the lagoon.



cyclones the climatic change triggered. Wave action is also most severe on the leeward side of these islands, the swells kicked up by the trades are small compared with those originating from high-latitude storms.

Poorly ventilated parts of the lagoon suffer too, and are sensitive to eutrophication from run-off laden with nitrates and phosphates. I drifted down through one graveyard of a coral garden lying dusty and still. This was no Eden. Skeletal tombstones of staghorn coral, now shrouded by green algae, were interspersed with carpets of transient algae, some festooned like cobwebs. Shoals of drab grazers and aggressive damselfish algae farmers added to the forlorn scene. There was a sense of mustiness, of decay. I was reminded of silent fetid quarries, grey wet slate beneath a sombre sky. Occasionally there were pitiful inches of new growth, a futile shout against the broken gangrenous plain.

The lagoon on the deep side off the Bora Bora Hotel is better ventilated. When we were there, the water was laden with gobs of plankton although the visibility was still quite good. The reef at the edge of the sand flat drops steeply to 20 metres then more

gently into the lagoon depths. Here there are milkfish, groupers and occasionally manta rays. Eagle rays nosed in the sand for molluscs and the stingrays were often shadowed by smooth cornet-fish. Again there were strange globular *Amplexidiscus* anemones on the cliff face.

An approaching trough had us scurrying to find an anchorage protected from the south to southwest. Like many bays in the Society Islands, Faanui Bay is either too deep or too shallow for anchoring a small yacht; the 20m bottom comes up almost vertically to a fringing reef you can hit. With 100 metres of chain you could anchor comfortably anywhere in the lagoon, but we try to find somewhere shallow if we can.

On the north side of Faanui Bay (which was the site of the wartime US naval station) we found an isolated lump with 6 metres of water where we could jam the anchor by hand between the coral rocks. Although a bit exposed from the west, the trough wind tends to clock from northwest to southwest fairly quickly. On the back of the trough, the *mara'amu* blows strong and cold from the south. When the trough had passed, we returned to the shallow anchorage west of the smaller volcanic island of Toopua which shares the barrier reef with Bora Bora.

We arranged to clear customs and collect our bonds. Although Bora Bora is the westernmost port of entry, one can visit Maupiti and Mopelia to the west after clearing customs.

On our final day we hired bikes and cycled clockwise round the island; past multicoloured *pareus* billowing beneath the trees in a small bazaar, past the overgrown ruins of the never-completed Hyatt Regency hotel and to the quiet east side. Towards the village of Anau, the seven million-year-old bulk of Mount Otemanu (727m) appeared to rear out of the road ahead. Nearer the south end we rejoined the land of boutiques, hotels and oxymoronic Polynesian fast-food outlets. In Povai Bay, on a reef where there used to be a couple of trading schooner wrecks, now stood a makeshift dwelling, a separatist banner snapping in the breeze. We checked the commercial wharf in Faanui Bay for a water tap; then the wharf in Vaitape. We eventually found a supply of water that evening at the school, not far from the monument to Alain Gerbault who



circumnavigated more than sixty years ago with the yacht *Firecrest*.

The night lay still. Across the silvered black water, across the black reflection of Mount Pahia, through the broken ribbons of light came voices, Polynesian voices in mournful mass, utterly captivating. Against a background of desultory chatter from two

lads fishing, the cicadas, restless fish in the silent water, it stretched its arms in the darkness. One cannot hear such singing and have ambition. It eliminates the unnecessary and leaves nothing but contentment.

The iconic peak of Mount Otemanu dominates Bora Bora.



MOPELIA – GRAVE OF THE *SEEDLER*

The packing grey reef sharks showed us little interest as we finned towards the reef. They patrolled a back-eddy just outside the narrow pass at the atoll of Mopelia. Further south we found the remains of the First World War German raider *Seeadler*, wrecked by a tsunami in 1917. Seventy-five years later much of the wreckage is concreted into a solid iron mass lining the coral gullies in shallow water. In one trench lay one of *Seeadler's* giant guns, another – salvaged long ago – decorates Bougainville Park adjacent to the post office in Papeete. Other gullies contained crankshafts and bronze bearings from the steam engine, brass cartridge cases, anchors and chain. More debris lay on the shallow reef top.

When *Eila* first visited Mopelia in 1986, I was enchanted at once. Then, only five people inhabited the atoll. I stayed two weeks,

diving every day with blacktip reef sharks in the lagoon. Amongst the coral heads, fish followed me curiously around as though they had never seen a diver before. Now there are 60 people, mostly from the volcanic island of Maupiti 100 miles to the east. So far, they have had little impact on the diving or the pristine nature of the uninhabited *motu*.

Mopelia lies 260 miles west of Tahiti, in the remote outreaches of the Îles Sous-le-Vent, more than a thousand miles from the easternmost islands of French Polynesia. The coral ring which forms the atoll is about five miles in diameter. All along the windward reef lies a single *motu* crowned with palms. Elsewhere there are smaller *motus* inhabited only by birds – frigates, sooty terns, fairy terns, boobies and noddies.





Historically Mopelia was used as a copra plantation. Although the price of copra is heavily subsidised in French Polynesia, no copra is cut in Mopelia today. The cultivation of black pearl oysters is now the main occupation. Unlike in Takaroa, pearls are not cultured here, but the conditions are ideal for collecting the black-lipped oyster spat on festoons of plastic mesh suspended in the lagoon. These tiny bivalves are then grown large enough to be shipped to other islands in the Îles Sous-le-Vent for seed pearl implantation and further growth. This industry is vulnerable both to shellfish diseases and to cyclones which occasionally affect French Polynesia between November and April. In December '91 a severe cyclone badly savaged Mopelia. For three days while storm surge and waves inundated the atoll from the north, the few inhabitants clung to palm trees in waist-deep water. Once the worst was over the French Navy took the women and children off by helicopter; the men by inflatable to a frigate. A third of the palms were felled by the vicious wind. They lay jumbled like spilled matches; in places, the reinforced concrete remains of the meteorological station were wrapped round the trees like scarves.

Strewn with driftwood, coconuts and the remains of a pirogue, the desolate windward beach seemed strangely exhilarating. The incessant southeast trade drove endless Pacific swells onto the reef, then fled unimpeded through the clattering palms. Frigate birds hung almost motionless in the stream.

On the lagoon beach hardly a vestige of this tirade remained. The white coral sand was pocked with burrows of ghost crabs and sewn with tracks of *Coenobita* hermits. Here the frigates flapped languorously like pterodactyls, lending a prehistoric air to the place; never landing, picking up twigs for their nests on the wing. When they had a fish, stolen from some bird able to dive, or snatched from the surface, they would drop the fish frequently, swooping to catch it, till they had it oriented for swallowing.

On the uninhabited *motus* many of the *Pisonia grandis* trees were leveled, obliging the frigate birds to find a new habitat for their nests. Many were nesting among stunted *mikimiki* bushes on coral rock ledges raised half a metre above the lagoon. Their gawky

downy chicks stood for hours on the crude nests awaiting a meal of regurgitated fish. The delicate fairy terns waste no time building a nest, they just find a precarious hollow on the branch of a tree. The clouds of sooty terns lay their eggs – patterned as though speckled with old blood – without fanfare on the ground.

Our intrusion filled the air with birds and plaintive cries which – like those of a baby – shredded my equanimity. At least our intrusions beneath the sea pass silently.



Frigate bird chick and right, sooty terns.





Palm trees felled by the cyclone of December 1991.



Coconut crabs live on these *motus*; and it was here that I first encountered these extraordinary animals. Imagine a hermit crab almost half a metre long without its mollusc shell. Armour plate the abdomen and carapace, then paint it blue, cream, maroon and orange with the richest watercolour. Then equip the animal with sufficient power to rip the husk from coconuts and break them open on the ground. The friends we made ashore – amused and incredulous that we had never seen a coconut crab – made a point of finding one to show us. Like hermit crabs, the juvenile coconut crabs hide their abdomens in gastropod shells once they emerge from the sea after larval development.

One evening our friends provided a feast ashore – without coconut crab I was glad to see – with halved lobsters in sauce, barbecued squirrelfish and turtle (which tasted like beef), *poisson cru* with heart of palm, *Tridacna* clam mantles in curried coconut sauce and the ubiquitous rice.

By way of reply the people on yachts made a feast reflecting an eclectic mix of nationalities for our new Polynesian friends aboard *Eila*. With the last of the magenta light from the sunset we listened



Coconut crab, *Birgus latro*.

to their grim stories of survival, how some had tied themselves to trees as waves surged across the island during the cyclone.

Outside the pass on the northwest coast there was no evidence of coral damage from the cyclone, but the stunted *Pocillopora* and *Acropora* corals in shallow water are resistant to wave action. The single 30m wide pass at Mopelia has a continuous outgoing current from water thrown over the reef into the lagoon on the south side of the atoll. Usually the stream is about five or six knots, so access for a yacht is practically impossible without a motor. This warm, turbid lagoon water billows out onto the ocean surface. Often I could dive outside the pass and watch this river in the ocean pass overhead. Out of this murky cloud would swoop graceful manta rays like dive-bombers from the clouds. The huge schools of big-eye jacks and the small barracuda, *Sphyræna forsteri*, seemed suspended in the current.

The sides of the pass where it carved through the outside reef were undercut with caves curtained with squirrelfish. From here I could watch grey reef sharks in the turbid pass water and bold whitetips which came very close, their gunmetal backs catching spangles of light from the surface. Along the drop-off north of the pass I watched whitetip reef sharks motionless in the current with their mouths agape so that tiny black and blue cleaner wrasse could slip inside their gill covers to graze on parasites, then emerge from the shark's mouth. On other dives I saw eagle rays being cleaned in the same manner. There were also lemon sharks in the pass, but they were very shy.

Usually I remained in one place watching milkfish, Napoleon wrasse, unicorn fish, rainbow runners and dog-tooth tuna go by. These tuna can be attracted into camera range in the same way spearfishermen get close enough to shoot them. You make a guttural noise in the back of your throat which is almost impossible to describe. They are one of the few pelagic fish that can be ciguatoxic as they haunt the reefs and feed on reef fish.

Occasionally I would slip down the drop-off to 30m, a touch of narcosis enhancing the reverie, the metallic sound of bubbles tightening in pitch. Looking down the cliff would induce a vertigo

not alleviated by knowing I could soar into the blue like a seabird off a cliff. Glinting far below were shoals of jacks. On one narrow ledge rested a large hawksbill turtle.

Early one morning drifting on a silken sea in the inflatable I was surprised by the plangent exhalations of a pair of humpback whales. They nosed quietly towards the pass as though sniffing the warm lagoon water; playing insouciantly in the stream. A Jacuzzi for giants.

At 30m – where the tongue of coral rock which forms the bottom of the pass spills over the drop-off – lies one of *Seeadler's* huge anchors. Three others lie amongst the wreckage in the shallows. Throughout the concreted ironwork there were parts of numerous brass rings with articulating loops like handles. One part bore the stamp “1916 No.” The bronze journal bearings lined with white metal which supported the crankshaft weighed more than 100kg.

During the First World War, the 75m three masted windjammer *Seeadler* – disguised as a Norwegian timber freighter – slipped through the blockade and then proceeded to capture and sink fourteen Allied vessels without the loss of a single life. Captained by the remarkable Count Felix von Luckner, *Seeadler* stopped at Mopelia – inhabited only by three Polynesian turtle catchers – in search of food and fresh water.

On the 2nd August 1917 while most of the crew were ashore, a freak tsunami threw the ship against the reef, marooning the ship's crew and complement of prisoners.

With five of his men, Count von Luckner sailed one of the ship's lifeboats – christened *Kronprinzessin Cecilie* – first to the Cook Islands and then via Niue to Katafanga in the Lau Group of Fiji, a distance of 1400 miles. Here they broke into the house of a trader and requisitioned some food, leaving money and an apologetic note explaining that they were on a sporting cruise of the South Pacific. The note, signed “Max Pemberton”, now belongs to the Ovalau Club of Levuka in Fiji. They sailed on to Wakaya where they discovered a suitable ship to continue raiding. However, before they could steal it, the Fiji Government ship *Amra* arrived and sent over an officer and four Indian soldiers. Count von Luckner noted,

“The Indians wore puttees and those funny little pants that leave the knees bare.” Though Count von Luckner claims he could have easily shot them, being a gentleman out of military uniform he surrendered peacefully. Almost a month had passed since leaving Mopelia. His arrival in Suva caused quite a stir in a country devoid of wartime excitement. He was taken to New Zealand where he managed to steal an army officer’s uniform and commandeer a boat. He was eventually recaptured near the Kermadec Islands and returned to New Zealand. Before he could escape again the armistice was signed.

Meanwhile, Lieutenant Kling and the other Germans left behind on Mopelia captured the French Government 25m schooner *Lutece* on her twice-yearly visit to the atoll. They renamed her *Fortuna* (her original name) and sailed her to Easter Island, where they were wrecked. After a couple of months they found a steamer willing to take them to neutral Chile where they lived with German colonists until the end of the war.

Wrecks like *Seeadler* are usually surrounded by stories of treasure. Before he died, in a letter dated March 16th 1964, Count von Luckner allegedly wrote of those events of August 1917: “When I had all the valuable gold coins safely sealed in an empty ammunition box, I weighed them down further by putting in some old iron. One night not long after the stranding of the *Seeadler*, we lowered the package over the side of the vessel and dragged it on foot through two feet of water on submerged coral to a certain spot where we hid it neatly in a small cavity on the lower side of two identical coral shelves, not deeper than 9 to 12 feet of water.”

As Count von Luckner revisited Mopelia in his own boat after the war, I doubt whether the treasure still remains.

Undoubtedly the most valuable treasure of the *Seeadler* is her location, a rare combination of almost pristine nature and excellent diving. In some ways Mopelia is a microcosm of all that is best in the atolls of French Polynesia, few people and breathtaking nature in the raw.

As *Eila* left Mopelia astern we knew that the richer invertebrate life we would find further west would be scant consolation for the excitement of dives in French Polynesia spiced with manta rays and large numbers of sharks.



Vicki with one of the 105 mm guns from *Seeadler*. Another decorates Bougainville Park in Papeete.





BETWEEN THE LINES

Overhead the silent procession glides by, squadrons of devilfish cutting swaths through the plankton slick. Although the surface is glossy with plankton, the turbid pall is only a shallow stream in the clear ocean water of the equatorial Line Islands.

Before the huge animals come towards me I exhale hard, so I can rise beneath them without my bubbles disturbing their entranced feeding. Were I not intent on the image in my viewfinder I could reach up and touch them.

I have never seen so many manta rays together. Fifty animals between two and three metres across patrol a single plankton slick a few hundred metres long just outside the atoll pass of Fanning Island.

Fanning – now called Tabuaeran in Gilbertese – is one of the equatorial Northern Line Islands, part of the Republic of Kiribati. Roughly halfway between Hawaii and Tahiti, the Northern Line Islands are a group of four islands, though the northernmost, Palmyra, is a United States possession. Washington Island (now

called Teraina) and Fanning are atolls, while Christmas Island is a raised coral atoll, the largest of this type in the world.

Eila met the Equatorial Countercurrent a hundred miles north of Palmyra after a swift but uneventful passage from Hawaii, (a sojourn between two visits to French Polynesia to avoid the cyclone season). The east-going current kicked up a steep sea against the northeast trade. Half a day later we encountered the first convergence zone weather of the doldrums: rain squalls and big ragged skies.

Taking sights for navigation was a chancy affair; seldom the sun broke through the overcast, rarely the stars showed at dawn or dusk.

Palmyra greeted us with a sea of bottlenose dolphins, always surprising us with their size and ease. Not long ago Palmyra was uninhabited, an oasis of pristine nature. Now there are almost twenty people there, clearing an airstrip and one of the islands for what they called a “discreet development”.



In spite of written permission from the owner of one of the *motus*, the manager claimed we were trespassing and had to leave. We made a small repair to the mainsail and left for Fanning Island 200 miles to the southeast.

We had intended to pass close by Washington Island, but the backing northeast wind allowed us to pass well to windward of this closed atoll, where in the days before cholesterol awareness and the subsequent decline in the world market price for copra, barges and a system of canals facilitated the transport of copra.

On the second morning we sighted Fanning Island from up the mast, well to windward. The fresh trade was reinforced by occasional squalls; after each passed there was a lull before the trade resumed. In one of these calms we approached the pass through a sea like cold steel. Outside the pass were several outrigger canoes; people fishing. Amongst them were black fins, velvet wing tips: devilfish.

There's nothing like thirty big manta rays to cheer you up on a grey afternoon, especially after spending four months diving in Hawaii and seeing only one.

Although the Sailing Directions told us that the average wind speed for April is six knots, for the first ten days we hid from the short lagoon chop kicked up by a reinforced trade by taking *Eila* through the maze of reefs and shallows to the windward side. Braille navigation, touch and go, Vicki steering, the skipper up the mast with Polaroids. Eventually we ran hard aground. To get free we had to reduce *Eila's* draft by swinging out the boom and both crawling to the end with the engine hard astern.

Like the Gilbert Islands of Kiribati these atolls have extensive shallow areas best navigated – if you could stand the noise – with a hovercraft. But we did the best we could with our 2.5m rigid-hull inflatable and sploshed the rest with French jelly sandals (incidentally, about the best adapted shoes for this lifestyle). We explored the northeast *hoa* looking for clear ocean water coming through but there was nothing diveable. Only bonefish, mullet and a few blacktip reef sharks in the blood-warm shallows. No one lives on the windward side. In places there were forests

of *Pisonia grandis* trees where frigates nested in the highest branches, distending like balloons their bright red throats which vibrated with their eerie call. Palms everywhere, landcrabs and the bright red *Coenobita perlatus* hermit crabs.



The shallow lagoon on the east side of Fanning Island.



The legs are torn off the land crabs to prevent them escaping.



Making roof panels from dried pandanus leaves.



Weaving a palm leaf basket.



When the wind abated we returned to the village by the pass where we were made welcome by the Micronesian inhabitants, many of whom have moved here to escape the severe overcrowding on parts of Tarawa and other atolls in the Gilbert Islands.

I was hoodwinked into attending church in the Catholic *maneaba*—a traditional open-sided meeting house—on Palm Sunday. After the service with beautiful singing, there was a meal.

As guests, the huge platters covered with muslin and lace (to keep the flies off) were laid on the floor in front of us first.

Though the men eat first, Vicki fell into the guest category and so ate with them. The island is visited by a ship from Tarawa twice a year which was due any day. But although the meagre shops were out of tobacco, flour and rice, you would have never known from the lavish spread set before us.

There was pork, chicken, land crabs, fish of various kinds, taro (which in Kiribati can be a particularly tough challenge), noodles and rice, baked pumpkin and pumpkin stalks in coconut cream which were hairy and hot. Coconut milk and coffee washed it down.

A supply ship from Tarawa arrives after a three month hiatus – so the whole village comes down to the quay. The 30' wooden sailing yacht is *Wanderer III*, owned by Thies Matzen and Kicki Ericson, who recently spent 26 months in South Georgia.



Easter is celebrated throughout Kiribati with singing and dancing competitions.

The first of these was held in the same corrugated iron roofed *maneaba* which resonated with the nasal singing. Aspects of the colonial past seem to have integrated themselves into the cultural activities of Kiribati. With interjections from a pea-whistle, the conductor of each choir guided the singers through the songs, giving shrill warning of the imminent last verse. Dancers' armpits would be sprayed in mid-dance with Impulse body-spray or doused with Johnson's baby powder.

The following day the Catholics from two villages put on a display of singing and dancing in a *maneaba* built of traditional materials; palm log framing lashed together with coir string and a pandanus leaf roof. Percussionists elsewhere in Kiribati sometimes use a large block of expanded polystyrene for a communal drum. Here a wooden crate was used, passed from end to end of the *maneaba* as each village performed.

The dances are undemonstrative compared with the tamure of French Polynesia.

The lower body moves little, while the arms and head move in fluttering bird-like jumps. Arms and fingers are adorned with flowery bracelets, heads with a coronet of palm and frangipani. A yoke of beads and two sashes are worn over a white shirt. The skirt is either of pandanus or palm. The men wear no shirt and a skirt of pandanus mat, tied with a belt of human hair, traditionally from the head of their mother.

Entranced by the drumming, the dancers reach a state of hypnosis punctuated only by their screams.

The traditional *maneaba* made from palm logs and pandanus.





These shark tooth and mantis shrimp daggers are sold to the few visitors.

Diving alone anywhere new and unknown is always a bit scary for me. Rarely do we meet other people on yachts who have the same obsession about diving with sharks or even manta rays.

Unlike Christmas Island where there are a couple of fish collecting businesses which send angelfish to Hawaii on the weekly flight, no one in Fanning dives with scuba so the fish seem curious about a stranger.

At one time, there must have been beautiful coral here, but now the stands are dead, the huge *Acropora* tables turned. From the size of the new growth my guess is that the coral was killed by the rise in seawater temperature in the El Niño years of '82-'83. At 28° C in a normal year the surface temperature is already high, close to 31° C which is lethal for many corals.

I was immediately impressed by the large numbers of big fish; snappers, Napoleon wrasse, humphead parrotfish (*Bolbometopon muricatum*), other large parrotfish grazing partly on dead algae-covered coral, partly on the small stands of live *Pocillopora* and *Acropora*. As elsewhere in the Pacific, the *Pocillopora* often embraced arc-eye hawkfish in the outer branches and a wealth of smaller fish and the xanthid crab *Trapezia* towards the trunk. Sometimes the humphead parrotfish – unusually approachable here – had an attendant blue-bar jack in their shadow. The jack uses the cover to approach unsuspecting prey. Elsewhere I have seen these jacks shadowing stingrays and Napoleon wrasse.

From the blue water would come shoals of giant trevally, homing in, presenting a head-on view like a flattened skull till they turned a metre away. Shoals of barracuda 200 strong would engulf me in their improvised purse seine, only a silver window at the top, elsewhere a uniform mesh of barracuda. If they hunt like this, I wondered how they organised the subsequent feeding. Do they take turns like dolphins?

There were fish here I didn't recognise from dives in Hawaii or French Polynesia.

I liked to think there was some larval transport east with the Equatorial Countercurrent, bringing fish and invertebrates from the richer Palau/Philippine region. One angelfish *Apolemichthys xanthopunctatus* I had never seen before. Sharks were rare.





I saw a few blacktip reef sharks and one large grey. Sharks are killed here for their fins which are dried and shipped to China for soup. Sometimes the teeth are made into traditional artifacts to sell to the occasional visitor.

With the depressed price of copra, there is little else to earn money for flour, rice and tobacco in such a marginal economy. Turtles are killed to vary the monotonous atoll diet of fish and rice. In an island without electricity or refrigeration any surplus turtles are kept alive by lying them on their backs.

On one dive I saw a yellowfin tuna. The i-Kiribati we had seen fishing from canoes outside the pass were catching yellowfin. A quantity of bait, one piece hiding a hook, is dragged quickly to the required depth with a stone which then falls away. The tuna dash in and one unfortunate animal is hooked.

In contrast to the Kiribati dancers, the trance of the feeding mantas is silent. Often during the ebb, especially in the morning calm, long clouds of plankton would snake along the reef and out into deeper water leaving a slick upon the surface. Up and down this river of food worked the mantas, often as many as fifty animals, sometimes fifteen in a single eyeful. Though the visibility in the slick was poor, usually the visibility outside was more than 20m. In the deep water I was reluctant to get in with them. But in the shallower water I could wait for them to fly directly overhead like silent stealth bombers. When my air had gone I would snorkel down as they came towards me, sometimes in a line, single file, rostral paddles cupped, mouths agape. They would pick up air which spilled in silver streams from their spiracles when they banked and turned. One was all black, another had monofilament fishing line caught round its rostral paddles; all were big.

As *Eila* slipped out of the pass bound for Christmas Island (Kiritimati) we could see them through the silky surface all along the windrow of plankton, soaring back and forth in endless procession.

Though only 150 miles, the sail to Christmas can be difficult, against both wind and current. If the Equatorial Countercurrent has moved far enough to the south, one may expect some help, but the steep seas kicked up by the wind against the countercurrent make progress in a small yacht painful.









We were lucky and had a swift trip. Outside the lagoon at Christmas is a large area of sand where one can anchor; however it is exposed to the ocean swell. At high water we can gain access to the lagoon and anchor just off the wharf where there is reasonable protection. The channel is virtually indecipherable; we ran *Eila* aground both times we entered. In the local language, Gilbertese, Christmas is known as Abakiroro, “The Faraway Island”.

Christmas Island was used as a base by the U.S.A. and Britain for atmospheric nuclear tests between 1956 and 1964. The bombs were exploded about 30 miles south of the island at an altitude of 5500m. They left behind an amazing quantity of rubbish. Some scrap aluminium and copper has been reclaimed and exported to Hawaii.

Christmas is the largest raised coral atoll in the world and has a huge population of sooty terns, which here breed twice a year. Cook Island, at the entrance to the lagoon, is a nature reserve. Natural history and sportfishing for bonefish are the only things Christmas Island has to offer visitors. A foreign economic adviser I spoke to suggested a casino was the way to attract visitors from Hawaii.

In the calm of early morning we took the dinghy outside Cook Island where the silky surface was disturbed by milkfish and occasionally a manta. There was a group of spinner dolphins here which would allow our approach. With the outboard just ticking over we could mingle with the group without seeming to upset their behaviour. On one of these occasions I spotted a group of animals far out to sea. They were melonhead whales, about 200 of the 2.5m animals, intensely vocal and interested in the dinghy and Vicki who could reach over the bow and touch their slick black skin. It was good to get a clear view; several times we have seen them and been unsure whether they were melonheads or pygmy killer whales.

Christmas is attractive as a place to spend the South Pacific cyclone season. On my first visit the weekly flights to Hawaii had been cancelled, the hotel was shut and there was no international telephone. I could – with the necessary persistence – make a collect call, using the SSB radio at the hotel. By our second visit a few months later the flights had resumed, the hotel had reopened, the fish collectors were in business and a new satellite telecommunications dish was being assembled.

Vicki watches a melonhead whale from the dinghy at Christmas Island.





THE COOK ISLANDS

There is a softness and understated beauty to much of Aitutaki; a gentle compromise between an atoll and the extravagant beauty of the high islands. Aitutaki has all the features of an atoll with the addition, in the northern part of the shallow lagoon, of a moderately high island of red volcanic earth where bananas, taro, cabbages, cassava and mangoes thrive. About 2500 people live here. The dozen or so *motus* which rim the remainder of the reef are uninhabited.

The lagoon is so shallow outrigger canoes are punted with long poles. The pass is also shallow; trying to enter at low water *Eila* kissed the ground. Using three anchors and a concrete block we secured *Eila* to one side of the narrow channel out of the traffic.

There were few changes in six years; many of the buildings have an in-built dilapidation which makes them gentle on the eye.

In early spring the frangipani blooms pink and white, the latter striking against dark waxed and polished leaves; and the scarlet flowers of the flame trees are just beginning.

I had several dives in Aitutaki but they were disappointing. The coral is in good condition, in places forming huge gulleys and ravines, but there are very few big fish and it is not far enough west to have the great diversity of invertebrate life found in Fiji.

The *Alexandria* lies in shallow water between the pass and the southern extremity of the island. It was wrecked in the 30's on passage between the USA and New Zealand with a cargo of Model T Fords. When we dived there, the water was clouded with plankton. We saw no sharks and only a few large fish although I noticed a Napoleon wrasse with a blue-bar jack shadowing it. In the shallows the coral seemed lush with particularly vivid colours, although the few Crown-of-Thorns starfish sucking the lifeblood out of the coral were the largest I have seen. In other islands we have seen areas of bleached coral not caused by Crown-of-Thorns, but by environmental stress. The corals expel their symbiotic zooxanthellae, become bleached and sometimes die.



Rarotonga, looking north with the
small harbour of Ngatangiia to the east.





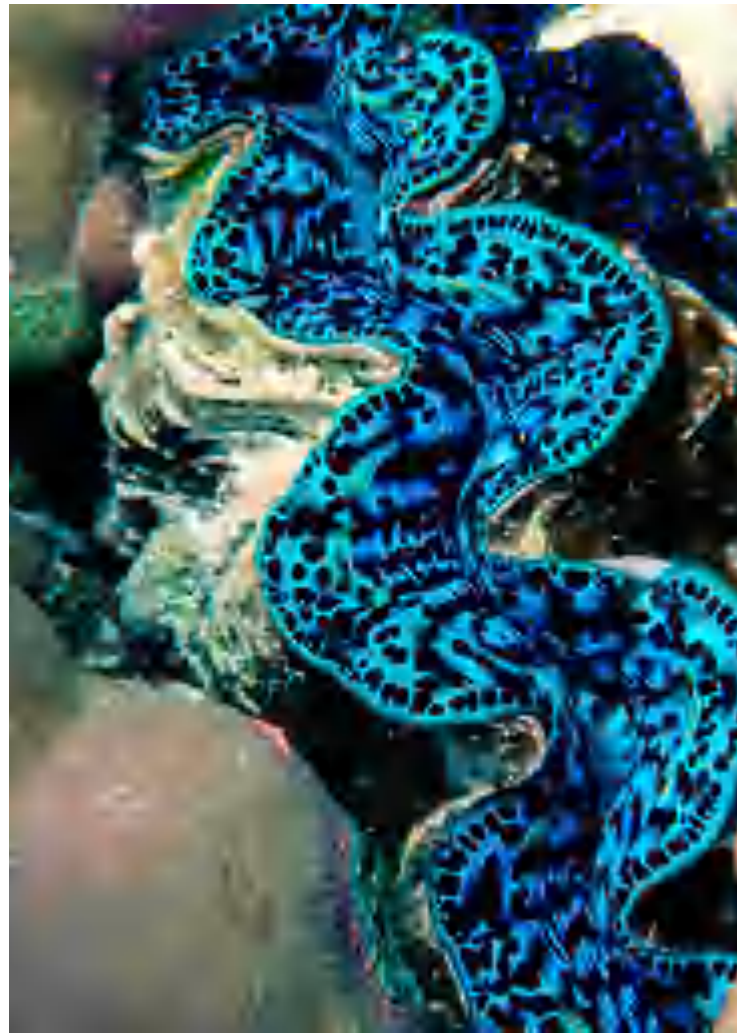
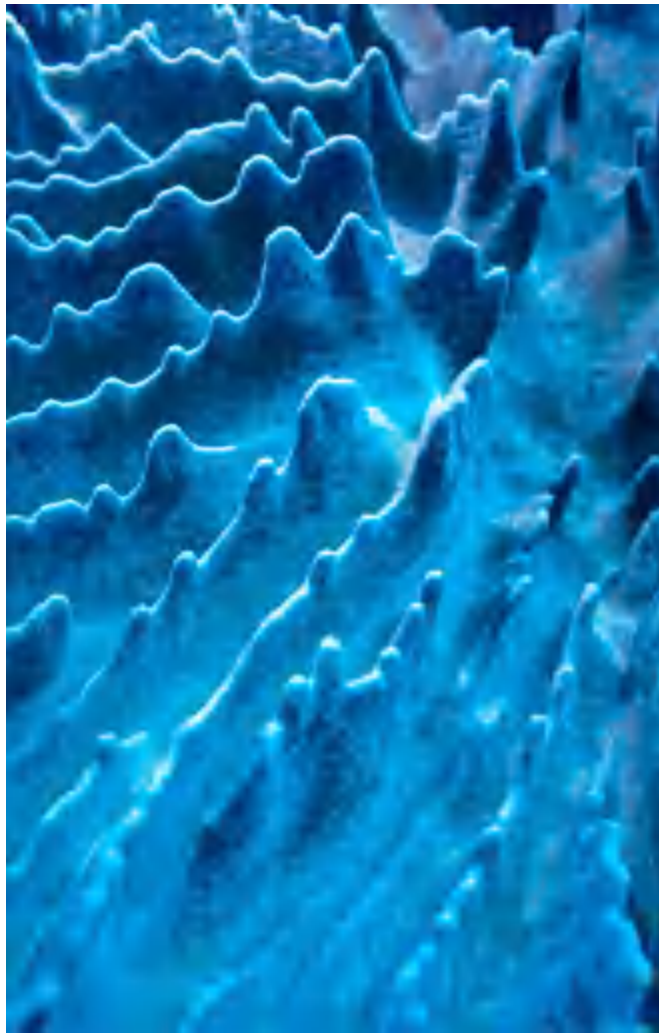
To the north of the pass there were coral formations the height of houses with narrow alleys between. Deeper, there was less plankton and very clear water with strange plate and spiky *Galaxea* corals. The fairy basslets amongst the corals appeared to fluoresce, being brighter than they had any right to be at that depth. There seemed to be more leather corals here than in French Polynesia and fewer moray eels and *Tridacna* clams. In some of the dustier areas there were *Palythoa* anthozoans which the photographer Chris Newbert likened to Japanese parasols.

We spoke with Neil Mitchell who runs a pleasantly laid back dive operation. He told us that in the eight years he has been in Aitutaki he has seen two whale sharks, no manta rays and few sharks on the sheltered western reef. In Rarotonga the diving has been made more interesting by the sinking of the *Maritime Reefer* and the *Mataora*.

One day we hired a motorbike and drove down to the Institute of Marine Resources where one of the Pacific giant clam hatchery projects set up by Richard Braley of James Cook University is under way. The institute has also established a protected breeding population whose spat can reseed the reef, which has suffered intense human predation. There are similar projects in Tonga and Fiji. They have five species of clams: *Tridacna gigas*, *derasa*, *maxima* and *squamosa*; and *Hippopus hippopus*. *Maxima* and *squamosa* are indigenous. Like reef-building hermatypic corals, all have symbiotic zooxanthellae in their tissues which, apart from providing additional nourishment for the clam, makes the mantle of some species, particularly *maxima*, a visual delight.

One evening we all went down to “Island Night” at the Rapae Hotel where a dance group performed under poor lighting upon a bare concrete floor, which felt in some way oppressive. I was roped into performing a Cook Island hip-swinging tamure with a delightful ten year-old dancer – making a fool of myself of course. Cook Island girls – incidentally – are about the friendliest you could hope to meet and they never seemed embarrassed by my appalling dancing.

The 26th and 27th October were public holidays. Gospel Day celebrated the arrival of the first missionaries in the Cook Islands in



1821. They were John Williams of the London Missionary Society and a Tahitian who stayed to convert Aitutaki and then had a crack at Rarotonga.

Gospel Day in Aitutaki was celebrated by competitions between the three villages with Cook Islands Christian Churches. There were dressy marching competitions with uniforms and modern drums which couldn't hide an atavistic sub-rhythm of Cook Islands syncopation. Much too paramilitary for me. There were musical competitions – with some sensational Polynesian singing – and plays depicting Biblical stories. Some of the groups had the treble sound and the cranked swing of a barrel organ. As everything was in the Rarotongan dialect of Maori it was a bit like watching charades. One story involved Isaac and his two sons. A chicken was produced; I suggested to Vicki that this might be the punk rock version. Sure enough the chicken was messily killed and plucked, feathers flying everywhere. It certainly grabbed our attention. The competition was intense. The host village of Arutanga walked off with all the glitzy trophies and much of the modest prize money.

There seemed to be some evolution in sports. On our first visit, children would play marbles on the worn beaten earth beneath the palms. This time, tennis was popular and the standard seemed high in spite of the bumpy courts. Since the same surface is used for rugby in the winter the lamentable courts were hardly surprising.

For the Festival of Pacific Arts in 1992 many islands built voyaging canoes which converged on Rarotonga. Because Aitutaki lacked suitable trees, the *Hokulea* crowd from Hawaii donated a couple of logs for building the hulls of *Ngapuariki*. The ship delivering them didn't stop, just threw them overboard and they were taken in tow by the tug.

After the festival the *Ngapuariki* eventually returned to Aitutaki shadowed by the yacht *Pozzualana*. Quite a few cruising yachts were used as shadow vessels for the canoes. The BBC had detained the canoe in Rarotonga for filming. The *Ngapuariki* arrived in Aitutaki in a tremendous rain squall after dark. In two *maneaba*-like structures by the shore, prayers and speeches were given. All the island seemed to be packed beneath the pandanus roof. The crew

seemed weighed down with masses of frangipani leis and fatigue. Then a feast was laid out for them. While they ate, the best dance group performed on the sand beneath the bare tungsten bulbs. It was a privilege to see these people doing this for themselves, because they wanted to; without commerce and the expectations of a tourist audience. There were very few white faces to be seen. When the crew had left the table it was open for a brief, voracious free-for-all. In moments the table was bare.

On my first visit I had the good fortune to rescue a drifting dinghy which belonged to an elderly man called Mata Paki.



One morning, a yacht which had just left for Tonga called up on the VHF. They had found an aluminium dinghy awash six miles west of Aitutaki. They couldn't get it on board so they thought I might like to try and find it. I took a compass bearing on their disappearing sails before a friend and I took *Eila* out to search. After a while I went up to the upper spreaders while my pal sailed *Eila*. It seemed a hopeless task looking for the proverbial needle. Just as we were giving up I spotted the tiniest speck amongst the waves. It was floating only on account of the polystyrene beneath the thwart. Bailing with a bucket didn't work, just as much slopped in as could be thrown out. We hauled it up on the genoa halyard to get the water out. The trade ensured we had a hard slog back to Aitutaki towing the dinghy.

Next morning a wizened old fellow came to visit in a mango dug-out with a relieved smile and a box of oranges – the owner of the dinghy, Mata Paki. We swallowed our avaricious thoughts and smiled with what magnanimity we could muster.

Many times during my stay, Mata Paki appeared on the dock astride his motorbike to take me across the island to his house in the village of Vaipae. He lived there with a younger woman, Lucy and her niece Helen, who was fifteen and beautiful.

The house was built of wooden poles and palm leaf thatch, holes for windows and doors, and a floor of beaten earth. Outside amongst the palms and breadfruit trees was the kitchen – an open-sided building with an iron roof – in which an open fire chuckled beneath blackened pots. The ground oven nearby covered with banana leaves exuded steam, smoke and delightful smells.

The garden extended down the hill to the lagoon. You could lie on one of the soft dumpy beds and gaze through the lattice of poles and the shadows of trees at the lagoon, shimmering and enticing.

On my arrival, an open drinking nut was offered in welcome by Lucy. After a short grace a bewildering array of food was served. There was succulent pork, a papaya pudding hot from the ground oven, trevally, curry battered parrotfish, yams, coconut sauce, chicken, and banana pudding. The meal was washed down with a drink made from grated heart of palm, sugar and water which resembled

wallpaper paste not only in texture. Helen stole shy glances.

Afterwards, a bowl of water was produced to clean the debris from our fingers. The difficulty with being a guest is that one is required to do everything first; so you can't get away with copying the behaviour of someone else. I made the mistake (the first time) of dabbling my hands in the water – the way kids wash their hands. The trick is scoop water out of the bowl and wash with that, so as not to muddy the water for the next person.

After the meal I was shooed inside for a rest; with Helen. So I asked her about Rarotonga, about school and her future – not a major Polynesian concern – and told her a bit about atolls, tectonics, stars. She wanted to know what my island was like. "It's big, there's a lot of people, and I prefer yours." What can you say?

So against the murmurings of Cook Islands Radio we lay on the bed and gazed out across the slatted lagoon and watched a black kitten taking life tentatively in self-created amusement.

Later, Mata Paki suggested I spend the night with Helen, which shocked me, though it didn't seem to surprise Helen at all. I stretched what diplomacy I could muster in the circumstances to decline the invitation.

I was preparing *Eila* to leave Aitutaki. The wind, normally the trade from the east-southeast, tripped to the northeast and north as a trough of low pressure, tropical herald of a subtropical depression, passed over.

Though yachts of modest draft can enter the pass and lagoon at Aitutaki, larger yachts anchor outside. Here they are well protected from the usual trade wind. The Swan 51, *Defiance* was anchored outside. The next day the wind was fresh from the northwest, blowing obliquely onshore. For some reason, the owner and crew were all ashore that day.

The anchor chain wrapped round the coral heads below, brought up short and broke between the windlass and the bow roller. Half a mile away, we watched helplessly as *Defiance* rolled her way ponderously down to the reef. It was sickening to watch the yacht jar and heel as she struck. Breakers swept in endless procession forcing her further onto the reef.

Three of the crew arrived quickly. They tried to board the Swan from seaward but the breaking seas made it a hopeless task. They returned to the lagoon and took the inflatable to the inside of the reef. From there they were able to wade across the reef top to *Defiance*. The owner located the skipper of the government tug and soon it was steaming out through the pass. The tug tried to pass a towing hawser to the Swan, but the line fouled the tug's single screw, so within seconds the tug was thrown on the reef alongside the Swan.

As dusk fell, small boats ferried off the personal belongings of the owner and crew.

The tug is the island's lifeline. The visiting freighters anchor outside the reef and the tug ferries goods to the small boat harbour in a towed barge. So throughout the night, oilskin-clad figures worked in the glow of Coleman lanterns to save the tug.

By dawn, the Swan lay over on her port side. A lorry delivered a load of palm log rollers to the dock while in the grey rain the owner watched through the viewfinder of his video camera.

Fifty government employees worked continuously till nightfall. Using rails, rollers and jacks, and a four-part tackle with forty men and the Swan's winches on the tail, they dragged the tug along the reef to a small gulley. By dusk the tug was in the gulley and made its way tentatively across the shallow lagoon to the harbour. The following morning it was hauled out on the slipway for repair.

It was during the salvage of the Swan on my first visit to Aitutaki that I bumped into Vicki Allen, a Canadian visitor with a Circle-Pacific air ticket. She was on her way to New Zealand. So was I, in a manner of speaking, so I asked her over tea whether she would care to sail with me to Tonga. She was adventurous enough to accept the invitation.

We left at dawn and had a lively twenty-six hour trip the 150 miles south to Rarotonga.

As we left Aitutaki behind, we almost ran over some huge creature about seven metres long; its languid behaviour suggested it may have been a whale shark.

We wanted to visit Rarotonga for several reasons; E-6 slide

processing was available (although they had run out of slide mounts) and there was a good library where I hoped to find out more about Count Felix von Luckner and his *Seeadler*. And it was an island I was interested in seeing with a view to living permanently somewhere, someday, maybe.

The interior of Rarotonga is out of the same mould as the high Society Islands; the stunning beauty of jagged, eroded volcanoes covered with rainforest.

Unfortunately the island had a feeling of a Kiwi colony. There is development similar to Tahiti, but here they seem to do it with





The Swan 51 *Defiance*
with the tug on the reef at
Aitutaki.

less panache. New Zealand is not renowned for its stylish influence.

We managed to secure *Eila* in the tiny harbour of Avarua from where we could hear the bands at Trader Jacks and the Banana Court Bar whether we wanted to or not.

In the South Seas the Banana Court Bar is probably second only to Aggie Grey's Hotel in Samoa in notoriety. It seemed at first as if people only came because it was famous. No one was dancing to the Cook Islands music. However towards midnight it filled with a

mixture of conspicuous Kiwis, and Rarotongans. Fortunately the Cook Islanders have not adopted the dress sense of the Kiwis. Cook Island girls are as attractive as their Tahitian counterparts but not quite as dressy – a result no doubt of less money and no French influence. Cruising through the hubbub were Mormon imposters. Black shoes, black trousers, ties and white shirts with the black plastic label on the left pocket. It might have said Elder Bouncer, but closer scrutiny revealed the word "Security".

The boat harbour at Avarua has barely room for one yacht, and no room to swing.



In the Cook Islands Christian Church car park nearby a slick evangelist group with expensive gear and frenetic oratory (interspersed with nice singing) harangued the late evening strollers.

On Sundays the Empire Theatre held New Wave religious gatherings which seemed to strike back neatly at the stultifying monopoly that the churches have over Sunday trading. Basically the Empire became a disco with religious lyrics.

We did not really want to sit out a trough in Avarua as it is open to the north, so as soon as the high cirrus indicated the next trough was on the way we left.

The atoll of Palmerston lies 300 miles northwest of Rarotonga. It was discovered by Captain Cook with HMS *Resolution* in 1774. In 1862 an Englishman, William Marsters, took his three Cook Island wives to the uninhabited atoll. Today, most of the population of eighty are direct descendants of William Marsters and his wives, and until recently the inhabitants used to speak a form of 19th century English.

On our way there, in the full moonlight, our trolled plastic squid caught a deep water snake mackerel a metre long, with large eyes, protruding lower jaw and barracuda-like teeth.

The fringe of palms popped up where I hoped it would and we motored into the lee of the largest of the six *motus* where there were signs of habitation. Two boats of beaming Cook Islanders soon appeared through the breakers and came alongside. One contained an administrator who cursorily examined the ship's papers. Because the two narrow passes are too shallow for *Eila's* draft, we anchored outside on the coral slope with two anchors even though we intended to leave before nightfall. The memory of *Defiance* and the wrecked Korean fishing boat on the reef ahead were sufficient reminders for caution.

I snorkelled down to check the anchors. It was very clear. There were flocks of parrotfish, jacks and whitetip reef sharks along the coral slope.

John Marsters took us ashore through a tortuous pass, and landed us at a blinding coral sand beach. When our eyes had adjusted to the intense glare, the colours were incredibly vivid.



The main commercial harbour at Avatiu, Rarotonga.



The old Customs House
at Aitutaki.

A small girl came to take Vicki's hand, perhaps because she was staggering a little until she found her land legs. We followed a soft sand path to the house of John Marsters where we were offered open drinking nuts.

After some island small talk we walked round the village. Evidence of Australasian aid was everywhere. There was a central

generator; each house had a meter on an outside wall.

In one shed were bags of cement; part of a project to provide each house with its own water cistern, the roof providing the catchment.

The wooden house built by William Marsters still stands. The massive planks are fastened with boat nails, the doors are swung

on brass hinges. The church is built from huge baulks of fir from the remains of the *Kitsap* wrecked in 1890. In spite of the massive construction it leans a little more precariously with each passing cyclone. Props support the tottering assemblage.

In Polynesian terms the houses seemed extravagant, fibre cement boards on wooden frames for walls. The horizontals provided narrow shelves for knick-knacks and faded family photographs. The windows were glassless shutters hinged on nails, held open with a hinged prop which engaged notches in the shutter frame. There was bright linoleum on the concrete floor. Vicki sat in a chair with *Teredo* worm sculpting in the arms.

In the centre of this *motu* is a taro pit; a major excavation which allows the taro root to subsist on the brackish groundwater found several feet down. In this damp oasis grew mango and breadfruit trees too.

We peeped in the dusty louvred windows of the schoolroom, which had finished for the day. There was a picture of the Queen on the wall and strange scrawlings on the blackboard. Only English is taught in school, unlike the rest of the Cook Islands where Rarotongan is taught also.

John Marsters returned us to *Eila* in his skiff. George Marsters was just returning from three hours fishing. The bottom of his aluminium dinghy was covered with huge dorado and wahoo, caught on lures with flying fish wired behind. He gave us a chunk of wahoo. Soaked in lime juice and fried, it was excellent.

Just before dusk we hauled up the anchors – with surprisingly little difficulty – and with a fair trade lay a course for Beveridge Reef, 300 miles to the west-southwest.





THE REMOTEST REEFS

Lost in the immensity of the Pacific between the Cook Islands and Tonga lies a tiny ring of coral enclosing a shallow lagoon. No trees, no islands, no land at all. Just ocean and coral beneath the endless sky.

On the leeward side, the ring is breached by a single wide pass where grey reef sharks laze in the current. The centre of the azure lagoon is 15m deep studded with small coral heads. Ringing the deeper water and extending to the back-reef margin inside the reef itself lies a shallow sand flat of old bottle turquoise where sunlight is broken into shards of David Hockney spangles.

Though the tidal range here is small, at high water a chop comes across the lagoon from the eternal onslaught outside. But at low water it lies like a mirror in a frame of coral rock rouged with calcareous algae.

From Palmerston we had a sublime four day passage to Beveridge Reef with the southeast trade on the port quarter – where it belongs. Each dawn and dusk I took star sights to refamiliarise myself with the procedure for the important fixes just before

reaching Beveridge. At dawn on the last day it was overcast! However the sky soon cleared and I was able to get a simultaneous sun and moon fix during breakfast. With Polaroids we could see the lagoon blink – the turquoise lagoon reflected in the clouds – almost twenty miles away. A couple of hours later I could see the breakers from the upper crosstrees.

While skirting the northern edge of the reef we sighted two humpback whales. The middle of November seemed very late for them as they should have been on their way south. We felt that this might be a good sign for the cyclone season. High water temperatures tend to cause more hurricanes; perhaps the increase in water temperature with the approach of summer indicates to the humpbacks when to leave for Antarctica. Late humpbacks may mean that the water is still cool; the surface lagoon temperature here at latitude 20° S was just under 25° C, about the same as the August water temperature on our first visit.



Motoring in the lee we caught a jack. It was staggeringly clear; we could see fish amongst the coral 25m below. We entered the pass where the lazy swell thundered to death on either side, motored across the lagoon and anchored on the shallow sand flat, sheltered from the ocean by the windward reef. To the south we could see a new wreck, a fishing boat from Seattle, the *Nicky Lou*. In the breathless calm beneath that scratched dome of sky there was a crisp and precarious silence, underscored by the faint white noise of the reef.

Atolls and particularly open reefs like Beveridge produce – like tropical rain – a feeling of primeval elation which Robert Louis Stevenson, in Fakarava, captured thus:

“And still, on the one side, stretched the lapping mere, and from the other the deep sea still growled in the night. But it was most of all on board, in the dead hours, when I had been better sleeping, that the spell of Fakarava seized and held me. The moon was down. The harbour lantern and two of the greater planets drew vari-coloured wakes on the lagoon. From shore the cheerful watch-cry of cocks rang out at intervals above the organ-point of surf. And the thought of this depopulated capital, this protracted thread of annular island with its crest of coco-palms and fringe of breakers, and that tranquil inland sea that stretched before me till it touched the stars, ran in my head for hours with delight.”

We slipped over the side for a snorkel round a coral head on the edge of the 45° slope which separates the sand flat from the lagoon depths. With crystal water it had that strange aquarium feel you get when the visibility exceeds 30m. Amongst the coral there were many clownfish anemones, *Tridacna maxima* clams, the red pencil urchin *Heterocentrotus mamillatus* and a tessellated moray. There were knife fish slicing through shoals of fry and *operu*. We saw no sharks, then.

Eila anchored on the sand flat by the coral head where we fed sharks.



The wreck of the fishing boat
from Seattle, *Nicky Lou*.



At dawn, I took the dinghy against the light to the reef. The low tide revealed the debris from an ancient wreck: hawse pipes, anchors and skeletal remains of chain.

There were scattered iron-rich ballast stones now stuck to the reef by calcareous algae. Strangely, in the shallow pools around the wreckage there were thousands of the tiny bubble shell opisthobranchs *Haminoea cymbalum*. Strange, because a few paces away from the wreckage, there were none. How they resist the high water turmoil I have no idea. Other animals are better protected. Cemented to the calcareous red algal cap of the reef top are tubes of vermetids. These gastropod molluscs cast mucus nets like cobwebs which collect passing plankton and detritus. The net is periodically gathered by the radula, consumed, and a new one secreted. At low water the tube is protected by a horny brown operculum.

On the seaward edge, the reef is etched into ravines and gullies covered by stunted corals and encrusting red algae. The hard reef top is formed into shallow terraces like rice paddies. In the confined pools there are black sponges, heavily shelled gastropods, blennies and occasionally an octopus.

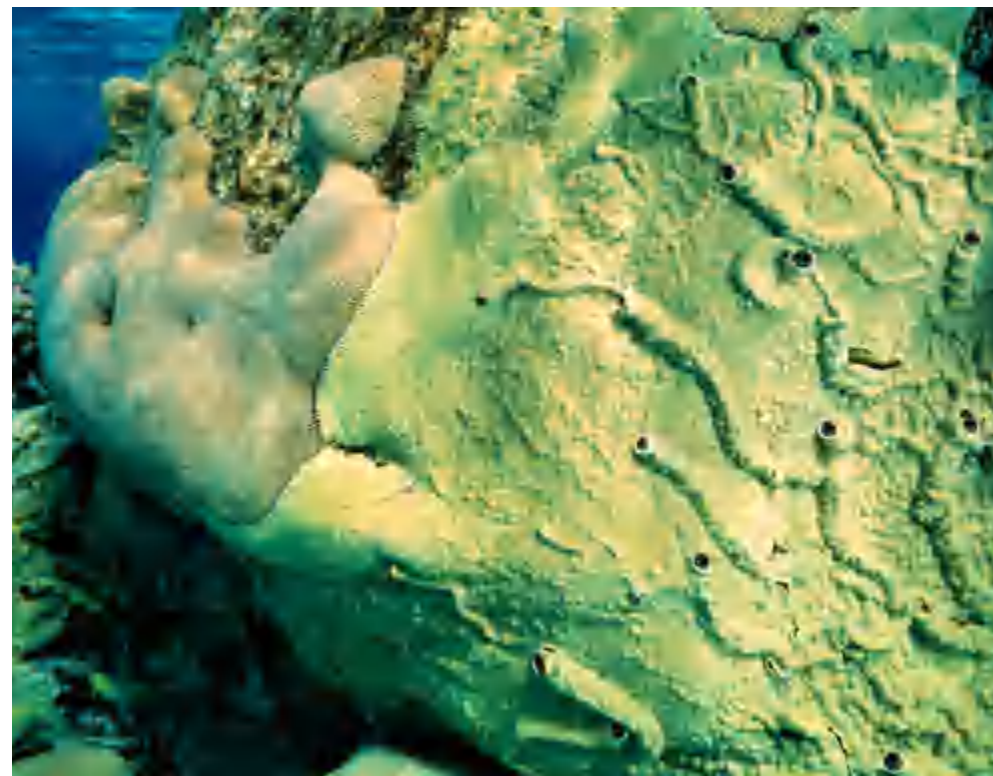
On that first morning I prepared for a dive at the pass. On my way across the lagoon I saw a huge creature; it took me a moment to realise it was an adult humpback with her calf inside the lagoon in about 15m of water! No doubt the animals we had seen the day before. They were lolling about at the surface, spyhopping and lobtailing.

The calf made a couple of half-hearted breaches. After I had watched the whales for an hour they slipped out the pass. Where the current was swiftest, I had a look over with my mask; there were large schools of jacks and many grey reef sharks. Trolling a plastic squid I caught a goldenspot jack and zipped back to *Eila*.

I took the filleted jack carcass on a dive to our nearby coral head. Very soon a couple of grey reef sharks turned up. As they were intent on getting the fish, which I had put under a big lump of rock, I was able to take some pictures.





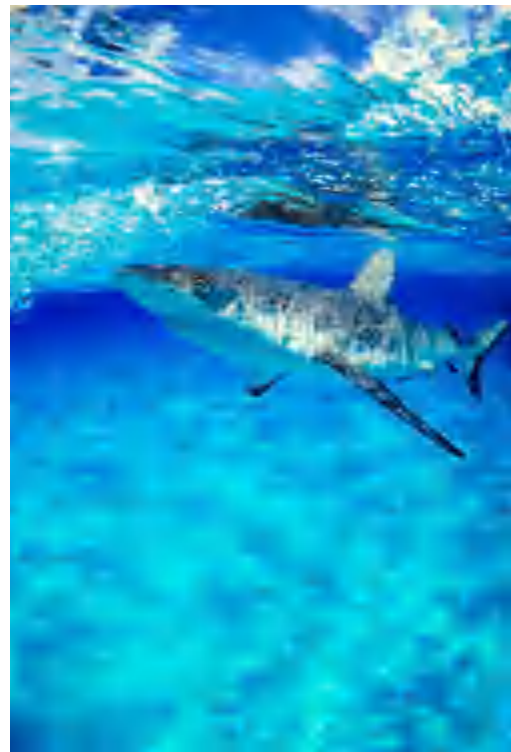
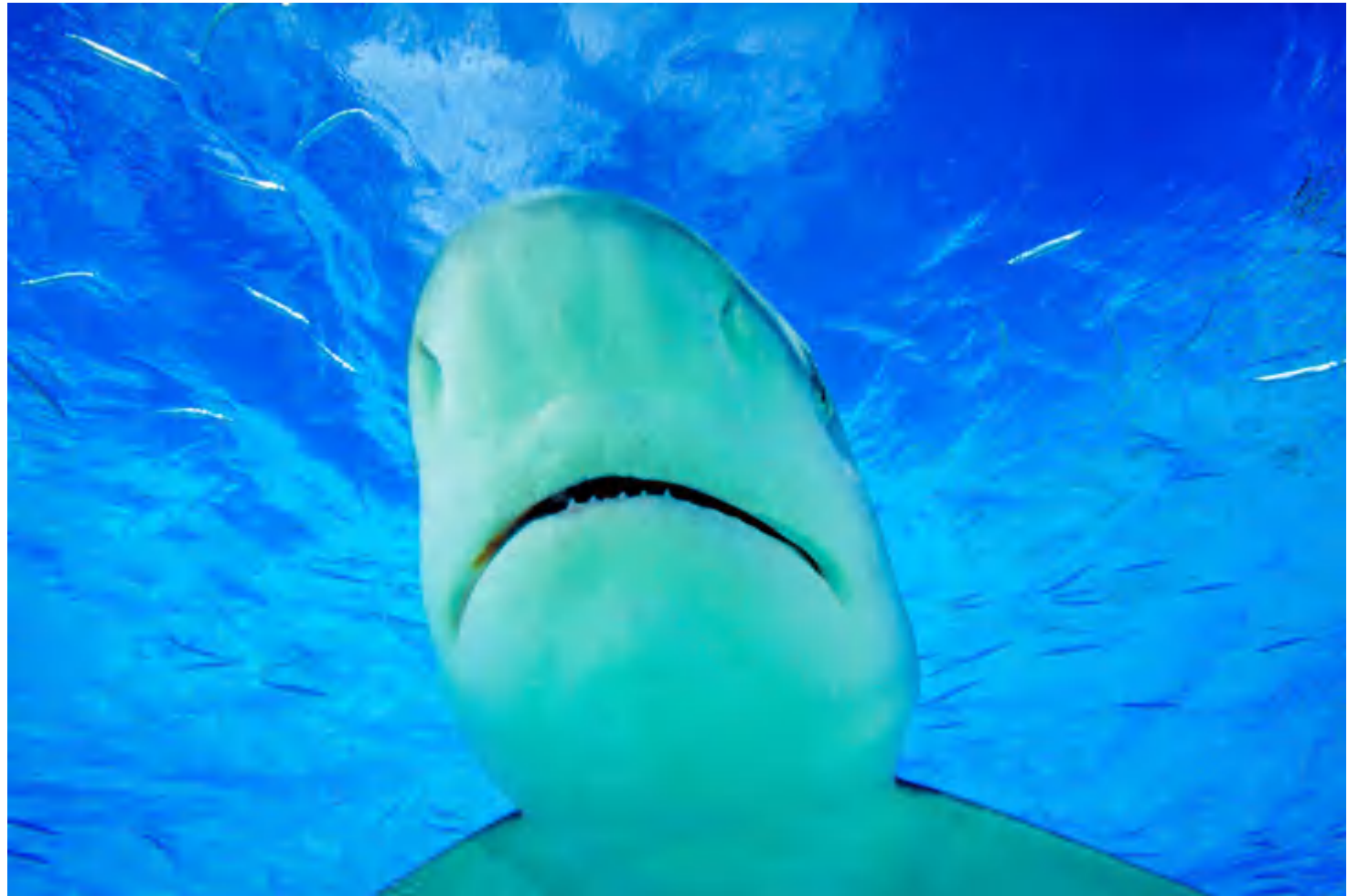


Once the fish was consumed they cooled off down below the slight thermocline and meandered about disinterested. I followed them down. Two greys returned and one of them began to bother me, tightly circling, so I retreated up the slope. But it followed, repeatedly making close passes quite fast. Even when I had put the camera in the dinghy it came up after me. The shark could probably hear my heart going boom-tiddy-boom nineteen to the dozen. For the rest of the day it was impossible to look outside without seeing at least one, sometimes four, grey reef sharks mooching around *Eila*. They were probably accustomed to clearing up from the yachts, as most will have anchored near the wreck and discarded many fish remains. Greys often show a posturing display prior to an attack and the only element of this that I saw were downward pointing pectorals on one approach so it may have been just overindulgent curiosity. It is in places like this that I often wish for a competent dive buddy to watch my back and reduce the fear.

The back-reef margin is shallow, not more than three metres, but the coral is lush, with much fire coral. In places *Tridacna* clams are packed tightly together. Coral heads on the sand flat have large colonies of *Turbinaria peltata*. There are many parrotfish, groupers and snappers, and sometimes an octopus or turtle. The only change I could see in the six years since my first visit was the behaviour of the blue-bar jacks. Previously they would mill around me not more than an arm's length away. Now, having acquainted themselves with spearguns, they keep their distance.

I cultivated a relationship with a whitetip reef shark which frequented one part of the reef. On one dive I rigged up a remote trigger for the camera. I set the camera up on a weighted tripod and triggered the shutter by means of two syringes and a length of plastic tubing – all filled with water. Pulling the plunger on the remote syringe four feet away tripped the shutter release. I hid some fish a couple of feet in front of the camera and waited. I soon realised this was a waste of time when the whitetip blithely swam between me and the camera and rooted round the base of the tripod looking for the source of fish odour.

















Although sharks rarely feed each day, they seldom resist a free meal. After a week of daily visits she was fat. A carcass of fish would slop around in a bucket or two of sea water in the bottom of the dinghy for half a day. My feet would marinade in this on the way to the dive site. Anchored near the shark's lair I would bail out this fetid soup which soon had her on the rampage. In this way I never had to wait to start taking pictures.

Grey reef sharks rarely pass overhead, but the sky refracted through the crystal water cried out to be a backdrop. We threaded morsels of fish on string tied to *Eila's* stern. The slight current across the sand flat held them near the surface and smeared a slick across the lagoon. A single grey made repeated passes, almost oblivious of me while I crouched on the sand.



To explore the rest of the lagoon we waited for one of those crisp days when the wind is down and a large swell casts a veil of haze above the reef. There is that sparkling oceanic feel; lots of ions enhancing the atoll-mania. We motored across the lagoon picking up thirty spinner dolphins at the bow. Their euphoric antics seemed levitated in old bottle glass.

Often, these particularly beautiful days are followed by the trough whose associated depression casts the enhanced swell on the reef. Each trough brings high cirrus like connective tissue

followed by a succession of Turner skies and a shifting wind.

To avoid any fetch, we shift *Eila* to keep the reef between us and the wind which clocks from northeast to north, then quickly through the west before blowing hard and cold from the south. The *marāamu* of French Polynesia.

The winter trade, when it resumes, can blow with a freneticism which is quickly tiresome, like the mistral. But this time it returned with a sigh. We put to sea and had a couple of light days before the freshening trade pushed us towards Tonga.



THE LAST KINGDOM

With the trade on the port quarter *Eila* approached Tongatapu from the east. Six miles below, in the black depths of the Tongan Trench, unimaginable forms of life were going about their business untouched by the existence of man.

We sighted high volcanic Eua Island, then the low limestone bulk of Tongatapu looking much the same – from a distance – as when Abel Tasman sighted them in 1643. From this direction Piha Passage is the most direct access to Nuku'alofa.

Usually the trade blows along this funnel-shaped inlet, so apart from a dogleg at the narrow end, sailing right into the harbour is straightforward. There is a new boat harbour now, used by all smaller vessels, including the King rowing his scull. Although the lagoon off the town is sheltered from the ocean by numerous reefs, in a stiff trade it is extremely choppy.

In the boat harbour we dropped an anchor and tied stern-to. As in Papeete, the trade – which is frequently fresh – is then on the beam, so if you drag, your leeward neighbour and equanimity are

vulnerable. Fortunately the bottom is gluey mud.

Nuku'alofa reminds me of a dusty Caribbean town, and is completely different from anything in the Cooks or French Polynesia. I have difficulty appreciating its qualities. Usually foreign yachts have come some distance to reach Tonga and need to repair something, or buy things. Here it seemed particularly difficult. It may have been difficulty with the language. Vicki has the patience of a saint, but in Nuku'alofa she eventually became unglued. She wanted buttons; they had a card showing different varieties.

“May I have six of those?” she asked pointing to a green one. Blank look. It turned out that they had only one of each, the ones on the card.

The shops stocked an eclectic mix of goods, some of uncertain vintage, as though Tonga was an Australasian dumping ground for things no one would buy. In general, prices seemed high, while most wages were low. A secretary might earn each week half what a lawyer charges in Tonga each hour.



So we spent our time trying to do those things that we knew would be even more difficult in the Vava'u group where there is a dearth of machine shops, French restaurants and Briggs & Stratton agents (who had only the agency, but no parts).

When it all became too much I paid our port fees (four different receipts) and we sailed the few miles to the island of Atata, where we anchored in Maria Bay until dusk. It is only about 45 miles to the Nomuka Group, an awkward length for a day sail, so we left just before dark, finding the pass through the reef by the lack of breakers. One of the things that makes pilotage easy is swell. Almost always, anything exposed to the ocean that is shallow enough to hit, will have broken water over it. (Oil tanker captains, please disregard this last sentence.)

By daylight Nomuka was abeam. Close-hauled, we could just lay the course to thread our way into the Ha'apai Group. It was here we really learned the value of swell. Protected by reef to the east and islands to the west the sea was flat. In the light wind our progress was slow and daylight was slipping away. There were numerous reefs

and although the low light was behind us, we could not see them. We were lucky this time, and stole safely into an anchorage in the lee of Uoleva as night fell.

Lifuka, the main island of the Ha'apai, is the next island to the north and the following day we wound our way there piloting from up the mast. There is a narrow channel just off the village of Pangai where, with two anchors, we could secure ourselves clear of the coral but a bit in the way of the local gaff-rigged open boats deeply laden with produce and people.

At low water, the glittering fringing reef was peopled in Lowry fashion with fossickers for molluscan delicacies. Ashore, I was struck by the contrast between the ostentation of the churches and the simple houses of the people. Graveyards are garishly decorated with beer bottles, plastic flowers and cloth banners, whereas in many Pacific Islands people's bodies are simply buried in the garden.

From the Ha'apai we had another overnight jaunt to the Vava'u Group. We arrived in rain under low grey skies. But once the mushrooms of eroded volcanic islands had been identified and *Eila* slipped into the flat olive green water between them, the wind became silent. The cliff-bound islands are topped with palms and tropical forest and prehistoric pandanus. Above the canopy, fruit bats flapped slow egret wingbeats above twisted naked trees. Hanging in the trees like dried fruit, they were as restless as discombobulated umbrellas.

The tropical summer is a lovely time to be in Vava'u. There are few foreign yachts as most have gone south to New Zealand for the cyclone season, so you are able to develop closer relationships with the people. The water is warmer and everything is happening; the fish and invertebrates are breeding, the plankton blooming. And although statistically it's the wet season, between passing cyclones there was hardly any rain at all.

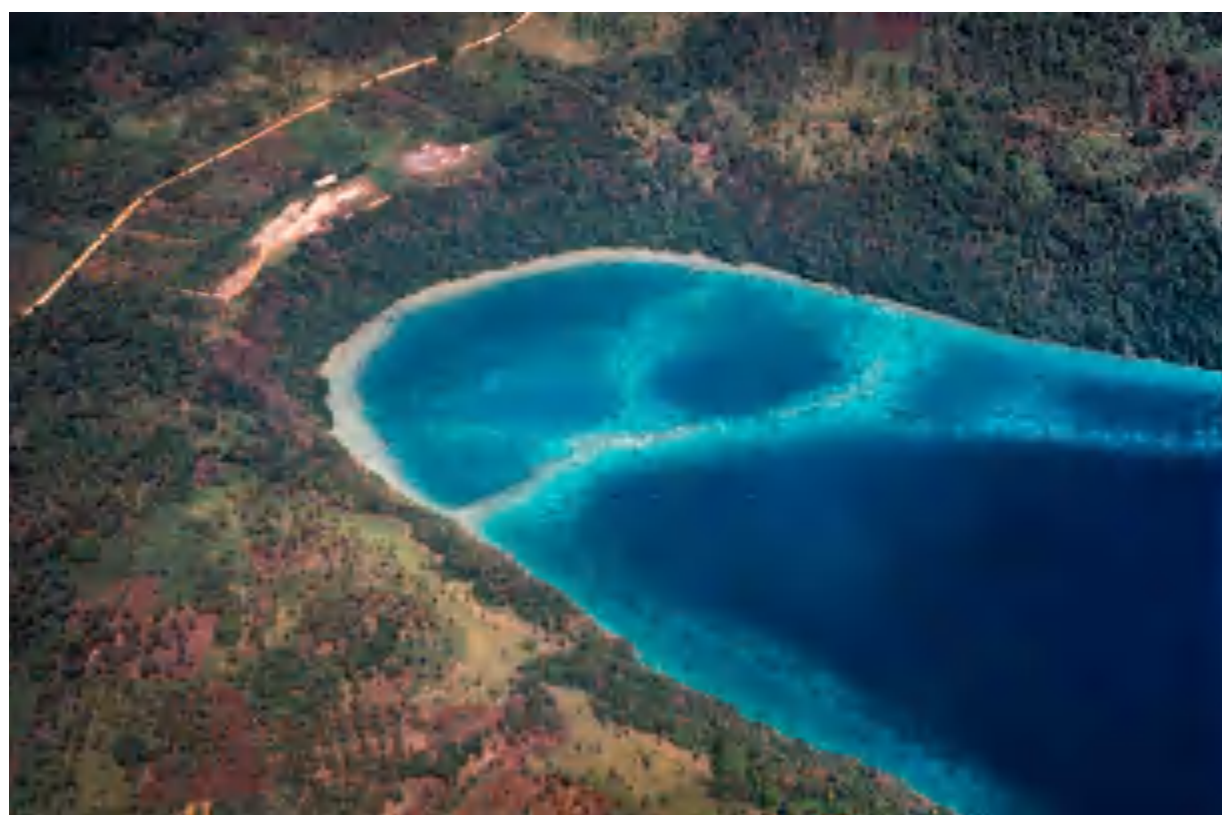
Neiafu harbour is deep and landlocked. The few areas shallow enough for anchoring amongst broken coral rock are sprinkled with moorings. As we intended to spend the hurricane season here, our first task was to explore a few of the places which looked well protected on the chart.

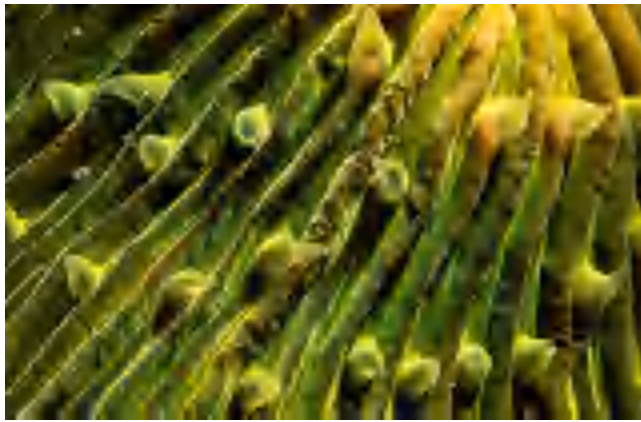
Three areas looked promising. On the west side of the group lies the island of Hunga, which completely encloses what can best be described as a lake. There's a narrow shallow pass open to the west but inside it is deep. Fetch from one end to the other is only a mile. The main disadvantage is the pass; if a hurricane was on the warpath the swell it generated would probably make the pass untenable.

While we were anchored there I took the opportunity to dive a small rock called Tefito Maka which lies a couple of miles south of Hunga. At the surface, shoals of two-spot darts sway in the surge. Fifteen metres below lie the remains of an old wreck, said to be that of a blackbirder. We heard rumours that someone had once discovered a gold coin amongst the encrusted debris. The wreck site is so old and concreted you would need explosives to find anything. There are a number of bronze and copper pins and two huge anchors. What struck me most were the brilliantly coloured blue tangs – surgeonfish which don't want to be photographed – and the soft corals. The rock is washed by ocean water and patrolled by schools of big-eye jacks, the males of each pair in dark breeding colouration.

West of Neiafu by the village of Tefisi is a shallow area lined with mangroves. A narrow pass leads through the reef into the lagoon where there are large areas suitable for anchoring. The pass is far enough from the ocean to avoid being troubled by swell, but the area is fairly open, a couple of miles of fetch in some directions.

Finally we looked at the head of Neiafu Harbour itself, where there is an arc of fringing reef with an area of clear water behind. Access is through another narrow pass, about four metres wide, marked by Clorox bottles. At half-tide *Eila* went aground in the pass but the bottom is mostly sand. There is a mile of fetch from the northeast, and none from anywhere else. Hills encircle the anchorage. There were enough coral heads on the sand to supplement *Eila's* ground tackle. We tied ourselves in only once (while cyclone Kina passed to the south) putting wire and chain round the bases of coral heads which we then chained to the crowns of our two anchors.





The greatest danger in a cyclone is usually some other unattended boat breaking free and sweeping through the anchorage. There were a few hurricane moorings in sight of our spot, two of which were attached to a large wreck.

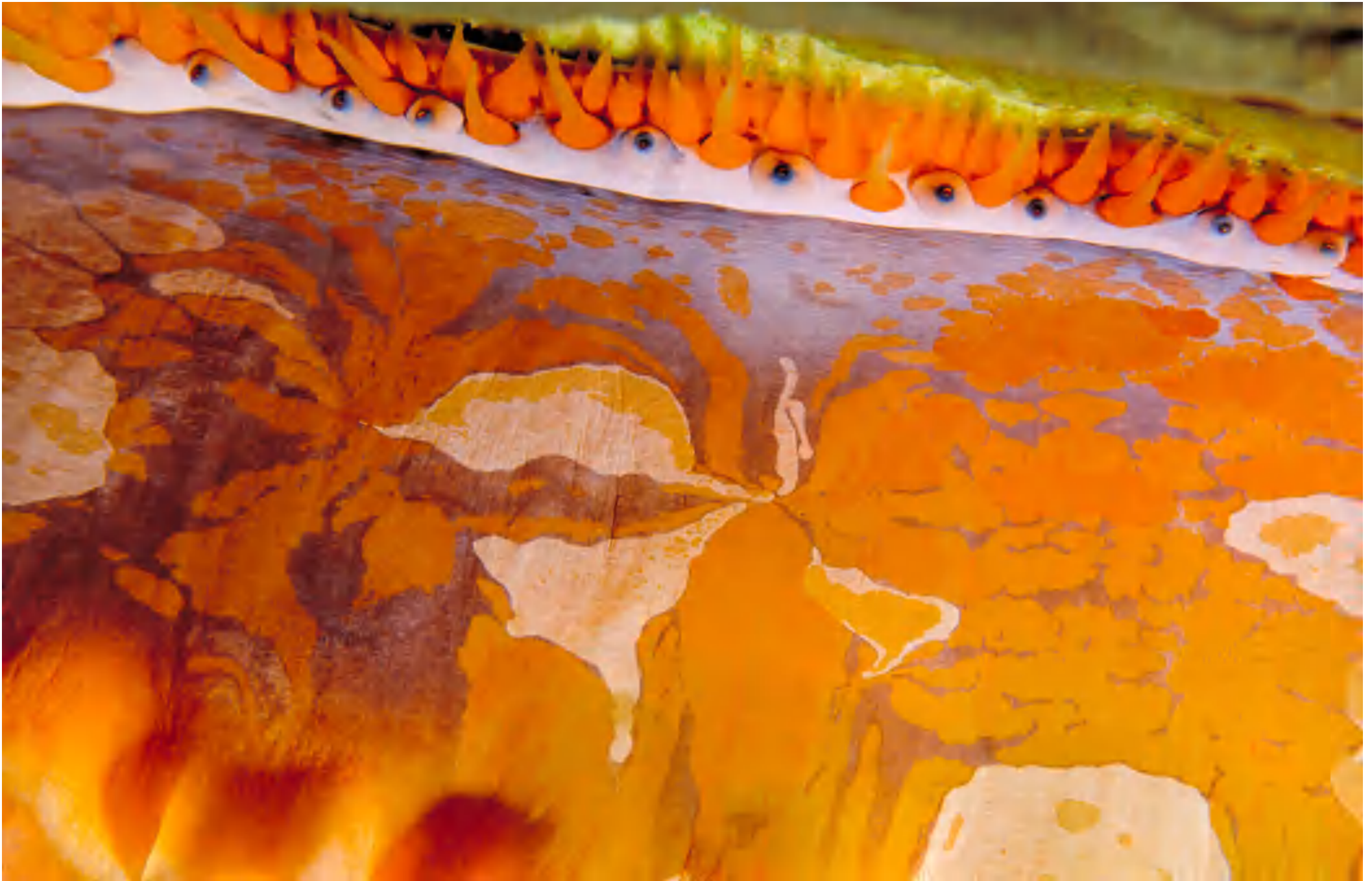
In the 1920's the ore carrier *Clan McWilliam* was alongside the wharf when it caught fire. The captain and engineer motored the ship across the harbour intending to beach her in shallow water. They never made it. The ship lies upright in about 35m of water.

Although the visibility in the harbour is seldom more than 20m due to a profusion of plankton, this quiet end tends to avoid the sediment-rich run-off which affects the harbour near the town. Consequently, the wreck is richly colonised by hard and soft corals and is the haunt of large numbers of fish.

As I dropped down the heavy mooring rope adorned with sponges and bright ascidians, the wreck looms out of the dark. The water is thick with ctenophores and other zooplankton which brush against my cheeks like snowflakes, appearing from a distant vanishing point like stars in a Star Trek movie. I settle amongst the *Halimeda* algae and sediment on the aft deck at 24m. There are bubble corals nearby and I find the transparent purple and white Palaemonid shrimps usually associated with them. When I poke my camera housing towards them they lift off, rocking back and forth in some kind of display beyond my ken. But out in the open they are vulnerable to a missile attack by lizard fish which launch themselves faster than I can see.

The wreck's ironwork is covered with *Lobophyllia* corals which, like the loose change of *Fungia* corals scattered on deck, fluoresce with colours which seem foreign here. I photograph what appears to be orange *Fungia* next to a green sponge; my pictures, when they return, show green *Fungia* and an orange sponge. A torch is a handy thing even during the day to reveal a kind of truth in the blue-filtered gloom. There are sponge encrusted leaf oysters with serrated shells, winged mussels and heavy *Spondylus* bivalves with smooth shell margins and mantle patterns like exotic wallpaper.

The clownfish anemones are huge with tentacles as thick as pencils. Everywhere are green colonies of *Goniopora* polyps like



clumps of daisies. Passing over the ship's holds I look down upon sedate shoals of crescent-tailed bigeyes, their reflective tapetums looking like silver cataracts. The shoals of the batfish *Platax orbicularis* are coy. I make my way the 90m to the foredeck passing busy shoals of *Rastrelliger kanagurta* like a cross between a mackerel and a basking shark; all mouth, hoovering plankton. The foredeck is small but I find a vase sponge with wispy cobwebs uplifted by

the continuous exhalant current from the osculum. There are *Thor* shrimps too, but although they are next to a bubble coral they refuse to dance over the balloons; it is not their territory. The second mooring is chained to the foredeck, so I ascend slowly, leaving behind only some disturbed sediment and a few regrets about the pictures I did not take.

The mantle of
Spondylus varius.



The town of Neiafu had scarcely changed at all in the six years between my visits.

There is little development which, to me, is its principal attraction. The main road through the town is barely sealed, and becomes a muddy torrent when it rains. The waterfront is lined by a number of old wooden buildings, and the Tongan Development Bank; ironically, the ugliest building in Neiafu. The oldest of the wooden buildings is the Vava'u Club which has a simple method of dealing with rubbish; bottles, cans and paper plates are hurled out of the window onto the slope below. From time to time this tip is cleared up. The wharf and small jetty see the coming and going of outboard-powered wooden craft overloaded with people dressed in pandanus mats and black. The cabin tops are crowded with Tongans clutching multicoloured umbrellas come rain or shine.

The administrative buildings include the old wooden post office.

Nearby is the Telecom building where you can phone twenty-four hours a day, even on Sundays, and a small library; unlike the one in Nuku'alofa, this one was open. Neiafu has all the hallmarks of civilisation.

Just up the street is the market selling fruit and vegetables, including squash which are exported in large quantities to Japan. Occasionally a truck draws up outside and someone blows a pea whistle (much less romantic than a conch or triton) to advertise the sale of fish, sometimes big red deep-water snapper. At the weekend the butcher will carve up a cow; the lack of flies made us wonder how much insecticide we consumed along with the beef.

Down the road behind the Paradise Hotel is the Neiafu Club. We were savouring a cold beer when the first wet season rains applauded on the iron roof. Gouts of water from the gutters crackled like fire as they hit the ground. The dust from the unmade road was

washed from the flame tree outside the verandah. After the rain, the silver stillness descended on the harbour. The sun slipped beneath the palms, gilding briefly the edges of the cloud. And there was the heady smell of earth and the sound of dripping leaves amongst the silence.

Much of the town (and there's not much of it) has a comfortable, established feel to it, from wear and tear and the passage of years. This lack of development is a by-product of the political system. Tonga was originally settled around 500 B.C. For the last thousand years it has been a kind of kingdom under a succession of chiefs. The current royal dynasty began in 1845. In 1900 Tonga became a British Protectorate. A Treaty of Friendship signed in 1959 gave more autonomy yet maintained protection. Tonga has a constitutional monarchy led, at the time of our visit, by King Taufa'ahau Tupou IV whose Royal Palace dominates the waterfront in Nuku'alofa.

The Legislative Assembly consists of seven ministers (appointed by the king), seven nobles (elected by the nobility) and seven representatives of the ordinary people. As democracy is currently fashionable elsewhere, there is now a vocal pro-democracy movement. Whether democracy would improve the quality of life of ordinary people is debatable. The inertia of this traditional political system seems to prevent rapid change which elsewhere has dispossessed people of their culture and encouraged the mindless consumption of goods and services. Until recently the absence of broadcast television also helped maintain Tonga's cultural stability.

All land is owned by the Crown. As each male reaches the age of 16, he is given inheritable leasehold on a "tax allotment" of 3.2 hectares of land to provide for his family. Whether this will continue depends on the population growth and the numbers of Tongans choosing to live in Australia or New Zealand. Only about half the males eligible currently get this lease. Much land is borrowed from other people, for which tithes are paid.

Central to Tongan life is the church. Most Tongans are Wesleyan Methodists, the first mission being established in 1826. There are many other shades of Christianity represented in Tonga, the most conspicuous of which is the Church of Jesus Christ of

Latter-day Saints, with churches scattered throughout the kingdom.

In stark contrast to the tatty, comfortable towns, the Mormon churches are immaculate, surrounded by sterile and manicured compounds and what appear to be newly painted buildings.

The style of dancing in Tonga is tame compared with the islands to the east although it is difficult to attribute this difference to the Methodist influence. Dances which Captain Cook saw are still performed today. There are none of the explicit sexual overtones of the tamure of the Cook Islands and French Polynesia. We watched the dancing first at a weekly feast run by Matoto Lotavao. Discretion and subtlety are hallmarks of Tongan dancing. As in



Children carry pandanus mats into the Catholic church in Neiafu.

other Pacific islands, a choreographer often directs the progress of the dance. Sinuous movements describe past events or tell stories. The dancer's knees are always held together, except in the sitting dances which are performed cross-legged. The dancers wear costumes made from variegated leaves, pandanus, flax, flowers, shells and tapa cloth. One curious custom is that of *fakapale*; literally "to give a prize". During the dance, spectators will leap up and stick bank notes to the costume or skin of the dancer, slick with coconut oil and sweat. This may partly explain the lamentable condition of some of the money.

Not far from Matoto's feast is the island of Tapanā. There were six Spanish yachts (known locally as the Armada) anchored in the bay near the Spanish restaurant, La Paella. One of the Spaniards, Diego, was out spearfishing. He shot a large jack. As he was trying to remove it from the spear he was hit by a shark in the thigh and buttock. Though alone, he was able to swim to the dinghy and motor back to his yacht. A call on the VHF brought an Italian doctor down to Tapanā in a taxi and Dr Don on *Green Dolphin* there by dinghy. Luckily no major arteries were severed. He spent the next

two months in hospital. Unfortunately he didn't see the shark at all, so its identity remains a mystery. Sharks are not common in Vava'u; they are regarded with the same reverence as other food items. In the past, fishermen were able to attract sharks with a "strange wild song".

La Paella was justly famous for the atmosphere which you could sell in chunks.

The band – guitar, electric piano, bongos and two saxophones – was good; mostly improvised music which bordered on outright lunacy; more strange wild songs. The characters seemed to have escaped from a Ken Russell film about the late sixties. Like the music, the building is largely improvised, loosely based on traditional Tongan construction.

Apart from the Spanish regulars, the band, and a photographer and editor from *Yacht* magazine in Germany, we were the only customers. The owner of the island was there too, hiding his terrific smile. He needed false teeth, but teeth were expensive. The dentist said they could adapt some old ones to fit; his late wife's set might do. Unfortunately, she had a much wider mouth.

On the sand in the anchorage at Tapanā I noticed the large red starfish *Pentaceraster* which we found again in the shallow anchorage at Vaka Eitu. It was here I first saw the beautiful petal urchin *Toxopneustes pileolus*. Fortunately, I have adopted the habit of not handling animals I don't know, so I wasn't inclined to move the animal out of the cloud of sediment I had disturbed. This urchin has flower-like pedicellariae which can inject a deadly acetylcholine-like toxin into prey, assailant or photographer equally. They usually use their tube feet to cover themselves with coral debris and shells to avoid the sun.

Between Vaka Eitu and Ovalau is a submerged reef, the top of which, at 6m, lends itself to lengthy decompression stops since it is just as interesting as a dive down the coral slopes inhabited by large shoals of jacks, snapper and batfish. At cleaning stations near the reef top the batfish would queue for attention, darkening in colour in the manner of goatfish, becoming almost entranced by the grooming of cleaner wrasse. In the open water, where blue jellyfish drifted like flying saucers, dog-tooth tuna and barracuda powered

The flower-like pedicellariae of *Toxopneustes pileolus*.





Above: Batfish, *Platax teira*
Below: Semicircle angelfish, *Pomacanthus semicirculatus*.

Above: Regal angelfish, *Pygoplites diacanthus*.
Below: Yellowfin goatfish, *Mulloidichthys vanicolensis*.



by. On the coral walls I found a spawning bivalve which appeared to be on fire with orange smoke pouring from within. Flat areas of coral rock and the undersides of *Acropora* tables were covered with the purple eggs of sergeant majors. The males standing guard chased away wrasse looking for a meal.

In deeper water there were delicate grey teacup sponges, each with transparent flattened *Pleurosicya* gobies which flitted across the outside of the cup.

One obvious aspect of the greater species diversity in Tonga compared with French Polynesia is the profusion of feather stars. At night they dominate the cliffs. We dived the north cliff of Ava one night, an island about a mile west of Port Maurelle, named after the Spaniard who, in 1781, was the first European to discover the Vava'u Group. The coast of Ava is vertical to 25m. The cliff has a profusion of coral near the surface; deeper, it is riddled with caves haunted by bioluminescent flashlight fish.

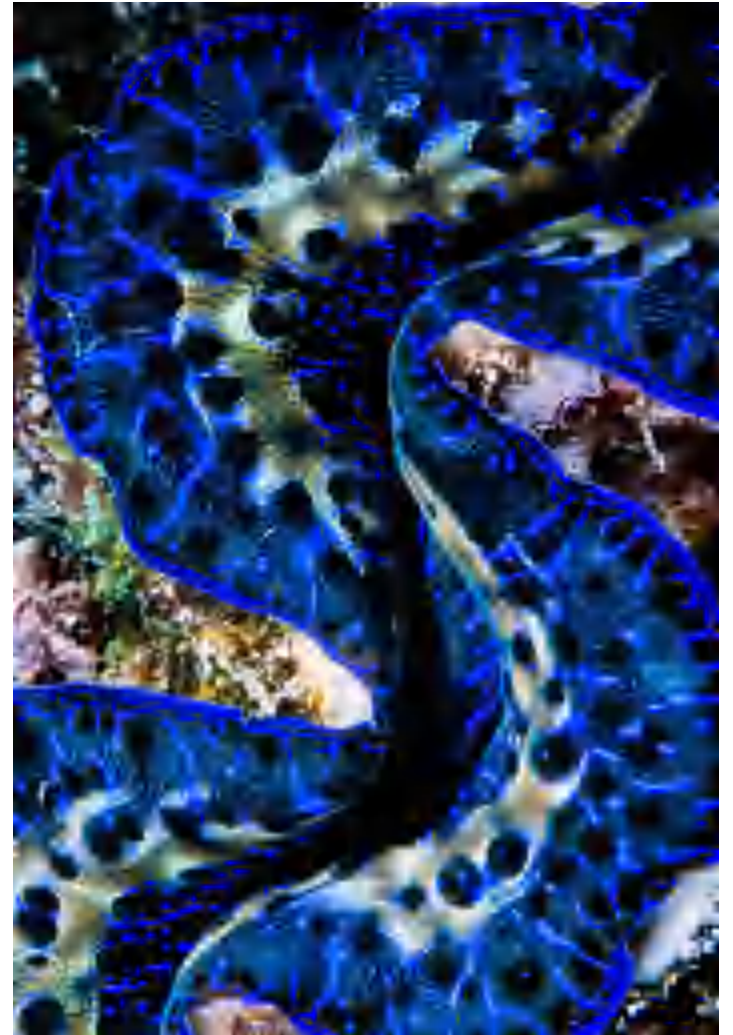
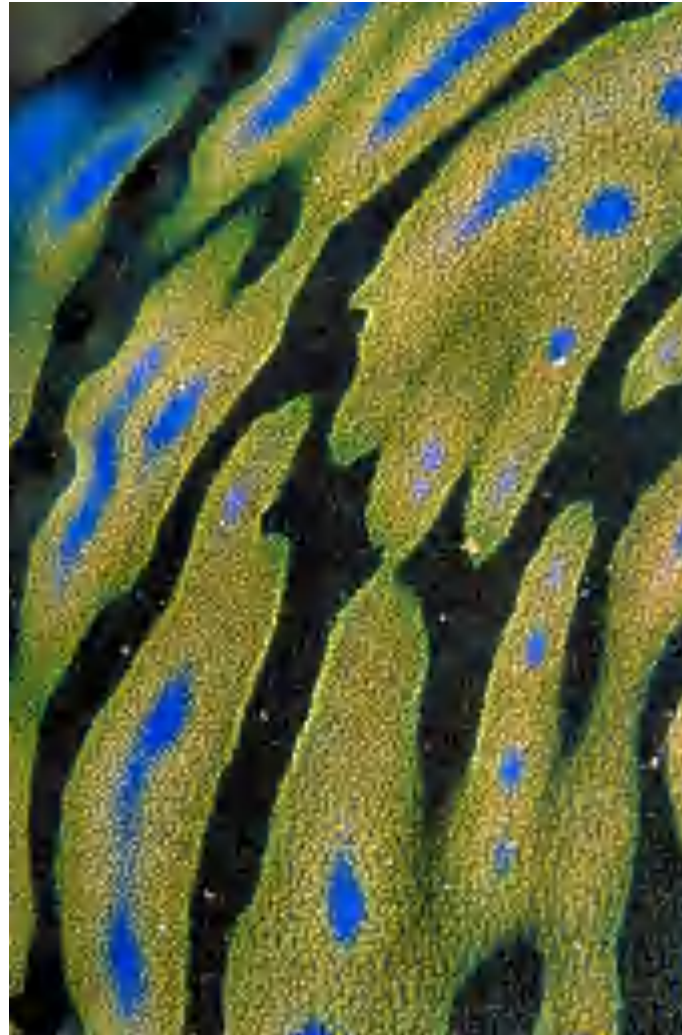
By day the cliff is clouded with fish. Among them were the beautifully delicate hawk anthias, *Serranocirrhitus latus*. On the rock surfaces were calcareous red algae like smears of yellow and red oils on an artist's palette. It was here I first saw the red and grey sea cucumber *Actinopyga flammea*.

A mile south of Port Maurelle is an anchorage between Kapa and the uninhabited island of Nuku. The current flows swiftly between them and at night dark red basket stars creep out and unfurl their archaic arms to the blizzard of plankton. Darkness brought a profusion of molluscs from the sand and echinoderms and crustaceans from the coral including a bizarre Dromiid crab with a huge sponge on its back. All I could see was a walking sponge larger than a saucer. I tipped it over and almost disrobed a crab. Dromiids are keen to retain their extravagant hat which they hold down with the last two pairs of legs. If they lose the cap they find a new sponge and trim it to fit.

There are few fish at night. The parrotfish hide from olfactory predators – such as morays – in their diaphanous mucus cocoons; other fish with darkened colours, lie hidden in the coral caves. In waist-deep water I found three stonefish, incredibly well camouflaged. I have seen a lot of stones that looked more like fish than









these did. *Synanceia verrucosa* is probably the most venomous fish of all.

By day the sandy slope at Nuku is a waving field of garden eels. Anchored by their tails they sway back and forth in the current intercepting plankton on the volley. When I approached they disappeared into holes in the sand. I set the camera housing on a weighted tripod with my remote hydraulic trigger to photograph them.

While waiting for the eels to reappear I watched scurrying goatfish pushing their noses and twitching barbels through the sand. Hard on their tails were wrasse picking at the spoils. It is an association I have often seen, though the wrasse are not particular; they were happy to trail my hand around as I sifted through the sand. The dog-eat-dog scenario beloved of free marketeers is not really a reflection of nature. Things get eaten, but there is a tight interdependency between animals, and animals and plants.

The symbiosis between both corals and clams and the zooxanthellae in their tissues is well known. At Nuku there is a new symbiosis, between clams and man. Human predation on clams has been severe throughout the Pacific. Eight years ago Dr. Richard Chesher set up a clam project at Nuku which established protected breeding populations whose spat colonise unprotected areas and are thus – eventually – available for consumption. In the Nuku reserve there were three *Tridacna* species, *derasa*, *squamosa*, and *tevoroa*. The difficulty was to create a project that was Tongan rather than just a source of foreign aid to be exploited, and to modify the behaviour of the people so they respected the sanctuary.

I love diving at places like Nuku where the only demands are those on my brain, trying to perceive some of the infinite variety of relationships between the animals. I can dive from *Eila* or take the dinghy a stone's throw. I can dive to the wire corals in deep water to look at their associated *Bryaninops* gobies, explore a cave at 15m or spend the whole dive in less than two metres. I can snorkel for the exercise or take half-and-half pictures with a palm-clad island in the background and coral reef in the foreground. But for these pictures the island of Mala between Kapa and Pangaimotu is better; beneath the surface the coral is a kaleidoscope of form and colour.

From the anchorage at Mala we took the dinghy to a place I call the Terrarium, a cave open at the top overhung by rainforest. I wanted to take some pictures of Vicki snorkelling here with the trees as a backdrop. Nearby is Swallow's Cave where the roof is adorned with the tiny cup nests of the swiftlets. The walls are covered with graffiti; even Mormon graffiti from Elder So-and-So reaching the parts that other religions don't reach.

Towards dusk a Tongan man – who turned out to be a Methodist minister – visited *Eila* in a mango dugout canoe filled to the brim with basketwork made by his wife. He was interested in our bicycle which, having sat on the aft-deck for months, was looking a bit sad. So next day we traded it for two beautifully made pandanus and palm trays. He wanted the bike to increase the mobility of his friend's son who had a badly deformed foot.

Between Hunga and Nua Papu lies the small island of Luamoko, typical of many of the 70 or more islands in Vava'u. It is volcanic in origin, flat-topped, sixty metres high, with vertical cliffs which in places are as sheer underwater. The tops are thickly wooded with palms and rain forest. In the evenings the air above some of these islands is darkened with fruit bats looking like pterodactyls the size of buzzards.

Luamoko has a sandy shelf large enough to anchor a yacht in settled conditions.

On the south end of Luamoko I was delighted to find some Lord Howe or Painted anthias (*Pseudanthias pictilus*), a species I had not seen before. Fairy basslets are challenging and beautiful subjects and these ones would disappear into the coral at the slightest provocation. They are sequential hermaphrodites, the male guarding a harem of females. If the male dies, the dominant female changes into a male and takes over the harem. The Watanabe angel-fish and what looked like yellow Herald angelfish with a black patch at the rear of the dorsal, were more approachable.

Spotted garden eels,
Heteroconger hassi.



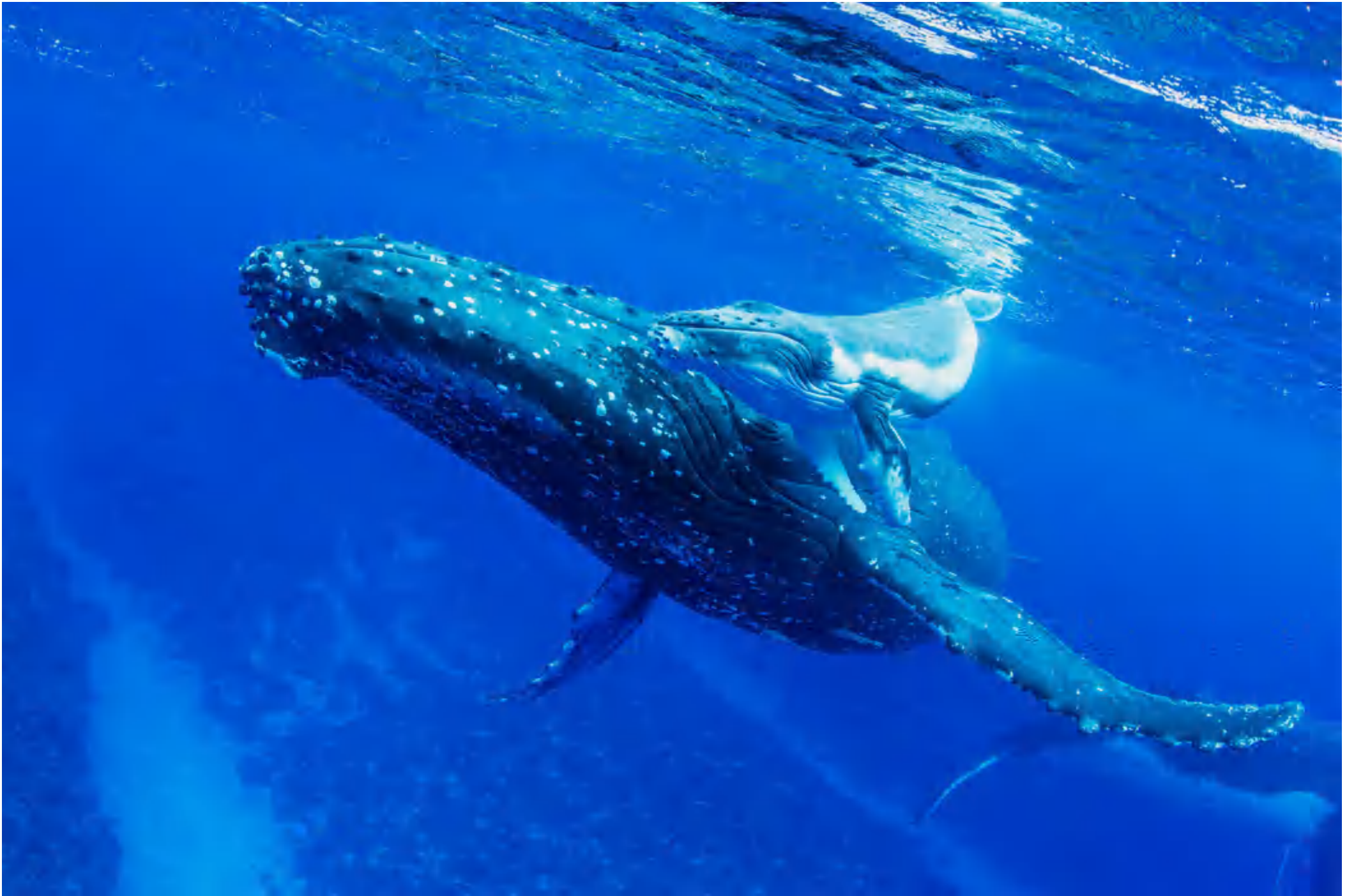


Luamoko is a good anchorage for spotting humpback whales between July and October. Mothers with calves prefer the shallow coral banks south of Hunga, but often pass Luamoko. With calves present, they rarely dive for more than ten minutes. I suspect the calves are buoyant. Once I snorkelled to the oily footprint where a mother and calf had submerged and they were just resting 20m down with the calf wedged across beneath the chin of the mother,

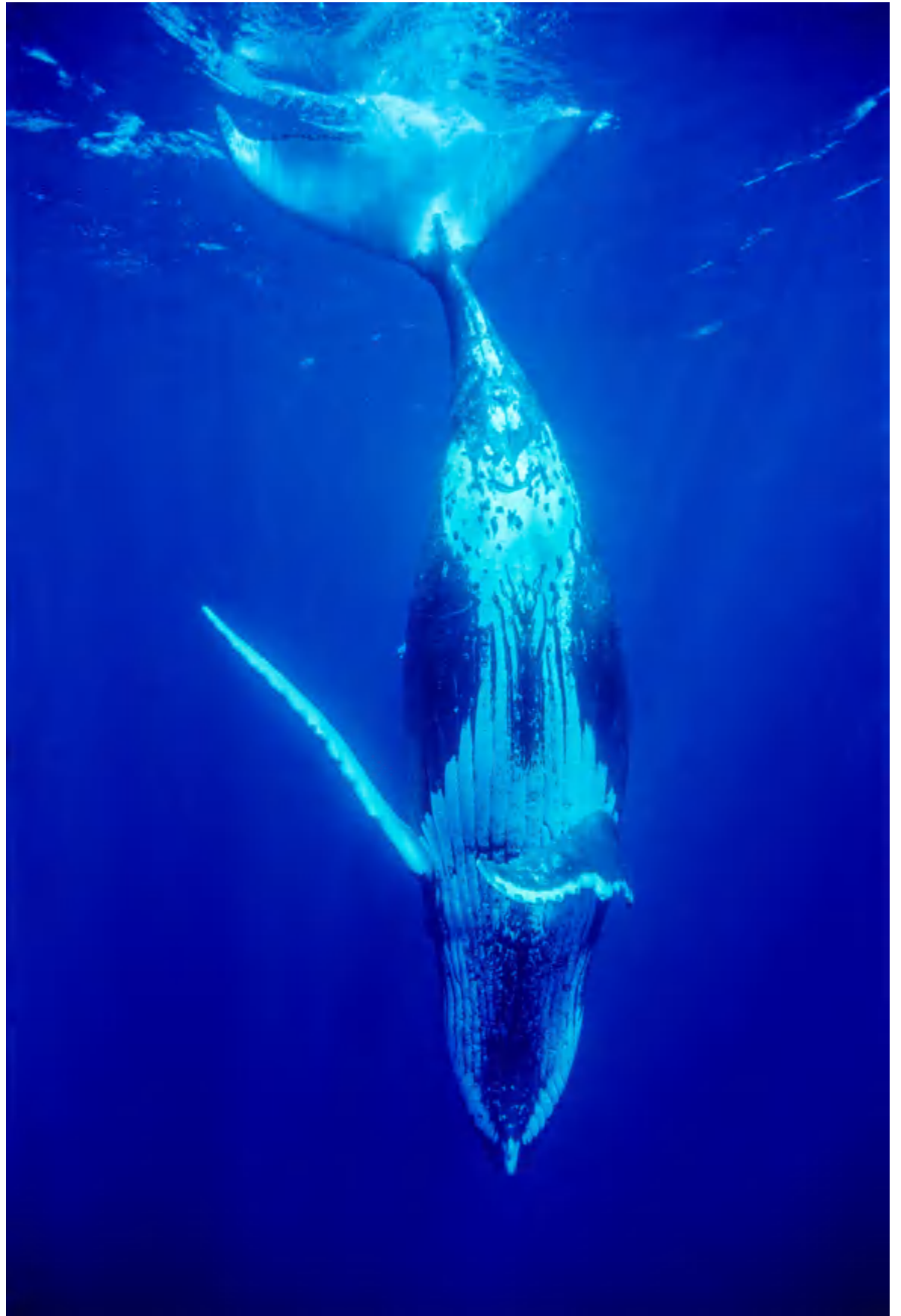


















as though to hold it down.

West of Hunga in the open ocean I have also seen pilot whales and occasionally dense beaked whales. A couple of miles offshore there is a fish aggregation device (FAD) anchored in almost 800m of water. In calm weather this can be a stunning dive with oceanic whitetips, shy silky sharks, wahoo and often a school of dorado.

Just east of Luamoko beneath the vertical coast of Nua Papu is Mariner's Cave, entered through a large underwater tunnel. Once we had found the dark shadow which marks the entrance on an otherwise featureless cliff it was quite easy to snorkel through into the cave. Inside there is a large air chamber. The most remarkable thing about the cave is this: when the swell comes in, the air inside is compressed; when it recedes, the pressure drops enough for fog to condense from the moist air, instantly.



In the absence of a suitable model I resorted to using the camera on a weighted tripod and the self-timer. I had 10 seconds to get into position. Luckily I could see my reflection in the dome port to aid composition.



Akin, so my father informs me, to the workings of a Wilson Cloud Chamber for detecting the tracks of atomic particles. So the fog comes and goes with each swell. The cave has another access tunnel at 20m.

Mariner's Cave was discovered (so the story goes) by a young chief while he was chasing a turtle. He was in love with a girl whose family had been condemned to death for rebelling against the ruling chief. So he captured the girl and hid her in the cave, bringing





her food and water. He prepared a canoe for a voyage to Fiji. On the day of departure his family urged him to take a wife. He stoically declined, but instead rescued the girl from the cave. The young couple escaped to Fiji where they lived for several years until news of the tyrannical chief's death reached them.

Some of the most spectacular diving in Vava'u is around the islands of Kitu and Tu'ungasika and the 26m high rock of Fotula in the northwest passage into the group. Both Kitu and Tu'ungasika have huge caves, frequently the resting place of whitetip reef sharks. Outside the east cave at Tu'ungasika the reef is covered with large sea fans, like the *Dendronephthya* soft corals, common in Melanesia but rare in Polynesia.

I think of all the dives in Vava'u, Fotula was the most impressive. The first time I dived there we took *Eila* but found nowhere to anchor. But we did find a group of 30 spinner dolphins nearby. One had a fresh scar from a cookie cutter shark. I have found crescents of teethmarks on *Eila* about the same size which suggests that cookie cutter sharks will try to eat anything that moves. While Vicki stooged around in *Eila*, I took the dinghy in and anchored precariously on the steep slope. I drifted down the barren scoured slope of contracted soft corals and dancing fairy basslets (among which I was surprised to see *Pseudanthias cooperi*) to a huge boulder at 25m with two tunnels beneath. Passing a Napoleon wrasse and a large double-headed parrotfish I finned up the slope to the west reaching an arête. It was sharp and sheer. The east-going ebb was buffeting ocean water against the cliff and I could see forever. Like a hang-glider I dropped over the edge and down into the blue. Concealed by soft corals, sea fans and trees of black coral lay the entrance to a tunnel. Taking care to avoid their delicate fawn branches I eased inside. In my narcotised state I was delighted to see long-nosed hawkfish on the black coral – the first I had seen east of Fiji. At the far end of the tunnel were more black coral trees and plate *Acropora* in which juvenile blue tangs were hiding like *Chromis*. Decompressing in the lee with the remnants of post-dive euphoria I found a blue jellyfish and blasted off the film.







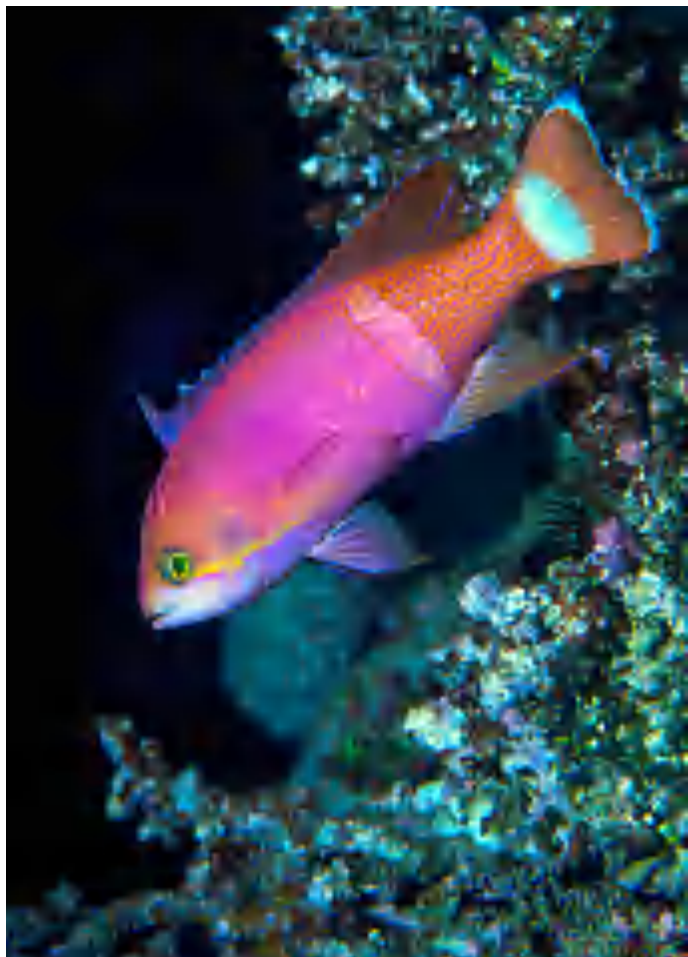


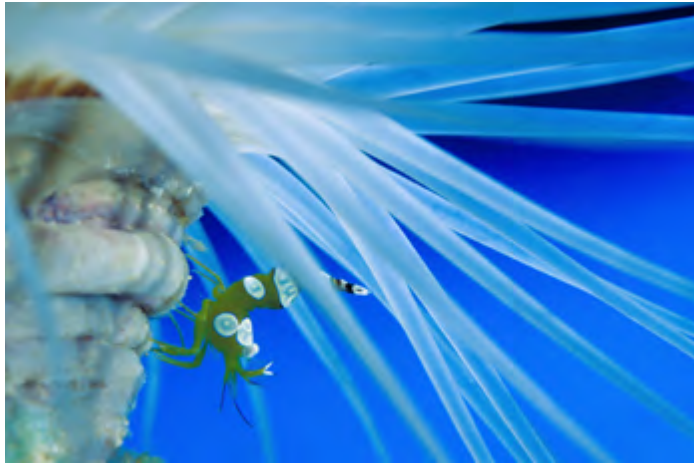


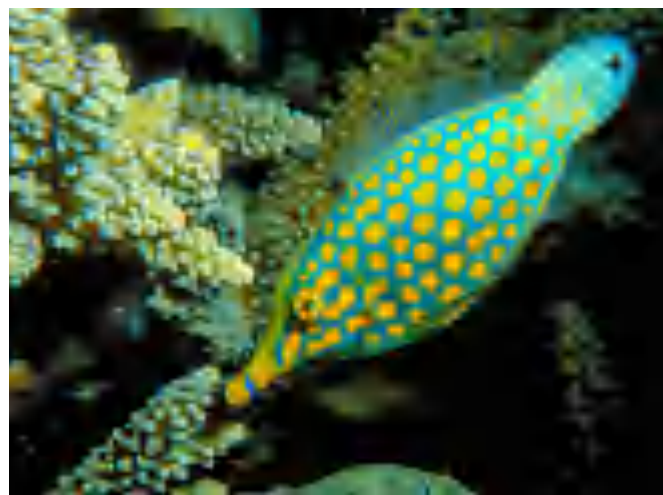
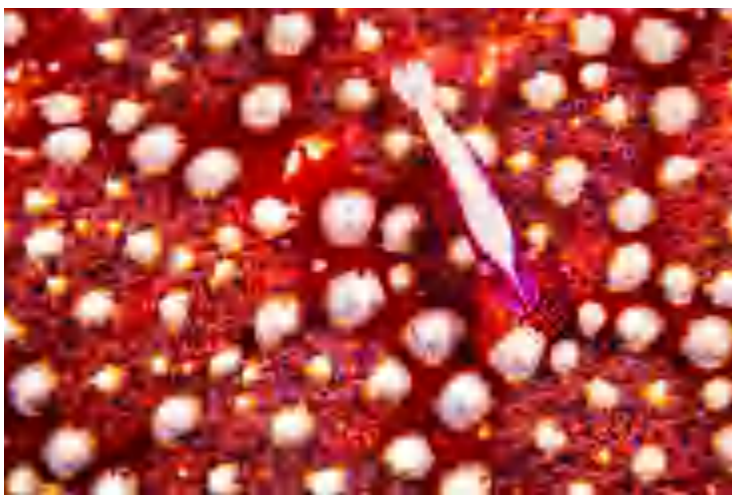




Crown jellyfish, *Netrostoma setouchianum*.

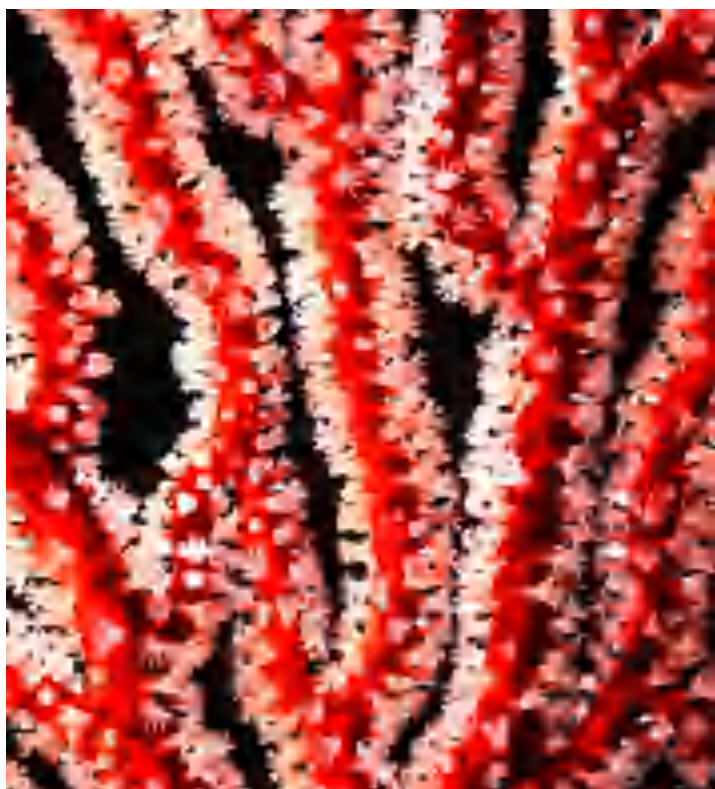
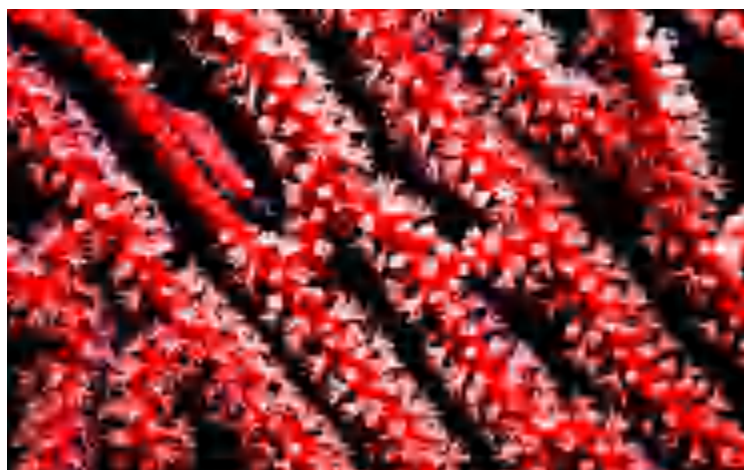


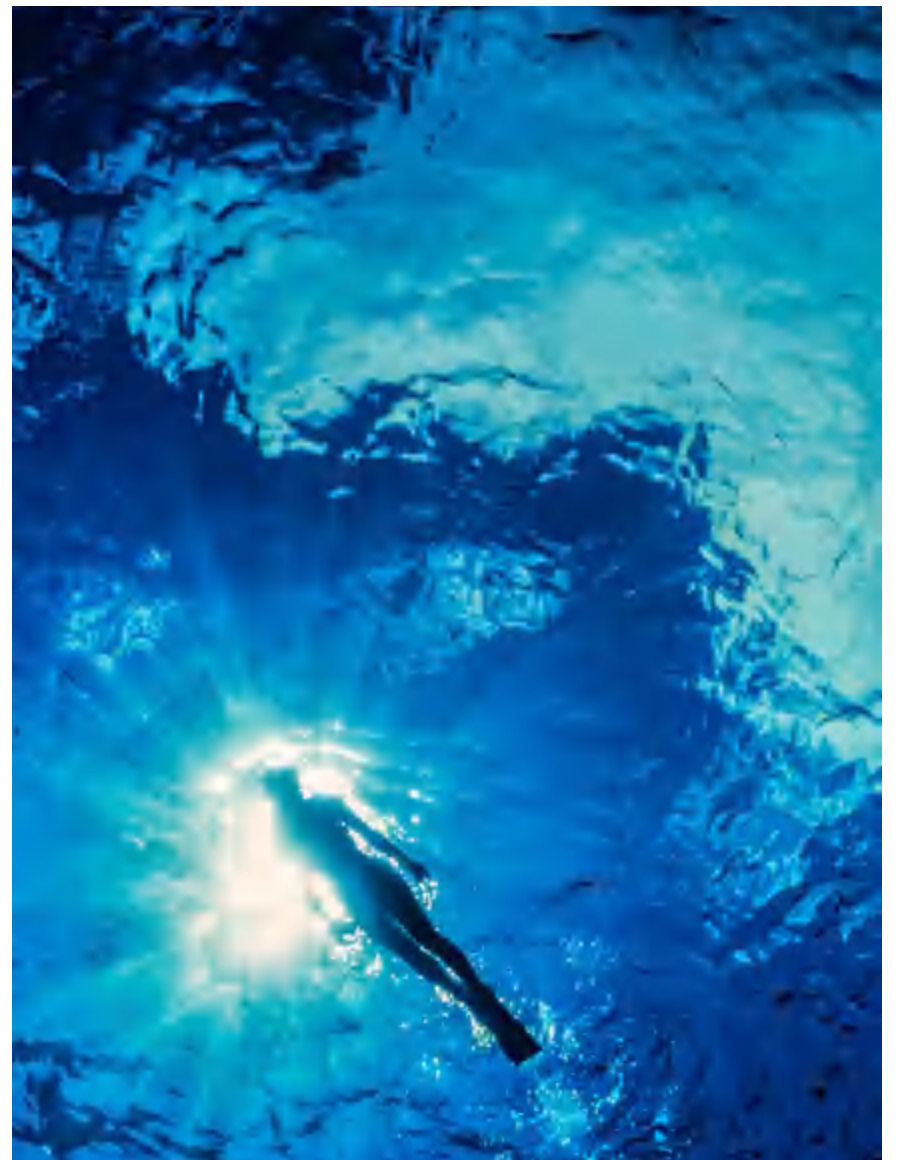














The great diving in Vava'u is a direct result of astonishing volcanic topography. Tonga is part of a great chain of volcanic activity stretching from White Island in New Zealand, through the Kermadecs to Tonga. Forty miles north of Vava'u is the active volcanic island of Fonualei, and a dive there seemed like a good idea.

While in Nuku'alofa we met Frank, the English skipper of a German registered traditional Danish fishing boat called *Breum*, which was being used for bird research in Tonga. The owner of *Breum* owned bird theme parks in Germany. *Breum* later turned up in Vava'u and Frank invited us to go with them to Fonualei. They were interested in the island as a possible habitat for the malau, an unusual megapode bird which is found only on the Tongan island of Niuafo'ou or Tin Can Island (so-called because the post used to be swum ashore from the ship in a kerosene tin). The malau is endemic to this inhabited island which lies about 150 miles north of Vava'u. On special occasions the eggs are eaten by humans. Unfortunately there is little point in outlawing consumption of the eggs because no one would take a blind bit of notice.



The malau lays its eggs in burrows dug in geothermally heated earth, somehow judging the right temperature for incubation. The eggs are huge compared with the bird's body as the young are fully feathered and have to be able to fend for themselves as soon as they emerge like a phoenix from the ashes.

I dropped the German bird contingent ashore through the surf as they wanted to climb to the summit, about 180m high. Fonualei is a couple of miles across, vegetated except where recent barren lava flows scar the hillsides.

I went for a dive along one of the steep cliffs. The bottom was black volcanic sand and boulders with almost no coral growth apart from some encrusting *Millepora* fire coral. There were few fish; a barracuda, a few blue-bar jacks, unicorn fish, and damsels. I was surprised to see no sharks. Although the sea was clear, by the cliff a huge cloud of sulphurous yellow water billowed from a fissure. Ashore we could see steam emerging from the hillside and in places the rocks were hot to the touch. The air was full of seabirds; frigates, boobies, noddies, wedge-tailed shearwaters and sooty terns. We had a slow motor back against the fresh trade sea past the coral island of Toku.

We arrived in the dark but Vava'u is ideal radar territory.

One of the scientists told me about a cave on the island of Eua, in which they had discovered the bones of 26 species of birds driven to extinction by human predation. This story, apocryphal or not, made me ponder other extinctions in Tonga. Some animals are vulnerable to fishing pressure because you can, given time, find them all. Manta rays are virtually extinct in Vava'u and sharks are far from common. Both would have more value alive for attracting dive tourists. Large fish of many other species are rare in Tonga. This is a pattern repeated almost everywhere and it is caused by human population growth, and the concept that fisheries can be exploited by anyone.

Tonga is one of the few countries which can do much about this because the King is not constrained by political expediency. To Tonga's credit, several marine reserves and island parks have been created in Tongatapu and no doubt more will follow.

There are few pristine places left in the world and Vava'u is not one of them. Yet its lack of development combined with ample beauty are assets which will increase in value to discriminating travellers as other parts of the world are inexorably seduced by shopping malls and fast-food. Tongan and other Polynesian cultures may yet survive by choosing a different path of progress, one reflecting their history of collective responsibility; one from which

other nations may one day learn.

When *Eila* finally left Polynesia astern, almost ten years after that first tentative arrival in the Marquesas, Vicki and I took with us a wealth of memories and few regrets.

Ahead lay all of Melanesia, and beyond, the biological riches of the IndoPacific. Wherever an old wooden boat could go there would be life in the sea, and adventure.





APPENDIX I

EILA

The Bermudan cutter *Eila* was designed by Fred Shepherd and built in 1935 by A.H.Moody & Sons at Bursledon on the south coast of England. She is 11m on deck, 8m on the waterline, has a beam of 2.75m and 1.7m draft.

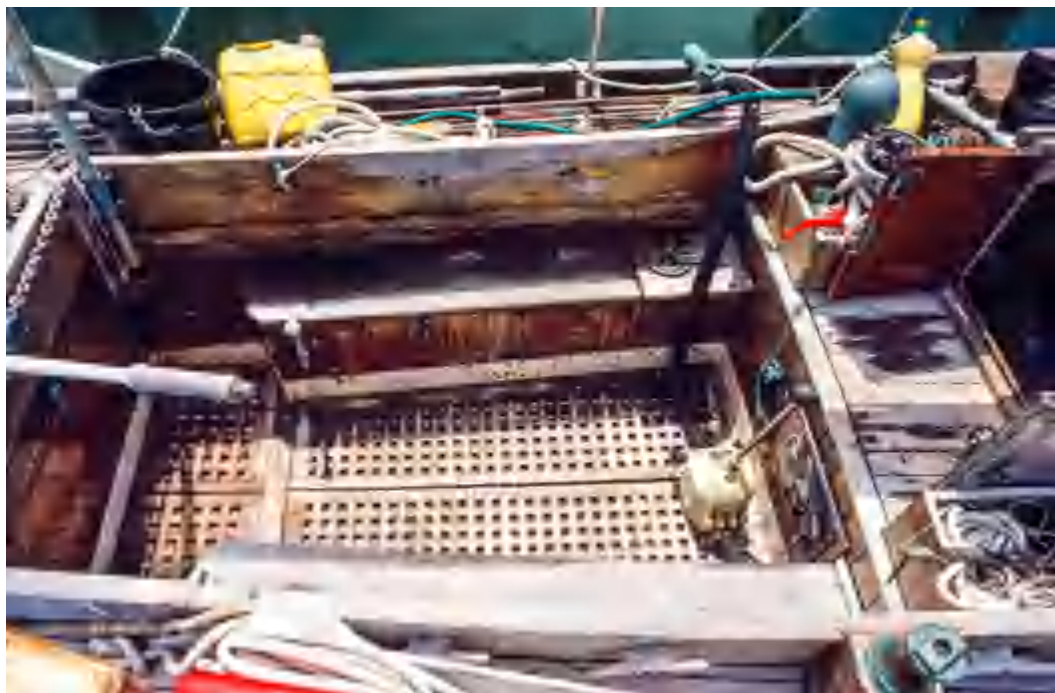
The hull is planked with pitch pine on grown oak frames with rock elm steam bent timbers between. The deck and coach-roof are teak, the spars are spruce. In 1982 I paid £11000 (about US\$18000) for her.

Looking around her ten years later, there is little resemblance to the musty and somewhat neglected yacht I moved aboard in Lymington. Structurally she was sound, but some of the gear was in need of improvement and over these past years I have spent at least as much again on equipment and modifications to *Eila* to make her easier to live with, more efficient on voyages and easier to maintain. Cosmetically I treat her as a workboat.

While visiting New Zealand in 1988 I removed the conventional cockpit and decked it over at deck level, leaving the original cockpit coamings for some protection on the rare occasions when the Aries self-steering gear is not in command at sea. This gave room for

a large double bed over the engine, a locker for petrol and kerosene, a spacious galley with huge double sinks and an athwartship chart table with a seat. *Eila* is a different boat. In effect we have added an aft cabin which has improved the quality of life aboard immeasurably. Engine access is improved and a Perkins-sized hatch enables us to remove it with a chain hoist on the boom (supported at that point by the main and staysail halyards) in literally a couple of hours. My only regret is that I didn't have the knowledge or confidence to make this alteration when I bought the boat.

I chose a wooden yacht for two reasons. For living aboard indefinitely, I considered 11m about the minimum size I could put up with, and an adequate yacht of this size in any other material was more than I could afford. I also thought that although a wooden yacht may require more maintenance than one, say, of fibreglass, the materials needed would be less expensive; conventional paints rather than polyurethanes for example. Much of the expense of yacht maintenance can be put down to vanity; if you are prepared to live on a workboat and avoid varnish, running a yacht (in the absence of marinas) is no more expensive than running a car.





MOTOR

Eila has a Perkins 4.108 diesel engine which drives a large 3-blade propeller through a TMP12000 hydraulic gearbox and 2:1 reduction. While the 20 year-old engine has been staggeringly reliable there is no provision for hand starting so on numerous occasions we have been obliged to do without it when the batteries have become flat, or the starter motor has temporarily died from a broken brush spring. At 45HP the 4.108 is large for a yacht of ten tons, but this has been very useful for setting the anchor and for negotiating atoll passes. Having a long keel means you can't turn *Eila* on a dime, but with the big three-blade prop you can kick the stern about for manoeuvring in the confines of a marina.



THE RIG

Over the years I have replaced the galvanised standing rigging with stainless steel wire and bronze bottlescrews. I'm no great fan of stainless steel but when of reasonable quality, it lasts quite well and usually gives some warning before it all lets go. The absence of rust or maintenance appeals to me. Slowly I am replacing Talurits with Norseman or Sta-Lok terminals. I like gear you can install and forget about for the next forty years. Unfortunately, products built with this philosophy in mind are a rare bird in these days of computer coordinated obsolescence.

The mast, boom and bowsprit are spruce. In spite of people telling me I should paint them, I struggled for years to keep them varnished. First to succumb to the ignominy of paint was the 'sprit, then the top third of the mast. Now only the boom remains varnished. Covered with the main or sail cover it seldom sees the light of day which is why varnish lasts more than five minutes.

We have stainless steel mast steps which are indispensable for pilotage in coral and maintaining the mast. I cannot imagine sailing in the tropics without them.

SAILS

When I moved aboard *Eila* she had a small staysail set on a boom, a flying jib set on a traveller on the bowsprit, and a jib topsail and light genoa for the topmast stay.

Now we have a large (but less than 100%) yankee on the headstay with Profurl roller reefing gear. Handling sails at the end of a bowsprit is lunacy. I moved the staysail stay forward to the stemhead, and up the mast to the upper spreaders and threw away the ridiculous staysail boom and the jumper struts. Now we have a staysail large enough to do some work, but small enough to tolerate a gale without disintegrating.

We hollowed the leech of the main and threw away the battens. The boom has Turner roller reefing which means I can do all reefing at the mast where there are plenty of hand holds. On three occasions in severe winds I have rolled the entire sail round the boom rather than risk it flogging to death by lowering it conventionally.

We have a spare staysail and a trysail. If you have a good sewing machine on board and newish sails I think you can get away with carrying only three sails on a cutter. People carry all kinds of light weather sails, but in ten years of mostly trade wind sailing we have seldom yearned for light sails. It helps to like calms.

SELF-STEERING

Eila has an Aries self-steering gear which has been excellent. Few pieces of marine gear work perfectly after ten years of abuse. We had an Autohelm 2000 at one time, but unless stored in a watertight box with freshly baked silica gel, keeping anything electronic working on a wooden yacht is the height of optimism. The Aries is now manufactured in Denmark.

WATER

Eila carries 90 litres in a stainless tank beneath the cabin sole, and another forty-five in jerrycans – handy for ferrying water from shore or taking with us if we had to abandon ship. This is pitifully little by contemporary standards; yet we have seldom been short of water on passage, even though we were 36 days in the Southern Ocean on our way to Îles Gambier in French Polynesia. With a roll in the main and the boom topped up we can catch a lot of rain at sea. A funnel and tube at the gooseneck directs this straight into the tank. We have never treated water anywhere except in the Gilbert Islands, where we were obliged to boil water from shore. At anchor we use a rain-catching awning over the foredeck. Shore water varies in the Pacific; in Tonga it is almost undrinkable. On passage the two of us use about 4.5 litres a day, but we wash dishes and our bodies in seawater with Joy detergent.

FUEL

We carry 130 litres of diesel in a fibreglass tank. Again this is a tiny amount compared with modern yachts, but it goes a long way, especially since without an electronic autopilot we are reluctant to motor for long periods. We're seldom in a hurry. We carry almost 20 litres of kerosene for cooking and cleaning paintbrushes and





45 litres of petrol for the compressor motor and Evinrude 8HP outboard. The jerrycans of fuel are stored in a gas-tight locker at the back of the flush cockpit. We transfer fuel with a length of hose with an outboard primer bulb in the middle. This saves splashing much of it on deck and tasting each fuel when you make a siphon. It also means that the rubbish tends to stay at the bottom of each container rather than contaminating the outboard or compressor motor. There's a 20 litre container for meths (for pre-heating the Primus burners) which we try to fill in places where it is cheap, like Fiji, to tide us over in places where it is almost unobtainable or £5/litre (US\$8/litre) like Tonga. We use about 15 litres a year.

DINGHY

Eila has had a succession of dinghies, all of which have been used for diving. We now have a Piper 2.5m RIB built of hypalon in New Zealand. This has been excellent.

An inflatable is ideal for diving but I hate dealing with intransigent floorboards and stringers, so a rigid hull suits me well. It also rows adequately. This stows upside down on the coachroof. A roller attached to the transom allows the companionway hatch on which it rests to slide easily. With the 8HP Evinrude it planes two-up but not with two sets of dive gear. This is seldom an inconvenience since I usually dive alone. With one person and dive gear it does about 14 knots. The Evinrude suffered teething problems, mainly caused by stupid so-called safety features but now has matured into a reliable and useful motor.

COMPRESSOR

More than ten years ago I bought a portable Bauer Varius 2.5cfm compressor driven by a 3HP Briggs & Stratton 4-stroke motor. The compressor unit has been excellent – apart from oil and filters I have done nothing to it. The Briggs & Stratton has always been a bit of a nuisance (Bauer compressors come with Hondas now) but even though I may have to spend a couple of hours tinkering with it, so far I have always been able to get it running. This is no small consideration in remote locations. It has had one rebore in that time. Parts are readily available in obscure places and the workshop

manual is excellent.

On another boat I would be inclined to have the compressor permanently mounted inside, either belt driven off the main engine or driven by a hydraulic motor. The hydraulic pump on the engine could be used to drive a hydraulic anchor windlass too, but I would want to know the system intimately and carry spare seals.

COOKER

Eila has a Taylors 030 kerosene cooker with an oven. After a long apprenticeship, it is now easy and inexpensive to keep running. If you choose to cook with propane the higher cost of the fuel is probably offset by the fact that you never need to replace burners or buy meths for preheating. Clean fuel is the most important requirement; an in-line filter is a good idea. Throughout the Pacific it is cheap (apart from Hawaii) and widely available.

The Taylors cooker had several mild-steel and cast iron parts which lasted ten years. I replaced the stove top with a sheet of 6mm aluminium and had some stainless sheet sheared and folded for a new interior; something the manufacturer could have done with little increase in cost.

NAVIGATION

For eight years I navigated *Eila* with a second-hand plastic Ebbco sextant. With this and perhaps some luck we managed to find Beveridge Reef which lacks even palm trees or scrub. A few years ago I bought myself a Zeiss sextant which is probably a bit more accurate but mostly a lot easier to use.

Mast steps and Polaroid sunglasses are perhaps the most useful adjuncts to celestial navigation and are invaluable for pilotage through coral. Lagoon blink (the turquoise reflected in the base of clouds) is sometimes impossible to see without Polaroids. On another visit to Beveridge we could see the blink 20 miles away.

In the days of SatNav one could make a case for remaining untainted by electronic marvels, but GPS makes this kind of thinking shaky. If you have at least £25000 (US\$40000) tied up in a boat and gear, £300 (US\$480) for a GPS seems like good sense. In the Line Islands especially, where overcast skies and uncertain currents



abound, I have often wished for a GPS just to reduce the anxiety of those times when you need a fix but the sky is occluded for days.

We carry a Walker log but it is years since we used it. GPS makes it even more redundant. You can usually estimate your distance run as reliably as a log can measure it, and as it only measures distance through the water it can mislead you into thinking you know where you are. I suspect that most accidents happen to those navigators who think they know where they are. If you're hazy as to your whereabouts, you tend to be much more cautious about approaching dangers, or jumping to conclusions.

I try to avoid electronic gear I can do without since it is notoriously unreliable on a yacht – especially a leaky old wooden one. We have a VHF which is handy only for chatting to pals. If we had a hand-held in the dinghy it would provide very useful cover when I am diving well away from *Eila*. If the outboard dies I could call whoever was on *Eila* and plead with them to come and fetch me.

We have a second-hand Seafarer 3 echosounder which looks a bit of a wreck now, but still works perfectly.

ELECTRICS

Eila has a Rutland windgenerator which puts out about 1 amp in 10 knots of wind; 7 amps in 25 knots. Before we bought a computer this provided all our needs for lighting, music and NiCad charging in an anchorage exposed to the trade. Ideally, solar panels would supplement this on windless days. Of course if you're obliged to run the engine an hour a day for refrigeration then you will have plenty of electricity. *Eila* has neither fridge nor ice-box.

ANCHOR GEAR

Having been inspired by Eric and Susan Hiscock, *Eila's* anchor gear is substantial. The bower is a 20kg CQR with 60m of 10mm chain. 60m is about the minimum you can get away with; 90m would be more useful especially in the lagoons of French Polynesia where sometimes the choice is between anchoring in 1m or 20m with nothing inbetween. The kedge is a 22kg fisherman with 30m of 8mm chain with 50m of 12mm nylon permanently attached and ready to go. Carrying two anchors is a bare minimum; in Aitutaki I needed three (and a concrete block). With diving gear on board you don't need to carry extra anchors as spares.

We raise both anchors with an old galvanised Simpson Lawrence double-action windlass which seems indestructible. Apart from oil and grease it requires no maintenance and the bronze and galvanised iron live happily together. When the gypsy became worn, we replaced it with a New Zealand Maxwell gypsy from a vertical capstan windlass which fitted perfectly with the addition of a bronze bush inside.

TOILET

We have a Raritan Headland which was far from new ten years ago. It has suffered use on a daily basis since then and still works perfectly, occasionally requiring new seals or a drop of oil. Few bits of gear on a boat last this long with daily use, especially marine toilets.

SHOWER

The shower is another of those things which I installed when I first moved on board and which still shows little sign of disintegrating. It consists of a 7 litre Killaspray insecticide sprayer plumbed to a shower rose. Filled with a kettle of hot water and topped up with cold, it is a real pleasure after a chilling dive. Both of us can have a more than adequate shower from a single filling. The pump shaft was mild steel which soon rusted; I replaced it with a piece of 8mm bronze rod.

SAFETY GEAR

Liferafts have such a poor reputation I don't think I would carry one on any vessel. I prefer a rigid hull inflatable and either a make-shift sailing rig or an inflatable kite – perhaps metallised to be radar reflective – so I could go somewhere.

For attracting attention, I'm sure a waterproof hand-held VHF is far more use than flares. It is also useful at other times and doesn't have to be replaced frequently. Safety gear is big business and will consume as much money as you let it. *Eila* carries less than a bare minimum. Unless you register in a country which dictates what you must carry, or visit New Zealand, the only country in the world with the arrogance to impose their safety requirements on foreign yachts, I would say safety gear is a matter of personal philosophy. Anyone can be unlucky, but a lot of safety gear is used when Mickey Mouse modern boats fail, especially while racing, when the basics of seamanship are prostituted to vanity.

SPARES

There are two philosophies regarding spares. One is the "carry everything for any eventuality" school; the other is the Visa Card and fax school, to which I belong. To carry spares for everything, waterpumps, injectors, alternators, etc. ties up a lot of capital and most of the stuff you'll never need. On a wooden boat, there's some doubt it would work after sitting in a salty mire for several years unless it was very well packed. I like to have spares for the things I know will go wrong; but I'm not sure quite when: the galley

pumps, the bilge pumps, the saltwater pump impellers for the main engine and outboard, spark plugs; that kind of thing. For those things which may well last ten years I don't carry spares. From most places in the world you can phone or send a fax and receive parts within a couple of weeks, usually free of duty if they are marked for "yacht in transit". You just need the fax numbers of reliable suppliers who will accept your credit card. Better still, a Visa debit card which saves you the bother of settling your bills each month, a tricky thing to do at Beveridge Reef.





APPENDIX II

PHOTOGRAPHY

CAMERAS

I started playing with underwater photography twenty years ago, an era – for me – of Instamatics, gaskets and wing nuts.

While at university I built the first of a succession of acrylic housings for a Fujica ST801. Though lacking an actionfinder, this camera had some useful attributes underwater, even surviving a baptism by total immersion. Reading through my old journals I am struck by the number of times either the cameras or flashguns were in pieces. The Fujicas and housings I sold in New Zealand and replaced them with a Canon F1n, autowinder and speedfinder. I think Chris Newbert's beautiful book "Within a Rainbowed Sea" which I saw for the first time in Hawaii in '85 had something to do with this decision.

On a visit to England I built housings for the F1n and two Vivitar 283 flashguns. As before, I built the flash remote sensor into the camera housing, having had good luck with remote sensing with the Fujicas and a National flashgun.

The F1n had a couple of years of continuous use and I wished I had spent the money initially; there's no substitute for an enlarged viewfinder, especially for macro work.

The flash synch speed of 1/60th (1/90th if you could do without the meter) was too slow to avoid ghost images with sharks and fast moving fish with balanced light. At that time, no 35mm camera offered an enlarged viewfinder option and 1/250th flash synch.

This changed with the introduction of the Nikon F4. Luckily, I was able to sell all my Canon gear and housings in Fiji, where I could also buy the Nikon gear at a tolerable price. It was time to visit my parents in England again (and my lathe in their garage) where I spent five weeks building acrylic housings for the F4 and two SB-24 flashguns. This combination had all kinds of features (many of which I have yet to use) and several auto functions including TTL flash control. This was a mixed blessing. With macro work this does quite well if you make exposure compensation allowances for very light or dark subjects but it doesn't make life any easier if you want maximum depth of field (and you almost always do) since you are obliged to consider the flash to subject distance to choose the smallest aperture the flash can cope with. And although the F4 literature implies there is spot TTL flash control this is utter rubbish – you can check it yourself with a flash meter. So for macros you need to fill the centre of the frame to get good exposure.



For wide angle work the TTL control was a disaster. Though the F4 has matrix metering you lose this with the actionfinder which allows only spot and centre-weighted metering. But matrix doesn't cope with this kind of thing anyway because the TTL control is only centre-weighted, so unless the subject fills the middle of the picture it is likely to be incorrectly exposed. The Nikonos RS and a housed Nikon F801 or F90 all offer matrix, and in the F90 the matrix flash metering has allegedly been improved enough to make a reasonable job of balancing flash and daylight.

I wasted a lot of film playing with TTL control when a batch of test exposures with the flash guns on manual would have produced consistent and reproducible results. Eventually I put manual controls on my flash housings so I could choose between full and 1/16th power in one stop increments.

I also wasted a lot of film using two flashguns when one would have been better.

The mystique dictated that two were de rigueur, and with macros and a 1 1/2 stop diffuser over the second flash I could get good results with documentary style pictures. But with much seawater between the subject and lens, two were a disaster, reducing the contrast and rendering the picture milky even in good visibility. A single flash would give a more contrasty picture. I have a focusing torch which attaches with velcro to the flash housing at an angle which mimics the edge of the flash beam, allowing me to illuminate the minimum amount of water between the camera and subject. With the SB-24 one can choose the angle of coverage from 24mm to 85mm.

Autofocus turned out to be handy, more for putting you in the right ballpark than for focusing. With macros, I still have to lock the focus and move the housing back and forth for critical focusing. Rarely do you want the point of sharpest focus in the middle of the picture, so you must recompose and refocus each time. For fish macros I prefer autofocus, but with invertebrates I find manual focus more efficient. With mobile fish photography you can just plonk the focussing brackets on the side of the fish and hope for the best, but figure on throwing away most of each roll.



Usually I use manual focus on wide lenses. Otherwise you need to put the focus brackets right on the gills or fin of a plain grey shark or the AF module will just hunt around looking for something.

LENSES

Except for my Sigma 15mm full-frame fisheye, I use Nikon lenses. I'm no particular fan of Nikon but with an old boat you have enough to worry about without having to wonder whether your optics are up to the job.

At present I use the Sigma 15mm, the 18mm F3.5, the AF 24mm F2.8, the AF 28mm F2.8, the AF 55mm micro F2.8 and the AF 105mm micro F2.8 underwater. The 105, the 24 and the 18mm are the most frequently used. At night I like the 55 micro.

Half-and-halves are usually taken with the 18mm, with either a polarizer or a one stop graduated ND filter and a half +3 dioptre in front of it (in a single mount to avoid vignetting) behind a large dome from a Hasselblad housing. If I want to focus on something a couple of feet away underwater and infinity above I use a half +6.



Smearing detergent on the dome front inhibits droplet formation, though it washes off after a few shots and needs reapplying. Alternatively, polishing the dome with Lemon Pledge causes the water to run off fairly cleanly. A tripod is almost essential for this work. The larger the dome, the easier it is to work with; a small ripple will make less of a difference to a large dome.

All my dome ports except the large one I use for half-and-halves are Ikelite cast acrylic domes. With the 18mm, 24mm and 28mm lenses I use a +3 dioptre close-up lens screwed on the front. These close-up lenses allow you to focus on infinity underwater, but also much closer than without them.

With the Hasselblad dome I can focus from the dome to infinity with the Sigma full-frame fisheye without a supplementary dioptre.

If you're expecting the dark secrets of setting up dome ports here, then I apologise. In the past I set up my dome ports so their centre of curvature was coincident with the plane of the aperture diaphragm. More recently I have set up the centre of curvature to what I assume is the front nodal point of the lens, determined by looking through the viewfinder and lining up pins imitating the angle of view of the lens, and then projecting those lines back inside the lens.

One feature of dome systems is that the plane of focus is curved, which means at wide apertures flat subjects like seafans will be sharp in the middle and blurred towards the edges.

FILM

A long time ago I used Ektachrome. I liked the colour green water was rendered (in those far-off days of U.K. diving) and I could roll and process my own. This sounded like a good idea at the time but it compromised picture quality. In the tropics I started using only Kodachrome 64. This had the great advantage of consistent processing. The three week turn-around from remote Pacific islands was no drawback since even if there was local E-6 processing available, there was a good chance I wouldn't be happy with the results, so mailing E-6 films would take just as long.

Of the islands covered in this book, only Tahiti provided quality E-6 processing – at Polydis.

Fuji introduced ISO 50 Velvia and I liked the fine grain and the things this film did to humdrum colours. After Kodachrome it seems contrasty and much less forgiving. I rarely have the self-discipline for bracketing but it seems to me that this film could use that kind of respect. Although I use almost entirely Velvia now, I miss the convenience of Kodachrome mailers which you can use anywhere in the world.

Many photographers rate Velvia at ISO 40. One advantage of E-6 films like Velvia is that you can uprate them a stop without much loss in quality and you can decide on the film speed while the camera is in the housing. For working with whales in overcast conditions, I find this essential. I have little experience with Fuji Sensia or Provia.

Kodak brought out ISO 50 Ektachrome Underwater which is more red-sensitive (the red-sensitive layer is ISO 200), and provides “truer” colours underwater. For use with flash, Tiffen developed a couple of flash filters to match the film. I have not tried it. The new Ektachrome film known variously as Elite, Panther, Lumiere or Select (depending on locality) is certainly worth trying. Some people like it, but after Velvia it seems bland to me.

THE NIKONOS RS

One might have thought that the introduction of the Nikonos RS – the first underwater SLR – would have answered the ancient and well worn prayers of underwater photographers. Unfortunately it falls far short of being an all- encompassing tool. Personally, I have great difficulty understanding the rationale behind the RS. The price seems geared to professionals but with features for the amateur.

Although there is a great need for an underwater SLR, if it cannot replace a housed F3 or the pertinent features of a housed F4, then professional photographers cannot switch to using RS cameras only; they need the fast motordrive of the F4 or F3 for whale work, they need something to provide the 105mm micro and 18mm wide-angle lens neither of which are currently available for the RS.



And yet the price seems beyond the scope of most amateurs.

At the present time four lenses are available for the Nikonos RS; the 13mm full-frame fisheye, the 20-35 zoom, the 28 and the 55 micro. These are Nikon “in-air” measurements, so really the 20-35mm (which sounds like a great lens at first) equates to roughly a 26-45mm lens behind a dome port.

The speedlight SB-104 has numerous deficiencies. It offers only two stop increments of manual flash control and the controls and diagnostic lights can be seen only with the flash mounted to the left of the camera. The camera offers flash synch to 1/125th which is adequate in many circumstances; but the technology is there for 1/250th synch – which the F4 offers – so it is surprising this feature is lacking in the RS. I could go on about esoteric (and expensive) lithium batteries etc but this is hardly the place. I’m not alone in hoping that in the unlikely event of an RS2 many of the shortcomings of the RS will be remedied. The RS ceased production in 1996.

If you want to pursue underwater photography seriously the F4 offers useful features including an optional actionfinder, 1/250th flash synch, AA batteries, fast motordrive and AF micro lenses which focus from infinity down to 1:1. If you can live without an actionfinder, the F90 is probably better.

The Nikon F5 released in late '96 has matrix TTL flash control, (as does the F90) better autofocus than the F4 and an optional actionfinder.



NIKONOS VIEWFINDER CAMERAS

I have not used one of these underwater. With the costly "15mm" lens (with the angle of view of a 20mm lens but with the depth of focus of a 15mm) some people take good photos. The convenience of a small package allows you to slip into the water quickly. Optically it is the yardstick by which dome systems are measured and I intend to try one.

With a framer and extension tubes, good macro pictures are also possible, but subjects are limited to those too sluggish to swim away. For a beginner, I think this kind of rig is an expensive disaster. Expensive, because without a 15mm lens, most of the pictures end up in the bin out of focus or poorly composed.

CAMERA HOUSINGS

Underwater camera housings tend to be costly unless you build your own. Ikelite make adequate polycarbonate housings which are reasonably priced. Like alloy housings they need to be rinsed in fresh water after use as the control glands are made of anodised aluminium. Subal and Seacam in Austria, Aqua Vision in Canada and Anthis/Nexus in Japan probably make the best commercial housings.

SLIDES AND SLIDE STORAGE

I view slides on a light box built into the top of the chart table. Ideally it would be colour-balanced for daylight. Transparencies are stored in pocketed PVC sheets of 24, on file hangers in an airtight box. (Slide-friendly archival plastic sheets are also available.) Inside there is about 500g of indicator silica gel in paper envelopes with a piece of indicator paper which turns from blue to pink when the gel needs baking. I cook it in a saucepan over the stove, then cool it in an airtight aluminium bottle in the sea. I hear that a microwave does this half-hour job in minutes. The best place to keep slides is with a picture agent.

CAMERA STORAGE

Without care, cameras, lenses and transparencies will become infested with fungal hyphae in the tropics. Cleaning them is either

impossible, inconvenient or expensive. I keep my cameras in a Pelican case with a sachet of about 500g of silica gel, again with some indicator paper taped to the inside of the lid so I can readily see if it needs cooking. I worry about the humid air trapped beneath filters. I also have a small amount of silica gel in my camera housing; partly because I have on occasion been troubled by condensation forming on the inside of the dome – in temperate waters – and partly because the camera sometimes sits in the housing for days on end and I like to keep it in a desiccated environment. I would like to use metal lens caps with built-in silica gel which you could pop in the oven now and then but as far as I know, they don't exist.

PHOTOGRAPHIC TECHNIQUE

I have had most success from capitalising on perfect conditions. For macros I prefer good light (for focusing), no swell and some current. This helps with fish, orienting them in a predictable direction and often allowing closer approach. Be conscious of the plane of focus at all times.

For wide-angle work I like very clear water and sunshine. Swell is less of a nuisance here. Often you can use natural light as your fill and so use only one flash, maximising contrast.

For consistent half-and-halves, absolutely flat water, no swell, flash on the underwater subject, sunlight and a weighted tripod are required. I am always amazed how rarely conditions are ideal for these photographs.

More nonsense has been written about composition than you can shake a stick at, and I don't intend to add (much) to the pile. If what you see through the viewfinder tweaks you on a physiological level (pituitary endorphins probably have a lot to answer for), then it is likely someone else will be tweaked by the resulting picture. Just adjust the composition for maximum tweak.

DIVING

To take photos underwater you need to be perfectly comfortable underwater. Personally, I am much more at ease when I'm diving alone; a good buddy is usually a distraction, an incompetent buddy is just a nightmare. I like to be slightly negatively buoyant so I can take

deep breaths, and hold them (so I don't scare some poor animal away) without drifting off. (But this kind of talk is heresy to PADI.) For macros and anything you might construe as art, I need to be in a certain frame of mind, totally relaxed, feeling clean and unbothered by a world in mindless turmoil, without intrusions of unnecessary thoughts.

If visual art is just a question of responding physiologically to visual stimuli (which I think it is), I need this clean slate of mind to respond to what I see and thus transfer this physiological state – through the medium of a picture – to someone else.





AFTERWORD

Much of this was written almost 30 years ago. I have made no attempt to bring it up to date. But this is a snapshot of an era exploring the Pacific when I had remarkable freedom from bureaucracy of all kinds. I feel grateful that with no qualifications, no safety gear and no experience (or insurance) I could just clear customs and sail away. For a young man, exploring Polynesia aboard a beautiful yacht, often with a lovely woman, is the epitome of adventure. The photography section has been made redundant by the digital revolution and if I owned a yacht now, it would be very different.

I owned *Eila* for 17 years, sailed her 45000 miles and in New Zealand, bought another yacht which I named *Vigia*. She was 44' long, a 24 ton aluminium yacht, hard to handle in gales, but dry office space was what I had yearned for. I installed a Roland electric piano on her immediately! I owned *Vigia* for 7 years, sailing her about 15000 miles. In 2004 I got a Distinguished Talent Visa for Australia, sailed to Cairns, Queensland, bought a house, sold the boat and married the Thai photographer Darin Limsuansub. Adjusting to a normal life was difficult; the bureaucracy was almost overwhelming. In 2010 we moved permanently to Phuket, Thailand, where personal freedom seems very similar to living on a yacht. It suits me.

EXTENDED CAPTIONS

All but a handful of the pictures in this book were shot on film. Frequently, months passed between shooting and being able to get the films processed. I would send 20 rolls of film from Vava'u, Tonga to New Zealand to get Beveridge Reef pictures processed which involved two weeks of nagging anxiety. If you have seen the post office in Vava'u, you would know why. I never lost films, but how my life would have been different with digital!

Almost all the slides were “scanned” by duping with a Nikon D800 and macro lens, then adjusting in Lightroom and cleaning up in Photoshop. The scans seem comparable to those produced by a Nikon Coolscan 5000, but duping was much quicker.



Crown jellyfish, *Netrostoma setouchianum* in Niue with Tobin Bernhard. This shot won Oceanz in 2001 and a trip to Walindi, PNG.



Eila's new cockpit, looking like a spaghetti factory in the calm.



Slow shutter speed exposure of sailing at dusk. The Aries control line has a segment of chain which clips onto the tiller at the appropriate location and can thus accommodate a degree of weather-helm. It is simple and effective.



Many friends I made amongst the yachties in the Marquesas, I am still in touch with 30 years later.



I visited Beveridge Reef five times over the years. These perfect conditions were rare, light wind and low water in the morning with a biological slick coming off the windward reef to oil the surface to make the ripples, and thus the caustic light patterns, very uniform.



Spinner dolphin, *Stenella longirostris*.



In much more wind than this *Eila* was unbearably roly sailing wing-a-wing dead downwind. You can just about see the transom roller on the dinghy which allowed the sliding hatch to slide, even though the dinghy was strapped down on top of it.



Having torn the mainsail on the trip south, I substituted a smaller sail which didn't fit well!



Eila anchored in Baie Hana Vave in Fatu Hiva, with my Bauer compressor on the foredeck filling tanks.



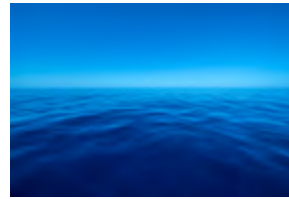
Bottlenose dolphins, *Tursiops truncatus*, come to *Eila's* bow.



A small, laden boat on the wind will have water on deck, frequently.



The view of Baie Hana Vave from the road south to Omoa.



Calm at sea is transcendent.



Spinner dolphin, *Stenella longirostris*.



Long-beaked common dolphin, *Delphinus capensis*.

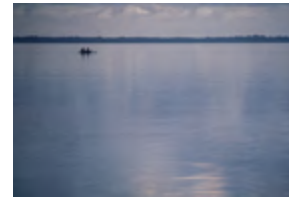
Wide open spaces devoid of people have great allure.



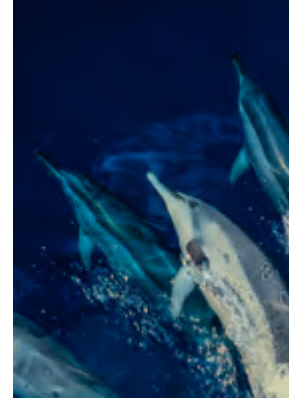
For years I navigated using only the sun, moon and stars, initially with a second-hand plastic sextant. Here I have graduated to a Zeiss sextant. Like photography on film, this is of historical interest only.



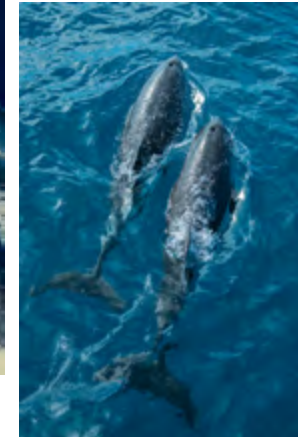
Bones of the medicine man lying among the volcanic cobbles.



An outrigger canoe in the calm lagoon at Fanning Island, Kiribati.



Eila at Robinson's Cove, Baie d'Opunohu, Moorea. One of the most beautiful places I have been.

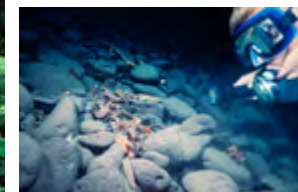


Bottlenose dolphins, *Tursiops truncatus*, at *Eila's* bow.

Fisheye lens view from the bowsprit with the 45lb CQR bower anchor and the 50lb fisherman anchor ready to deploy.



I only discovered that these were *Pseudanthias regalis* quite recently. I had first tried to identify them a decade before Google existed, without success.



Disturbing the two different halinities made this early selfie a blurred mess!

The tibia of the medicine man, found in the subterranean lake. The housing was the first I built for an SLR, a Fujica ST801. Unusually, the bottom (rather than the back) was removable, and it incorporated a remote sensor for the flash gun within the camera housing. I built it 40 years ago.



The view of Bora Bora from Raiatea, French Polynesia.



Fisheye lens view from the bowsprit with the 45lb CQR bower anchor and the 50lb fisherman anchor ready to deploy.



The whitetip reef sharks, *Triaenodon obesus*, in Fatu Hiva were remarkably bold.



The tibia of the medicine man, found in the subterranean lake. The housing was the first I built for an SLR, a Fujica ST801. Unusually, the bottom (rather than the back) was removable, and it incorporated a remote sensor for the flash gun within the camera housing. I built it 40 years ago.



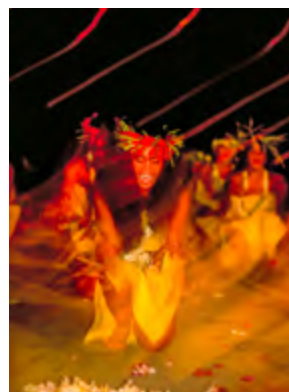
The view of Baie Taiohae, Nuku Hiva, from the road to the airport. The anchorage was almost always roly.



The mountains at Baie Hakatea, Nuku Hiva, look like molten wax.



The basalt spires of Ua Pou are simply stunning.



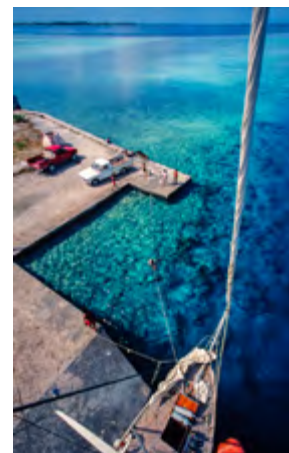
The combination of Tahitian dancing and drumming is hard to describe. It changes you forever. Be warned!



Bastille Day celebrations in Ua Pou, Marquesas.



You can see the *motus* on the far side of the lagoon in the gaps between the closer *motus*. Atolls look pretty much alike from seaward.



Anchoring in the lagoon in Takaroa was frowned upon on account of all the pearl culture activity. Alongside the wharf, rats have a perfect opportunity to come aboard and try to eat anything plastic, including a film processing tank!



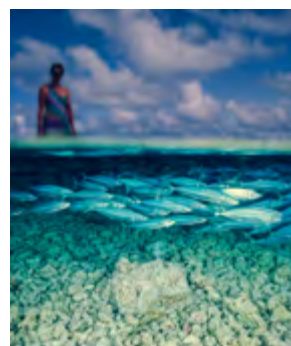
Eila tied alongside at the end of the quay at Takaroa. The dinghy is hauled out of the water on a spare halyard for security and to reduce the proliferation of fouling organisms.



Tahiri Pamati in his turquoise house in the lagoon at Takaroa.



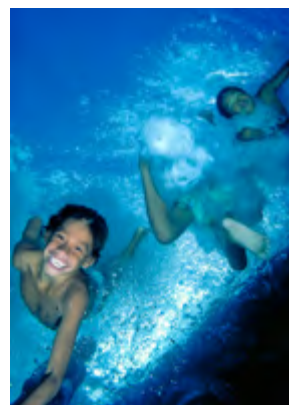
Black pearls in the hand of a man who knows hard work.



Vicki at the *parc à poisson* at the head of the pass in Takaroa where *operu*, *Decapterus macarellus*, are caught.



When they weren't bombarding *Eila* with rubbery bits of copra, the kids fearlessly swam in the pass heedless of the sharks.



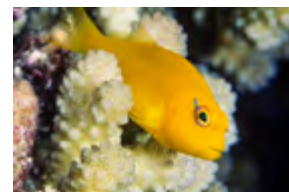
An underwater camera seemed a bit of a novelty for these children at Takaroa.



This eagle ray was almost stationary in the current, so I was able to get quite close before it took fright, by simply not breathing.



Sacks of copra awaiting the arrival of *Manava II*. Mast steps are not only essential for piloting in coral but make a handy photographic vantage point.



The yellow hawkfish *Paracirrhites xanthus* was first described by Jack Randall in 1963. It is found in the east and central Pacific.



Women preparing plastic mesh for capturing black pearl oyster spat in the lagoon.



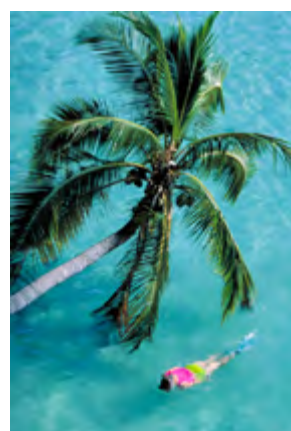
Saint Michael's Roman Catholic cathedral at Rikitea, Île Gambier was built between 1839 and 1848 and is the largest church in the South Pacific.



Much of the cathedral is decorated with mother of pearl.



Akamaru, Île Gambier, had an exceptionally photogenic palm tree.



From the vantage point of a casuarina tree I could shoot this palm against the turquoise lagoon. I shot rolls of this tree. When my pictures were eventually processed in Papeete, I thought they were all underexposed. I discovered later that my home-made light-box was somewhat less than the standard brightness.



At Île Gambier the water was cold and clear, and it seemed like the animals were unfamiliar with scuba divers.



Finding a space big enough to anchor among the coral heads in a place like Akamaru, Île Gambier, is why you really need mast steps and Polaroid sunglasses.



The spinner dolphin Vicki named Bojangles on account of her ragged dorsal fin.



The *County of Roxburgh* was wrecked in 1906. It's interesting to note the difference in corrosion of the iron plating between the seaward and landward sides. There's a fascinating website about the ship at www.county-of-roxburgh.com/



Paracirrhites nesus is also another a rarity which I couldn't identify until years after taking this photograph.



Vicki snorkelling amongst the lush coral at Rotoava, at the northern end of the lagoon at Apataki.



Bojangles at her favourite coral head.



Parrotfish dominate the catch from the fish traps at Apataki.



Blacktip reef shark, *Carcharhinus melanopterus*.



Eila anchored at Rotoava. In strong trade winds the anchorage is untenable.



Bojangles at her favourite coral head.



In places seldom dived, grey reef sharks will often make one close inspection before losing interest.



Blacktip reef sharks are competitors for reef fish and are killed.



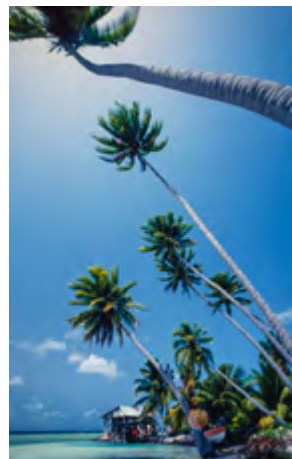
A sun awning keeps the deck and interior cool although a wind scoop on the forehatch makes the biggest difference. The Aries self-steering gear on the stern is arguably the most important gear on the boat. Originally made by Nick Franklin in the UK, then in Denmark and now in Holland. If I were to ever have another yacht, I think this is what I would buy first.



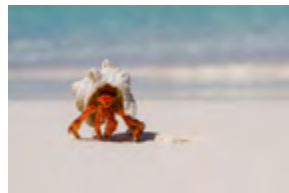
Vicki snorkelling with Bojangles at Rotoava.



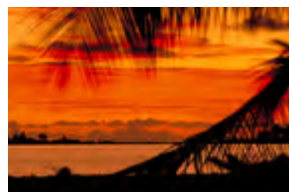
Eila tied into the small basin at the village of Niutahi. It was shallow!



The lagoon-side palms at Niutahi, Apataki.



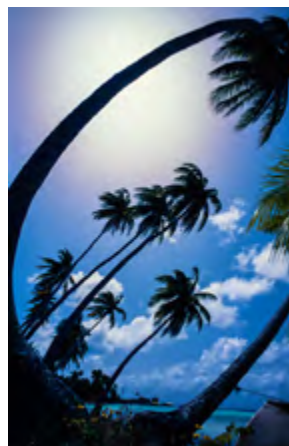
The beach at Rotoava, Apataki was sewn with the tracks of *Coenobita* hermit crabs.



The sunsets we had at Rotoava were spectacular as a result of the huge volcanic eruption of Mount Pinatubo in the Philippines a couple of months earlier.



This is what the slides looked like, without any manipulation.



Inside the fish trap on the reef top is a scrawled filefish, *Aluterus scriptus*.

The lagoon-side palms at Niutahi, Apataki.



The uninhabited *motu* at Rotoava was thick with mosquitoes which bred in brackish pools.



Bojangles at her favourite coral head.



The fish traps are emptied so that fish can be sent to market on the ship to Papeete.



Eila tied into the small basin at the village of Niutahi. It was shallow!



Eila sailing in the lagoon at Apataki with friends Frank and Andrea Siera aboard.



From memory, this was shot with a flat port and a 24mm lens, but with perfectly calm water. Not a recommended technique!



Mount Tohivea at 1207m is the highest mountain in Moorea and dominates Baie d'Opunohu.



The entrance to Baie de Cook, Moorea.



Bonitier fishing boats tied stern-to along the quay at Papeete.



The view of Moorea from the track leading up to Mont Marau, Tahiti.



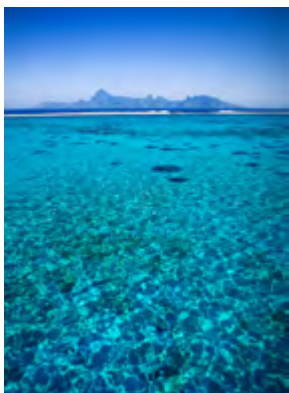
Mont Aorai (I think) in the interior of Tahiti, the third highest peak at 2066m.



Papeete waterfront with the sun setting behind Moorea.



At the north-west corner of Moorea I found a quizzical humphead wrasse, *Cheilinus undulatus*.



Moorea from the sand flat at Maeva Beach, Tahiti.



The ancient fish traps viewed from the marae at Maeva, Huahine.



Flower sellers in the market in Papeete.



From my vantage point up the mast I have a great view as this humpback whale turns on its back.



Cetacean soup: two humpback whales, *Megaptera novaeangliae*, some rough-toothed dolphins, *Steno bredanensis*, a hundred melonhead whales, *Peponocephala electra* and enough oceanic whitetip sharks, *Carcharhinus longimanus* to encourage me to get out of the water! This was about six miles north of Moorea.



From behind the town of Uturoa, Raiatea, there is a beautiful view towards Tahaa and Bora Bora on the far left.



Photos of Tahitian dancers always seem timeless to me.



The black-finned snake eel, *Ophichthus altipennis* also known as the highfin snake eel, burrowed in the sand at Maeva Beach.



A humpback whale surfaces not far from the entrance to Baie d'Opunohu, Moorea.



Mast steps are great for photography as well as pilotage in coral. This *motu* is off Taha'a but with a long lens it seems close to Bora Bora, 20 kilometers away.



Lack of light lends itself to slow shutter speed, blurred motion effects.



Oriental flying gurnard, *Dactyloptena orientalis* at Maeva Beach, Tahiti. Gurnard comes from the Old French word gornard, meaning grunter, which is the noise these fish make!



Humpback whale and calf.



Fresh skipjack tuna, *Katsuwonus pelamis* for sale on the quay at Fare, Huahine.



Note the French Sarraizienne plastic sandals, my main footwear for 20 years. By supergluing the tab closed to keep the load off the buckle they would last a year of continuous use and were perfect for the sailing life. Not exactly stylish according to some...



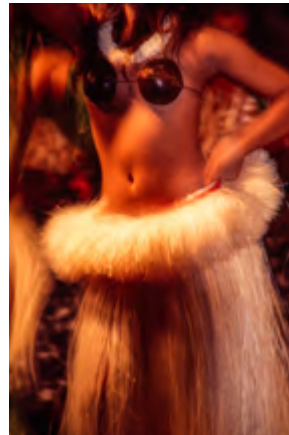
Consolidated PBY Catalina flying boat, sunk in 1962 for divers near the international airport at Faaa, Tahiti. A wrecked fishing boat lies nearby.



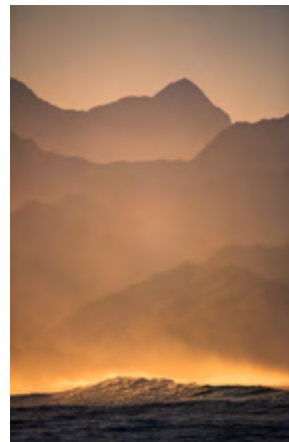
As this humpback rolled on it's back, the dinghy with a 24mm lens didn't seem like the safest place to be!



Street scene from Fare, Huahine.



Ah Tahiti...



The surf breaking on the reef near Papeari, Tahiti, a few miles north of Teahupo'o, one of the most famous surf breaks in the world.



Eila anchored in the lee of *Motu Toopua*, Bora Bora.



The church at Tiva, Taha'a, with Bora Bora in the background.



I spent many weeks anchored on the shallow sand flat at Maeva Beach and this was the view of Moorea each evening.



A humpback whale dives off the north coast of Moorea at sunset.



Blacktip reef sharks *Carcharhinus melanopterus* are fed off the north coast of Moorea.



In 1986 the coral outside the main pass at Bora Bora had not yet recovered from the El Niño years of '82-3.



After the shark feed, the blacktip reef sharks were frisky and bold at the south end of *motu* Piti Aau in the south east corner of the lagoon at Bora Bora.



Red footed booby, *Sula sula* on the nest.



Cyclone Wasa in 1991 felled many of the palms on Mopelia, French Polynesia.



The uninhabited windward side of the lagoon at Fanning Island was shallow, but great for photography.



Clear ocean water is driven over the reef at the south-east corner of the lagoon in Bora Bora where Vicki feeds double-saddle butterflyfish, *Chaetodon ulietensis*.



The fairy or white tern, *Gygis alba* lays its egg on the branch of a tree.



Cyclone Wasa in 1991 felled many of the palms on Mopelia, French Polynesia.



The coconut or robber crab, *Birgus latro* can grow to 4kg and is immensely powerful. The juveniles use empty gastropod shells for protection in the manner of hermit crabs.



Cycling around Bora Bora we stopped at a shop selling multicoloured pareus, Polynesian sarongs.



Fairy or white terns, *Gygis alba*.



Eila anchored at Mopelia.



These kids were pulling the legs off the land crabs so they couldn't run away.



Mount Otemanu at 727m dominates the interior of Bora Bora.



Fairy or white tern, *Gygis alba*.



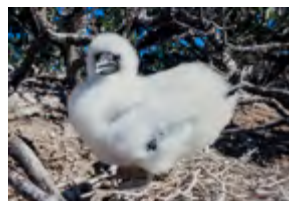
One of the 105mm guns from *Seeadler* ("sea eagle" in German) lies in a gully just south of the pass at Mopelia.



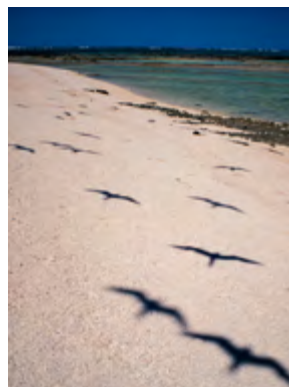
The arrival of the supply ship from Tarawa (the first in three months) was a big occasion for Fanning Island. The 30' wooden yacht is *Wanderer III*, originally built for Eric and Susan Hiscock, whose books inspired me so much. *Wanderer III* is now owned by Thies Matzen and Kicki Ericson who produced the gorgeous book "Antarctic Wilderness" after spending 26 months in South Georgia aboard her.



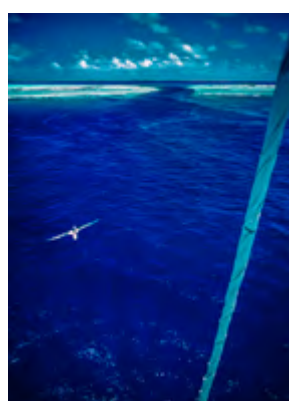
The view of Mopelia from outside the pass on the west side. The palms on the windward motu are just visible across the lagoon. The pass is narrow, with plenty of outgoing current so a good engine is a necessity.



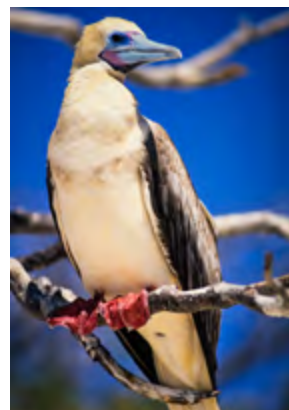
Red footed booby chick, *Sula sula*.



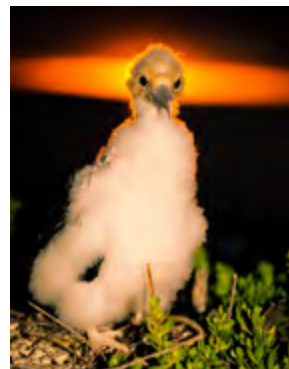
Shadows of sooty terns on the lagoon sand.



Mast steps and Polaroid sunglasses are great for reducing anxiety about tricky pilotage as you can get a clear overview of what is required.



Red footed booby, *Sula sula*.



Great frigate bird chick, *Fregata minor* on a motu in Mopelia.



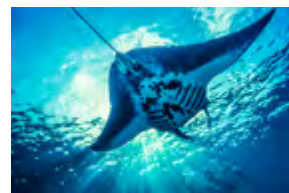
Sooty terns at Mopelia.



Weaving a palm leaf basket.



Red footed booby, *Sula sula* on the nest.



One of the reef manta rays, *Manta alfredi*, at Fanning Island was entangled in monofilament fishing line.



Vicki points at one of the many manta rays which gather outside the pass at Fanning Island.



Making a dried pandanus leaf roof panel.



Restless children await the dancing in the pandanus maneaba.



Palm logs, pandanus and palm fronds are building materials found all over the tropical Pacific.



The dancers seemed to slip into a kind of hypnotic trance.



Kiribati child in her coronet of flowers.



During the dances, people would come and adorn the dancer with Johnson's baby powder and Impulse body spray.



Kiribati children.



This dancer was especially enthusiastic and vocal.



Vicki with a box of dried shark fins at Fanning Island. This was one of the few sources of income.



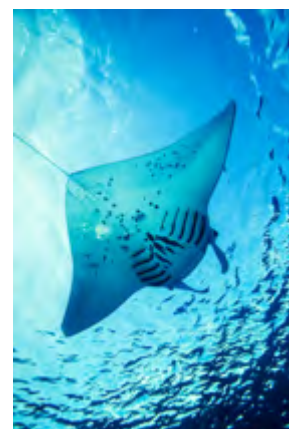
These souvenirs are made from shark's teeth and the raptorial claws of mantis shrimps. The speed at which mantis shrimps can attack prey with these claws defies belief!



Anchored in the calm at Fanning Island we lift the dinghy out of the water with a halyard to reduce fouling on the bottom. You can see the wind chute (or scoop) which normally would be funneling the breeze down below.



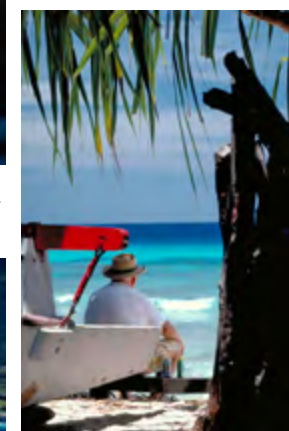
Kiribati children.



Reef manta ray, *Manta alfredi*.



A Cook Island dancer in Aitutaki.



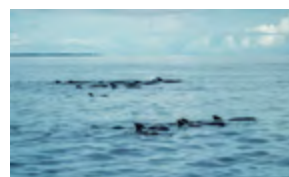
A Catholic priest in Kiribati.



Reef manta ray, *Manta alfredi*.



Outside the reef at Fanning the visibility was not that good, but the plankton bloom was the reason the manta rays gathered in large numbers.

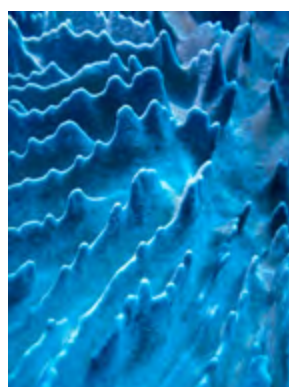


Melonhead whales, *Peponocephala electra* off Christmas Island.

Reef manta ray, *Manta alfredi*.



Blue starfish, *Linckia laevigata* are found throughout the tropical Indo-Pacific.



Leather coral, *Lobophytum* sp.



The mantles of the clam *Tridacna maxima* are infused with symbiotic zooxanthellae which, during the day, provide their host with carbon and nitrogen, products of photosynthesis.



The mantles of the clam *Tridacna maxima* are infused with symbiotic zooxanthellae which, during the day, provide their host with carbon and nitrogen, products of photosynthesis.



The melonhead whales came so close to the dinghy that Vicki could reach down and touch them.



Ngatangiia Harbour in Rarotonga, Cook Islands. I was able to anchor there once, when bad weather made the two northern harbours untenable.



In Rarotonga, David Nardini and I were able to hire a plane for twenty minutes and the young pilot obligingly removed the window strut so that the large window lifted right up against the underside of wing, giving us both a clear view.



Defiance was eventually taken to New Zealand where Orams boat yard repaired it and renamed it *Majestic Eagle*.



The Swan 51 *Defiance* and the local tug on the reef at Aitutaki. I wouldn't recommend anchoring outside the reef even with someone on board all the time. This seemed like negligent seamanship rather than bad luck. The channel into the lagoon is less than 2m deep, so high water is recommended for entry but the Swan drew almost 3m so did not have that option.



On the north coast of Rarotonga there are two boat harbours. Avarua is in front of Trader Jacks bar and there is no room to swing so I had to tie a stern line to a concrete block underwater. Swell enters the harbour but in normal trade wind conditions it's not too bad.



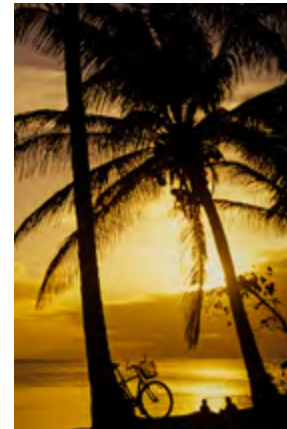
The Cook Islands Christian Church at Matavera.



The commercial harbour at Avatiu, Rarotonga. I always felt uneasy tied in here because the waves that enter have nowhere to dissipate their energy but just get reflected.



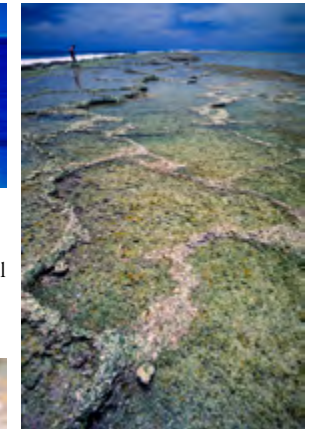
The old Customs House at Aitutaki in 1986.



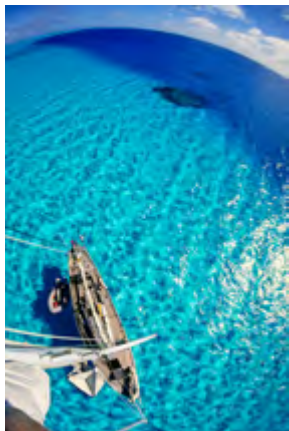
Hurly-burly, Rarotonga style.



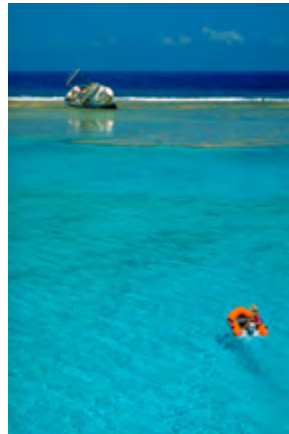
Beveridge Reef, looking south. The coral head on the edge of the sand-flat was our photo studio full of sharks.



The reef top at Beveridge is formed into hard terraces covered with a layer of calcareous algae.



The wreck of Nicky Lou, a fishing boat from Seattle on the windward reef.



The wreck of Nicky Lou, a fishing boat from Seattle on the windward reef.



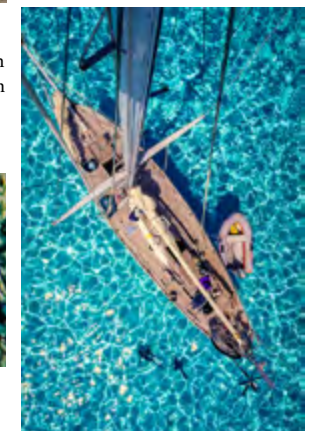
The thick aluminium hatch-top had disappeared by the time of my next visit, along with much else of any value.



Whitemouth moray, *Gymnothorax meleagris*.



Opisthobranch *Haminoea cymbalum*. They were common on a small part of the reef top near an old wreck.

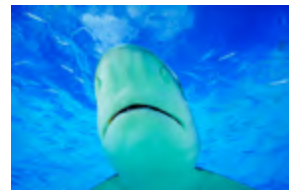


Grey reef sharks swimming around *Eila* on the sand flat at Beveridge Reef.

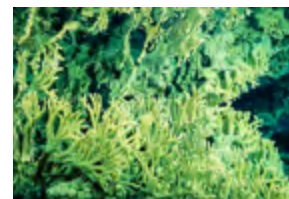
From the same vantage point, with a fisheye lens. The sand flat is about 4m deep and the water is crystal clear.



The windward edge is riven with gullies. I was never brave enough to snorkel on the ocean side.



A grey reef shark passes close overhead at Beveridge Reef.



Fire coral, *Millepora* sp. in the shallow back-reef margin.



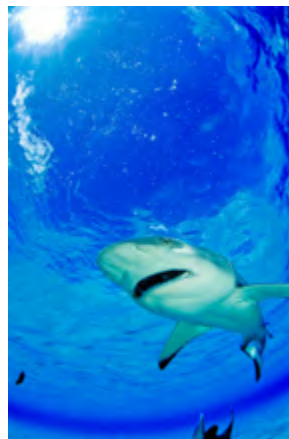
Tubes of the vermetid molluscs *Dendropoma maxima* covered with encrusting fire coral, *Millepora* sp.



The pretty back-reef margin at Beveridge Reef.



Vicki exploring the reef top at low water. The black animals are urchins in the hollows.



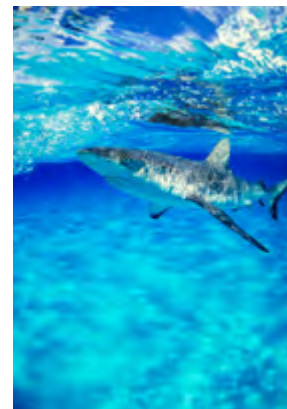
Feeding sharks at Beveridge Reef. I rarely felt in any danger. Usually they behaved impeccably.



This picture of a grey reef shark won the Innovation Award at the Wildlife Photographer of the Year in 2004. That year the competition had 18000 entries from 50 countries.



The vermetid mollusc *Dendropoma* feeds by casting a mucus net which catches plankton. It is then gathered by the radula and consumed, and a new one secreted.



Shot with a fisheye lens at the surface, the food offering has just been pulled out of the picture.



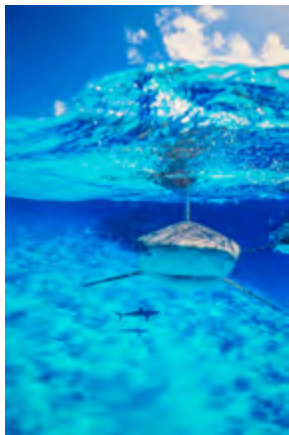
Tobi Bernhard won the top prize at Wildlife Photographer of the Year in 2001 with a shot taken at Beveridge Reef. Here he is feeding grey reef sharks at our favourite coral head.



Looking down the slope to the lagoon depths, with grey reef sharks.



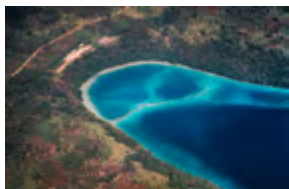
The reef top at Beveridge is formed into hard terraces like rice paddies.



This picture won Highly Commended at the Wildlife Photographer of the Year in 1996. It gives an impression of the wonderful clarity of the water at Beveridge Reef.



A male grey reef shark against the Snell's window.



From the air one can see the layout of the reef at the head of Neiafu Harbour which is a reasonable cyclone refuge for a shallow draft vessel.



Bubble-tip anemone, *Entacmaea quadricolor* with its more usual colouration.



I processed this in black and white simply because it doesn't really work in colour!



Vicki steers *Eila* across the lagoon at Beveridge Reef.



A red sponge surrounding a Christmas tree worm, *Spirobranchus giganteus*.

Bubble-tip anemone, *Entacmaea quadricolor*. The bulbs are indicative of anemonefish being present; if the fish are removed, the bulbs deflate, only to reinflate when the fish are reintroduced. I suspect this white one has expelled its symbiotic zooxanthellae due to environmental stress.



This grey reef shark, *Carcharhinus amblyrhynchos* carried this remora or sharksucker, *Echeneis naucrates* around on its pectoral fin like jewelry with no effort to dislodge it.



Vicki steers *Eila* across the lagoon at Beveridge Reef.



A red sponge surrounding a Christmas tree worm, *Spirobranchus giganteus*.



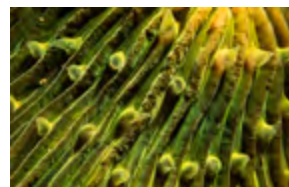
Backlit mushroom coral, *Fungia* sp. on the deck of the *Clan McWilliam* in Neiafu Harbour.



Whitetip reef shark, *Triaenodon obesus*.



At the island of Nuku in Vava'u, Tonga there used to be a patch of leather corals, *Sarcophyton* sp. just off the beach where noddies and terns would rest.



Fungia sp. mushroom coral.



The flower urchin, *Toxopneustes pileolus* has pedicellariae (which are small claw-like structures on the end of a tube) which can inject an acetylcholine-like venom and thus these urchins should not be handled!



Just off the Tongan Beach Resort I found these juvenile batfish, *Platax teira*.



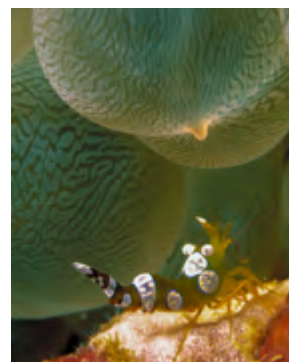
Grey reef sharks at our favourite coral head at Beveridge Reef.



The high islands and deep water of Vava'u make it reasonably safe to approach at night, if you have radar. And you know what you are doing!



The Palaemonid shrimp, *Periclimenes holthuisi* on a bubble coral, *Plerogyra sinuosa*.



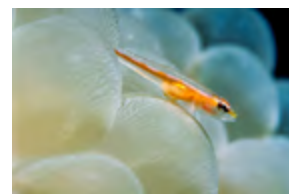
The squat shrimp *Thor amboinensis* by a *Plerogyra sinuosa* bubble coral. This shrimp, unlike *Periclimemes*, does not live on the bubbles.



Grey reef sharks at our favourite coral head at Beveridge Reef.



Mangroves line a few of the anchorages in Vava'u and always offer interesting snorkelling.



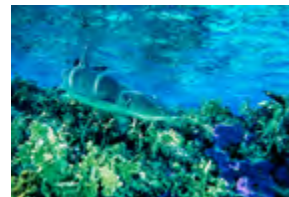
A goby on the bubble coral, *Plerogyra sinuosa*.



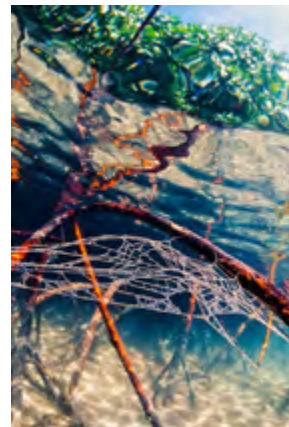
The mantle patterns of the thorny oyster, *Spondylus varius*.



Regal angelfish, *Pygoplites diacanthus* in Vava'u.



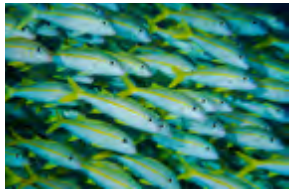
A whitetip reef shark in the shallow back-reef margin at Beveridge Reef.



I assume this web was made by a spider at low water and just happened to be covered at high water. However, it's intriguing, and I would like to be sure that the spider isn't intentionally making a fishing net for plankton.



Young boys carry fringed pandanus mats into the Catholic church in Neiafu, Vava'u, Tonga.



A shoal of yellowfin goatfish, *Mulloidichthys vanicolensis*.



Semicircle angelfish, *Pomacanthus semicirculatus*.



Port Maurelle on the island of Kapa, Vava'u.



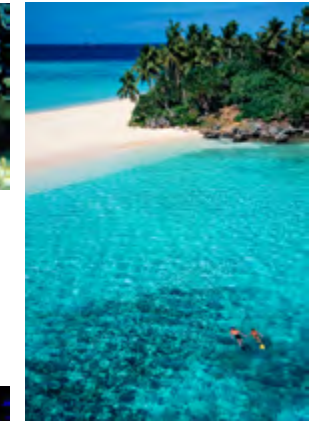
Looking west from Port Maurelle, Vava'u.



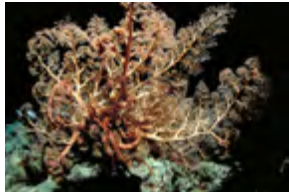
On a night dive off Kapa Island I saw this feather star releasing eggs; the only time I have ever seen this and an event rarely witnessed.



This crab *Dromia dormia* cuts and fits a sponge on its back. It is usually observed at night. This was at Nuku, Vava'u, where I did many night dives.



The island of Nuku from the masthead. I could spend all day snorkelling there.



The highlight of night dives at Nuku were the handful of basket stars which would unfurl just inches from the surface. My dive light would make them curl back into the reef.



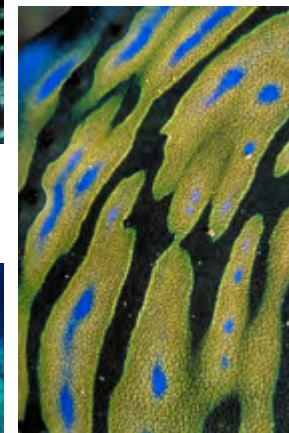
In deeper water off Nuku were wire corals *Cirrhipathes anguina* with small gobies, *Bryaninops yongei*.



In deeper water off Nuku were wire corals *Cirrhipathes anguina* with small gobies, *Bryaninops yongei*.



The mantle patterns of the clam *Hippopus hippopus*.



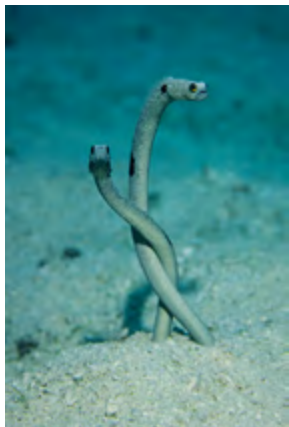
This is the mantle of *Tridacna squamosa*. All these clams have symbiotic zooxanthellae in their tissues. There is still a breeding program of sorts near Nuku in the hope that some breeding stock will restore clam populations on adjacent reefs.



The smaller and more abundant *Tridacna maxima*.



Also at Nuku I found this parrotfish sleeping in the mucus cocoon it secretes to protect itself from olfactory predators such as moray eels.



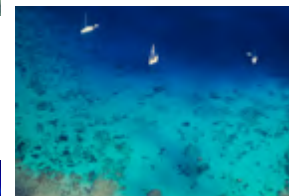
On the sandy slope at Nuku were garden eels, *Heteroconger hassi*. I noticed that some close together would entwine briefly. On long shallow dives with plenty of habituation and breath holding I was able to capture a very rare photograph.



The coral at Mala Island is some of the best in Vava'u. But cyclones take their toll and recovery is slow. I take the long view.



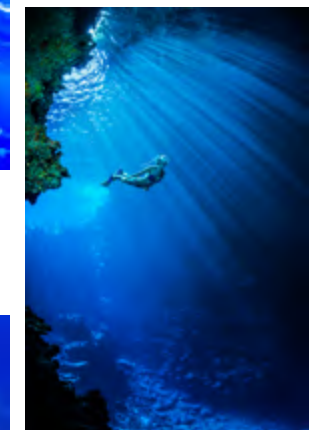
Kim Rickett snorkels over a coral head of *Diploastrea heliopora* just outside Swallow's Cave in Vava'u.



Yachts anchored at Port Maurelle, Vava'u. The black speck in front of the middle yacht is a manta ray.



A more recent picture shot digitally at 1/640th second. I don't miss film at all.



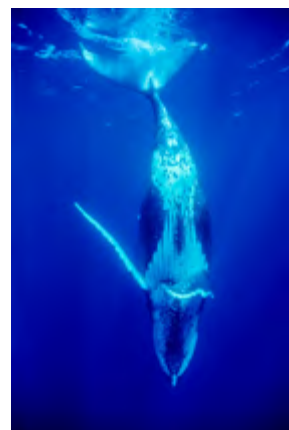
Darin Limsuansub snorkelling in Swallows Cave, Vava'u. One of a handful of pictures in this book shot digitally.



Humpback whale, *Megaptera novaeangliae* in Vava'u. This was shot at 1/60th second due to poor light; all the other pictures in this sequence had motion blur.



Leopard shark, *Stegostoma fasciatum* among the coral heads at Mala Island, Vava'u.



Humpback whale, *Megaptera novaeangliae*.



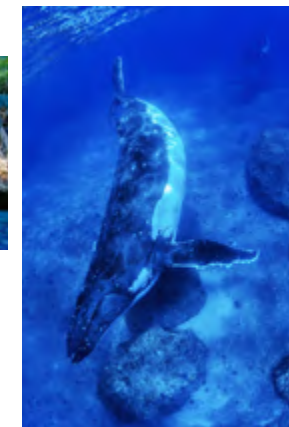
Humpback whale, *Megaptera novaeangliae*.



The island of Kitu in Vava'u typifies the geology of the group; raised limestone sprinkled with volcanic ash.



Humpback whale, *Megaptera novaeangliae*.



Humpback whale, *Megaptera novaeangliae*



Where contrast is lacking in the original photo, sometimes rendering in black and white can increase the punch of a picture.



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Although the sportfishing boats frown on it, a snorkel at one of the offshore Fish Aggregation Devices in Vava'u can be electric; we have seen dorado, wahoo, silky sharks and oceanic whitetip sharks out there.



A longnose hawkfish *Oxyrrhites typus* on the black coral at the cave entrance on Fotula, Vava'u.



A self portrait at Tu'ungisika, Vava'u. I weighted the tripod with a weight belt and used the self-timer, so I had 10 seconds to get into position. I could see my reflection and that of the sun in the dome which was a great aid to composition.



The small island of Fotula is one of my favourite dives in Vava'u but a tricky place to anchor even a dinghy.



Uninhabited Ovalau Island, Vava'u.



Looking south from the main island of Vava'u towards Tu'ungisika and Nuapapu Island.



On a more recent trip to Tonga, Darin Limsuansub had a great encounter with humpback whales. I would recommend a week's whale-watching to be fairly sure of a good encounter.



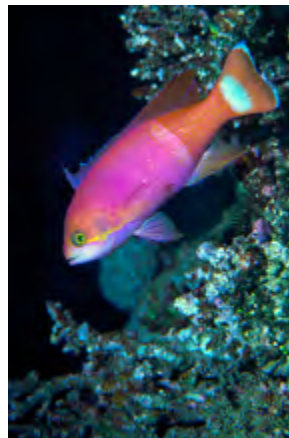
Dawn at Kenutu on the east coast of Vava'u.



Dawn at Kenutu on the east coast of Vava'u.



The view from the cliff top on the west coast of Nuapapu Island.



Male Lord Howe anthias, *Pseudanthias pictilis*, at Luamoko Island, Vava'u.



Lionfish, *Pterois volitans* at Nuku, Vava'u.



We spotted mandarin fish in very shallow water at the Paradise Hotel dock. We dived there in the early morning when the fish seemed to be more accessible. And there were less people wondering what on earth we were doing!



The fringing reef on the south side of Vaka'eitu Island in Vava'u at low water.



Dive instructor Karen Ruffle-Klugkist at Euakafa Island.



Watanabe's angelfish, *Genicanthus watanabei*, Vava'u.



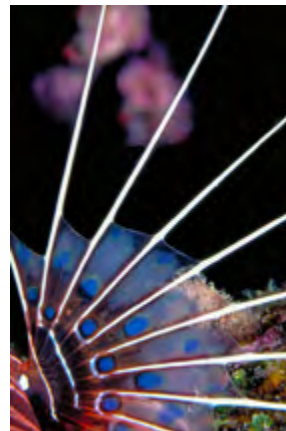
Crown jellyfish, *Netrostoma setouchianum* are seasonal; some years there are few, other years, many.



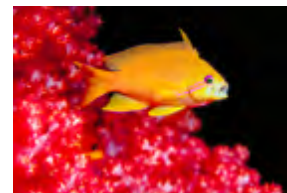
Male lyretail anthias, *Pseudanthias squamipinnis*.



Heteractis magnifica is a symbiotic host of the pink anemonefish, *Amphiprion perideraion*. Tu'ungisika, Vava'u.



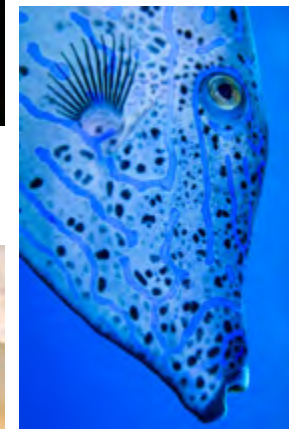
Spotfin lionfish, *Pterois antennata* showing the pectoral fin.



Female lyretail anthias, *Pseudanthias squamipinnis*.



Nudibranch *Gymnodoris ceylonica* with commensal shrimp, *Periclimenes imperator*. Nuku, Vava'u.



Blue starfish *Linckia laevigata* sometimes have this parasitic gastropod mollusc, *Thyca crystallina*, on their undersides. Often, a larger female and smaller male will be found together on the starfish.



Stocky anthias, *Pseudanthias hypselosoma*. Vava'u.



Tube anemone, *Cerianthus* sp. with squat shrimp *Thor amboinensis*, in front of the Tongan Beach Resort, Vava'u.

Scrawled filefish, *Aluterus scriptus*, Tu'ungisika, Vava'u.





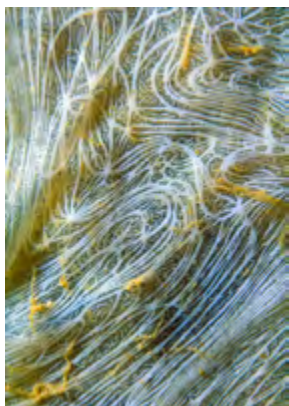
The nudibranch *Gymnodoris ceylonica* preying on a lined sea hare *Stylocheilus striatus* which released a purple liquid when it was attacked. Nuku, Vava'u.



Longnose hawkfish, *Oxyrrhites typus* on a gorgonian. Fotula, Vava'u.



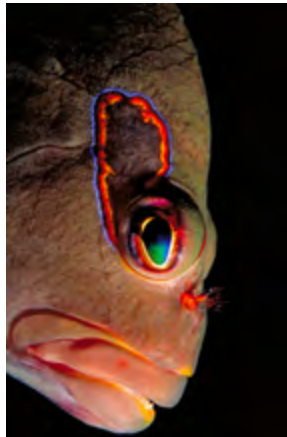
Diploastrea heliopora coral.



An unidentified sponge. Vava'u.



Acropora table coral. Vava'u.



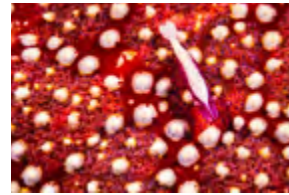
Arc-eye hawkfish, *Paracirrhites arcatus*. This picture won a Highly Commended in the Wildlife Photographer of the Year competition in 1996.



The colonia ascidian *Atrium robustum* looks rather like a sponge! The green colouration is from the symbiotic prokaryote *Prochloron*.



A snorkeller at the surface.



Cushion star, *Culcita novaeguineae* with a commensal shrimp *Periclimenes soror* on the underside of the cushion star.



Longnose filefish, *Oxymonacanthus longirostris* feeds on *Acropora* polyps. Mala Island, Vava'u.



Coral, possibly *Platygyra acuta*.



Hermit crab, *Aniculus maximus*. Vava'u.



Hermit crab, *Dardanus guttatus*.



Brain coral, *Leptoria phrygia*.



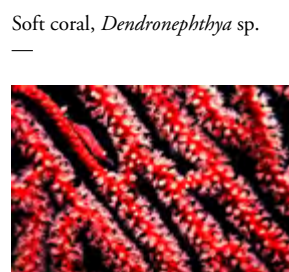
Another unidentified coral!



The back side of a wave tube.



Light rays through a fine bubble mist underwater.



Soft coral, *Dendronephthya* sp.

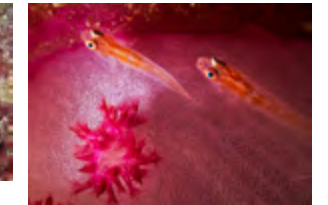
Shrimp living on a sea fan.



Giant trevally, *Caranx ignobilis*.



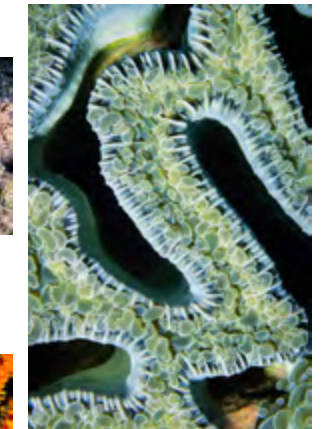
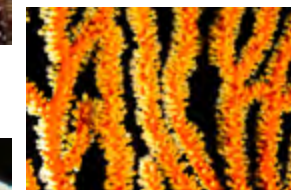
In the wide exposed bay on the north-west coast of Vava'u we found many of these nudibranchs, *Cuthona sibogae* which feed on hydroids of the genus *Sertularella*. Here, two are mating.



Soft coral gobies, *Pleurosicya boldinghi* on *Dendronephthya* sp, Vava'u.

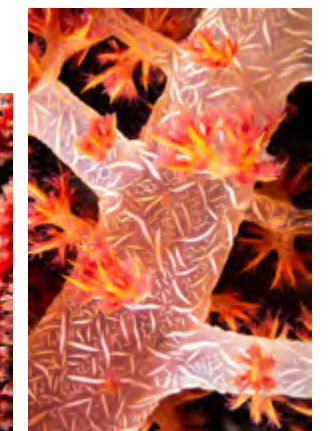
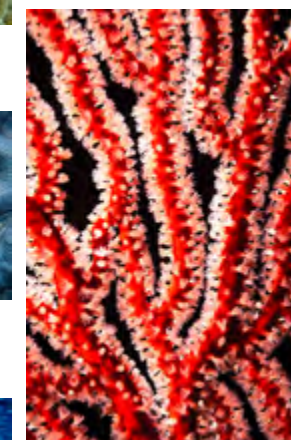


Red slate pencil urchin, *Heterocentrotus mammillatus*.



The bubble coral, *Plerogyra sinuosa* with the balloon-like polyps retracted. Vava'u.

Gorgonian sea fan, *Subergorgia mollis*.



Soft coral, *Dendronephthya* sp.

Gorgonian sea fan, *Subergorgia mollis*.



Christmas tree worm, *Spirobranchus giganteus*.



An amazing spider crab *Chirostylus ortmanni* occupies much of this picture of a sea fan *Melithaea* sp.



Bigfin reef squid, *Sepioteuthis lessoniana* in evening light.



This was *Eila* as I bought her in 1982, sitting in the yard at Lymington Yacht Haven. My old Morris Traveller is nearby. The decks leaked so much I got soaking wet the first night I slept aboard.



Eila sailing in the lagoon at Tarawa, Kiribati, with friends Clive and Mary Stewart aboard.



The author in 1986 in Moorea, French Polynesia. That contraption on the gimballed table is how my articles were written.



Late afternoon and the contrast range between the sky and underwater was great. I shot this jellyfish, possibly *Cephea cephea*, near the surface so that the clouds showed through the Snell's window, yet the reflection of the depths outside the window registered as black. Rotating the picture 90° completed the effect.



Eila being lifted into the water at Ray Roberts Marine in Whangarei, New Zealand where I spent many summers.



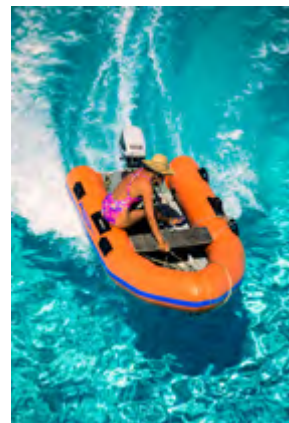
Eila sailing in the lagoon at Tarawa, Kiribati, with friends Clive and Mary Stewart aboard.



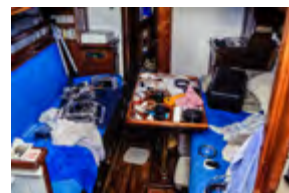
This was the third underwater camera housing I built, for a Fujica ST801 SLR and a 17mm lens. Photo © Geoff Tompkinson.



I finally replaced the cockpit in Whangarei, leaving the existing cockpit coamings in place. The two hatches are for removing the engine and for a watertight locker for petrol and kerosene. A big double bed was beneath the new cockpit. This alteration improved the quality of life aboard immeasurably.



Vicki driving the Piper 3.1m RIB we bought in New Zealand with an 8HP Evinrude outboard motor.



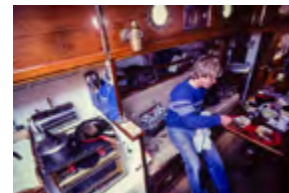
I see six different dome ports in this picture! On the left is my home-made housing for the Nikon F4 and two housings for Nikon SB-24 flash guns.



The housing I built for the Canon F1n and Speedfinder. I had the remote sensor for a Vivitar flash gun wired into the camera housing.



Here's the original cockpit; too deep, too uncomfortable and far too many places for it to leak. That Whale Gusher 25 pump got a lot of use!



1983 in the Isles of Scilly, UK, the usual mess of tools, camera housings and a film rolling machine. The cooker is a Taylors 030 paraffin cooker. Breakfast for photographer Geoff Tompkinson. Photo © Geoff Tompkinson.



Testing a new mini dome off Moorea, fortunately without the camera in the housing, the back collapsed, so I surfaced with about 20 pieces stuffed in my wetsuit. I had Tensol 70 glue aboard and was able to buy 12mm Perspex in Papeete. A week later I had repaired the housing by replacing the top plate and making a better designed, much stronger back.



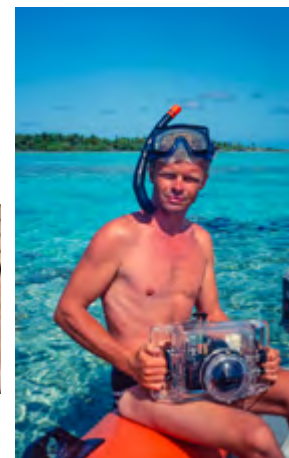
The housing I built for the Canon F1n and Speedfinder. I had the remote sensor for a Vivitar flash gun wired into the camera housing.



Vicki reading a book on deck while I am up the mast. This shot was used on the cover of Cruising World magazine.



Tobi Bernhard snorkelling next to *Eila* with wonderfully clear water.



The author in Apataki with his home-made housing for the Nikon F4 and actionfinder.



Hard corals and leather corals in the back-reef margin.



Eila sailing in the lagoon at Tarawa, Kiribati, with friends Clive and Mary Stewart aboard.



Dr Matt Ruglys snorkelling by *Eila*; you can see the outline of Vicki on board.



A much later picture of me with the Subeye Reflex underwater camera with the fabulous 13mm Nikonos fisheye lens attached.



That this old leaky boat kept me alive for 45000 miles is nothing short of a miracle. I'm sure *Eila's* beauty helped sell the many articles I wrote about sailing and diving in the Pacific. Here, Vicki and Thies Matzen are sailing in the lee of Fanning Island.



Installing the newly painted Perkins 4.108 engine while there is still a big hole where the cockpit used to be. I built the new cockpit while *Eila* was afloat in the Town Basin in Whangarei, New Zealand.



Vicki working at the new chart table after the cockpit conversion.



Eila under sail at Fanning Island, Kiribati, with Vicki and Thies Matzen aboard.

POLYNESIA ~ AN OCEAN REALM

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Inspired by the underwater adventures of Jacques Cousteau, Pete Atkinson sails into the South Pacific alone, with a head full of dreams, a hauntingly beautiful 11m cutter and a plastic sextant from a rummage sale. Entranced by the allure of the South Seas, for twenty years he pursues his quest for adventure, sailing over 45,000 miles and creating a breathtaking photographic record of Polynesian life and encounters in crystal clear waters with whales, dolphins and lots of sharks!