

CHAPTER III

BETWEEN THE DIPPER AND THE SOUTHERN CROSS

The cruise which began on March 6th was the authentic start of our Galápagos project. I elected to sail on the Nixe with Steve and Kathy, while the others went on the Charybdis. Owing to the tides our start took place late in the morning, and we took the same course we had taken a few days before to collect the freight. I felt very relaxed and content as we sailed along the east shore of Santa Cruz. A moderate swell was running with only erratic light winds to ruffle now and then the glassy smoothness of the sea waves on which we rose and fell. We went under power of our auxiliaries with sails set to take advantage of the occasional breeze. The Nixe's motor is a one-cylinder diesel whose slow pounding rhythm reminded me of the single-cylinder two-cycle engines with which I grew up from boyhood on the Maine coast. From those engines I had learned my first lessons about the sea. Now in this far away place the reliable sound resurrected the old established feeling of security and confidence.

We arrived at our anchorage in the bay between the Plaza Islands early in the afternoon, and I went ashore immediately. I worked until the sun was low over Santa Cruz Island. The next day we all returned on shore and photographed until noon. From the previous visit I knew what I wanted to do and wasted little time going about it. I felt compelled to photograph everything even though I was aware that more interesting examples of the plants, and pictures of the animals in more dramatic settings could probably be obtained on other islands. I was experiencing

a sort of photographic "buck fever" which made intelligent discrimination difficult. The important thing was to concentrate on the unique features of the island, the vegetation, and this despite my excitement I fortunately did. The opuntias still bore many blossoms although they had passed their peak, but the beds of portulacca on the cliff top and extending over the open eastern end of the island were in full bloom. Three and a half months later on the last day of our stay we stopped again on South Plaza Island. Autumn had come in the meantime, and the aspect of the ground cover had changed completely. The portulacca had long since gone to seed. Its leaves had changed from fresh green to a deep crimson - the island was red with their color. It was the October of their year.

In the afternoon we crossed the channel that separates the Plaza Islands from Santa Cruz to a small cove on Santa Cruz at the foot of Cerro Colorado. The latter is a hill composed of lava blocks, reddish-brown ash, and tuffs. A stand of tree cacti had attracted our attention but the place is much more notable for its geology. This is one of the few places in the Galápagos where fossiliferous marine limestone is exposed. The complicated structure of lava, tuffs, and sedimentary rock indicates old eruptions through the limestone layers and submarine basalt flows, and upheavals in a sequence not yet clearly understood, but dating back possibly into the Miocene. In more recent times the cove was used by whalers and perhaps by pirates. The fragments of European pottery that can still be found above the beaches are the remaining evidence of this use.

Later in the afternoon we sailed on to South Channel to

anchor behind the same reef where we had spent the night on the trip to Baltra. I slept on deck in the star light. It was to become a habit that I shared with my son and his wife. In the tropics - and we were in the very center of the tropics - the length of the days and nights does not vary greatly throughout the year. Each is twelve hours long, more or less, and the twilights of dawn and dusk are short. On cloudless nights - and most nights in the spring are cloudless - the stars come out fast. When the moon is down they hang with incredible brightness and clarity in the black sky. Nowhere except in the high country of our western states have I seen such an array of stars as in the dustless Galapagos skies. They come right down to the horizon. Often I went to bed so early that immediate sleep was impossible and I would lie on my back in my sleeping bag watching the constellations between pole and pole wheel slowly overhead. I saw meteors scratch the surface of the dark, and the sunlit globes of satellites swing past and vanish into the invisible shadow of the earth. In March on the Equator the Great Dipper hangs upside down in the northern sky, its two pointer stars aimed at a point on the horizon where the North Star is just out of sight. The southern hemisphere, filled with strange constellations, is diagonally bisected by the Milky Way whose brightness extends undiminished to the very meeting place of sea and sky. To its right like a spilled bit of the milk ~~is~~ a sparkling patch of brightness marks the greater Magallanic Cloud. And slanting under this river of stars the Southern Cross points its foot at the unmarked south celestial pole. As night advances the Dipper tilts westward and the Southern Cross swings upright and then it too leans toward the west, pivoting on the

southern pole. If you wake at night and wonder how far off is the dawn the slant of the Southern Cross will tell you.

After an early breakfast we weighed anchor and in the misty morning light set our helms for the dim outline of Daphne Major six miles to the northwest. In his book, Galápagos, World's End, William Beebe describes the sandy floor of Daphne Major's crater dotted with evenly spaced blue-footed boobies nests. I wanted to see this spectacle for myself, so this island was our next destination. The sea was fairly calm and the low sun was intermittantly obscured by thin scattered clouds. In an hour of motoring we had come in close under the sea-cut cliffs of Daphne's eroded flanks and were cruising along looking for a landing place. Not only did we seek a wave-cut bench on which to land from a small boat with our equipment, but also a place with access to the slope above the cliff. We found the only spot where these two features coincided and where other parties before us, I am sure, had landed -- a platform barely above the wash of the waves below a broken section of the cliff. Here we disembarked two at a time passing our gear from hand to hand up the steepest places to the beginning of a faint path which led diagonally across the rubblely slope of the crater's side to the lowest place on the rim.

The cone of Daphne is the peak of a volcano that a million years or more ago burst from the floor of the Pacific, shot a blast of ash and pumice into the air, erupted for a while and then died. It is like several other small cones that exploded out of the ocean long ago and it resembles in shape and structure many of the volcanoes that grew on the shore of the larger islands as secondary eruptions. Its mouth is tilted to one side, like the crater where I first saw

flamingoes, as though during its active period a strong wind had moulded its rim. This same tilted configuration occurs in the cones around Sullivan Bay and James Bay on San Salvador Island, and is still visible in many of the cluster of time-aged and overgrown cones that form the summit of Santa Cruz Island. The sea has been working at Daphne since its birth, whittling away and paring down its sloping sides - undermining and chewing them off. Given time, and time is in plentiful supply, the sea from which it rose will reclaim it all.

From the dip on the lip of Daphne we looked down expectantly into the crater. Instead of a colony of hundreds of nesting boobies, we saw a flat, chalky plain an eighth of a mile across practically devoid of bird life. Here and there a few living birds were standing around; several of them proved to be cripples unable to fly that would soon perish from starvation. This fate had already overcome a number of their contemporaries whose carcasses were strewn over the surface in all stages of disintegration and decay. Around the edge of the flat bottom in cactus and scrubby bushes were a few nests of frigatebirds, one containing a white egg, the others downy young in different stages of development. It slowly dawned on us that we had arrived during the slack period between breeding seasons. The dregs of the one just past lay spread out before us, while the next cycle had not yet begun. We climbed down to examine this refuse more closely. The floor consisted of a whitish deposit of bone fragments and a pumice gravel coated with bird lime and compacted into a hard layer by the year after year tramping of thousands of webbed feet. Embedded in the surface were egg fragments, bits of the fragile bones of hatchlings, the

stronger bones of more mature birds, and the durable skeletons of adult boobies. The homogenizing process of decay obliterates at last all differentiation of age and body structure converting all organic matter into a gray dust. Hundreds of birds must die each year, yet the species survives. A study of the life cycle of boobies has shown that although each female lays two eggs, only one young bird is raised to maturity. This seems to come about through the working of a normal biological pruning process, the survival value of which is obscure. Because the eggs are laid in succession and incubation starts with the laying of the first one, they do not hatch on the same day. The first chick, therefore, has a head start on its sibling, receives more food, grows faster, is stronger, and eventually monopolizes the care of its parent so that the younger one ultimately dies of neglect and starvation. These dead chicks disappear into the soil of the nesting colony.

The small ubiquitous lava lizard, Tropidurus, occurs on almost all of the Galapagos Islands, and Daphne Major is no exception. They have adapted themselves to a mode of life on each island that fits their food resources and their physical environment. Thus at Academy Bay the larger males are speckled in light and dark colors in shades of brown and green and black to match the ground litter and porous lava of the dry chaparral behind the mangroves. On Espinosa Point of Fernandina and on the shore of Hood Island, where they forage on the dark lava rock close to the tidal zones, a black pigmentation nearly obscures the pattern on their skin. In Daphne crater they are grayer, lighter and more variegated to match the sandy soil. On each dead booby a pair of lizards had staked out a claim to the carrion insects attracted to

the dead body. They snapped at the flies as they alighted on the feathers and burrowed under the boddies for small beetles. Here was an adaptation by the lizards to a bird colony without which they scarcely could have survived, but how they got to Daphne in the first place is the recurring mystery of the archipelago. If the lizards had any enemies we did not see them, although Galápagos hawks could easily fly over from Santa Cruz to prey on them.

It was on Daphne we saw our first red-billed tropic birds. They nest in small caves and crevices in the rocky inner and outer slopes of the crater. The first one I saw came plummeting down out of the sky while I was photographing a frigate bird and disappeared into a hole in the crater slope only a few yards from where I stood. When I went to investigate I could dimly see far back in the nest cavity a bright red bill, a black stripe on a white head, and an unblinking eye. I sensed something menacing about the bird's appearance; perhaps the powerful bill like a bloody dagger deterred me from pushing my investigation further.

We left Daphne, after photographing masked boobies on the outer slope, resolved to return - but we never did. Too many other islands and our limited time prevented our coming back. From Daphne we sailed eastward to Isla Mosquera, a small sandy strip of an island, to visit a large sea lion colony. Waves were breaking on the shelving beach with a surge that carried them far up on the sand. We had to wait for the relative calm that follows a series of big waves before rowing in on the crest of a small one. As we hit the beach we all piled out and held the boat against being sucked back by the retreating water while all our gear was handed out. Then we dragged the boat up the beach out of reach of

the waves. Not all landings were executed with this precision. More often than I like to admit our seamanship was deplorable. We have stumbled when disembarking, fallen flat in the water, lost hold of the boat, and barely recovered in time to avoid a swamping. Our awkwardness fortunately was more than compensated for by the seamanship of Carl and Fritz, who were always able to save the situation. No cameras were lost or damaged although we ourselves were often soaked through. But in 80-degree water and on the Equator too, a soaking mattered little. Sneakers were wet all the time anyway, and our scanty clothing - shorts only for the men - dried with incredible speed in the Galápagos atmosphere.

The sea lions occupied the whole length of the beach for a quarter of a mile. They paid us little attention as we moved cautiously among them, taking alarm only if we moved too suddenly. Then they would rouse from their sleep, roar at the unexpected intrusion, and flop into the sea. The cows were for the most part an indolent lot who didn't like to be disturbed, raising their heads to stare at us curiously and with a weary groan resuming their napping. "Don't bother me", they seemed to say. But the bulls were of a different stripe; they had their responsibilities and they took them seriously. When disturbed in the midst of their harems, they responded with angry roars and ungainly, lumbering charges. The best part of valor was then to retreat, for they can move at times with surprising speed. The structure of the colony - its division into family groups - was only detectable when two bulls tried to out-roar or out-posture one another. At this point of dispute, then, their respective territories adjoined.

25 SCOTTON FIBER

As the tide comes in over the rocky east side of Mosquera the red crabs forsake their grazing pastures and advance up the shore ahead of the rising water. They gather on all elevated positions like refugees escaping a flood, but the flood is no danger to them. Every rock and stump is crowded with them. They cling to their positions unshaken by breaking waves, until the inundation reaches a certain degree, determined it seems by a subtle balance between water, foam, and air, when they desert their places for drier ones farther up the shore. Their numbers and their deliberate, halting progression are like the advance of an army that must maintain its internal communications.

Leaving Mosquera with the sun low in the west we sailed south to Baltra Harbor, where we had gone to collect our freight, for a quieter night's anchorage. When we woke in the morning we saw fresh turtle tracks on the beach, like the trails of small treaded vehicles, straight up the sand into the brush at the top of the beach. The Galápagos Islands are one of the most important nesting places of the Pacific green turtle, and although the season for egg laying had passed we hoped still to find a few late breeders. Laying is done at night in pits dug in the sand well above the high tide line. Sometimes a turtle is discovered on a beach in the evening as she begins her search for a nesting site, or in the morning with her task not yet completed. At the peak of the season the chance of finding a female on a beach in daylight is greatest, of course, but I hoped for luck in this respect and so was encouraged by the sight of fresh tracks on Baltra. We decided to see what could be found on the beaches along the north shore of Santa Cruz, which were known to be favored nesting haunts of the green turtle.

Our hopes rose as we neared a long white, shell sand beach where we could see through our binoculars a lacework of tracks. Some of the tracks extended down into the inter-tidal zone over which the tide was rising, proving that they had been made during the past night. A landing did not seem to present any great difficulties to our inexperienced eyes, and we were already preparing our cameras when Fritz announced that it was too rough to land. The swell had come up during the night - the far-reaching effects of a distant storm - causing a heavy surf that he said would swamp the light dinghies. It is difficult to judge without practice the force of surf from the sea side of a beach with the waves all running away from you. You cannot see the height of their curling tops or the drag beneath them as they suck the water down the sand before the final crash. Only experience warns you how dangerously deceptive the off-shore view is, and how different from the aspect on land. So we turned away for the time being and set a course for Sullivan Bay on San Salvador, a four-hour sail.

From a preoccupation with wild life and the problems of photographing conscious, alert living creatures, I found myself precipitated into a world of dead geological monuments and volcanic phenomena. Sullivan Bay is more of a strait between San Salvador and Bartholomé Island than it is a bay. At our anchorage in the tropical, ultramarine and turquoise blue waters of the strait we looked south at San Salvador into a scene of utter desolation. A fiery catastrophe had not long ago overtaken the land. At least a dozen cones and craters of many sizes and degrees of weathering to browns and grays rose above a field of black basalt that had enveloped their bases and poured on irresistibly into the sea.

The lava could hardly have been more than a century old, and judging by the freshness of its surface probably considerably less. Whence the outpouring came, from what smoking cavern leading from the cone of the submarine Galápagos platform we could not tell; perhaps it issued from a rift on the side of the higher peaks. That the melted rock belched forth in a fiery stream of fast flowing lava is indicated by the nature of its frozen surface. Locally called plate lava, the geological name is the Hawaiian word pahoehoe. As it solidified the surface was compressed horizontally into twisted, parallel wrinkles like pieces of rope laid together side by side. On further cooling the crust broke up into slabs forced by the dynamics of the flow to stand on edge or to override one another. Eventually the entire flow solidified into an undulating plane of ridges and troughs resembling the standing waves in river rapids. The intrinsic color of this slaggy material as seen on broken edges is a dark gray, almost black, whereas the under surface of the crust where it was separated from the melt is a glassy olive green. The upper surface, exposed as it cooled to the immediate oxidizing action of the air, is covered with shiny facets of iridescent purples, blues, and browns. Since it reflects a considerable fraction of incident light at certain angles it appears much lighter than the frothy, fragmented slag heaps of lava in other flows.

We landed on a white, shell-sand beach behind which a barrier of old sand dunes had deflected the flow. Here, my son, his wife and I made a discovery that diverted us for a time from our original purpose. Scattered through the flotsam deposited by the tide we found dozens of violet shells, of all sizes, of the

pelagic *Janthina* snail, a mollusk that drifts on the surface of tropical seas suspended from a raft of bubbles. The animal manufactures the raft from mucus that it secretes and which hardens into a froth as durable as styrafoam. Many of the snails we found were still attached to fragments of their floats. They were all empty. What freak of winds and tides and currents had carried these beautiful snails to this one isolated, protected beach was a mystery that would always remain unsolved. During all the rest of our stay in the Galápagos and on all of the many beaches we walked never again did we find a single *Janthina* snail.

Leaving the beach from which we had gathered all the *Janthinas* we could find, I set off across the rolling lava flow towards a red cinder cone a mile along the shore of Sullivan Bay. It was easy going on the ropery lava, ascending one ridge after another and descending into the trough beyond it, walking always on the flat fragments of crust. I could imagine they were the scales of the body of an enormous reptile and that I was a minute ectoparasite. Later when we assayed the volcano on Fernandina I was to appreciate more fully the advantages this kind of lava gave to a volcano climber. At the foot of the cinder cone whose purple-red sides, frosted with whitish lichens, rose straight up out of the enveloping black flow I found a cactus growing improbably from a crack in the plate lava. It was a plant of the species *Brachycereus* endemic to the Galápagos Islands, its short, yellow-tipped branches spreading candelabrum-like from a single hidden base. What it found to nourish its apparently luxurious growth in this barren soillessness was the mineral richness of the rock

from which its roots extracted the needed chemicals. We were later to find it growing in other equally hostile environments where not even lichens had become established; among the scoria on the rims of dead volcanic vents, and in the furnace-like heat of the desiccated lava flows on Fernandina.

The unseen is always more compelling than what lies in sight before one. Thus the other side of a hill, the next beach along a coast, or the unexplored canyon beyond a bend draws one on irresistibly. And so the far side of the red cinder cone attracted me. It might have been the same back there as where I stood beside the *Brachycereus*, but as if in reward for my curiosity it turned out to be a place such as would interest even an experienced volcanist. The lava flow had apparently been blocked here, and as pressure built up in the highly fluid magma it melted through the crust that had frozen over it to squirt from many vents in what must have been a spectacular natural pyrotechnic display. The hot liquid built up small spatter cones encrusted with globules of greenish, brownish, and bluish volcanic glass. When the vents were active the force of ejection covered the surface around the cones for a considerable distance with frozen spatterings. Not many people had visited this place before us. Although appearances can be deceptive, the formations seemed to be of recent origin; no obvious weathering had taken place, and the particles of brittle glass were unbroken except where they had been crushed under our feet. Some solidified bubbles showed where the lava had failed to break through the crust and had flowed away leaving on the under side a forest of olive green, icicle-like drippings.

The next day we cruised south along the east shore of

San Salvador to another small bay protected by another volcanic island named locally Sombrero Chino after its coolie hat shape. The water was incredibly clear, and in this bay we had our first taste of fish-watching with snorkel, fins and mask. It is an occupation that can quickly become an addiction, being an experience very near to flying. You lie face down on the surface of the water - and at a temperature of 80 degrees after a hot morning on shore it is a delightful sensation - breathing easily through your tube and watching the schools of bright colored fish swim beneath you indifferent to your presence. You feel very much a part of the environment. By ducking down below the end of your snorkel you can get a fish-eye view of the surface, which makes you feel even more at home. The undulating silver sheet above your head separates you completely from the world of air-breathing creatures, but when some curious playful young sea lions come to investigate, you know the separation is not very great. They bring their air with them and are continually belching out great blasts of glistening bubbles that drift upwards like clusters of Christmas tree ornaments. When you dive down to get a closer look at some object on the bottom, don't forget to take a deep breath first so that you will have reserve air for blowing out the snorkel when you return to the surface and will be able to resume your fish watching without interruption.

Sea lions spend much time on shore and the older bulls may actually be on land more than in the water. They bask in the sun on warm days and seek out caves in the lava where they sleep at night and in cool, foggy weather. Sometimes they wander quite far inland in search of shelters to which they establish trails

that follow routes of least resistance. On San Salvador opposite Sombrero Chino we found such a seal track that extended inland for more than one hundred yards. It followed the top of a lava tube to its origin in a partly collapsed lava bubble from which the melted rock had welled out and flowed away on a snakey course to the sea forming the tube. The trail was unmistakable. Generations of sea lions had coated it with a hard, chalk-like deposit of excrement and salt, and polished it with their sliding bodies to a porcelain finish that shone in the sun. On other islands during subsequent cruises we came across basking plazas in groves of giant opuntias where the glare from the whitened, polished rock dazzled our eyes. Old bulls lay about here between the orange trunks of the cactus trees, their course hair turning from dark amber to a sandy yellow as they dried.

Perhaps a word about lava tubes is appropriate at this point. When melted rock pours forth from a volcanic crater it will take a course that follows the line of least resistance, swerving aside this way and that as obstacles are encountered. It may rush forth in massive irresistible flows or in thin hot rivulets that are easily diverted from side to side. Under conditions of favorable temperature, viscosity, and composition the surface of the liquid cools and stiffens without crumbling to provide a shell around the fluid core of the flow, insulating it against further loss of heat and so containing it and providing a tube or tunnel to conduct it away from its source. As the eruption diminishes and lava ceases to be expelled, the contents of the tubes flow away and out through their lower ends without solidifying, leaving behind hollow, rock-walled passages. Lava

tunnels occur in all sizes from cavernous holes miles in length and as wide as a railway tunnel to meandering, surface conduits scarcely a foot in diameter. Only the more fluid types of lava produce tubes; the massive, slow moving rivers of rock that push a crumbling front of clinkers and scoria ahead of them cannot produce this kind of formation. Many of the caves that are found in old volcanic areas are the uncollapsed remains of these lava tunnels. In the Galápagos small lava tubes are very common, when near the shore they are used by sea lions as routes to resting places away from the sea. On the high slopes they appear as snakey ridges leading down the sides of old cones, and look like giant examples of the mud built termite tunnels that these insects construct to preserve perpetually their world of darkness. It is possible to imagine pale, fearsome, ant-like creatures creeping through them on their mysterious errands, ready to attack anyone who breaches the security of their gloomy caverns. And in the uplands on the older islands one comes upon the brown and weather-beaten backs of old tubes, that still ring hollow to the blow of a stone, winding through the grass and bracken.

I had been told by an employee of the Darwin Station of a flock of flamingoes feeding in the shallow crater lake in the largest of the Bainbridge Rocks. We sailed by the low side of the rim to have a look. The outer wall of the crater was here no more than fifteen feet high, and from the top of the mast it was possible to see into the interior. A choppy sea made my perch on the mast head very uncomfortable. I was flipped back and forth so violently by the motion, multiplied many times by the height of the mast, that clinging to the thin wire shrouds hurt my hands. Twisting

one leg and one arm around a shroud I was able to hold myself more rigidly by crook of knee and elbow and so give full attention to the scene before me. And there was that unforgettable sight: A small blue lake encircled with green with pink birds wading on the far side. I counted thirty flamingoes. The time, however, for landing was not propitious. The rock shelf on which a landing would have to be made was alternately high and dry or submerged under several feet of water as the seas broke against the cliff. The risk of wetting our cameras was so great that we decided to postpone the attempt, and sailed back to the north shore of Santa Cruz to try again our luck with the green turtles.

On the way we caught a dolphin on a troll. To a certain extent we were living off the sea and land so a dolphin was an important catch: It provided us with a meal. If one has never seen a live dolphin its edibility would be considered its greatest attribute and its food quality its greatest gift to piscine culinary art. The flesh of a dolphin is light and sweet, equal in delicacy to Lake Superior whitefish before they were killed off by the advent of lampreys. A dolphin makes a dish worthy to set before the most fastidious gourmet. But compared with the living creature the uses of a dead one are but dross from smelted gold. A dolphin is a fish at home in the surface of tropical seas; a fish of speed and grace and iridescent beauty. To catch a dolphin is to commit an act of ultimate disdain for the miracle of creation, and to ingest a dolphin is to perpetrate a final indignity to the species as great as eating lark's tongues is the last indignity to larks. And yet we caught and ate dolphins without suffering more than a moment of shame. Our dolphin was hauled on board fighting

desperately against the irresistible steel barb in his lips. His high, blunt forehead would plow the waves no more; his dark green, azure spangled back has glided unseen for the last time through the blue watery empyrean. His great yellow eyes stare hopelessly as with a final desperate effort he seeks, by convulsive flopping, to regain his native element. He soon is clubbed into insensibility and as he pours his scarlet blood upon the deck his vibrant living colors fade to the gray of death. The azure lights along his sides become mere palish lifeless spots. His green and yellow belly, the color of a freshly picked lemon, that served to make him invisible in the shining surface of the sea to the eyes of his enemies below, change to dirty slime slipping from his scales in stringy masses. No longer a dolphin, he has become a dead fish merely.

This time, although the swell had been severe on Bainbridge Rocks, it had moderated considerably on Santa Cruz, and we landed without difficulty. The tracks we had seen led to nests at the top of the beach, every one of which had been plundered by wild pigs. There were the curled and empty parchment shells lying in the bottoms of the dug-out nesting pits. It was a discouraging sight. Pigs, introduced by whaling ship captains, are without doubt the most destructive of all the exotic animals in the Galápagos Islands. They are so efficient in locating green turtle nests that on Santa Cruz and San Salvador where they abound the breeding success of the turtles is at a minimum. Few turtle eggs on these islands ever hatch, and still fewer young turtles reach the sea. Such depredations on important breeding beaches if continued could seriously reduce the Pacific green turtle population. This unfortunately is not the worst of the predations of wild pigs.

They prey also on the eggs and young of the Galápagos tortoises whose survival has become a matter of concern to conservationists throughout the world, and on land iguanas and ground nesting birds such as the Galápagos duck. If ever they gained access to bird colonies - the flamingo colony on Isabela is one they might be able to penetrate - they would wreck irreparable havoc. Goats are another exotic that is causing great damage to Galápagos vegetation and indirectly to the reptilian fauna, but they are probably easier to control than swine. It has been advised that the pigs might be eliminated by introducing into the population the virus disease of swine cholera. Since, however, the farmers on the inhabited islands keep domestic hogs the disease might spread to them causing food shortage and economic hardship. Any such control measure would have to be carried out under the strictest supervision by trained epizootiologists, with provisions for prompt compensation for private loss.

Although we didn't find any nesting turtles, Fritz Angemeyer, who knew this coast well, took us by dinghy into what he called turtle cove, a maze of shallow bays and channels leading back into a lava flow over-grown with mangrove, manzanillo, and water hali. The water was murky green with algae and infested with small white-tipped sharks. One did not dangle one's hand in this water. But back in these bays also were large numbers of green turtles that found rich foraging around the mangrove roots. We saw and heard the turtles all around us as they came to the surface to breath. A beaked square head would appear followed by a sucking intake of air, then a silent, rippleless disappearance. Near the end of one of the tortuous inlets we landed on a spit of

25% COTTON FIBER

lava from which more elevated position we could look down into the water a greater distance than was possible from the seats in the dinghy. The turtles were thick around this point - mostly females, Fritz said, stating that he could tell this by their short tails - and their dim outlines could be seen as they rowed along below the surface, using their narrow front flippers like oars. When alarmed they could disappear at high speed, but most of the time they swam around close to the rock where we stood, paying us little attention.

That night we anchored farther to the west in another inlet, unnamed on the chart, that the Angemeyers called Venice Bay after its many narrow channels. Unlike Turtle Bay the water was a clear deep turquoise blue. Several tiny craggy islets of black scoria on which grew mangrove and Jasminocereus and opuntia cacti added to the complexity of the inlets. I woke on deck at dawn, my sleeping bag wet with dew, to a chorus of bird song mostly from the throats of yellow warblers but with less melodious contributions from mockingbirds. The atmosphere was more like a New England May morning than like Melville's description of a place he disliked where the only sound heard was a hiss. We explored Venice Bay before moving to a new anchorage at a sandy beach for a visit to Dragon Hill, a mound of weathered ash and pumice, named for the colony of land iguanas that live around its base. Behind the beach lay a salt marsh filled with the tangled stems of the fleshy-leaved salicornia through which we made our way to see the iguanas. This was our second experience with these animals. I spent a long time with my son's help trying to photograph them before they dove into their burrows. My success was not great. Because this colony has been a target both for collecting and photographing by many

expeditions the reptiles have become wary and unapproachable.

The next night we anchored at Bowditch Point on the northwest corner of Santa Cruz opposite the Guy Fawkes Islands in the shelter of three tiny islets. I was lulled to sleep by the sound of surf and the gentle rolling of the Nixe in the swell that broke over a protecting reef between two of the islets. In the morning we began our return to Academy Bay around the western side of Santa Cruz but made one more stop first on Eden Island where Beebe had captured an octopus in 1923 when he visited the Galápagos on the steam yacht Noma. Eden is half a crater on the inner curve of which is found its only beach; and this beach is the first of its kind we had seen. The sand is olive green composed, not of shell fragments, but of polished granules of the volcanic rock olivine. Olivine beaches occur on many of the islands, some so dark that they have been given names like Celeta Black on Isabela, and Black Beach on Floreana, famous for its history of marooned sailors, intrigue, mayhem and murder. Other beaches we visited on later trips are red or purple deriving their color from the ground-up lava that composes them. But Olivine is the most beautiful of all minerals that form beaches. Its grains are clear, like the grains in quartz sand, but pale yellow green, polished to smooth opalescent ^{ph}steroids. A sand rich in olivine and containing grains of black, ruby, emerald, and topaz colored minerals is a treasure hoard under a high power glass.

25% COTTON FIBER