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BLUE ANGELS AND WHALES

By the Same Author

IORANA : A TAHITIAN JOURNAL

THE SEVENTH MAN

A TRUE TALE OF LOVE IN TONGA

COCONUT ISLAND

JOHN GRAHAM, CONVICT

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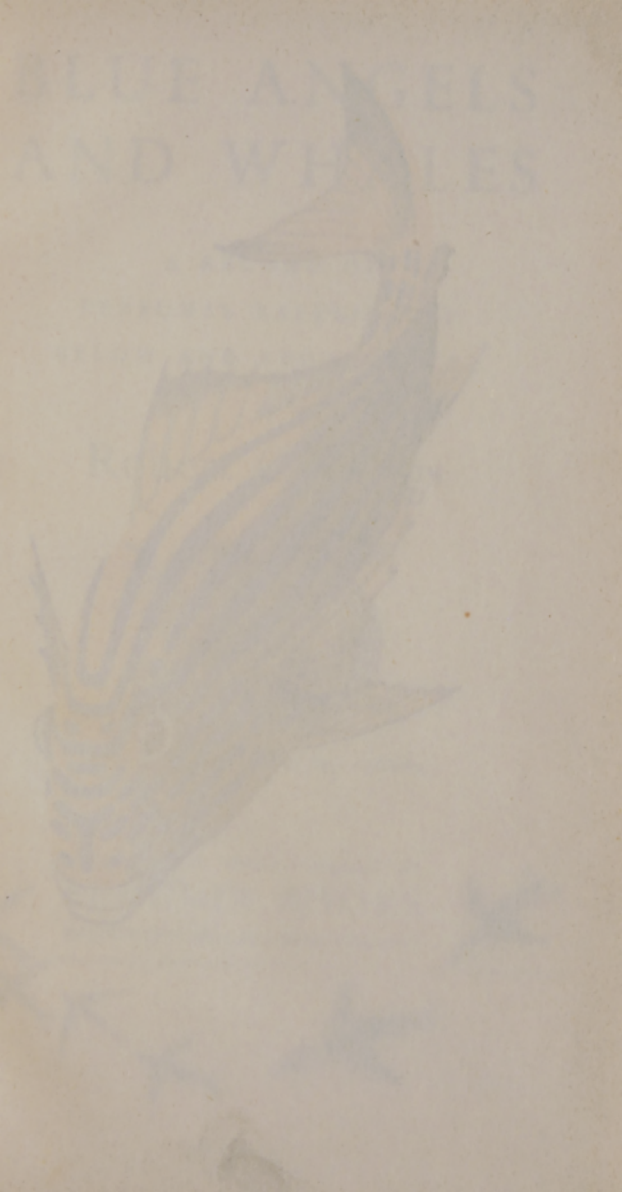

BLUE ANGELS AND WHALES

A RECORD OF
PERSONAL EXPERIENCES
BELOW AND ABOVE WATER

BY

Robert Gibbings

WITH ILLUSTRATIONS BY THE AUTHOR

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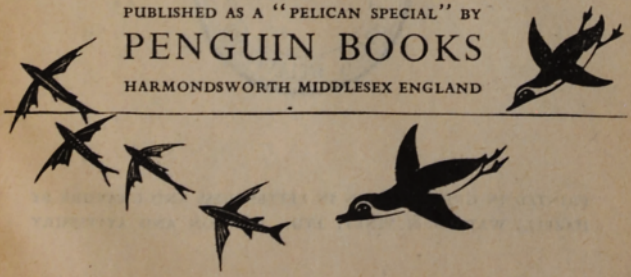

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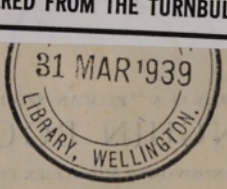

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TO

ELISABETH

Acknowledgments

I WOULD like to thank Mr. William Bridges and Dr. William Beebe of the New York Zoological Society, Mr. Edwin Whitfield of Bermuda, Mr. Allen Lane and Mr. S. Sindall of London, and the various scientists whose work I have quoted, for the help they have severally given towards making this small book a reality.

ROBERT GIBBINGS.

WALTHAM-SAINT-LAWRENCE,
BERKSHIRE.
August, 1938.

Contents

CHAPTER I

Tahiti

"YOU seem to be in a bit of a hurry," said the American Consul at Tahiti as, somewhat out of breath, I stepped from my canoe and pulled it up on the edge of the lagoon.

"I was wondering," said I, "if sharks often attack canoes."

"Man alive," he answered, roaring with laughter, "they never even attack swimmers out here; there's fellows fishing and playing about in the lagoon all day long, and never a one has ever been touched. Try a dip outside the reef and it's a mighty different story. There they'll have you before you kick twice; but in here, why, you're as safe as in your own bath."

"What about that atoll up in the Paumotus," I enquired, "where the diving was held up for a fortnight?"

"Tiger shark," he said, "got in the lagoon by accident, shouldn't have been there at all. You won't get them in here. I tell you, you can swim

all over this lagoon, and if you're minded to shut your eyes and drop asleep for a while and a shark happens to come along, he'll just steal away without as much as a flip of his tail, for fear of waking you."

This was comforting to a newcomer to the islands. Truth to tell, I'd had a bit of a scare when, looking over the edge of my canoe, I'd seen the grey snout and ugly eye of a ten-foot shark who was squinting up at me with no looks of either kindness or affection. I had been floating over the lagoon watching the multitudes of brightly coloured fish swimming in and out of the coral, and I had just about come to the momentous conclusion that, henceforth in life, a study of the reef and its associated fauna must be my chief concern, when that sudden apparition from the depths created a vacuum in my stomach, and at the same time caused me to revise my vocational plans even more quickly than I had made them.

" What you've really got to be careful of," said my companion, " is the stonefish; ugly damn brute, the dead spit of a stone on the bottom: if you step on him you'll know all about it for an hour or two, and then," he added as an afterthought, " you'll know nothing more about anything else ever again."

I'd heard yarns before about these creatures, with their spines and poison glands, but like stories of the giant octopus, I hadn't taken them to be much more than travellers' tales.

" Wear strong shoes and watch where you step," he added, " and you're in no greater danger than crossing Fifth Avenue."

Then as we moved along to the club he emphasized that no shark had ever touched a human being in Tahiti lagoon, and no coconut had ever fallen on a man's head. Thought I to myself, I hope I won't be the one to break either of those records.

Captain Muldoon was at the club.

> "*Micky Muldoon from Mulligar.*
> *With limbs as thick as a mainsail spar,*
> *Not an inch of his skin without a scar*
> *And his blood as thick as Stockholm tar.*"

"What in hell d'ye want, lookin' at fish?" he asked. "Couldn't ye see the like of them at home without travelling to Tahiti?"

"Looking for mermaids," suggested Eriksen the Dane.

"Looking for trouble," said Munro, who had suffered from coral poisoning.

"If he keeps to mermaids he'll be all right," said Dr. Jacques.

I had journeyed to the Pacific prepared to meet strange people, prepared to find all the luxuriance of the tropics, hedges of hibiscus, avenues of frangipanni and flamboyant trees, groves of mangos, guavas and bananas, and I had looked forward to native feasts, moonlight dances and all the other romantic incidents associated with the islands; but from that first day when I floated over those coral gardens I knew that henceforth my allegiance must be to Neptune rather than to either of those other classical

deities Venus or Dionysus, who, more usually, hold sway in the islands.

There were parties, of course: yes, plenty of them, and I'm not suggesting that I turned in to a lonely cot, at nine o'clock in the evening, when the moon was rising over the banana groves and the drums were beating out a rhythm for swaying hips; neither do I pretend that I refused all invitations to picnic in the valleys or bathe in the streams that cascaded down from the hills; but these entertainments became of less and less interest, and eventually were no more than occasional relaxations from the new and absorbing subject of enquiry to which I had fallen victim.

Of course, I knew absolutely nothing about these fish except that they were beautiful. They appeared more gorgeous than anything I had ever seen in my life, their shapes, their markings and their colours seeming to vie with each other as to which could be the most bizarre. Every morning while the surface of the lagoon was still unruffled, every evening when the trade wind had died down, I would spend hours drifting in the canoe, watching with amazement the under-water panorama which unfolded below me.

The longer I stayed on the islands the more enamoured I became of the reef. It did not take me many days, however, to realize that the inhabitants of the reef viewed any shadow overhead with suspicion, and that by approaching them from that angle I was missing a great many of the shyer individuals. I used, therefore, to try to meet them on more equal

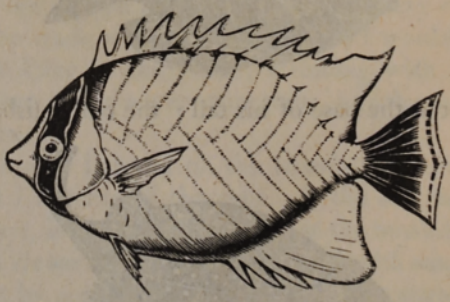
terms, by immersing myself chin-deep in the water. I then found that, provided I kept reasonably still, the fish would appear and, eventually crowding round me, would pick at the chewed-up fragments of coconut which I spat into the water.

After a few weeks I made friends with an Irishman called Carney. He had a Japanese friend called Kono, and a Chinese maid of all work called Kitchee. Kono and Carney would go fishing at night, and in the morning Kitchee would bring me any specimens whose colours suggested that they might be poisonous. Here was at least one example of the practical value to the owner of coloration which suggests unpalatability. It was through Carney that I first made close acquaintance with the surgeon fish, who carries

a lancet at the base of his tail ; the coffer fish, whose

skeleton is mostly soft cartilage and who is held together by his box-like exterior; and the vache de mer, who with his horns and large eyes strangely re-

sembles a cow. Kitchee brought them across the road to me in an old enamelled basin, and many an hour I spent in trying to register their forms and features on paper. She brought them faster than I could draw them, and though in many cases I made attempts to record the colours in actual pigment, I find that more often than not my note-book has black-and-white sketches followed by such notes as these:



"Main colour of fish eau de nil, paler on belly. Dorsal and anal fins deep orange. Tail black with bar

of middle chrome. Band on head, black with white at either side." Or again: " Head like a pig, with black band across the eye. Two broad vertical dark bands across the grey anterior portion of body, posterior third of body, tail and deep dorsal and ventral fins bright orange with jet black spot at base of tail."

One day, James Norman Hall, who lives permanently in Tahiti, suggested that I should go with him to Tetiaroa, a low coral island twenty miles to the north. It took us several days to persuade the crew of the schooner to leave the cinema at Papeete, for a new film had just arrived by mail boat, and the men insisted on seeing it several times over. Eventually, however, we did manage to get away one evening, and after sailing all night with a fair wind we woke next morning to see a long, low line of palms on the horizon. Two hours later we had dropped over the side of the schooner into the surf boat and were heading for the reef.

The entrances to the lagoons vary at different islands: some are wide and easy of negotiation, as at

Tahiti and Moorea ; others have a narrow channel, in and out of which the tide surges, as at Maiao; while at many of the low atolls there is no boat pass at all, and the only way of reaching land is by surf-riding the reef. This was the case at Tetiaroa, and as we pulled towards the island, rising and falling with the swell, we could see at one moment a white trail of foam as the wave broke over the reef ahead, at the next a yawning abyss of water through which we were rushing at a most unpleasant speed towards a bristling wall of coral.

As we neared the reef and the rowers hung on their oars, waiting for the right wave to carry us over, we were greeted by a party of islanders who had waded through the lagoon to meet us. They stood in the breaking water on the edge of the reef ready to lend a hand, and well it was for us that they did so, for the chosen wave lacked force, and during one long agonising moment we remained, suspended between sky and sea, balanced precariously on the wrong side of a jagged precipice. Fortunately a rope had been thrown and held, and thus only were our children rescued from orphanage. The next mountain of water carried us to safety, and we were towed in state to the shore.

Tetiaroa is typical of the seventy or more atolls which lie to the north-east of Tahiti ; that is to say, it consists of a number of islets rising to a few feet above the general level of a ring of coral which encircles a lagoon. Outside this ring is an area of calm water which is again enclosed by a barrier reef of

coral on which the surf is for ever breaking, and beyond which the sea sinks precipitously to almost unknown depths. There are therefore two lagoons, a central one whose water is often brackish and an encircling one whose water is clear and sparkling as crystal; and it was when making our entry into the latter of these that we so nearly met with disaster.

This island, on which nothing more than coconuts now grows, was at one time part of the ancestral property of the Royal House of Tahiti, whose chiefs used it not only as a place of quiet and rest from political disturbances, but also as a resort where the ladies of the court could practise the fashionable art of fattening. Legend also hints that King Pomare I used to retire there to hold his "heathen orgies" when, owing to the influence of the missionaries, it was no longer politic to continue such observances on the main island. But over and above fattening females and heterodox theology, the island was famed for fish; so important, indeed, was this item of its produce considered, that by royal decree no bread-fruit might be grown on the atoll. In this way the inhabitants were compelled to bring their fish to Tahiti to barter for the fruit. To-day the island is almost uninhabited, but the glory of the reef remains the same.

Tetiaroa, atoll of five islets, what do I remember of it? Palm trees, of course, and a thick fern-like scrub growing everywhere. Not a spot of land more than a few feet above sea-level. There was a white tern that flew threateningly at our heads, but never

came quite close enough to be hit. There were mosquitoes at night and flies in the daytime, surely the most persistent flies God ever made. Over and above all other memories and impressions there were fish.

CHAPTER II

London

WHEN, contrary to all good sense, I eventually sailed from Tahiti, I had but one big regret—the reef I'd left behind me. Throughout the journey home, throughout the days that followed, my mind was ever harking back to those clear waters and all that they contained.

With the idea, then, of building up a few atolls of scientific knowledge in the ocean of my ignorance, I visited again and again that edifice at South Kensington which is dedicated to Natural History. Within those walls I met with a perfect hurricane of information, an encyclopædic storm in which sharks, turtles, squids, swordfish, angel fish, sponges, corals and starfish ricochetted off each other and gyrated around me. Many a day and many an hour I flattened my nose against the glass-fronted cases, learning of the little fish *Pomocanthus imperator* who, in his youth, wears a livery of white concentric circles on black, and then by varied transformations eventually changes it to parallel yellow lines on brown; of European eels who

must travel to the West Indies to celebrate their nuptials, of remorras who attach themselves to sharks by sucking-disks, and travel the world in such grim company, and of *Fierasfer*, a small eel-like fish whose romantic notion of life is to insert himself within the hinder end of a sea slug's gut, and only emerge for food and exercise. There was no end to the diversity of habit or strangeness of taste.

As time went on I got hold of various scientific treatises. Professor Reighard, in his paper from the Tortugas Marine Biological Station, proved that fish not only recognize different colours, but that they have memory. He showed, for example, that when " an inconspicuous fish which serves normally as the food of the grey snapper is given an artificial warning colour and at the same time rendered unpalatable it is, after a brief experience, no longer taken as food." His experiments need not concern us here more than to say that the normally inconspicuous fish were dyed vermilion, yellow, green, sky blue and purple, and filled with such unsavoury condiments as red pepper, strong ammonia or carbon disulphide. It was observed that within a very short time each colour became associated in the fish's mind with certain unpleasant characteristics just as our minds have, through remote experience, become apprehensive of a certain blueness on beefsteak, or redness in a wayside berry.

Dr. C. H. Townsend, in *Zoologica*, Vol. IX, No. 9, published by the New York Zoological Society, describes the various changes in colour which have been

observed in the fish under his care. Speaking of the Nassau Grouper he says: "Eight phases of coloration are sometimes observed. In one the fish is uniformly dark; in another creamy white. In a third it is dark above, with white underparts. In a fourth the upper part of the body is sharply banded, the lower pure white. A fifth phase shows dark bands, the whole fish taking on a light-brown coloration, while in a sixth the fish is pale, with all dark markings tending to disappear. The seventh phase shows a light-coloured fish with the body sharply banded and mottled with black, while in the eighth the body is dusky above, white below, with a median black band from head to tail."

The same writer describing the Blue Tang says: "Two striking phases of coloration are assumed, one a dark blue, the other a creamy white. The blue phase is the one usually seen, since it is assumed whenever the fish is in the least disturbed by visitors passing the tank, and this lasts all day long. The other phase is seldom seen until evening, when the fish may settle down toward the white sand bottom and take on a ghostly whiteness, the blue colour remaining only as a narrow border on the fins. Any disturbance instantly brings back the blue colour." These are but two examples from about thirty species which he has described.

But besides the fish I became intensely aware of that variety of sea anemone which can secrete for itself an external skeleton of lime, and which is known as the coral polyp. In some cases no bigger than a pin's

head, in others having a diameter as large as a three-penny bit, while in a few cases approximating to the size of a saucer and the appearance of an inverted mushroom, this organism, so simple in construction that it consists of hardly more than a digestive cavity fringed with tentacles, has yet built up innumerable islands in all the tropic seas, and vast areas of protecting reef along the shores of continents.

Each subject that I glanced at brought others into view; the common blue mussel opened up vistas of pearl-oysters and giant clams, the trumpet shell of our own shores led the way to the great conch, whose deep sound I had heard so often at night when the Tahitian fishermen signalled to each other on the reef; even the worms who chew the dead coral and pass it from their bodies in fine particles commanded interest and gratitude, for what would tropical isles be without their sand?

Weeks passed by, and months, and even years, until one day in the summer of 1937 I leaned over a ship's rail and watched the suburbs of Liverpool and the pier at Birkenhead fade into a mist on the horizon, as we headed for the west and Bermuda.

Before sailing I had presented myself again at South Kensington with the idea of thanking certain officials for their help in the past, and of offering my services if there were any small specimens I could collect which would be of use to them. One of the men, apparently quiet and reasonable, was immediately interested and begged me to come with him to his room. Down we went by hidden staircases and

secret passages through endless corridors and up flights of steps, so that I shouldn't have been surprised if we had emerged in Stepney or Cheapside. Instead of that we found ourselves at the entrance to one of the new halls, not then open to the public. He told me that his collection was almost complete, that it only wanted three specimens, that they were all to be found in the western Atlantic, and that if I could and would be good enough to procure them for him I would earn his undying gratitude. Needless to say, I asked for details and promised my best efforts.

Speaking without emotion, he told me that what he wanted was three whales; but seeing my face lose colour he added quickly that if there was any great difficulty about shipping the carcases, he would be satisfied with the heads and skeletons. When I pointed out that I was travelling light, and that my sole equipment was no more than a pair of bathing shorts and a butterfly net, he reduced his demands to three dolphins.

Now the dolphin has great misfortune in his nomenclature; for the creature commonly called by that name, and famed among sailors for its dying colours, is not really a dolphin at all, but a scaly fish of the family *Coryphenidae*. The true dolphin bearing the escutcheon of the *Delphinidae* is a mammal, who, like the whales, the seals and the dugongs, has taken to an aquatic life because it suited him best. He has lungs like the rest of us, and the bones of his flippers are very much more akin to our hands than they are to the fins of a fish. Of his tribe are the porpoises who

pursue their leisurely and sportive way about our shores. Fortunately for me, however, it appeared that the specimens required had their habitat considerably south of Bermuda, so that the chances of my needing another suitcase became considerably reduced.

No man starts alone on a long sea journey without optimism as to who may share his table. On previous voyages I have been for the most part lucky, but this time it seemed that I was to be haunted by that joke in the museum, for sitting opposite to me was a leviathan of a man who ran out a line of 58 inches round his waist and turned the scale at 24 stone. For the first time in many years I felt small and humbled, with my miserable six foot and eighteen stone dwindled to an appearance of chronic malnutrition. Before that man came aboard carpenters had made special adjustments to his bunk; when he put foot on the gangway all other passengers were held back till the "all clear" informed us that he was safely on deck.

At La Pallice, the port of La Rochelle, where we called for a few hours, he suggested that we should share a taxi to the town. To this I agreed, and being

invited to enter the cab first I did so, taking up as little space as possible in one corner. Then he got in. Placing himself in the centre of the seat, apparently oblivious of my presence, he appeared to expand in all directions; his whole frame seemed to inflate, and as I sank farther and farther into the upholstery the springs of the cushions entered deeper and deeper into my anatomy. He opened his knees and spread his feet; he put his hands on his hips and his elbows reached across the whole width of the car, so that my view of the countryside was totally obliterated, and I had nothing left to admire but the pattern on his tweed jacket.

We had no French money. The driver was therefore instructed to take us to a bank, and he proceeded to do this at a speed only attained by French taxi drivers, taking three unlevel crossings at the height of his form. After the first I was speechless, after the second I was breathless, but after the third I was semi-conscious, and seemed to have lost all identity, not knowing whether I had been absorbed by my companion or by the car. On arrival at the bank we found the door locked, and through the grille we made out portions of a notice informing us that the bank had been closed for 48 days or would be shut for 48 hours: we couldn't tell which. There was nothing for it but to drive back to the ship. I do not remember any more.

When eventually I became conscious again and had all an infant's delight in recognizing my own limbs, I lay in a deck chair and soliloquized to myself about

the ship. Where had the oak of the rails and the pine of the decks come from? How many years had they taken to grow? In what dense forest? I thought of the rain that had fallen on them and dripped from their leaves, the insects, blindly purposeful, who had lived in their bark, the ill-mannered birds careless of what lived below.

And the metal of the rails, of the plates. Whence was it dug? Whose were the hands that wielded the drills? What men tended the furnaces? Had they wives, children, complexes; were they faithful to their wives, were their wives loving? While they tended the monstrous hammers beating out these plates, were their hearts quickening at the thought of some clandestine meeting, or had they the pains of jealousy shooting through their bellies?

And the sea, "so charming, isn't it?"—on its surface. How romantic the spray in one's face, the ozone in the air, the flying fish breaking from the waves at the bow: but, at sixty feet down, how different; and at six hundred, and at six thousand—giant squids fighting with sperm whales in the dark shades. . . .

"Sun's over the yard arm," said the purser, appearing behind me.

"Come and join us," called Miss Angel as we set a course for the bar. "Mickey is telling us a wonderful story."

Mickey was always telling wonderful stories. He had a broken nose and a drooping eyelid which gave the effect of a perpetual wink, and he was as thin and

tough as a wire brush. He'd served his time in sail, been engineer on a tramp, then took to mining and now had the idea that once he got to Callao his fortune was made.

"What's the yarn?" I asked as we sat down.

"Just told it," said Mickey.

"Tell it again."

"Only happened once," he replied.

"I think it was perfectly awful," said Miss Angel.

"What was?" we asked.

"He fell overboard and the captain wouldn't pick him up."

"He did pick me up," interposed Mickey.

"He was rude to you," purred Angel.

"He called me up on the poop and he said, 'You been overboard?' I said 'Yes, sir.' Then he said, 'Who the hell gave you permission to leave the ship? You go aloft again,' he said, 'and dry your clothes and wait there till I give you orders to come down, and don't try any more ruddy diving tricks.'"

"An absolute beast," said the Angel.

"A damn fine man," said Mickey. "When we arrived in port he gave me half a crown out of his own pocket and said, 'You go ashore and have a ruddy good swim at the baths.'"

Angel purred, and sipped her "sidecar." She was buxom, blonde, and generally wore blue, so we called her Blue Angel. On the first evening out, as we leaned over the rail together, she had told me how interested she was in Art, in woodcuts particularly, had indeed done some herself—or was it lino cuts?

She had stood closer and let her arm touch mine: our feet met on the rail, too. She did *so* admire artists. Did I understand? She did so admire tall men, and men with beards. Did I only draw fish? Did I ever draw people? She would so like to be drawn. Did I understand?

CHAPTER III

Bermuda

THE ship ploughed on and the weather grew warmer. Blue Angel purred to each officer and passenger in turn. She did so admire sailors, engineers, doctors, business men. It must be wonderful to live on the sea, in the great wide spaces, in a hospital, in a city. Did they understand?

One day a family of false killer whales, with a young calf close to its mother, showed their velvety backs for a few moments on our beam, and I thought of D. H. Lawrence's lines:

"There they blow, there they blow, hot wild white breath out of the sea!
And they rock, and they rock, through the sensual ageless ages
On the depths of the seven seas . . ."

We passed a manta or devilfish asleep on the surface of the water, the flying fish broke in all directions from our bows, but otherwise the sun rose and set on

a calm sea, and the ship moved steadily westward day and night, while the passengers' lives were circumscribed by a perimeter of meals and deck quoits. On the fourteenth day we reached Bermuda, and almost before the anchor had stirred the sea floor I was appropriated by the uncrowned monarch of the island.

We reached the Yacht Club at 9.30 a.m. By 9.33 I had been made a member, by 9.35 we had had a drink, by 9.45 we had had two more. At 10.15 I was poured on to the train for St. George's, where I found my luggage had already been loaded free of customs inspection. But on arrival at the biological station where I was to work, a more serious vein of thought was awakened in me, and little by little I settled down to the main business of my travelling.

As I have already said, it was my ambition to get on closer terms with the fish, and to meet them on their own level; and one of my chief reasons for coming to Bermuda was to make use of the diving apparatus belonging to the Marine Research Station. I was anxious, too, to make drawings under the water, and when first considering this possibility I had thought of taking down copper plates prepared for etching; but when I mentioned the subject to Cyril Pearce, a colleague of mine at Reading University, he suggested that I should try working on sheets of xylonite, a waterproof substance not unlike celluloid, which when roughened with sandpaper takes a pencil as pleasantly as paper. I had therefore brought a supply of this material with me, as well as some thick sticks

of graphite, which are usually supplied as refills for sketching pencils, but instead of their normal wooden casing, which would have come to pieces in the water, I fitted them into rubber tubing, so that my hands would remain clean and smudges on the drawings be avoided.

The diving apparatus consists for the most part of a helmet, a hose pipe and an air pump, the principle being that the water cannot rise inside the helmet provided the air pressure is maintained by the man at the pump. The surplus air escapes where the helmet rests on the shoulders, so that only the diver's head is enclosed in a cylinder of air, while the rest of the body is in contact with the water. Enough weight is hung on the helmet to overcome the natural buoyancy of the body, and a pair of bathing shorts and strong-soled shoes complete the outfit.

My first dive was an experimental one from the pier. The sea was rough, the water was cloudy and there was a strong current running. As I stepped off the ladder and staggered into the deeper water the noise of the air pump echoing down the hose pipe seemed deafening, and the waves splashing against the window of my helmet prevented me seeing anything either above or below the water. I wondered why I had ever left home and heartily wished I had not done so. Then a couple of steps took me completely below the surface, and I entered a new world. My ears ceased throbbing, I breathed easily, I forgot the noise of the pump. It was like being in some great cathedral lit by pale-green glass; and I had

lost all sense of weight—an achievement! Yes, it really was true, the fish were completely unafraid, and they scarcely deigned to notice me as I walked about amongst them. But as I reached deeper water my feet seemed to lose their hold on the ground. I could pat it and paw it with my toes, but except when I skidded down a slope I could make little or no progress. Only by striking out vigorously with my arms, as in swimming, and using my drawing-board as an auxiliary fin did I manage to return to upper air.

On explaining my difficulty to Edwin Whitfield, who was in charge of land operations, he produced about 20 lb. of lead piping which we moulded into a waist belt, and thus accoutred I descended again. This time I was able to move about below as easily as one walks on land, in spite of being weighed down by some 120 lb. of metal. I tried drawing also, and found that though I could not make elegant sweeping lines against the pressure of the water, it was nevertheless possible to make notes of sufficient accuracy to be worked on afterwards.

All was therefore in readiness to begin work. On the first calm day we headed the launch for the reefs in Castle Harbour, and I was soon down below. The fish crowded round me, hundreds of them. There were Blue Angels and Yellow Grunts, Sergeant Majors, Trigger Fish and Porgies, Four Eyes and Demoiselles. The Angels came and looked through the window of the helmet, the Porgies and Slippery Dicks swam between my legs, and the Sergeant

Majors nibbled at my shoulders. I often had to wave my arms to drive away these insistent seekers after food and knowledge. In and out through the crevices of the coral and under the overhanging brainstones they came and went, moving without apparent effort, while the blue and gold clumps of iridescent weed swayed with them in the swell. Several days were spent in this locality, where the great spheres and hemispheres of brain coral raise themselves from the sea floor one on the other in phallic form.

We put down fish traps, too, of wire netting, and it was always a thrilling moment when they were hauled to the surface and the catch emptied into a large tin bath kept in the launch for its reception. Sometimes we would get a dozen or more individuals, among whom there might be three or four different species; at other times it might only be a single big rockfish whose well-filled paunch suggested only too clearly why he was alone. On one occasion we had positive proof of our suspicions, for either from nerves or the movement of the launch, a two-foot groper was unable to retain his appropriation, and, half-way home, we discovered a smaller fish in the tank beside him.

Outside the harbour the coral growths are different. Near St. Katherine's Point the soft branching gorgonias predominate, covering the sea floor with their fan-like growths, while farther out to sea rugged rings of hard coral rise up from the deeper waters. Dropping down 20 ft. into the centre of one of these, I could see in all directions romantic alley-

ways opening out to the sea beyond; the water was clearer than in the harbour, and all life sparkled with iridescence. Each time that I went down I made a drawing: there was no need to wander about and search for a subject; wherever I looked there was something new to draw. The strange thing was that when I came to the surface I found that during my time below I had forgotten all rules of perspective and other dicta of the art schools, and that I had drawn everything in the proportion of its importance to me. In the upper world of air we have accustomed ourselves to make subconscious adjustments in our vision, so that an elephant seen a mile away still conjures up an idea of something large, though its actual dimensions on our retina may be no bigger than those of the fly on our boot. Under the water all these adjustments vanished, and if a particularly interesting small fish passed in the distance, I found that in my drawing it was depicted as very much larger than some dull fellow twice the size who happened to be near at hand. This suggests a parallel with primitive art, where objects were drawn on cave wall or canvas according to their importance to the artist, and not according to mathematics and laws of optics. Doubtless, when I have dived more often, I shall begin those accursed adjustments of reason, and may even, in time, write a textbook on the subject. God forbid!

CHAPTER IV

The Reef

BEFORE we go any farther we must consider in rather more detail what this amazing organism called a polyp may be, and how it is that through its agency not only have some of the most romantic places in the world been built, but some of the greatest shipping disasters have occurred. All over the warmer waters of the Pacific Ocean, from the East Indies and Great Barrier Reef of Australia to the Paumotu archipelago, all through the West Indies, in the Indian Ocean and in the Red Sea we find this ubiquitous organism building up isles of enchantment or reefs whereon proud ships are wrecked. Only on the western shores of the great continents is it absent, for there flow cold currents from the poles.

The polyp itself is, as we have said, a form of sea anemone, similar in many ways to those of our own shores, but having the power to abstract lime from sea water and deposit it as a calcareous skeleton about its base and sides, as well as forming radiating septa

which act as protection for the soft tissues within. It differs, however, from the anemone in that it reproduces by budding, very much as a tree shoots

Cross-section of a polyp of coral known as *Lobophyllia*, reproduced direct from the coral itself.

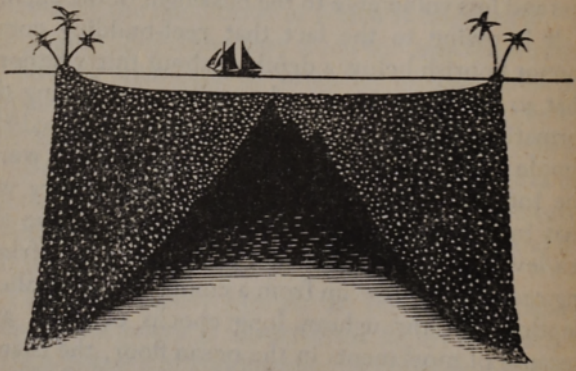
forth its branches, and it is in this way that whole colonies are formed, which are the chief elements in reef construction. As the oak, the ash or the chestnut throws out its branches, each after its own kind, so also the various corals send out their buds in a manner characteristic of their species; but just as the oak trees on windswept coasts differ from those in sheltered parks, so also each coral is automatically pruned by the conditions in which it finds itself. In deep water long stems may reach towards the surface, as straight and bare of branches as the pollarded poplars of France, while in rough water where the surf breaks on the reef the very same variety may be as compact in form as the clipped shrubs that decorate our public gardens. Only in the sheltered shallow waters do we get the richest foliation and the full glory of unimpeded growth.

Though intensely prolific in favourable circumstances, the polyp is nevertheless highly sensitive to certain changes of conditions. A heavy tropical rain storm may, by diluting the surface of the sea, kill all the growing tips of the coral that come within its

reach. Similarly, an unusually low tide which leaves the reef exposed for a few hours, as happened recently in the Red Sea, or a sudden reduction of sea temperature such as happened in Bermuda in 1901, may destroy the life over a wide area. Silt is one of the coral's greatest enemies, and the form and structure of the growth of the same species of coral varies considerably in overcoming this menace. It is easy to imagine that where a flat, saucer-like growth finds itself in a muddy area, the edges of it, which are closest to the mud, will be retarded in their development owing to the cilia of the polyps being compelled to spend overtime in removing the debris rather than in obtaining nourishment for their owner. In this way the more centrally situated polyps get a lead, and the general shape of the colony becomes convexly curved, thereby automatically rendering itself less and less vulnerable to the onslaught of the enemy.

It is owing to the fact that reef-building corals cannot flourish below a depth of about thirty fathoms that so much controversy has arisen concerning the formation of reefs and atolls. Darwin proposed the simple explanation that each atoll is now, as it were, the tombstone of a former island. His theory was that in a past age these islands were high above the sea-level, and that they were surrounded by a fringing reef which grew up from a comparatively shallow depth. But throughout long epochs of time, and because of movements in the ocean floor, the islands were gradually subsiding, though at such a slow rate that the coral could all the time keep growing at sea-

level. Where the water was constantly changing, as on the outer edges of the reef, there the coral grew most strongly; and in course of time an ever-deepening lagoon was formed inside the reef and around the remaining peaks of the island. Finally those peaks sank slowly to oblivion, and the waters of the lagoon flowed over and covered all traces.



This theory was generally accepted until Sir John Murray, after his voyage in H.M.S. *Challenger*, 1872–6,

put forward the converse opinion that the coral grew not on a sinking island but on submarine peaks or mounds which had for the most part been elevated by volcanic agency.

Professor Stanley Gardiner of Cambridge suggests that other corals existing in deep waters, though not reef builders themselves, may have brought about accumulations of detritus which would in time be near enough to the surface for the reef builders to gain a footing.

Professor A. R. Daly of America has calculated that during the great Ice Age the general level of the equatorial seas was about thirty fathoms lower than it is to-day, and that it may have been at that time that the foundations of many atolls were laid.

It is probable that each of these theories, and others, may hold true for different islands; for as Dr. C. M. Yonge, who led the Great Barrier Reef Expedition of 1928–9, says, "It is certain that coral reefs have not all been formed in the same way."

Perhaps it is more interesting for the layman to realize that reefs and islands are actually being formed to-day just as they were yesterday. It is not only the exuberant growth of the living polyp, which ramifies everywhere, that builds up these great structures, but the dead coral also. Broken by the waves and reduced to powder by boring molluscs and worms, this serves as cement to bind the whole together, and, burying themselves in it, there are shellfish who in turn contribute their shells to the general structure. Over it all is deposited a gentle

rain of sediment from the sea water. One day, when the living rock has reached the surface, a floating coconut will be arrested in its travels and, taking root, will throw up its leaves. Then begins another cycle—the leaves of the tree will fall and rot, forming humus in which other seeds, borne by sea and wind, will take root; they in their turn will die and form further soil; and so a new world will come into being, on which all the romance and tragedy of human life will find a setting.

CHAPTER V

The "Seabird"

ONE day in the launch with Whitfield I asked what had brought him to Bermuda.

"Fish," he replied, "same as yourself."

"God bless us," I said, "what do you want with fish? I thought you were a naval officer."

"Second Officer in the B.I. once, but I wanted to be free; so did Dunch, shipmate of mine, so we cashed in and bought a yacht."

"And sailed to Bermuda?" I asked.

"Half-way, and got wrecked."

"Go on," I said; "tell us."

"Nothing to tell. 'Twas Dunch's idea, caught me in Antwerp, just back from four years' sweating in the East. He said let's buy a fishing boat, sail her to Bermuda, catch fish and make money."

I thought to myself, I wish to heaven he'd catch more of these coral fish.

"We found the boat we wanted in Cowes," he con-

tinued, " after I'd been to every fishing village on the east coast. The *Seabird*, forty-one years old, and sound, yawl rigged, forty-eight feet over all, twelve feet beam. We lived in her fo'c'sle and worked like hell from dawn till dark, insulating her main cabin and installing refrigerating machinery in the owner's cabin. For the voyage to Madeira she was rigged with a heavy free-footed trysail with a twelve-foot gaff, and a jib-headed mizzen of the same brick-red canvas.

" God, it was a cold grey day when we headed down Southampton Water, wind north-east. We were logging 6½ knots. Wind freshened next morning and everything was perfect. Making water a bit fast, we thought; but no matter. What we didn't know was that she'd been a year in the mud and that under the copper there wasn't much else but that same mud in her seams. Then we had a south-east gale. It blew all night; we took turns at the pump and tiller, but in spite of continuous pumping the water in her bilge seemed to get no lower. Next morning the water was over the floorboards and the pump choked: only thing to do was run for Falmouth. What a glorious sail that was! She tore north before the gale with three reefs in the mainsail, the great waves racing up astern; from the trough we could look back and up at great mountains of water; then that wild exhilarating swoop, and we were away up in the breaking crest itself.

" We reached Falmouth next morning, and when we got the copper off you could see daylight through the seams."

"I thought you were wrecked," I said, disappointed at this tame ending.

"We were, later on," he said. "I've got the log at home: you can see it if you like."

The rest of that morning I spent drawing a group of golden brainstones around whose base variegated weed waved like heraldic mantlings, but while at work I found an increasing difficulty in keeping my feet, and I seemed to be thrown about without consciousness of any outside force. Then the weed and the soft corals appeared to sway more than usual, and even the fish were "sidestepping" in an unusual way. I began to wonder if anything had gone wrong with the air supply, but as I felt all right I continued with the job. Next time I looked up, the water had become murky and the visibility so reduced that there was no good in staying down longer.

"What's up?" I asked, when at the top of the ladder they had removed my helmet. "Everything's going round down below, and it's thick as a London fog."

"Reckon it's the wake of that tramp out there," said Whitfield, pointing seawards.

"No wonder you left steam," said I; "she's gone and spoiled a good drawing."

That night he continued his story of the *Seabird*.

"Fill your glass," he said, as I sank into his best armchair. "Where was I?" he asked, as he helped himself and strengthened the ration I had poured for myself.

"You'd just arrived in Falmouth," I replied, "with your seams like a Venetian blind."

"Well," he said, "I'll start again where we left Falmouth a week later, with a smoke screen belching from our engine-room. Do you know, the damn engine seized before we were past the Lizard, and what's more, do you know we were heartily glad of it, both of us, for we'd had enough of machinery: what we wanted was to ruddy-well sail.

"First night out the wind was fair and fresh," he continued, consulting his log, "and we reduced our distance to Madeira considerably, but by noon of next day we were lying in a flat calm, and it wasn't till sunset that a breeze came up from the east. Then soon after dark we picked up Ushant Light, the wind freshened rapidly, and soon we were tearing along on a south-south-westerly course with our lee rail under water. It was grand sailing, by God it was, and we could see ourselves crossing the Bay in record time. It must have been about eight o'clock when I relieved Dunch at the tiller. There was some question of whether we should shorten sail, but the temptation to drive her was too strong, so I settled down and had four of the most wonderful hours of my life: almost standing on the lee side of the cockpit with the tiller hard against my chest and the old *Seabird* riding like a gull. I little guessed 'twas by way of being her swan song.

"As the night wore on the wind strengthened until it was blowing a gale from the south-east: several times I almost turned Dunch out to shorten sail, but the temptation to carry on was too strong. But at midnight we daren't do so any longer, and there was

nothing for it but to down mainsail and heave to, under storm jib and mizzen. All next day we lay hove to, and it blew a steady gale from south-east. The seas were tremendous and we shipped a few heavy ones, so we decided to try to bring her more nearly head on by rigging the sea anchor; but the line carried away, leaving us wallowing again in the trough of the sea. We then slung the kedge on the foot of the squaresail and paid it out ahead with a bridle on the yard, but it didn't help her much. After that the Bumpkin shrouds carried away, so we lowered the sail and lashed it over the cockpit, where it did more good by keeping out the seas which were breaking aboard all the time.

"Some time during the night our improvised sea anchor carried away and, to add to our troubles, she was leaking again. By morning the water was six inches above the cabin floor. It was impossible to keep dry; streams of water fell on us constantly as we lay in our bunks. Our eating, too, had been a bit sketchy, and I'd foolishly had breakfast from a tin of pork and beans left over from supper Gosh, that laid me out good and proper—some sort of ptomaine poisoning. All that day we lay while the gale still blew. I remember every second of it. Next morning a German steamer came close by and wanted to take us aboard, and it took us the hell of a time to make them understand we didn't want to go.

"Soon after they'd plunged away on their course the end of our main halyards went, and Dunch had to go aloft and fetch it down. I was too weak to be of

much use. After midday the wind had gone round to south-west and had moderated, so Dunch got sail on her and off we went again, but the effort was short-lived, for by four-thirty there was a gale from the south-west with a wicked cross-sea, and there was nothing to do but heave her to again, this time under foresail only. Blowed if it didn't blow clean out of the bolt ropes, with a report like a cannon. After that we could do nothing but let her lie, so Dunch got a primus going and we had some tea, well laced with rum. That reminds me," he said ; " fill your glass."

After a few moments' interlude to crack a bit of ice and consider our present comfortable situation he went on. " That next night was a mighty long one, and the day after there was still that gale from the south-west. 'Twas becoming monotonous, to say the least of it. It was disheartening, too, because all the time we were drifting steadily back, and the one thing we were determined on was not to turn and run for home. We had only a double-reefed trysail on her, and damned if the sheet of that didn't carry away during the afternoon. At this time I was lying in my bunk too ill to be of any use, but I remember, it must have been about midnight, when Dunch came below. He had hardly climbed into his bunk when there was a roar of rushing water, and next thing I knew was that I was flat on my face against the ship's side, pressed down by a huge weight of solid water. I remember thinking calmly enough to myself, ' So this is the end.'

" Gradually she righted herself, but we were in

bad shape, for she was half filled with water, and with every lurch it charged about. I don't know how I got back in my bunk, but I remember Dunch piling on the sodden blankets and greatcoats. I couldn't move an inch, and I can still feel their weight.

"Things were worse on deck, for the mizzen mast had gone, the dinghy, skylights, fo'c'sle hatch and parts of the bulwarks were washed away—in fact, the deck was completely cleared. Dunch then set to work to pump her out, but the pump kept choking, and each time he cleared the suction he had to go completely under water.

"Next morning the wind had eased a bit, and Dunch got the trysail up with the intention of trying to make for land, but when he went to take the tiller he found the rudder had gone, so there was nothing for him to do but pump; and as I lay in my bunk I watched the water rush from side to side of the cabin, gradually demolishing everything. It broke out the drawers and lockers under me and began to steal the covers off me. With each roll I felt the framework begin to give, and the cross-boards supporting the mattress were washing out one by one. At this point Dunch logged 'Decided to abandon ship,' but I'm blithered if I know how he thought he was going to do it."

I interrupted here to ask why there weren't more steamers on the route. "Blown out of the course," he replied; "too far west and south for the steamer lines."

But as it happened a steamer, also blown out of

her course, did come along, a Spaniard loaded down with coal " bucking her way slowly south, with green water coming over her fo'c'sle at almost every sea," and somehow these unfortunate mariners were got on board. The final entries in the log, of which a facsimile is shown, speak for themselves.

10 *a.m.* Pump jammed, unable to clear same. Commenced bailing out with bucket.

Noon. Distress signal hoisted.

Decided to abandon ship, as she was in a semi-waterlogged condition and Dunch was unable to keep the water under. Whitfield still laid up with diarrhœa and very weak.

2.30 *p.m.* S.S. *Vasco* arrived and sent boat to our assistance.

Sea cock opened and bilge suction pipe holed before abandoning ship.

E. S. DUNCH.
E. WHITFIELD.

Suffice it to say that no sooner did these two lunatics reach England than they purchased another ship and, setting out again, reached Bermuda in safety.

Dec 23rd. Resumed pumping out. Vsl. laying to under Trysail.
10.0 AM. Pump jammed, unable to clear same.
Commenced bailing out with bucket.
Noon. Distress signal hoisted.
Decided to abandon ship as she was in a semi-waterlogged condition & Dennch was unable to keep the water under.
Whitfield still laid up with Diarrhoea & very weak.
2/30 pm. S.S. VASCO arrived & sent boat to our assistance.
Sea cock opened & bilge suction pipe broken before abandoning ship.

E. A. Dennch.
G Whitfield.

CHAPTER VI

Queer Fish

FLOATING about the surface of the warmer waters of the western Atlantic are patches of sargassum weed. Coaxed by wind and drift into long parallel lines which stretch away on either side of the ship, these yellow sponge-like clumps must be familiar to every traveller in those seas. But how many people realize that each separate piece provides a home for numerous small fish and crabs who travel in each other's company and trust to those frail tendrils, leaves and berries to complete the cycle of their lives?

Out of scarcely more than a bucketful of this weed I shook at least two dozen fish, and ten times that number of crabs, shrimps and worms. Most of the fish were the long, narrow pipe fish, closely related

to the better-known sea-horse, but without his arched back and curling tail. One was a small trigger fish and two were slate-coloured midgets with a bright silver patch on their bellies. The most interesting of all was the sargassum fish, who takes his name from the weed he lives in and whose appearance he imitates so well. His disguise is as perfect as that of the little Indo-Pacific mangrove fish, which can hardly be distinguished from the dead leaves of that tree which float in the water, or of the young fish described by Dr. Th. Mortensen, which, in the Bay of Panama, swim among fragments of driftwood and can so simulate the appearance of the wood that even when they are both caught and put in a dish of water together they can scarcely be discerned apart.

Only by shaking the sargassum fish from the weed was it possible to discover his presence, for his shape and markings blended so well with his surroundings that the closest scrutiny failed to find him.

Transferred to the aquarium he had the same stealthy habits as the angler fish whom I had once seen capture his prey. I remember, as in a nightmare, the sinister expression of that yellow toad-like creature when, fixing his eye on a small fish who had strayed too close to his domain, he had slowly stalked him, moving step by step on his flippers over the rock. There was absolutely no emotion portrayed, but the manifest certainty of success was almost terrifying. The victim seemed hypnotized and made no effort to move until his destroyer was close upon him;

then, as the angler lifted the rod which lay along his forehead and swept its tasselled end through the water, the little fish moved forward as if to enquire—

snap! Quicker than human eye could see, it was engulfed, and the same deadly expressionless stare of the angler told nothing. Only the twitchings of the sufferer inside his stomach betrayed the fact that the final act of the drama had been accomplished.

While on this dismal subject it might be well to mention the great Moray eel, who in both the Atlantic and Pacific Oceans grows to a length of eight or ten feet, and who lurks with mouth wide open in the crevices of the coral reefs, ready to snap its incurved teeth on any unwitting visitor. In the Pacific this eel is a far greater danger to the pearl divers than sharks, with whom they can deal; for should a groping hand be caught inside those jaws there is little chance of release, and drowning must be the inevitable result. Only the strongest lungs can hold

out till the grip is momentarily loosened, preparatory to a firmer hold, and only in that last split second of time is there chance of escape.

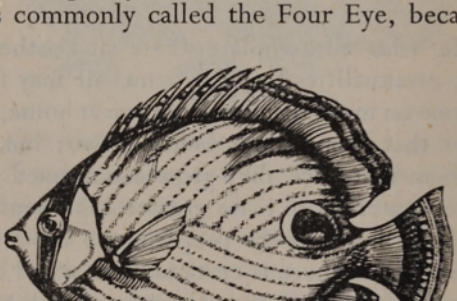
There are also in all tropical and sub-tropical seas the voracious barracuda, a kind of salt-water pike, which may attain a length of eight feet, whose teeth are like scimitars and whose strike is like a flash. But all these are rare acquaintances. I have never met a Moray eel except in an aquarium, and though I have seen a number of comparatively small barracuda, I never came across any of them when diving.

People who contemplate these and other unpleasant eventualities from an armchair may feel as I have done on more than one occasion at home, when awake at that dismal hour before dawn; but I can assure them that once they grow accustomed to being under water there is no greater apprehension of danger than if they were preparing to cross Piccadilly Circus, and there is certainly less actual danger to be met on the reefs than there is in motoring on the main roads of England. Mountaineers have told me that when climbing, the risks they run seem a paltry price for the exhilaration experienced, and so it is with diving; the importance of one's own entity fades to nil and any slight personal danger seems immaterial.

One of my chief surprises under water was the apparent ease with which fish move. The flight of birds is the only thing that approaches it, while in comparison all the wayfarings of terrestrial creatures

seem uncouth hobblings. Fish when drawn are usually portrayed with all fins erect and all spines at "the ready"; but this is entirely incorrect, for only when aggressive or frightened or displaying before the female do they appear in such a way. That part of the dorsal fin which is nearest the head and which is generally armatured is seldom raised, and the ventral and anal fins are only used for balance, so that the outstanding impression is one of streamlines from snout to end of tail.

There is a pretty little fish of the Chaetodont family who is commonly called the Four Eye, because on



each side, close to the base of his tail, he wears a large round black-and-white mark which resembles an eye. But for all his daintiness he carries a formidable array of spines in the two fins which run the whole length of his body, above and below. In the ordinary way these lie close to the body, but when he is alarmed or attacked up come these "hackles" immediately,

added to which he swims backwards, and pretends that the black-and-white ocelli are really his eyes, and that his head is in the hinder region of his body. In that way he bamboozles his aggressor and slips into the safety of a near-by crevice.

Much the same device has been adopted by certain butterflies which have been observed by Mortensen on the island of Tobago. He writes, "As is well known, the species of this genus have some peculiar, thin prolongations from the hind-wings, sometimes only small and inconspicuous, but in most species, especially the larger tropical forms, long and thread-like. There may be one, two or three pairs of such prolongations, of different length, the lower or the middle pair being generally much the longest. In most species there is a conspicuous coloured spot on the underside of the hind-wings at the base of the processes; sometimes there are two such spots. These butterflies, when resting, always close their wings, so that only the underside is seen. Then they have the remarkable habit of moving the hind-wings alternately up and down, whereby the thread-like prolongations are kept in constant movement, looking perfectly like antennæ. The conspicuous coloured spot at the base of the pseudo-antennæ perfectly suggests an eye—and thus the impression is produced that this end is the head, the real antennæ being held quite motionless, and the real head being black and quite inconspicuous. . . . So vivid is the impression, in the more perfect species, that although I knew it all perfectly well and had observed it

many times, I had always the involuntary impression that the tail end was the head, and, of course, persons with no special knowledge of insects would invariably take this to be the head."

In England many of the Hairstreak butterflies, which belong to the same family, have similar appendages, and if we are lucky enough to observe the handsome Swallow-tail butterfly, now, alas, confined to the fens of Norfolk and Cambridgeshire, we can well imagine that the special development of the wing which gives the owner its name, coupled with the bright eye-like markings close below it, might very easily delude an enemy who had not by repeated experience learned what to expect.

Louis L. Mowbray, the director of the Bermuda Government Aquarium, is a mine of information on all that concerns the reefs. Of the Chaetodonts mentioned above he told me how he had often seen them enter the mouth of a Moray eel or of one of the bigger rockfish and proceed to clear away the parasites which had accumulated there. He said that the larger fish never attempted to take advantage of their scavenging visitor, but that they seemed only too willing to have their toilet completed in this way. When we were discussing colour change he pointed out a yellow coney or sea bass which, though normally of a canary colour all over, invariably changes to dark brown when put into an aquarium. This particular fish had behaved in that way when first caught, and for some time afterwards, but one day there was introduced into the tank a magnificent

golden grouper which Mr. Vincent Astor had brought from the Galapagos Islands. Immediately the coney saw this resplendent creature he forgot his own sulky humours and flashed out into his brightest tints, as if in an effort to outshine the new arrival. Since then, whether from male rivalry or merely from the force of good example, he has never changed back to his more sombre hue.

This aquarium has probably the finest collection of tropical fish in the world, thanks in a large measure to the generosity of Vincent Astor, whose yacht the *Nourmahal* is fitted out with special tanks for transporting live specimens from the South Seas, the Cocos Islands, the Galapagos or wherever else there are species to be collected. And there can be few people alive who know better how to maintain these captives in health than Mowbray himself. "Born on the reef," he understands the psychology of his charges, and—nearly as important from my point of view—he understands the psychology of visitors. From the first moment that I met him I was given the freedom of the tanks, and anything I wanted to draw was moved to a special aquarium in his own studio. Many of the more elusive fish who had escaped our traps were drawn in this way; for, needless to say, during the fifteen or twenty minutes below the surface at any one place it was impossible to do more than hint at the general character of the passers-by. Indeed, it was a most tantalizing experience to stand there amid that wealth of beauty and know that one's greatest efforts could convey scarcely more sugges-

tion of the truth than a trouser button does of the garment to which it belongs.

But there are other things of interest besides coral and fish. One may, for instance, find the large conch shells which, with the tips filed off, are used as trumpets all over Polynesia and the West Indies; or one may come across sea urchins whose blue spines are ten and twelve inches long, or starfish, some compact and scarlet, others with thin brown feathery fronds. And there is always the weed, some of which covers the dead coral with the richest moss, while

other forms wave in the ocean swells like banners in the wind. Drawing can but hint at the shapes; nothing can express the movement. Unlike cornfields, whose ripening heads bend all together to the same breeze, neighbouring clumps of weed, swayed by opposing currents, change and counter-

change their direction, achieving a rhythm more subtle than the choreography of any ballet.

Fortunately for my own convenience in travelling, I could get no information which might put me on the tracks of those particular dolphins so badly needed by my friend in the Museum, nor, indeed, could I get much enlightenment about whales, except that once on a time there had been plenty of them in those waters, but that from excessive hunting and slaughter they had been driven away. An aged harpooner who had "squared his yards, coiled down his ropes and was then waiting for the last signal to let go the anchor" stood outside his cottage with one foot on a monstrous bone and told me stories of the past, but he spoke in a dialect I could not understand, and for all that I can do his legends must die with him.

CHAPTER VII

Cooper's Island

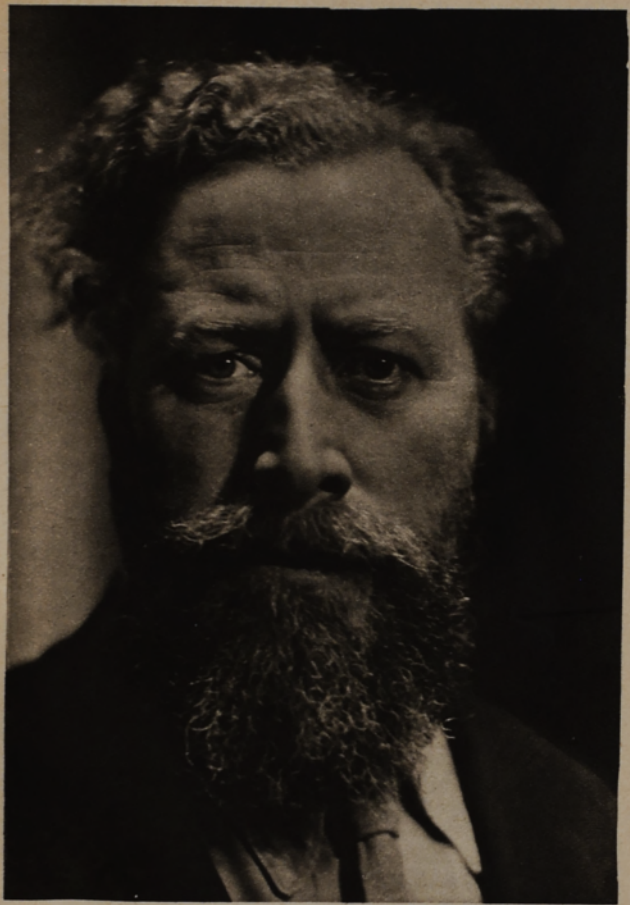
IT has been said that Bermuda consists of several hundred bridges connected by excrescences of coral rock; that on the rock grow cedar trees and tourists; that the trees are stunted and the tourists are intoxicated. That description may be unkind and exaggerated; nevertheless, there is a modicum of truth in it. Islands abound and so do bridges, but the former are in the majority, so that it is still possible to find patches of land on which the cedar trees flourish and where there are no inhabitants.

On one of these, called Cooper's Island, at the south-eastern extremity of the group, I landed one morning and spent two days entirely alone. Like its neighbours, this island has seen stirring events since Juan de Bermudez first landed on it in 1510. The famous Captain Tew sailed from there on that eventful voyage when he turned pirate and became so successful in his new rôle that before settling down in Madagascar he was able to distribute £3,000 to each member of his gallant crew, whose watchword had

been "A golden chain or a wooden leg." Other buccaneers, known and unknown, have landed on these shores, and tales of buried treasure have become a commonplace, but there are also tales of evil spirits and demons who guard the treasure, and "Fire drakes who rise out of the ground and assend the aire and have been seen to fly over that portion of the island where the treasure was buried," so that no part of it has ever yet been recovered, save only a few coins and some silver spoons.

In the year 1690, however, there was granted to one Thomas Neale a royal charter for the recovering of treasure which was reputed to have been buried by crews of wrecked ships before ever "The Burmudaes" were settled. In order to facilitate the carrying out of this project, statements were taken from important local residents, of which the following is typical:

"The Deposition of Mr. Joseph Ming of Cooper's Island, being the south-east point of the Island of Bermuda, who deposeth and sayth:" "That there hath been ever since his time a great discourse in these Islands, by the antient Inhabitants, that a great treasure hath been hid in this said Coopers Island, and likewise that the marks and signe of it were three yallow wood trees, that stood tryangular, upon one of w'ch was a plate of brass nailed, and on the other were severall names or letters cutt thereon, and that this depont with some others to his assistance did about two years since endeavour to discover this treasure by digging in a peece of ground lying in the



Photo, Howard Coster

THE AUTHOR

THE DRAWINGS PRINTED ON THIS AND THE ELEVEN FOLLOWING PAGES ARE DIRECT REPRODUCTIONS FROM THE AUTHOR'S PENCIL SKETCHES MADE ON XYLONITE WHILE HE WAS ACTUALLY UNDER WATER

BERMUDA: Brain stones and soft corals, the latter swaying in the swell caused by a passing steamer.

Opposite: In clear water about twelve feet deep ; yellow brain stones among purple gorgonias or soft corals.

BERMUDA: Blue angel fish pass and repass in scores.

BERMUDA: Three miles from the shore a ring of coral rises from deep water.

BERMUDA: A clear day.

BERMUDA: A dark day.

BERMUDA: Twenty feet down.

RED SEA: The central clump of coral was ten feet high and yellow ; the low, shrubby growth in the foreground lavender coloured ; the cluster on the left deep blue, and the fish metallic gold and mauve.

RED SEA: An isolated pile of *porites* rising fifteen feet from the sea floor.

RED SEA: A dead clam among at least ten varieties of coral in every shade of gold, rose, ultramarine, etc.

RED SEA: "Stag's horn" coral with clouds of mauve and silver fish.

RED SEA: A typical underwater horizon.

BERMUDA: Schoolmaster. White grunt. Red squirrel fish.

BERMUDA: Black angel fish. Sea weed. Sea hare: this individual, of a mottled muddy green or yellow, creeps along the sea floor like a huge slug. Its head is on the left of the drawing. When disturbed it can, like a squid, eject from its hinder end a purple liquid which acts as a " smoke-screen " to cover its retreat.

Diving operations : Bermuda.

Diving operations : Red Sea.

center of this tryangle of trees, for five or six dayes, but mett with noe success therein, soe grew soe tired and left off, not being able nor willing to bestowe any longer time or paines, therein, although the ground was very easye to digg, and that the place they digged was foure or five yards square. . . . And this depont further sayth that his grandfather had an extraordinary confidence of finding great treasures here from the satisfaction of the tradition and markes here found, upon which about sixty yeares since this deponts grandfather went for England and made his application to the proprietors to purchase this said Coopers Island and carried with him a considerable quantity of Ambergreece and presented the proprietors with a good part thereof, upon which the proprietors offered him Davids Island in lieu of his present which consists of tenn times more land and intrinsick value then this Coopers Island, which he rather chose than the said Davids Island for the hopes he had as aforesaid, and likewise oblidged himselfe to the proprietors to mantaine seven men continually at his owne charge towards manning the forts of the said Islands.

JOSEPH MING."

It has recently been suggested that the inscription on the brass plate was probably written in Latin or Spanish, which would not have been understood, and that, in any case, it was nothing more than a record of a previous landing or a claim to the island. This seems much more reasonable than to suppose that,

having buried vast treasure, the owners would immediately put up signs and marks to tell all new arrivals where it lay. A similar fable exists in the Cocos Islands where, even to-day, sane and otherwise intelligent men hazard their lives and health in following imaginary clues derived from the scratchings of bored or drunken sailors.

It was good to be alone and to know that in whatever direction I cared to look there would be no sight or sound to remind me of humanity. Nothing but the bo'sun bird imitating the cry of the sirens as he circled overhead, reflecting the emerald green of the sea from his breast.

I had left behind me strange people. One of them lived only for blood, and it didn't matter whether it was in a crayfish, a sea urchin or a human being; he had to have it. His main interest at home was comparing the blood of criminals before and after electrocution. There was another, a woman, who collected toads, and injected poison into their eyes. And there was a third who made experiments with innumerable small crustacea not unlike large woodlice. To help himself in his work he consumed large quantities of rum, but, lest that gracious aid to knowledge should prove too exuberant in its action, this man of science kept his supply of liquor in such a place that he could only reach it when standing in his bath. The bath was kept permanently full of cold water and the professor maintained that by these constant restorative immersions of his feet he could

maintain that perfect mental equilibrium necessary to the higher forms of research.

On this island, where I found myself voluntarily marooned, there was neither science nor art, but there was warm sand and sun with a cooling breeze, and shady groves of sweet-smelling trees. As I wandered along the shore I thought of the three Crusoes who had been the first settlers on the island and who "began their common wealth for a while with equall and brotherly regencye," until making "a priuye search into euery nooke and corner of the craggie rocks for whatsoeuer of value the open armed ocean had for a long time conuayed thether and secretly horded up, so that at length (answerable to their wish and paines) they chaunced vpon the goodlyest and greatest peece of Amber-Grece that the world is knowen euer yet to have had in one lumpe."

In my wanderings I found no trace of that greasy and heavy-smelling substance so highly esteemed by man and so gladly vomited by the whale: once only did I anticipate treasure, when I came upon the flat trail of a turtle and thought to follow it to a goodly store of eggs; but it merely led me across a narrow isthmus of sand and then disappeared in the sea beyond. I therefore consoled myself with reflection on the fate of the three men who found the ambergris and who became rich folk; "and so to be proude, and from being proude to be ambitious, and from that into a contempt one for another, and a desire of super-eminencye: so that lastly (being only three forlorne men in a narrowe desolate place, three thou-

sand miles from their natiue country and to their knowledge in noe likly-hoode of euer recoueringe of it) they fell into a most hott and violent contention for superioritye and commande; so that quickly they came from wordes to blowes. . . . And thus in this desolate place and miserable fashion liued thes three poore men . . . so that their cloathes were all worne and falne away from their backs, and their hopes of forrainge reliefe as naked as their bodyes."

Noon changed to afternoon and sunset gave way to moonlight like the changing colours of a rockfish. As the golden glow faded in the west the light of the rising moon grew stronger, and for a moment each of the two luminaries cast a shadow on opposite sides of where I stood. Gradually the moon took over command. The night temperature was perfect. I lay on the naked sands and watched the shore grow wider and wider as all dunes and hillocks disappeared in the moonlight, and there was left only a flat world

bounded by a sea of silver. When I woke after a few hours' sleep, the moon had passed across the zenith and the western sky again held court, but, before that fading light had given the stars one brief hour in which to kindle, a faint grey streak on the eastern horizon proclaimed that the sun was again at hand. One by one the stars dimmed out, dove-grey clouds took clearer form as their edges were tinged with ivory; the eastern sky grew warmer and the wide acres of sand diminished in area. Only the morning star was still shining. Then the sky was touched with fire and wild streaks of light flashed up behind the purple clouds, the last star disappeared, and suddenly the east was aflame.

Back on the main island there was great excitement among the scientists, for it was the night after the full moon, and that is the time each month when the reproductive segments of a phosphorescent worm called the Palolo come to the surface to breed. Fifty minutes after sunset is the marriage hour and, on this occasion, shortly before that time, an aged professor armed with a silk net and an iron bucket was seen to embark in a light skiff, along with a middle-aged lady, and pull their craft into the bay. Then as darkness fell we could hear excited cries from the boat. "There's one, a female," called the old man, "and there's the male on the right. Watch! Watch, there they go! *WATCH!*"

"A perfect copulation," said the lady.

From the shore we could now see, dotted like

stars in the water, the bright circling lights given out by the females as they rose to the surface. A few seconds after each appearance the lesser glow of a male would be visible, then almost instantly it would be seen rushing towards the other, and after a few seconds of intensified luminosity the light of both would fade out as they sank together to the bottom. Different species of the Palolo are known in many parts of the world, and in all cases they have a similar regularity of habit, so much so, indeed, that in Samoa and Fiji their appearances constitute important fixed dates in the calendar, and events are reckoned as so long before or after the time of swarming. In both these groups of islands the worm appears in very much larger quantities, and is considered such a delicacy that chiefs on the coast send baskets of it as presents to their neighbours inland. Only on two days in October and November does it appear, and the dates are looked forward to with eagerness by men, women and children, who are ready to rush into the water and scoop the assembled millions into baskets made of coconut fibre.

In the Gilbert Islands, farther to the west, where the worm is known as "the glistener," the swarms appear in June and July: in the Malay Straits a similar species emerges in March and April on the second and third nights after full moon, while in Japan their relatives come to the surface at a corresponding time in October and November.

As we watched from the shore at Bermuda and saw the last pair of lights flicker and fade, there came to

our ears from across the water the sound of singing and the music of banjo and concertina, and a few minutes later two motor launches filled with jubilant negroes passed down the channel.

"Warm work in town to-night," said a white man on the pier.

"Well," replied his coloured neighbour, "if dey win cricket match and bring back d'cup, ah reckon they got perfect right misbehave themselves little bit."

"Cricket indeed," said a ghost at my elbow, and I thought of two old newspapers I'd seen a few days previously.

"April 12th, 1788. To be sold by Public Vendue, on Thursday the 17th day of April, at Two o'clock in the afternoon. . . . The Personal Estate of the late Benj. Tibby consisting of House Furniture, 1 Negro man, 2 ditto Women, 3 ditto Boys and 2 ditto Girls.

"Jan. 9, 1790. To be sold. A healthy young Negro Wench, fit for the house or plantation; she can wash, starch, iron, cook and sew. Salt will be taken in payment."

CHAPTER VIII

East of Suez

ONE fine day in the spring of this year I found myself travelling south through the valley of the Rhône *en route* for the Red Sea, via Marseilles. Acres and acres of fruit trees in full blossom shone purple in the sun, while calm stretches of the river, not yet obscured by the spring foliage, reflected the grey, vine-terraced hills whose soil brings such joy into the heart of man.

We reached Marseilles, we reached the ship, and next morning we awoke to a "stark oil calm" through which we ploughed with an almost indecent disrespect. Most of the passengers had come round by long sea. There were two nuns with eyes cast down, two hot-gospellers with eyes cast up, Indian women, Scots engineers, Australians. The hot-gospellers saw celestial cities in the clouds, the bo'sun saw dirty weather. The latter was right, and we had a bit of a blow which levelled both the saved and the unsaved.

I was glad to get off that ship, the first I've ever

been on without a soul. She had less of that commodity than a channel steamer, and I seem to remember nothing more of her and her passengers than a jazz pattern of gramophones, beach pyjamas, gin, dice and vaccination notices. Oh, yes, there was a girl who sang "Don't love a dog, have a baby," and another who confided to me the tale of her shattered romance. It seems that she saw him first from a stage box, that he was tall and slight, that his dark hair waved and "he played *divinely*." She had leaned from her box when he played "Moonshine" and their eyes had met when he played "We two," and when the curtain fell he had sent her a bouquet "To the girl in the box with the beautiful eyes. Would she dine next night?" And she did, and he talked about his art and himself, and about himself and his art, so that her heart went out to him and she asked *what* was his greatest ambition. Then he had said that "he thought —that it probably—was—to keep a pub."

A few hours were spent in Port Said denying solicitous shoeblacks and refusing importunate vendors of postcards, and then the train rolled out across the isthmus, showing on the one side the dull walls of proud man's little canal and on the other side a panorama of time-worn customs and age-old history; mud walls, minarets, pink sands, splay-legged camels, black-cloaked women in lush green fields, palms, sheep, goats, water-wheels, vultures and ophthalmia. I arrived in Suez a quarter of an hour too late to catch the oil tanker which would have dropped me at my destination.

The next two days were occupied, for the most part, in trying to get a passage on some local trading steamer, but there was time to wander about the

town or sit at a café and contemplate life in general. One of the charms of travelling is that apart from the stimulus of an ever-changing scene, and apart from the joy of "escape," we are able to view the world with the irresponsibility of children, unthinking and ignorant of the drama which lies behind each and every façade, whether it be the forbidding features of some gaunt factory or the painted face of some unhappy wife.

Psychologists tell us that we are all compounded of the male and female elements in varying proportions, and that even in the most blood-curdling dictator can be found traces of the gentler sex, just as in the most tender-hearted mother will sometimes be seen

glimpses of the he-man. The artist in particular, we are told, combines the attributes of both sexes. He, at one moment, is passive and receptive as only a female can be; at the next he is forceful and thrusting as the male in his ecstasy; but only from the former can the latter be born. With hopes, then, of ultimately completing the cycle, I sat and absorbed the varying colours of the cosmopolitan procession which flowed past; Egyptians, Arabs, Nubians, Italians, Greeks; tarbush, turban, trilby hat. Sheep led through the town by a small boy who enticed them forward with a handful of beans, reminding me of politicians at home. A fellahin with goatskin water-bottle, a donkey with zigzag patterns cut, like a garter, in the hair of each fore shoulder. Last but not least, an Arab woman who, when passing, smiled and lifted a corner of her veil, revealing for a moment a blue tattoo mark on her lower lip. Strange how that gesture gave a momentary thrill.

Thanks to Mr. Gunn, of the Shell Oil Company, I eventually found myself on board a small "tanker," sharing the Third Engineer's cabin with a man of uncertain origin. He had been introduced to me as an Austrian, and certainly the cut of his tight-behinded breeches and the tilt of his Tyrolean hat confirmed the idea, but his voice didn't sound like anything that ever came out of Europe. The Captain, who spoke a little of most languages, tried him with German and Italian. I put forward my best French. He couldn't understand a word of what we said, and till he and I were going to bed that night the mystery remained

unsolved. He was sitting on the edge of his bunk removing a pair of brand-new riding boots, when he made a short, crisp speech which ended with a sound like tec—sas.

"Been to America?" I asked.

"Sure," he replied.

Then it was simple going. I found that his sentences consisted of long slurs with a bark at the end of each. It was no use listening to the slur, the only thing to do was to try to catch the bark. By approaching his remarks as one attempts to solve a crossword puzzle, and trying to reach the meaning by the "lights" of glance and gesture, it was possible to arrive at some sense. He was an oil driller, and for some reason those riding-boots were his pride and joy. When he went to bed his shirt, breeches and jacket were thrown on the floor, but the boots were laid tenderly on the settee. They had cost twenty-five dollars in Texas. But the Captain, a Scotsman, who was used to dealing with a crew of many nationalities, was unable to comprehend a single word spoken by that man on the voyage.

Twenty-four hours' steaming down the Gulf of Suez brought us to Towila, a truly desert island, for over its whole area I only saw as much herbage as would fit on a doormat. We landed there soon after mid-day, and while some German and Egyptian oil surveyors were being put ashore with their gear I had time to wander off alone.

To my surprise the crusted sand which covered the whole surface of the island was filled with shells and

dead coral. It was impossible to move without stepping on one or the other; in fact, the island seemed entirely composed of these materials. This was my first experience of real desert, of dry, parched, sterile soil, on which, all day and every day, the sun beats wantonly down as if trying to set on fire that which has already been burnt out. Distances were deceptive, and far-away objects seemed nearer than they afterwards turned out to be. A blue shimmering light on the horizon suggested water, and it was easy to imagine some unfortunate traveller pursuing this chimera hither and thither in vain hope.

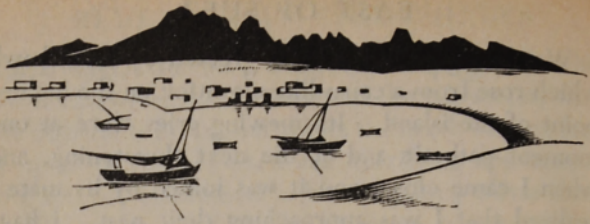
Wading near the shore I almost trod on a yellow skate or ray. His triangular head was more lemon-coloured than the rest of his flat body, and as he glided along by gentle undulations of the lateral fins, he was scarcely perceptible against the striated tide marks in the sand. I followed at a distance of a few feet for some twenty yards, and he seemed to be completely unaware of my presence. Not until I was within three feet of him did he give a sudden flick of his tail, and under cover of the sediment thereby stirred up, quickly change direction and shoot off at right angles. I followed him again and he repeated the manœuvre rather more quickly, but before I could catch up for a third time he had disappeared from view.

There are many varieties of these fish, from the well-known skate of our own shores to the tropical manta who may measure twenty feet across its body and weigh anything up to five thousand pounds.

These larger fish have a habit of leaping from the water and falling back, flat on to the surface, so that the noise of their impact is like the crack of thunder. In spite of their horned and terrifying appearance they are not considered to have anything worse than a sulky nature, and seldom do harm to man unless attacked. Even then their behaviour is not vicious, for given the chance they will dive to the bottom and remain there motionless until their harpooner has grown weary and cut the line. The smaller rays are, in reality, much more to be feared; for, in some species, at the end of their whip-like tail or, in others, under one of the caudal fins, they carry a poisonous spine which can inflict a most grievous wound. Woe be to the man who steps unwarily upon one of these creatures lying half buried in the mud. Paralysis, loss of a limb or even death may be his portion.

As I retraced my steps to the shore I noticed about fifteen rose-coloured crabs who had formed up in a semicircle on the edge of the shore, and were gradually converging on some hidden object. Before I reached them they had obviously cornered their quarry, and when eventually they dispersed at my near approach they left behind them the half-eaten body of an eel. So intent was I in watching them that I had not noticed another eel of a slightly pinker colour who was writhing in the water close by. I could see no hurt upon him, but he was obviously unhappy, and I can only imagine that he was either searching for or lamenting after his dead mate.

Wandering inshore, I was greeted by a sea hawk which rose from a cairn-like elevation on the highest point of the island. Its mewing cries were at one moment pathetic and at the next threatening, and when I came closer and it was joined by its mate I realized that I was approaching their nest. I have since learned that for many generations this one spot has been the nesting-place of these birds, and that the elevation of the site is due entirely to the annual increment of nesting material and offal which they collect. As I struck back towards the ship a solitary grey owl rose from under a stone and winged its way into the dusk.



CHAPTER IX

Ghardaqa

DURING the evening a sand storm blew up. Visibility was nil; a London fog couldn't have been more obliterative. Fortunately, we were at anchor far away from shipping routes. We had sand in the eyes, sand in the ears, sand in the mouth. We licked our fingers and wiped the dust off our eyelashes. Inside our shirts the grit collected and chafed our skin. Where the belt constricted the clothing there was sufficient accumulation to grow carnations. But at dawn the sky was clear and innocent as a baby's smile. As we picked our course through the reefs the island of Shadwan lay like a feather from a dove's breast on a mirror-like sea, while Sinai with its peaks, its crevasses and its legends lay behind us, shining silver in the morning light.

The port of Hurghada consists of a pier and a line of mud-walled houses, following the crescent of the bay. Behind them lies the desert, and from that, at a distance of some twenty miles, rise the mountains which form the western battlements of the Great

Rift Valley, and which divide the Red Sea from the River Nile.

On the shore, close to the landing stage, were lying a few canoes, and moored near by were native sailing feluccas. A ten-inch oil pipe hung its nozzle over the pier, guttering its filthy dregs into the clean water.

I was met by Dr. Cyril Crossland, who, with his first words, directed my attention to some crimson

and bronze alcyonaria, or soft corals, which grew on the girders of the pier. Like rich rosettes of royal velvet, they decorated the rusting iron, transforming

the unromantic metal into pillars that would grace a palace. These growths, fleshy and leathery when contracted, as in the illustration, open out into bunches of exquisite daisy-like forms, each pin-head nodule expanding into a star-like bloom at the end of a long and delicate stalk. The change is as great as that of a full-blown rose from its earliest bud, but instead of happening once only in a season, it is of daily occurrence. On the Great Barrier Reef of Australia, and on many islands in the Pacific, allied species, yellow, verdigris green and lilac, grow abundantly, and Saville Kent has recorded a single colony which spread over an area between fifty and sixty feet in diameter.

The Marine Research Station at Ghardaqa, about seven miles from our port of entry, is a branch of the University of Egypt, and was planned and built some eight years ago by its present director, Dr. Crossland. For the study of corals no one could ask a better site, for the reefs are in full bloom within a hundred yards of the shore. There are no show aquariums, but the laboratories are close to the sea, and the observation tanks are filled with running water, which is fed through porcelain pipes lest any trace of metal should contaminate the supply. By skilful arrangement of windows there is a constant circulation of air through the rooms, so that even in midsummer the temperature is never oppressive.

In spite of twenty-five years in the tropics, the director is a man of energy and action, and before I had been ashore more than a few hours he suggested

that we should experiment with the diving apparatus, for though the helmet had been among the first purchases of equipment for the station, no one had hitherto made use of it. It was a different pattern to the one I had used in Bermuda, being made of galvanized iron instead of copper, and having its window set so that the line of vision was thrown slightly downwards. This was, no doubt, excellent for collecting specimens, but not so good for drawing, as in order to see the full height of the coral which towered above me it was necessary to lean back to an extent almost dangerous to the balance. One of the essential things to remember in the use of this apparatus is the necessity of maintaining the body in a vertical position, for should, by chance, the helmet be tilted forward or backward at more than a certain angle, the air within will escape, the metal casque will drop to the bottom and the diver will arrive feet first at the surface.

Once again, as at Bermuda, the adjustment of weights took time. When I first stepped off the ladder, a few feet below the surface, I remained suspended in complete equilibrium, moving neither up nor down. It was necessary, therefore, to return to the surface for more weight, but lead was a scarce commodity in the desert, and communications with the outside world were slow, so we lashed a dozen yards of iron chain in such a way as to make a waist belt which could be hooked and unhooked with ease. At my next attempt there was sufficient weight to keep *me* down, but not enough to overcome the buoy-

ancy of the air-filled helmet as well. Before I reached the bottom I was like to have dropped clean out of my headgear. Again the ladder had to be climbed, and this time, *faute de mieux*, they added to my breastplate some seven pounds' weight of spare parts from the launch's engine, thereby achieving for me perfection of submarine balance, and so setting my mind free for the work in hand.

In Bermuda the sharks had an enviable reputation for altruistic behaviour, and the diving had been a comparatively casual affair with no more hint of danger than in a children's nursery, but here in the Red Sea it was different. El Rayis, the Captain of the launch, had had personal and unpleasant experience of these slit-eyed Selachians whose history is known to go back at least two hundred million years, yet who, in all that time, have not developed a bony skeleton but been content with one of mere cartilage. El Rayis had gone fishing one day and was standing in about four feet of water, when he was suddenly seized by both legs and carried off his feet. Holding his breath and biding his time, he bent forward and drove a finger and thumb into the shark's nostrils. This frightened his aggressor to such an extent that it let go, but several months elapsed before El Rayis recovered, and he still carries deep scars on his legs which I myself have seen, and which testify to the truth of his story.

In spite of this experience he had nothing but scorn of these monsters, and he did not hesitate to jump on to the back of any individual who might be

prowling too near the launch, just to make it understand that its presence was inconvenient. Whatever he might do himself, however, didn't alter the fact that in his opinion all white men were clumsy and proverbially helpless in the water, and that he was to a certain extent responsible for their safety; so whenever I prepared to descend he also got ready for his duties by divesting himself of his flowing robes, and taking his place on the gunwale ready to plunge at a moment's notice.

As things turned out there was never any occasion for him to come to my assistance, for I didn't see a shark at any time when under water; nevertheless there were moments down below when, remembering the conversations I had heard in the local camp, I was mighty glad to know I had a guardian up aloft.

"Ever seen 'em in Shark Bay, other side of the point?" asked a superintendent of oil works. "By Jingo, you see 'em thick enough over there. Me go down? Not on your life!"

"My word, they come like lightning!" said an Australian. "Now if you escape the first rush you must walk towards them." Then he went on to describe how I should let air out of the helmet to frighten them, or throw my sheet of white xylonite in such a way that they would see it and follow it. "They always go for anything white that flickers in the water, soles of the feet or china plates—all the same thing." He'd saved a man's life once by chucking plates into the sea, each one a little farther from the

diver, and so gradually attracting the shark away till the man had time to come to the surface. He knew, too, of a deep-sea diver who, just as he was going down, saw a large shark awaiting him.

"What did he do? Why, he dropped a stick of dynamite overboard with a time fuse attached. The shark made a grab and swallowed it and I reckon, in twenty years, you couldn't count the bits of that fish that came to the surface."

CHAPTER X

Down Below

THE Red Sea district is generally pictured in the mind as a roasting wilderness where men's eyes burn in their sockets and their tongues cleave to the roofs of their mouths, but when I was there in April the temperature was scarcely higher than on a summer's day in England, while the nights were cool enough to make two blankets a necessity for comfortable sleep.

The sea is, of course, no more red than the Mediterranean sea or the Atlantic or Pacific oceans, but it has probably got its name from the colour of the mountains which run parallel to the coast on either side, or possibly from the soil which in times of flood is carried down from those same hills and discolours the water far out from the shore.

The water itself was cooler than I expected, and the deeper I went the colder it became. Even in my descent of a few fathoms I could notice at least three distinct changes of temperature. No wonder, then, that corals which only thrive in warm water

cannot exist at depths where the more genial surface currents never penetrate. Twenty minutes seemed the maximum time which could be spent below without chill, but what crowded moments those were! While in Bermuda the different forms of coral seemed hardly more than could be counted on the fingers of one hand, here in every direction were new varieties. Crossland told me that, in one spot, he had counted twenty different species, but if he had said twice or three times that number I should still have thought that he was suffering from scientific reticence, for to me every square foot was unlike the next. He could see resemblances where I saw none, and where I thought I recognized two brothers he showed me that the Eskimos and Patagonians were hardly less related.

Besides the multitudinous hard corals which branched around me there were the alcyonaria whose delicate tasselled heads formed bell-like flowers as they opened and closed in their search for food. Some of them were biscuit-coloured, others were every shade of lilac, some were rich and lustrous like those growing on the pier at Hurghada, others seemed fragile as thistle-down.

In among the crevices of the dead coral were giant anemones, among whose tentacles might be discovered a small fish marked with conspicuous white bars across its bronze body, which, either by long habit or by " gentleman's agreement," has gained immunity from the stinging cells of its host. Living as it does under cover of such a battery, it achieves a

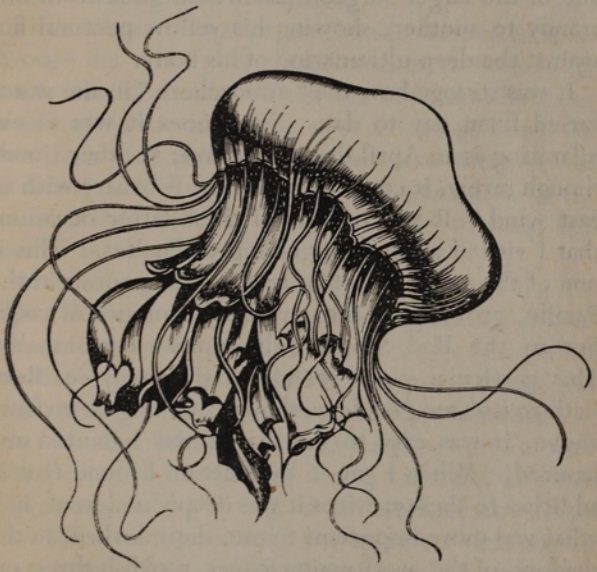
greater security from its enemies than if dependent on its own resources. In order to repay the hospitality granted, it makes it its business to dart from cover

and endeavour to lure or drive any passing stranger within reach of the tentacles. Should it be successful there is no lack of reward in the crumbs that fall from its host's table. Saville Kent records two other fish of this same family, and also a prawn, who live in this commensal way with other species of giant anemones on the Great Barrier Reef of Australia. T. C. Roughley tells of a hermit crab who, notwithstanding the protection afforded by a borrowed shell, likes to have one or two of the smaller stinging anemones attached to the same covering, as if to make assurance doubly sure. Yet again, there is a crab in the Indian ocean who carries stinging anemones about with him on his claws, brandishing these when attacked. In both these cases any

defensive duties carried out by the anemone are well repaid by the crab, who not only constantly carries his companion to pastures new, but also, being a dirty feeder, provides it with a rich diet of scraps from his own meals. Neither last nor least in the long list of these marine partnerships is the well-known Naucrates, the little fish who always swims ahead of the shark and pilots him to his prey, knowing full well that there will be sufficient over from the meal to satisfy his own modest needs, added to which he will obtain security from the presence of the shark, who would certainly scare away any other predaceous fish. Dr. Meyen in his *Reise um die Erde*, quoted by A. C. L. G. Günther, writes, "We ourselves have seen three instances in which the Shark was led by the Pilot. When the Shark neared the ship the Pilot swam close to the snout, or near one of the pectoral fins of the animal. Sometimes he darted rapidly forwards or sidewards as if looking for something, and constantly went back again to the Shark. When we threw overboard a piece of bacon fastened on a great hook, the Shark was about twenty paces from the ship. With the quickness of lightning the Pilot came up, smelt at the dainty, and instantly swam back again to the Shark, swimming many times round his snout and splashing, as if to give him exact information as to the bacon. The Shark now began to put himself in motion, the Pilot showing him the way, and in a moment he was fast upon the hook."

Sometimes when under the water I would see droves of small blue jellyfish pulsating their way

along, calm and dignified, utterly unconscious of the thousands of their own species which, cast on the shore with every tide, shine in the sun like disks of burnished silver. At other times there would pass one or more of the little grey Medusæ, whose upper surface of lace-like filaments forms a richer rosette than any functionary's badge of office. There did not seem to be any of the larger Cyanea, common in



Bermuda, whose clammy jelly wraps itself like a poultice round the body, and whose stinging cells can leave their mark and their memory for many days.

The fish in the Red Sea were rather more elusive

than elsewhere, though I understand that they are in greater evidence in summer, when the water is warmer; nevertheless I moved among clouds of mauve and silver midgets who hovered and darted about the coral like specks of dust in a sunbeam or humming birds on the edge of a tropical forest. Pairs of golden Chaetodonts would pursue their daily routine irrespective of my presence, and sometimes one of the larger surgeon fish would glide from one cranny to another, showing his yellow pectoral fins against the deep ultramarine of his body.

It was strange how the " atmosphere " in the water varied from day to day. Sometimes it was as exhilarating as an April day in England; at other times, though rarely, it could be more like February with an east wind. It was on one of these latter occasions that I visited an outlying clump of Porites. This is one of the most important reef-building corals in the Pacific, growing up into great solid masses of rock, but in the Red Sea it only appears occasionally. This particular piece rose from the sandy sea floor with an isolated grandeur, though, looking down from above, it was easy to see that it was indented and fissured. When I got to the bottom I found that in addition to these crevices it was deeply undercut, and, what was more important to me, there lurked, in the shadows of the overhanging ledges, rockfish three and four feet in length who with stealthy movements kept eyeing me with far too great an interest.

There had been several days of strong wind and consequent rough sea, so that the water was murky

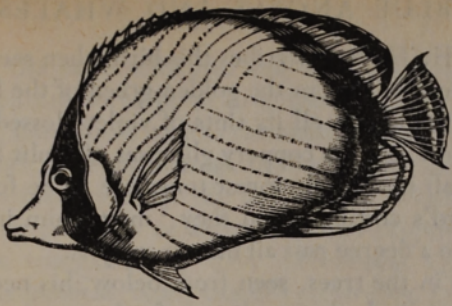
from the stirred-up sand; furthermore, out here by this isolated monolith, away from the shelter of the other reefs, the temperature of the water was considerably lower, and I couldn't but remember that in Australia and the New Hebrides these rockfish can be premeditatedly sudden in their attacks. The atmosphere was definitely non-conducive to æsthetic contemplation, so after a comparatively short stay below I returned to the launch.

Other days in other places the sun seemed to shine through the water with all the exaltation that accompanies it on shore. At times one seemed to be living within or on the other side of a Chinese painting, for like those delicately drawn trees and temples and birds and people who fade into tenuous mists, so the fish and the branching corals seemed to hang suspended as if on tinted canvas.

Although most of the hard corals expand only at night, there was no suggestion of suspended animation during the day; indeed, everything seemed to be as actively alive as a hive of bees or a nest of ants, but without any of the hurry or bustle that is such a feature of terrestrial life. A wonderful serenity of purpose pervaded everything, from the mottled skate lying tranquil by the edge of the reef, or the clams with their mantles picked out in divers colours, to the gorgeous little nudibranchs or sea slugs who crept over the rocks, exhibiting colours as bright as any national standard.

But over and above the unending kaleidoscope of interest which presents itself to any diver there must

always be the added attraction that during the time below it is possible to forget the power of gravity. It is like being in a world of dreams where we can fly or float at will, and there is none of that everlasting effort necessary to support our weight. Should we wish to explore a chasm which may yawn before us, we have only to cast ourselves forward and, lo and behold, even with a hundredweight of ballast attached to us we *float* into the depths. No eagle's feather ever dropped more lightly on the desert sand than our feet on the bottom of the pool, and should there be any trouble about returning, we merely unhook our waistbelt of chain and let it fall, whereupon we shoot to the surface. It is not, however, all clean sand and coral, neither is it always inviting. Wide areas of fine mud exist in which little grows but eel grass. This is the home of the sea horse, who twines his tail so caressingly about the plants, of the little trunk fish or sea cow, of numerous pipe fish and trigger fish allied to those we have already met in the sargassum weed, and of the shrimp fish. This last has, for mouth, a long tube through which it sucks its nourishment from the mud and, the better to perform this function, it has acquired the habit of swimming in a vertical position. Not only that, but its tail has gradually bent out of the straight, so that it now comes out of the abdomen, while the dorsal fin having moved to the stern carries on the line of the body. Thus, standing on its head and propelled, back first, by the fins which have congregated along its ventral surface, it lives and moves and has its being.



CHAPTER XI

Camouflage

ONE of the things which struck me most forcibly when under water was the inconspicuousness of the "conspicuous" fish. We are accustomed to think of coral fish as brightly coloured, and so they are; we are accustomed to think of them as bizarre in pattern, and so they are; but in most cases neither of these qualities is particularly apparent in their own surroundings. In the shallow water of an aquarium against an unnatural background the fish show up vividly, but with a dozen or twenty feet of water over them, instead of as many inches, the colours take on the mellowness of an old master rather than the crudity of a new one, and the fish are no more obvious than a green-headed mallard among reeds, or a butterfly at rest in a garden.

Among birds there can be few more gorgeous than the peacock, and few who can be more conspicuous when strutting on the castle lawn, yet here is how

Abbot H. Thayer describes this bird when seen in its forest home: "From the golden-green of the forest's sunlight, through all its tints of violet-glossed leaves in shadow, and its coppery glimpses of sunlit bark or earth, all imaginable forest-tones are to be found in this bird's costume; and they 'melt' him into the scene to a degree past all human analysis.

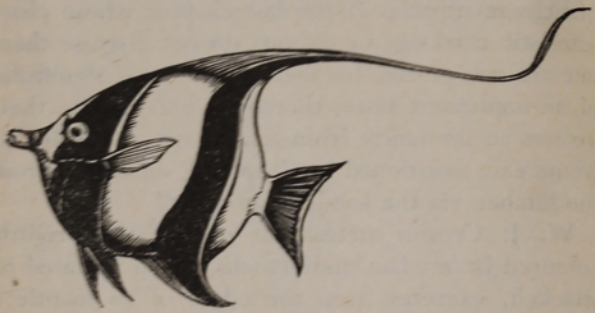
"Up in the trees, seen from below, his neck is at its bluest, and when sunlit, perfectly represents blue sky seen through the leaves. Looked *down* on, in the bottom shades of the jungle, it has rich green sheens which 'melt' into the surrounding foliage. His back, in all lights, represents golden-green foliage, and his wings picture tree-bark, rock, etc., in sunlight and in shadow. His green-blue head is equipped with a crest which greatly helps it against revealing its contour when it moves. Accompanying its every motion, this crest is, as it were, a bit of background moving with it. The bare white cheek-patch, on the other hand, 'cuts a hole,' like a lighted foliage-vista, in the bird's face. The tail, when spread or even when shut, 'mingles' in a thousand ways with its jungle surroundings. The ocelli, guaranteed by their forest-scenery colours to vanish into the *background* at a short distance, have one peculiarly fantastic use. Smallest and dimmest near the body, and growing bigger and *brighter* in even progression towards the circumference of the tail, they inevitably lead the eye away from the bird, till it finds itself straying amid the foliage beyond the tail's evanescent border."

It is the same with fish and most other brightly coloured creatures in nature, though there are, of course, individuals such as the caterpillar of the magpie moth, the brimstone butterfly and the nudibranchs mentioned in the last chapter whose characteristic markings or colours do not disguise them but are recognized by their enemies as significant of an unpleasant taste, thereby achieving for their owners an immunity from attack, or, as in the extreme case mentioned in Chapter I, an escape from the kitchen via the hands of an artist!

W. J. Crozier states that one of the brightly coloured Bermudian nudibranchs, when irritated or attacked, excretes from the edges of its mantle a bluish-white substance, unpleasant to fishes and various marine invertebrates, and that in addition to this it has at all times a disagreeable and penetrating odour which causes fish who come near it to retreat quickly without touching it. Other creatures, like the wasp and the skunk, flaunt their livery in the knowledge that their powers of offence are known to all, but, apart from these few arrogant beings, there is a mighty host of others who use their decoration in more modest manner. It seems, at first thought, impossible that emerald-green fish should find adequate cover among the petals of pink coral, but then emerald green is the complementary colour of that particular shade of pink, and the fish are thereby absorbed into its shadows. It seems impossible that blue fish should be lost amid clusters of cream coral, but in southern Europe the sun on the yellow build-

ings throws blue shadows, and, here, we are thinking of latitudes far nearer the Equator than even Palermo.

There is a fish very common in Tahiti whose black and white bands and flowing dorsal fin command



immediate attention when it is taken from the water, though it is hard to see when swimming in its natural element. As it moves, with every now and then a quick change of axis not unlike that of a flat stone or coin when dropped into water, the black and white bands appear as annular or semicircular patterns almost identical with the flicker of light on the surface. To add to the illusion the long filamentous development of the upper fin blends in as the crisp edge of a wavelet. That is, of course, only a defence from above, and I have not seen this fish when diving, but if ever I want to re-create for myself a vision of the strange flickering light which penetrates those waters I think of the movements of this fish, just as when I want to visualize those same movements I remember the fluttering light transmitted through the scalloped surface of the lagoon.

Besides the fish who seldom move far from their own particular crevice and who dodge into that shelter at the least approach of danger, we have others who prefer to remain immobile and trust to their protective patterns for salvation. There is one, some three inches in length, and marked like a zebra with clear-cut vertical bars of black and white, who can be as inconspicuous among the intersecting branches of white stagshorn coral as our own cock pheasants can be when lying close under a spray of bracken. Others again depend for their safety on markings whose chief function appears to be disguise of the silhouette. The "Rock Beauty," found all over the West Indies and north as far as Bermuda, has its body divided vertically into three portions, of which the first and last are pure gold, and the middle one ebony black; a relation of his in the Pacific is divided into three horizontal zones of black and silver white. Others depend on dark splodges on a light skin or light splodges on a dark skin to break up the continuity of their form. It is interesting to note that the native warriors of the Marquesas Islands, with whom Herman Melville was a prisoner, tattooed their faces with similar broad bands and circular patches, taking hints no doubt from what they saw in the water, and finding these patterns the most effective disguise for their features among the strong lights and shades of tropical vegetation. As a parallel, which gives weight to this idea, we are told that in the Ellice Islands, farther to the west, if an untattooed native presumed to any of the privileges

of one who was fully tattooed he was quickly rebuked with the remark, " You are not like a highly coloured fish."

One day in Bermuda, when swimming in shallow water over clear sand, I noticed a number of black spots moving in the water. They seemed no bigger than pennies, and yet they darted here, there and everywhere. It was only by the closest observation that I realized they were the ocelli on the tail of a silver fish which frequents those shores, so perfectly did their owners take on the colour of the water or reflect the sand over which they moved.

This reflection must be one of the greatest aids to concealment in forms of aquatic life which are constantly moving from place to place. Time and again I have watched fish like the white grunt and the porgy, both of which would, normally, be considered silvery white, and as they passed by coral, rock or weed their scales reflected the colours of their surroundings to such an extent as to render them almost invisible. We can imagine, too, how our own freshwater fish like the roach or tench can lie motionless among the reeds, reflecting the stems and leaves, and so achieving almost as great an obliteration of their bodies as those portions of the walls of our houses on which we hang mirrors.

Another point is that many seaweeds have a polished surface, and just as the highlights reflected from a motor-car may be almost any colour except that of the car itself, so the variegated serpentining weeds may throw back coloured lights and shades

against which the gayest fish may lurk unseen. There is also the capability of actual change of colour which seems to be a property of nearly all marine life. Most of us can remember our early disappointments when, having caught a richly coloured rockfish and put him for safe keeping in a shallow pool, we found later than he had turned as dull in hue as the rock over which he lay.

My observations under water seemed to indicate that, even apart from their background, there is among many species a constant varying of colour. Shoals of blue-striped grunts when passing had their fins and tail any shade from gold to deep brown: if resting for a moment, their sides became suffused with dark vertical bands. The Blue Angel can appear in any dress from pale cerulean to deep cobalt blue, accentuating or diminishing at will. A Red Hind, stealthy as a cat, stalked my white shoes to within a few inches, its colour changing from red to pale yellow with momentary appearances of vertical white bands.

W. H. Longley states that "not only do fishes change their colour and shade, but some have two or more alternative systems of markings in which their colours may appear," and he goes on to say, "One may almost dare state it as a law, that when any species has alternative patterns of longitudinal stripes (or self-colour) and transverse bands, the former is shown when the fish that displays it is in motion, while the latter tends strongly to appear whenever it comes to rest," and he adds a note, "Since this was written it

has been observed that like many fishes the squid when at rest in the water is transversely banded but replaces these bands by longitudinal stripes when it begins to move."

We had squids under observation at Ghardaqa, and though their powers of running through the chromatic scale were a constant interest, their powers of perception were even more surprising. On one occasion I watched a specimen swimming close to the jetty in a few feet of water. With gentle movements of his fins he passed along, apparently unseeing or heedless of the humans who were hardly more than a dozen feet away. In his eight shorter tentacles he held a fish, on which he was slowly feeding, while the remaining two arms, longer than the others, waved and groped about as if seeking further plunder. Two natives entered the water some twenty yards away, hoping to surround him with a net, but no sooner had their feet touched the surface than the creature, with powerful belchings of the water in its body cavity, shot straight out to sea and was lost to view.

Most of the fish that we brought into the aquarium varied from moment to moment according to the background that we gave them. Perhaps the most interesting discovery concerned a parrot fish who did not change his actual colours at all but whose colours appeared entirely different according to the light in which he was seen. When the light was behind the observer the fish was a strong blue and purple, but when the light was behind the fish the portions that had been purple showed as yellow, this change being

due to the fins acting as a filter of light and only allowing the yellow rays of the sun to pass through, at the same time reflecting the complementary purple ones.

Instances could be multiplied to fill a book; even *Mussa fragilis*, the lowly rose coral, when brought into the aquarium was seen to alter its tone to match its new surroundings.

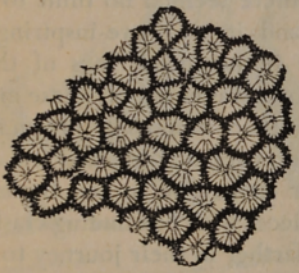
CHAPTER XII

Drowned Valleys

ACROSS the sea beyond the pearl-tinted island of Shadwan lay the slopes of Sinai, where so much Jewish history had its origin. Behind us, to the west, rose a line of granite peaks five, six and seven thousand feet high. At a casual glance one would have said that they were scarcely an hour's march from the camp, so clearly did the foothills rise from the plain, yet, even as the vulture flies, it must be fifteen or twenty miles before he can come to rest on those slopes. The shore for half a mile inland was a raised coral beach. We were in fact living on a reef which at some remote period of time had been lifted above the level of the sea. All along that Egyptian coast of the Red Sea a mighty upheaval in the earth's crust had taken place, so that now, for a depth of half a mile or more inshore, the land was nothing but sand, dead corals and shells.

It wasn't a case of searching for any of these, for one had only to bend down, as at Towila, to pick up these relics, whose age scientists guess to be anywhere in the region of fifty to a hundred thousand

years. The shells were as perfectly preserved as many we find on our beaches to-day, and the specimens of coral, though broken, were sharp and clean to the touch, and, even for a layman, easily placed alongside the same species collected on the reefs to-day.



Cross-section of fragment of coral picked up half a mile inshore. Reproduced direct from the coral itself. Approximate age, 50,000 years.

Wandering up the dry watercourses of the desert one saw, on either side, wind-swept slopes from which protruded patches of these shells. In one place it might be the trumpet variety, in the next it might be cockles, or sea urchins, or oysters. Each appeared to have been gathered together in colonies at that momentous hour when the last trickle of sea water had drained away, wiping out acres of radiant reef, and leaving them as bare of life as the town of St. Pierre, in Martinique, after Mont Pelé had, in 1902, cast forth its mantle of death.

Equally significant were many of the stones standing half buried in the sand. Once molten pebbles hurled from volcanic depths, they had lain exposed

for thousands of years, suffering the burning heat of days and the chill of nights, until at last the inner stresses, carried since their birth, had split them apart. Now they stood not as single stones, but as parallel slabs with each surface the exact counterpart of that which faced it, and each group only needing some cohesive force to reunite it in every detail. Among the mountains there seemed no limit to the size of these stones, and it was awe-inspiring to realize that from time immemorial, tens of thousands of years before Moses was heard of, these mammoth boulders had stood there unmoved. Even now internal and external forces are at work, and one day, perhaps to-morrow, or it may be in ten thousand years, they will fall in pieces with resounding crashes, and so reach one stage farther in their journey to the sea.

The mountains themselves rose sheer from the sand which lay, smooth and flat, caressing each slope and winding its way higher into the ravines, slowly and steadily smothering the very parents from which it was born. One mighty rock stands guard at the entry to the Qena Pass, a huge Plutonic cone of molten forms, layer after layer arrested in their downward flow. No blade of herbage grows on its sides, nor does a single seed find welcome on the slopes beyond; but here and there among the stones and sand of the valley grow thorn bushes, and drifts of sparse silvery grass which, blown by the wind and glistening in the sun, seem, at a distance, like the smoke of straggling fires. Once in twenty miles an

orchid seed will find shelter under a stone and, taking root, will bloom and flourish.

Inside the pass, peaks rise up, on the one side granite, sharp and crystalline in form; rose, crimson

and lavender in colour: on the other side turbulent slag heaps of gargantuan size, broken black basalt, as if cast up from Vulcan's own kitchen. Afar, beyond the porphyry mines once worked by the Romans, the road stretches again across the desert towards the setting sun, towards the Nile, towards Luxor and towards the glory that was Egypt.

When the time came to leave Ghardaqa I asked Dr. Crossland how best to show my appreciation of the sailors and others, without whose help my journey would have been in vain. He suggested that the present of a sheep would meet the case, explaining

that it would be divided in traditional portions. This, then, I agreed to do, and my last memory of the camp is of a black bobtailed sheep being led in by three Bedouins who, on arrival, sat down and waited for our ambassadors to come and parley with them.

When I said good-bye to Crossland he was on the pier and I was on the *Ormer*, moving off in a mirror-like calm. His last words, called to me as he pointed to the water, were: "I can count fifteen different species of fish."

CHAPTER XIII

Leaves from my Note-book

ROBERT V. S. MITCHELL writes to *Nature* that he has himself observed a species of carp grow from less than an inch in length to between ten and eleven inches in three months, the conditions being particularly favourable.

Extract from ship's prayer book:

" Most heartily we beseech Thee with Thy favour to behold our most gracious Sovereign Lord King George, the King of Spain, the Presidents of the Portuguese and Ibero-American Republics and the President of the United States; and so replenish them, etc., etc.

A woman, to encourage me, writes: " Robert was the name of my first love: he hanged himself."

The pelvic fins, when a fish is resting, have very much the same cupping action as human hands when the swimmer is floating on his back.

Saville Kent describes various species of fish in which the male and female are of different colours, and mentions the capture of one which had male

colouration on one side and female on the other. When dissected the fish proved to be hermaphrodite.

A girl on board ship was described to me as "*most* attractive, very well off indeed."

Pearling skipper to man ashore who will have to wade to the boat: "You'll have to get the meat out of the shells," meaning he'd have to take off his boots.

When French naturalists first saw the tentacles of the coral "anemones" they associated them with the octopus which was known to them as *la Poulpe*, a name taken from the Latin *Polypus*, meaning many-footed; so they called these organisms "polyps."

Deep-sea corals are solitary. Like crystalline lace, these white rosettes scarcely bigger than a florin have been dredged from over 2,000 fathoms.

It has been calculated that some of the slower-growing corals might take 7,000 years to build a reef 150 feet thick, whereas some of the quicker-growing ones might achieve the same thickness in about a quarter of the time.

"Planters' Punch":
One of Sour (one part *fresh* Lime Juice).
Two of Sweet (two parts sugar).
Three of Strong (three parts old Jamaica rum).
Four of Weak (four parts water and ice).

Add a dash of bitters. Shake well. Serve very cold in a tall glass with cracked ice. Add a cherry.

Sharks go into deep water during a storm. The Bermudian extracts the oil from their brain and liver and keeps it in a sealed bottle. When the weather is fair, the oil is clear; when bad weather approaches, the oil becomes cloudy, particularly on the side on which the storm is coming.

In the alligator farm at Los Angeles, it is perfectly safe for the keeper to wander about during the summer months when the animals are well fed, hot and lazy, but in January in the breeding season, the same man dare not put a foot inside the pen.

At business houses in Suez all money is rung on a stone slab before acceptance, in order to make sure it is genuine.

Generally speaking, the fish showed no fear of me when I was under water, but on one occasion when I had a boat hook in my hand they were thoroughly scared by it, and it was only necessary to point it in their direction for them to scatter in all directions.

Taedy Murphy tells of a wake in County Cork:

"Glory be to God! He had a quiet death, he with ninety years on him, sittin' there listenin' to the wireless. Well, praise be to God! Didn't he cross over with the latest news?

"And the wake he had, with ivery wan of his children and ivery mother's son of his grandchildren, and his ould woman sittin' in the corner, and the keeners screeching, and whisky flowing, and Guinness foaming, and the poor old corpse sittin' up there with his pipe in his mouth and the cards in his hands and his ear still cocked for the wireless.

"'I've come to tell you how sorry I am,' said Mrs. Flanagan.

"'I didn't suppose you'd come to tell me how glad you were,' murmured Mrs. Doolan sadly; and there were the little children sobbing and holding on to their mothers, and half-witted Nelly screeching, and cross-eyed Mike pouring out the whisky while red-haired Dan tried to keep his wife from tearing out the eyes of her sister-in-law—engaged in an argument they were over a sow.

"The friends and the relations and them that was neither all dropped in to show their respect or, maybe, to get a free swig from the bottle. A long queue of blue-cloaked women and black-coated men stretched down the stony lane, and on the road itself was a procession of ass carts all anchored to the hedge. 'Twas early hours in the morning when the last of them were leaving.

"'Praise be to God, 'twas a grand wake! Mustn't she be the proud woman!' said Paddy O'Sullivan.

"Mrs. O'Sullivan, his wife, dropped back for a last word of comfort to the widow.

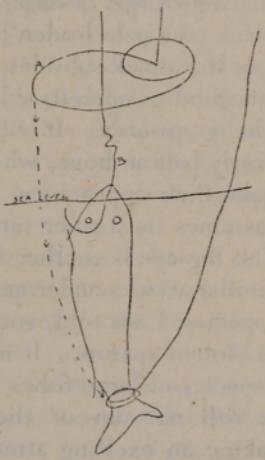
"'Fifty years, was it, Mrs. Doolan?' she asked.

" ' Fifty years,' said Mrs. Doolan slowly, 'and—I—niver—liked—him.' "

R.W. Shufeldt, writing in *The American Naturalist* on the psychology of fishes, says: "The Snowy Grouper, when over-teased in any way, or sometimes without even that provocation, or when its food is presented to it, whether the act be voluntary or involuntary, passed through a peculiar fit or spasm, simulating all the symptoms of a dying fish. Not only this, but the specimen so behaving *changes in colour* from the normal brownish-black to a pale leaden hue, and as the spasmodic stage of the attack subsides, the fish comes to lie perfectly motionless upon its side, or else floats on the bottom, belly upwards. It will remain in this condition for nearly half an hour, when signs of animation again make their appearance, and the individual gradually assumes its former normal condition and colour. The Big-eye is another species exhibiting somewhat similar attacks under nearly like conditions, but this species, I am told, sometimes dies in one of its more violent spasms. It is a well-known fact that some species of large fishes that prey upon smaller species will not devour them unless captured when making an exciting attempt to escape, and in full vigour of health. They will not touch a dead specimen, or even one in the act of dying. . . . Now, this peculiar fit that seizes the young of the Snowy Grouper may be due to the result of an acute reaction caused by fear; but, on the other hand, it may be something of the nature of ' feigning death,'

and thus be useful to the form in nature. Possibly there may be some large form in the seas that preys upon young Snowy Groupers, and *prefers* to take them only in the excitement of actual chase, and ignores a dead or dying one."

We are told by scientists that the Chaetodonts and other gay fish of the coral reefs existed in European seas about fifty million years ago.



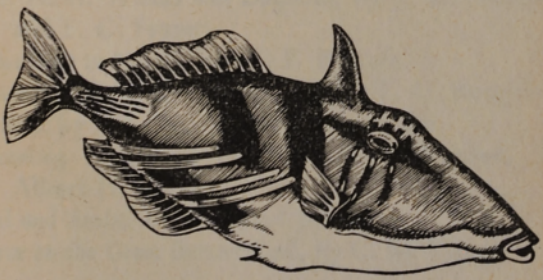
The captain of the Ormer makes a drawing to illustrate his directions for getting a large shark on board. Slip running bowline noose (A) down rope (B), on which shark is hooked, over the fish and pull taut round tail. Then slack away hook and heave by tail.

La Rochelle, town and harbour of mediæval towers and turrets, of red sails, blue boats and golden sun blinds. An elderly Scotch lady returning on the tender thought it was nasty, thought all French towns were nasty.

Shoals of "fry," leaping to avoid pursuers, rise from the water like jets of fine spray, rising and falling in a series of glittering arches.

Instances of man's colour change in new surroundings are given by Apsley Cherry-Garrard in *The Worst Journey in the World*, where he mentions that the eyes of one member of the expedition changed from brown to blue while in the polar regions, and that under the same conditions his own beard, which would normally have been brown, came out white.

The ordinary is far more extraordinary than the extraordinary.



Postscript

THIS book is not meant to be anything more than a record of personal experiences in following up a subject which became of ever-increasing interest to the writer. Nothing that has been said or drawn in it can give more than the faintest hint of the world of loveliness which awaits our study. For those who wish to pursue the matter further there is a list of books appended, each one by a master of his own theme.

Nonsuch : Land of Water, by William Beebe.

Field Book of the Shore Fishes of Bermuda, by William Beebe and John Tee-Van.

Desert and Water Gardens of the Red Sea, by Cyril Crossland.

Science of the Sea, edited by G. Herbert Fowler.

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A History of Fishes, by J. R. Norman.

Giant Fishes, Whales and Dolphins, by J. R. Norman and F. C. Fraser.

Camouflage in Nature, by W. P. Pycraft.

Wonders of the Great Barrier Reef, by T. C. Roughley.

The Seas, by F. S. Russell and C. M. Yonge.

Concealing Coloration in the Animal Kingdom, by Albert H. Thayer.

Coral and Atolls, by F. Wood-Jones.

A Year on the Great Barrier Reef, by C. M. Yonge.

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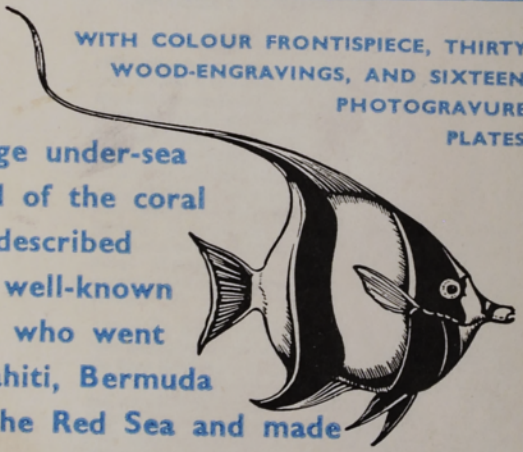

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Robert Gibbings "was born in Cork in 1889 and educated in the snipe bogs and trout streams of Munster." Also attended the National University of Ireland, and in London the Slade School and the Central School of Arts and Crafts. During the war he served at Gallipoli and Salonica; in 1924 he took over the Golden Cockerel Press and ran it for nine years, producing books which will long remain some of the finest examples of English printing. It was largely through his efforts that the Society of Wood-engravers came into being. At present he is a Lecturer in Wood-engraving and Typography at Reading University.

He has a passion for tropical islands and likes getting off into strange places to draw. He finds sketching under the sea the most satisfactory way of drawing fish and corals, and has ambitions to visit the Great Barrier Reef of Australia, the East Indies, Melanesia, Micronesia and Polynesia—in fact, "anywhere else there's coral and coral fish."

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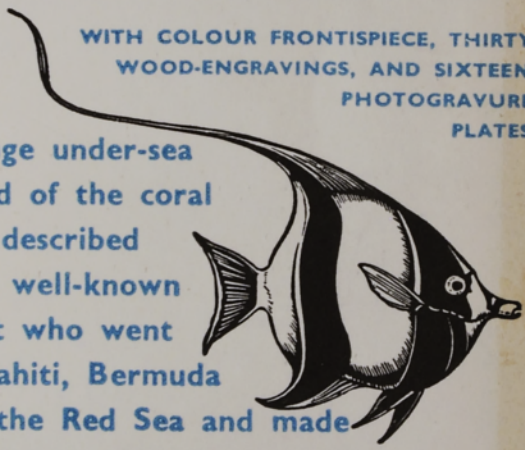

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