

CHAPTER XIII.

Chiloe—General aspect—Boat excursion—Native Indians—Castro—Tame fox—Ascend San Pedro—Chonos Archipelago—Peninsula of Tres Montes—Granitic range—Boat-wrecked sailors—Low's Harbour—Wild potato—Formation of peat—Myopotamus, otter and mice—Cheucau and Barking-bird—Opetiorhynchus—Singular character of Ornithology—Petrels.

CHILOE AND CHONOS ISLANDS.

November 10th.—THE Beagle sailed from Valparaiso to the south, for the purpose of surveying the southern part of Chile, the island of Chiloe, and the broken land called the Chonos Archipelago, as far south as the Peninsula of Tres Montes. On the 21st we anchored in the bay of S. Carlos, the capital of Chiloe.

This island is about ninety miles long, with a breadth of rather less than thirty. The land is hilly, but not mountainous, and is covered by one great forest, except where a few green patches have been cleared round the thatched cottages. From a distance the view somewhat resembles that of Tierra del Fuego; but the woods, when seen nearer, are incomparably more beautiful. Many kinds of fine evergreen trees, and plants with a tropical character, here take the place of the gloomy beech of the southern shores. In winter the climate is detestable, and in summer it is only a little better. I should think there are few parts of the world, within the temperate regions, where so much rain falls. The winds are very boisterous, and the sky almost always clouded: to have a week of fine weather is something wonderful. It is even difficult to get a single glimpse of the Cordillera: during our first visit, once only the volcano of Osorno stood out in bold relief, and that was before sunrise; it was curious to watch, as the sun rose, the outline gradually fading away in the glare of the eastern sky.

The inhabitants, from their complexion and low stature, appear to have three-fourths of Indian blood in their veins. They are an humble, quiet, industrious set of men. Although the fertile soil, resulting from the decomposition of the volcanic rocks, supports a rank veg-

etation, yet the climate is not favourable to any production which requires much sunshine to ripen it. There is very little pasture for the larger quadrupeds; and in consequence, the staple articles of food are pigs, potatoes, and fish. The people all dress in strong woollen garments, which each family makes for itself, and dyes with indigo of a dark blue colour. The arts, however, are in the rudest state;—as may be seen in their strange fashion of ploughing, their method of spinning, grinding corn, and in the construction of their boats. The forests are so impenetrable, that the land is nowhere cultivated except near the coast and on the adjoining islets. Even where paths exist, they are scarcely passable from the soft and swampy state of the soil. The inhabitants, like those of Tierra del Fuego, move about chiefly on the beach or in boats. Although with plenty to eat, the people are very poor: there is no demand for labour, and consequently the lower orders cannot scrape together money sufficient to purchase even the smallest luxuries. There is also a great deficiency of a circulating medium. I have seen a man bringing on his back a bag of charcoal, with which to buy some trifle, and another carrying a plank to exchange for a bottle of wine. Hence every tradesman must also be a merchant, and again sell the goods which he takes in exchange.

November 24th.—The yawl and whale-boat were sent under the command of Mr. (now Captain) Sullivan, to survey the eastern or inland coast of Chiloe; and with orders to meet the Beagle at the southern extremity of the island; to which point she would proceed by the outside, so as thus to circumnavigate the whole. I accompanied this expedition, but instead of going in the boats the first day, I hired horses to take me to Chacao, at the northern extremity of the island. The road followed the coast; every now and then crossing promontories covered by fine forests. In these shaded paths it is absolutely necessary that the whole road should be made of logs of wood, which are squared and placed by the side of each other. From the rays of the sun never penetrating the evergreen foliage, the ground is so damp and soft, that except by this means neither man nor horse would be able to pass along. I arrived at the village of Chacao, shortly after the tents belonging to the boats were pitched for the night.

The land in this neighbourhood has been extensively cleared, and there were many quiet and most picturesque nooks in the forest. Chacao was formerly the principal port in the island; but many ves-

sels having been lost, owing to the dangerous currents and rocks in the straits, the Spanish government burnt the church, and thus arbitrarily compelled the greater number of inhabitants to migrate to S. Carlos. We had not long bivouacked, before the barefooted son of the governor came down to reconnoitre us. Seeing the English flag hoisted at the yawl's mast-head, he asked, with the utmost indifference, whether it was always to fly at Chacao. In several places, the inhabitants were much astonished at the appearance of men-of-war's boats, and hoped and believed it was the forerunner of a Spanish fleet, coming to recover the island from the patriot government of Chile. All the men in power, however, had been informed of our intended visit, and were exceedingly civil. While we were eating our supper, the governor paid us a visit. He had been a lieutenant-colonel in the Spanish service, but now was miserably poor. He gave us two sheep, and accepted in return two cotton handkerchiefs, some brass trinkets, and a little tobacco.

25th.—Torrents of rain: we managed, however, to run down the coast as far as Huapi-lenou. The whole of this eastern side of Chiloe has one aspect: it is a plain, broken by valleys and divided into little islands, and the whole thickly covered with one impervious blackish-green forest. On the margins there are some cleared spaces, surrounding the high-roofed cottages.

26th.—The day rose splendidly clear. The volcano of Osorno was spouting out volumes of smoke. This most beautiful mountain, formed like a perfect cone, and white with snow, stands out in front of the Cordillera. Another great volcano, with a saddle-shaped summit, also emitted from its immense crater little jets of steam. Subsequently we saw the lofty-peaked Corcovado—well deserving the name of “el famoso Corcovado.” Thus we beheld, from one point of view, three great active volcanos, each about seven thousand feet high. In addition to this, far to the south, there were other lofty cones covered with snow, which, although not known to be active, must be in their origin volcanic. The line of the Andes is not, in this neighbourhood, nearly so elevated as in Chile; neither does it appear to form so perfect a barrier between the regions of the earth. This great range, although running in a straight north and south line, owing to an optical deception, always appeared more or less curved; for the lines drawn from each peak to the beholder's eye, necessarily

converged like the radii of a semicircle, and as it was not possible (owing to the clearness of the atmosphere and the absence of all intermediate objects) to judge how far distant the farthest peaks were off, they appeared to stand in a flattish semicircle.

Landing at midday, we saw a family of pure Indian extraction. The father was singularly like York Minster; and some of the younger boys, with their ruddy complexions, might have been mistaken for Pampas Indians. Everything I have seen, convinces me of the close connexion of the different American tribes, who nevertheless speak distinct languages. This party could muster but little Spanish, and talked to each other in their own tongue. It is a pleasant thing to see the aborigines advanced to the same degree of civilization, however low that may be, which their white conquerors have attained. More to the south we saw many pure Indians: indeed, all the inhabitants of some of the islets retain their Indian surnames. In the census of 1832, there were in Chiloe and its dependencies forty-two thousand souls: the greater number of these appear to be of mixed blood. Eleven thousand retain their Indian surnames, but it is probable that not nearly all of these are of a pure breed. Their manner of life is the same with that of the other poor inhabitants, and they are all Christians; but it is said that they yet retain some strange superstitious ceremonies, and that they pretend to hold communication with the devil in certain caves. Formerly, every one convicted of this offence was sent to the Inquisition at Lima. Many of the inhabitants who are not included in the eleven thousand with Indian surnames, cannot be distinguished by their appearance from Indians. Gomez, the governor of Lemuy, is descended from noblemen of Spain on both sides; but by constant intermarriages with the natives the present man is an Indian. On the other hand, the governor of Quinchao boasts much of his purely kept Spanish blood.

We reached at night a beautiful little cove, north of the island of Caucahue. The people here complained of want of land. This is partly owing to their own negligence in not clearing the woods, and partly to restrictions by the government, which makes it necessary before buying ever so small a piece, to pay two shillings to the surveyor, for measuring each quadra (150 yards square), together with whatever price he fixes for the value of the land. After his valuation, the land must be put up three times to auction, and if no one bids

more, the purchaser can have it at that rate. All these exactions must be a serious check to clearing the ground, where the inhabitants are so extremely poor. In most countries, forests are removed without much difficulty by the aid of fire; but in Chiloe, from the damp nature of the climate, and the sort of trees, it is necessary first to cut them down. This is a heavy drawback to the prosperity of Chiloe. In the time of the Spaniards the Indians could not hold land; and a family, after having cleared a piece of ground, might be driven away, and the property seized by the government. The Chilian authorities are now performing an act of justice by making retribution to these poor Indians, giving to each man, according to his grade of life, a certain portion of land. The value of uncleared ground is very little. The government gave Mr. Douglas (the present surveyor, who informed me of these circumstances) eight and a half square miles of forest near San Carlos, in lieu of a debt; and this he sold for 350 dollars, or about 70*l.* sterling.

The two succeeding days were fine, and at night we reached the island of Quinchao. This neighbourhood is the most cultivated part of the Archipelago; for a broad strip of land on the coast of the main island, as well as on many of the smaller adjoining ones, is almost completely cleared. Some of the farmhouses seemed very comfortable. I was curious to ascertain how rich any of these people might be, but Mr. Douglas says that no one can be considered as possessing a regular income. One of the richest landowners might possibly accumulate, in a long industrious life, as much as 1000*l.* sterling; but should this happen, it would all be stowed away in some secret corner, for it is the custom of almost every family to have a jar or treasure-chest buried in the ground.

November 30th.—Early on Sunday morning we reached Castro, the ancient capital of Chiloe, but now a most forlorn and deserted place. The usual quadrangular arrangement of Spanish towns could be traced, but the streets and plaza were coated with fine green turf, on which sheep were browsing. The church, which stands in the middle, is entirely built of plank, and has a picturesque and venerable appearance. The poverty of the place may be conceived from the fact, that although containing some hundreds of inhabitants, one of our party was unable anywhere to purchase either a pound of sugar or an ordinary knife. No individual possessed either a watch or a

clock; and an old man, who was supposed to have a good idea of time, was employed to strike the church bell by guess. The arrival of our boats was a rare event in this quiet retired corner of the world; and nearly all the inhabitants came down to the beach to see us pitch our tents. They were very civil, and offered us a house; and one man even sent us a cask of cider as a present. In the afternoon we paid our respects to the governor—a quiet old man, who, in his appearance and manner of life, was scarcely superior to an English cottager. At night heavy rain set in, which was hardly sufficient to drive away from our tents the large circle of lookers on. An Indian family, who had come to trade in a canoe from Caylen, bivouacked near us. They had no shelter during the rain. In the morning I asked a young Indian, who was wet to the skin, how he had passed the night. He seemed perfectly content, and answered, “Muy bien, señor.”

December 1st.—We steered for the island of Lemuy. I was anxious to examine a reported coal-mine, which turned out to be lignite of little value, in the sandstone (probably of an ancient tertiary epoch) of which these islands are composed. When we reached Lemuy we had much difficulty in finding any place to pitch our tents, for it was spring-tide, and the land was wooded down to the water's edge. In a short time we were surrounded by a large group of the nearly pure Indian inhabitants. They were much surprised at our arrival, and said one to the other, “This is the reason we have seen so many parrots lately; the cheucau (an odd red-breasted little bird, which inhabits the thick forest, and utters very peculiar noises) has not cried ‘beware’ for nothing.” They were soon anxious for barter. Money was scarcely worth anything, but their eagerness for tobacco was something quite extraordinary. After tobacco, indigo came next in value; then capsicum, old clothes, and gunpowder. The latter article was required for a very innocent purpose: each parish has a public musket, and the gunpowder was wanted for making a noise on their saint or feast days.

The people here live chiefly on shell-fish and potatoes. At certain seasons they catch also, in “corrales,” or hedges under water, many fish which are left on the mud-banks as the tide falls. They occasionally possess fowls, sheep, goats, pigs, horses, and cattle; the order in which they are here mentioned, expressing their respective numbers. I never saw anything more obliging and humble than the manners

of these people. They generally began with stating, that they were poor natives of the place, and not Spaniards, and that they were in sad want of tobacco and other comforts. At Caylen, the most southern island, the sailors bought with a stick of tobacco, of the value of three-halfpence, two fowls, one of which, the Indian stated, had skin between its toes, and turned out to be a fine duck; and with some cotton handkerchiefs, worth three shillings, three sheep and a large bunch of onions were procured. The yawl at this place was anchored some way from the shore, and we had fears for her safety from robbers during the night. Our pilot, Mr. Douglas, accordingly told the constable of the district that we always placed sentinels with loaded arms, and not understanding Spanish, if we saw any person in the dark, we should assuredly shoot him. The constable, with much humility, agreed to the perfect propriety of this arrangement, and promised us that no one should stir out of his house during that night.

During the four succeeding days we continued sailing southward. The general features of the country remained the same, but it was much less thickly inhabited. On the large island of Tanqui there was scarcely one cleared spot, the trees on every side extending their branches over the sea-beach. I one day noticed, growing on the sandstone cliffs, some very fine plants of the panke (*Gunnera scabra*), which somewhat resembles the rhubarb on a gigantic scale. The inhabitants eat the stalks, which are subacid, and tan leather with the roots, and prepare a black dye from them. The leaf is nearly circular, but deeply indented on its margin. I measured one which was nearly eight feet in diameter, and therefore no less than twenty-four in circumference! The stalk is rather more than a yard high, and each plant sends out four or five of these enormous leaves, presenting together a very noble appearance.

December 6th.—We reached Caylen, called “el fin del Cristianidad.” In the morning we stopped for a few minutes at a house on the northern end of Laylec, which was the extreme point of South American Christendom, and a miserable hovel it was. The latitude is $43^{\circ} 10'$, which is two degrees farther south than the Rio Negro on the Atlantic coast. These extreme Christians were very poor, and, under the plea of their situation, begged for some tobacco. As a proof of the poverty of these Indians, I may mention that shortly before

this, we had met a man, who had travelled three days and a half on foot, and had as many to return, for the sake of recovering the value of a small axe and a few fish. How very difficult it must be to buy the smallest article, when such trouble is taken to recover so small a debt!

In the evening we reached the island of San Pedro, where we found the *Beagle* at anchor. In doubling the point, two of the officers landed to take a round of angles with the theodolite. A fox (*Canis fulvipes*), of a kind said to be peculiar to the island, and very rare in it, and which is a new species, was sitting on the rocks. He was so intently absorbed in watching the work of the officers, that I was able, by quietly walking up behind, to knock him on the head with my geological hammer. This fox, more curious or more scientific, but less wise, than the generality of his brethren, is now mounted in the museum of the Zoological Society.

We stayed three days in this harbour, on one of which Captain Fitz Roy, with a party, attempted to ascend to the summit of San Pedro. The woods here had rather a different appearance from those on the northern part of the island. The rock, also, being micaceous slate, there was no beach, but the steep sides dipped directly beneath the water. The general aspect in consequence was more like that of *Tierra del Fuego* than of *Chiloe*. In vain we tried to gain the summit: the forest was so impenetrable, that no one who has not beheld it, can imagine so entangled a mass of dying and dead trunks. I am sure that often, for more than ten minutes together, our feet never touched the ground, and we were frequently ten or fifteen feet above it, so that the seamen as a joke called out the soundings. At other times we crept one after another on our hands and knees, under the rotten trunks. In the lower part of the mountain, noble trees of the *Winter's Bark*, and a laurel like the *sassafras* with fragrant leaves, and others, the names of which I do not know, were matted together by a trailing bamboo or cane. Here we were more like fishes struggling in a net than any other animal. On the higher parts, brushwood takes the place of larger trees, with here and there a red cedar or an *alerce* pine. I was also pleased to see, at an elevation of a little less than 1000 feet, our old friend the southern beech. They were, however, poor stunted trees; and I should think that this must be nearly their northern limit. We ultimately gave up the attempt in despair.

December 10th.—The yawl and whale-boat, with Mr. Sullivan, proceeded on their survey, but I remained on board the *Beagle*, which the next day left San Pedro for the southward. On the 13th we ran into an opening in the southern part of Guayatecas, or the Chonos Archipelago; and it was fortunate we did so, for on the following day a storm, worthy of Tierra del Fuego, raged with great fury. White massive clouds were piled up against a dark blue sky, and across them black ragged sheets of vapour were rapidly driven. The successive mountain ranges appeared like dim shadows; and the setting sun cast on the woodland a yellow gleam, much like that produced by the flame of spirits of wine. The water was white with the flying spray, and the wind lulled and roared again through the rigging: it was an ominous, sublime scene. During a few minutes there was a bright rainbow, and it was curious to observe the effect of the spray, which, being carried along the surface of the water, changed the ordinary semicircle into a circle—a band of prismatic colours being continued, from both feet of the common arch across the bay, close to the vessel's side: thus forming a distorted, but very nearly entire ring.

We stayed here three days. The weather continued bad; but this did not much signify, for the surface of the land in all these islands is all but impassable. The coast is so very rugged that to attempt to walk in that direction requires continued scrambling up and down over the sharp rocks of mica-slate; and as for the woods, our faces, hands, and shin-bones all bore witness to the maltreatment we received, in merely attempting to penetrate their forbidden recesses.

December 18th.—We stood out to sea. On the 20th we bade farewell to the south, and with a fair wind turned the ship's head northward. From Cape Tres Montes we sailed pleasantly along the lofty weather-beaten coast, which is remarkable for the bold outline of its hills, and the thick covering of forest even on the almost precipitous flanks. The next day a harbour was discovered, which on this dangerous coast might be of great service to a distressed vessel. It can easily be recognised by a hill 1600 feet high, which is even more perfectly conical than the famous sugar-loaf at Rio de Janeiro. The next day, after anchoring, I succeeded in reaching the summit of this hill. It was a laborious undertaking, for the sides were so steep that in some parts it was necessary to use the trees as ladders. There were also several extensive brakes of the *Fuchsia*, covered with its beautiful

drooping flowers, but very difficult to crawl through. In these wild countries it gives much delight to gain the summit of any mountain. There is an indefinite expectation of seeing something very strange, which, however often it may be balked, never failed with me to recur on each successive attempt. Every one must know the feeling of triumph and pride which a grand view from a height communicates to the mind. In these little frequented countries there is also joined to it some vanity, that you perhaps are the first man who ever stood on this pinnacle or admired this view.

A strong desire is always felt to ascertain whether any human being has previously visited an unfrequented spot. A bit of wood with a nail in it, is picked up and studied as if it were covered with hieroglyphics. Possessed with this feeling, I was much interested by finding, on a wild part of the coast, a bed made of grass beneath a ledge of rock. Close by it there had been a fire, and the man had used an axe. The fire, bed, and situation showed the dexterity of an Indian; but he could scarcely have been an Indian, for the race is in this part extinct, owing to the Catholic desire of making at one blow Christians and Slaves. I had at the time some misgivings that the solitary man who had made his bed on this wild spot, must have been some poor shipwrecked sailor, who, in trying to travel up the coast, had here laid himself down for his dreary night.

December 28th.—The weather continued very bad, but it at last permitted us to proceed with the survey. The time hung heavy on our hands, as it always did when we were delayed from day to day by successive gales of wind. In the evening another harbour was discovered, where we anchored. Directly afterwards a man was seen waving his shirt, and a boat was sent which brought back two seamen. A party of six had run away from an American whaling vessel, and had landed a little to the southward in a boat, which was shortly afterwards knocked to pieces by the surf. They had now been wandering up and down the coast for fifteen months, without knowing which way to go, or where they were. What a singular piece of good fortune it was that this harbour was now discovered! Had it not been for this one chance, they might have wandered till they had grown old men, and at last have perished on this wild coast. Their sufferings had been very great, and one of their party had lost his life by falling from the cliffs. They were sometimes obliged to separate in search of food, and

this explained the bed of the solitary man. Considering what they had undergone, I think they had kept a very good reckoning of time, for they had lost only four days.

December 30th.—We anchored in a snug little cove at the foot of some high hills, near the northern extremity of Tres Montes. After breakfast the next morning, a party ascended one of these mountains, which was 2400 feet high. The scenery was remarkable. The chief part of the range was composed of grand, solid, abrupt masses of granite, which appeared as if they had been coeval with the beginning of the world. The granite was capped with mica-slate, and this in the lapse of ages had been worn into strange finger-shaped points. These two formations, thus differing in their outlines, agree in being almost destitute of vegetation. This barrenness had to our eyes a strange appearance, from having been so long accustomed to the sight of an almost universal forest of dark-green trees. I took much delight in examining the structure of these mountains. The complicated and lofty ranges bore a noble aspect of durability—equally profitless, however, to man and to all other animals. Granite to the geologist is classic ground: from its wide-spread limits, and its beautiful and compact texture, few rocks have been more anciently recognised. Granite has given rise, perhaps, to more discussion concerning its origin than any other formation. We generally see it constituting the fundamental rock, and, however formed, we know it is the deepest layer in the crust of this globe to which man has penetrated. The limit of man's knowledge in any subject possesses a high interest, which is perhaps increased by its close neighbourhood to the realms of imagination.

January 1st, 1835.—The new year is ushered in with the ceremonies proper to it in these regions. She lays out no false hopes: a heavy north-western gale, with steady rain, bespeaks the rising year. Thank God, we are not destined here to see the end of it, but hope then to be in the Pacific Ocean, where a blue sky tells one there is a heaven,—a something beyond the clouds above our heads.

The north-west winds prevailing for the next four days, we only managed to cross a great bay, and then anchored in another secure harbour. I accompanied the Captain in a boat to the head of a deep creek. On the way the number of seals which we saw was quite astonishing: every bit of flat rock, and parts of the beach, were cov-

ered with them. They appeared to be of a loving disposition, and lay huddled together, fast asleep, like so many pigs; but even pigs would have been ashamed of their dirt, and of the foul smell which came from them. Each herd was watched by the patient but inauspicious eyes of the turkey-buzzard. This disgusting bird, with its bald scarlet head, formed to wallow in putridity, is very common on the west coast, and their attendance on the seals shows on what they rely for their food. We found the water (probably only that of the surface) nearly fresh: this was caused by the number of torrents which, in the form of cascades, came tumbling over the bold granite mountains into the sea. The fresh water attracts the fish, and these bring many terns, gulls, and two kinds of cormorant. We saw also a pair of the beautiful black-necked swans, and several small sea-otters, the fur of which is held in such high estimation. In returning, we were again amused by the impetuous manner in which the heap of seals, old and young, tumbled into the water as the boat passed. They did not remain long under water, but rising, followed us with outstretched necks, expressing great wonder and curiosity.

7th.—Having run up the coast, we anchored near the northern end of the Chonos Archipelago, in Low's Harbour, where we remained a week. The islands were here, as in Chiloe, composed of a stratified, soft, littoral deposit; and the vegetation in consequence was beautifully luxuriant. The woods came down to the sea-beach, just in the manner of an evergreen shrubbery over a gravel walk. We also enjoyed from the anchorage a splendid view of four great snowy cones of the Cordillera, including "el famoso Corcovado:" the range itself had in this latitude so little height, that few parts of it appeared above the tops of the neighbouring islets. We found here a party of five men from Caylen, "el fin del Cristiandad," who had most adventurously crossed in their miserable boat-canoe, for the purpose of fishing, the open space of sea which separates Chonos from Chiloe. These islands will, in all probability, in a short time become peopled like those adjoining the coast of Chiloe.

The wild potato grows on these islands in great abundance, on the sandy, shelly soil near the sea-beach. The tallest plant was four feet in height. The tubers were generally small, but I found one, of an oval shape, two inches in diameter: they resembled in every respect, and

had the same smell as English potatoes; but when boiled they shrunk much, and were watery and insipid, without any bitter taste. They are undoubtedly here indigenous: they grow as far south, according to Mr. Low, as lat. 50°, and are called Aquinas by the wild Indians of that part: the Chilotan Indians have a different name for them. Professor Henslow, who has examined the dried specimens which I brought home, says that they are the same with those described by Mr. Sabine* from Valparaiso, but that they form a variety which by some botanists has been considered as specifically distinct. It is remarkable that the same plant should be found on the sterile mountains of central Chile, where a drop of rain does not fall for more than six months, and within the damp forests of these southern islands.

In the central parts of the Chonos Archipelago (lat. 45°), the forest has very much the same character with that along the whole west coast, for 600 miles southward to Cape Horn. The arborescent grass of Chiloe is not found here; while the beech of Tierra del Fuego grows to a good size, and forms a considerable proportion of the wood; not, however, in the same exclusive manner as it does farther southward. Cryptogamic plants here find a most congenial climate. In the Strait of Magellan, as I have before remarked, the country appears too cold and wet to allow of their arriving at perfection; but in these islands, within the forest, the number of species and great abundance of mosses, lichens, and small ferns, is quite extraordinary.† In Tierra del Fuego trees grow only on the hill-sides; every level piece of land being invariably covered by a thick bed of peat; but in Chiloe flat land supports the most luxuriant forests. Here, within the Chonos Archipelago, the nature of the climate more closely approaches that of Tierra del Fuego than that of northern Chiloe; for every patch of level ground is covered by two species of plants

* Horticultural Transact., vol. v. p. 249. Mr. Caldcleugh sent home two tubers, which, being well manured, even the first season produced numerous potatoes and an abundance of leaves. See Humboldt's interesting discussion on this plant, which it appears was unknown in Mexico,—in *Polit. Essay on New Spain*, book iv. chap. ix.

† By sweeping with my insect-net, I procured from these situations a considerable number of minute insects, of the family of Staphylinidæ, and others allied to *Pselaphus*, and minute Hymenoptera. But the most characteristic family in number, both of individuals and species, throughout the more open parts of Chiloe and Chonos, is that of the Telephoridæ.

(*Astelia pumila* and *Donatia magellanica*), which by their joint decay compose a thick bed of elastic peat.

In Tierra del Fuego, above the region of woodland, the former of these eminently sociable plants is the chief agent in the production of peat. Fresh leaves are always succeeding one to the other round the central tap-root; the lower ones soon decay, and in tracing a root downwards in the peat, the leaves, yet holding their place, can be observed passing through every stage of decomposition, till the whole becomes blended in one confused mass. The *Astelia* is assisted by a few other plants,—here and there a small creeping *Myrtus* (*M. nummularia*), with a woody stem like our cranberry and with a sweet berry,—an *Empetrum* (*E. rubrum*), like our heath,—a rush (*Juncus grandiflorus*), are nearly the only ones that grow on the swampy surface. These plants, though possessing a very close general resemblance to the English species of the same genera, are different. In the more level parts of the country, the surface of the peat is broken up into little pools of water, which stand at different heights, and appear as if artificially excavated. Small streams of water, flowing underground, complete the disorganization of the vegetable matter, and consolidate the whole

The climate of the southern part of America appears particularly favourable to the production of peat. In the Falkland Islands almost every kind of plant, even the coarse grass which covers the whole surface of the land, becomes converted into this substance: scarcely any situation checks its growth; some of the beds are as much as twelve feet thick, and the lower part becomes so solid when dry, that it will hardly burn. Although every plant lends its aid, yet in most parts the *Astelia* is the most efficient. It is rather a singular circumstance, as being so very different from what occurs in Europe, that I nowhere saw moss forming by its decay any portion of the peat in South America. With respect to the northern limit, at which the climate allows of that peculiar kind of slow decomposition which is necessary for its production, I believe that in Chiloe (lat. 41° to 42°), although there is much swampy ground, no well characterized peat occurs: but in the Chonos Islands, three degrees farther southward, we have seen that it is abundant. On the eastern coast in La Plata (lat. 35°) I was told by a Spanish resident, who had visited Ireland, that he had often sought for this substance, but had never been able to find any. He

showed me, as the nearest approach to it which he had discovered, a black peaty soil, so penetrated with roots as to allow of an extremely slow and imperfect combustion.

The zoology of these broken islets of the Chonos Archipelago is, as might have been expected, very poor. Of quadrupeds two aquatic kinds are common. The *Myopotamus Coypus* (like a beaver, but with a round tail) is well known from its fine fur, which is an object of trade throughout the tributaries of La Plata. It here, however, exclusively frequents salt water; which same circumstance has been mentioned as sometimes occurring with the great rodent, the *Capybara*. A small sea-otter is very numerous; this animal does not feed exclusively on fish, but, like the seals, draws a large supply from a small red crab, which swims in shoals near the surface of the water. Mr. Bynoe saw one in Tierra del Fuego eating a cuttle-fish; and at Low's Harbour, another was killed in the act of carrying to its hole a large volute shell. At one place I caught in a trap a singular little mouse (*M. brachiotis*); it appeared common on several of the islets, but the Chilotans at Low's Harbour said that it was not found in all. What a succession of chances,* or what changes of level must have been brought into play, thus to spread these small animals throughout this broken archipelago!

In all parts of Chiloe and Chonos, two very strange birds occur, which are allied to, and replace, the Turco and Tapacolo of central Chile. One is called by the inhabitants "Cheucau" (*Pteroptochos rubecula*): it frequents the most gloomy and retired spots within the damp forests. Sometimes, although its cry may be heard close at hand, let a person watch ever so attentively he will not see the cheucau; at other times, let him stand motionless and the red-breasted little bird will approach within a few feet in the most familiar manner. It then busily hops about the entangled mass of rotting canes and branches, with its little tail cocked upwards. The cheucau is held in superstitious fear by the Chilotans, on account of its strange and varied cries. There are three very distinct cries: one is called "chidu-

* It is said that some rapacious birds bring their prey alive to their nests. If so, in the course of centuries, every now and then, one might escape from the young birds. Some such agency is necessary, to account for the distribution of the smaller gnawing animals on islands not very near each other.

co,” and is an omen of good; another, “huitreu,” which is extremely unfavourable; and a third, which I have forgotten. These words are given in imitation of the noises; and the natives are in some things absolutely governed by them. The Chilotans assuredly have chosen a most comical little creature for their prophet. An allied species, but rather larger, is called by the natives “Guid-guid” (*Pteroptochos Tarnii*), and by the English the barking-bird. This latter name is well given; for I defy any one at first to feel certain that a small dog is not yelping somewhere in the forest. Just as with the cheucau, a person will sometimes hear the bark close by, but in vain may endeavour by watching, and with still less chance by beating the bushes, to see the bird; yet at other times the guid-guid fearlessly comes near. Its manner of feeding and its general habits are very similar to those of the cheucau.

On the coast,* a small dusky-coloured bird (*Opetiorhynchus Patagonicus*) is very common. It is remarkable from its quiet habits; it lives entirely on the sea-beach, like a sandpiper. Besides these birds only few others inhabit this broken land. In my rough notes I describe the strange noises, which, although frequently heard within these gloomy forests, yet scarcely disturb the general silence. The yelping of the guid-guid, and the sudden whew-whew of the cheucau, sometimes come from afar off, and sometimes from close at hand; the little black wren of Tierra del Fuego occasionally adds its cry; the creeper (*Oxyurus*) follows the intruder screaming and twittering; the humming-bird may be seen every now and then darting from side to side, and emitting, like an insect, its shrill chirp; lastly, from the top of some lofty tree the indistinct but plaintive note of the white-tufted tyrant-flycatcher (*Myiobius*) may be noticed. From the great preponderance in most countries of certain common genera of birds, such as the finches, one feels at first surprised at meeting with the peculiar forms above enumerated, as the commonest birds in any district. In central Chile two of them, namely, the *Oxyurus* and *Scytalopus*, occur, although most rarely. When finding, as in this

* I may mention, as a proof of how great a difference there is between the seasons of the wooded and the open parts of this coast, that on September 20th. in lat. 34°, these birds had young ones in the nest, while among the Chonos Islands, three months later in the summer, they were only laying; the difference in latitude between these two places being about 700 miles.

case, animals which seem to play so insignificant a part in the great scheme of nature, one is apt to wonder why they were created. But it should always be recollected, that in some other country perhaps they are essential members of society, or at some former period may have been so. If America south of 37° were sunk beneath the waters of the ocean, these two birds might continue to exist in central Chile for a long period, but it is very improbable that their numbers would increase. We should then see a case which must inevitably have happened with very many animals.

These southern seas are frequented by several species of Petrels: the largest kind, *Procellaria gigantea*, or nelly (quebrantahuesos, or break-bones, of the Spaniards), is a common bird, both in the inland channels and on the open sea. In its habits and manner of flight, there is a very close resemblance with the albatross; and as with the albatross, a person may watch it for hours together without seeing on what it feeds. The "break-bones" is, however, a rapacious bird, for it was observed by some of the officers at Port St. Antonio chasing a diver, which tried to escape by diving and flying, but was continually struck down, and at last killed by a blow on its head. At Port St. Julian these great petrels were seen killing and devouring young gulls. A second species (*Puffinus cinereus*), which is common to Europe, Cape Horn, and the coast of Peru, is of a much smaller size than the *P. gigantea*, but, like it, of a dirty black colour. It generally frequents the inland sounds in very large flocks: I do not think I ever saw so many birds of any other sort together, as I once saw of these behind the island of Chiloe. Hundreds of thousands flew in an irregular line for several hours in one direction. When part of the flock settled on the water the surface was blackened, and a noise proceeded from them as of human beings talking in the distance.

There are several other species of petrels, but I will only mention one other kind, the *Pelacanoides Berardi*, which offers an example of those extraordinary cases, of a bird evidently belonging to one well-marked family, yet both in its habits and structure allied to a very distinct tribe. This bird never leaves the quiet inland sounds. When disturbed it dives to a distance, and on coming to the surface, with the same movement takes flight. After flying by the rapid movement of its short wings for a space in a straight line, it drops, as if struck dead, and dives again. The form of its beak and nostrils, length of

foot, and even the colouring of its plumage, show that this bird is a petrel: on the other hand, its short wings and consequent little power of flight, its form of body and shape of tail, the absence of a hind toe to its foot, its habit of diving, and its choice of situation, make it at first doubtful whether its relationship is not equally close with the auks. It would undoubtedly be mistaken for an auk, when seen from a distance, either on the wing, or when diving and quietly swimming about the retired channels of Tierra del Fuego.