

as male. So far as I know, the plumage of the young, which differs from that of the adult bird, has never been described :—

MEASUREMENT.					
Male	L. 7.50	..	W. 4.25	.. B. .69 .. T. 1
Female	..	L. 6.75	..	W. 3.75	.. B. .69 .. T. 1

I landed on my last expedition on the 8th April, 1885, returning in May, during which time I went to the centre of the island, where I knew their favourite resort, to obtain some specimens for the use of the New Zealand museums. I was then successful in observing a pair feed their young, (two males and one female,) which must have been a late brood. I also shot some, shedding their first plumage, as per specimen shown, the yellowish band round the chest beginning to show, also the white ear feathers, and the throat, neck, and head changing from grey to black. When very young, the male is of similar plumage to the female, except the yellow shoulders.

These very rare birds will soon disappear, even from these lonely wilds, owing to the domestic wild cats, which are very numerous, and commit great havoc among them, and also the Sparrow-hawk (*Hieracidea novæ-zealandiæ*) and "Morepork," (*Athene novæ-zealandiæ*) in whose crops I have often found their remains.

ART. XIII.—*Notes on New Zealand Ornithology: Observations on Procellaria parkinsoni (Grey), Brown Petrel (Taiko).*

By A. REISCHEK, F.L.S.

[Read before the Auckland Institute, 27th July, 1885.]

THESE birds are found round the coast of New Zealand; I have seen them over a hundred miles from land, cruising about in a similar manner to, and in company with, the Albatross (*Diomedea exulans*), but they never go near enough to a vessel to be caught, nor do they pick up the food thrown overboard, as the Albatross does. This Petrel is gregarious, and I have seen them in large flocks together, resting on the water. Their power of flight is marvellous. In July, 1879, outside the Kaipara, on the west coast of North New Zealand, I had an opportunity of observing these birds, having to lay by outside the bar for several days, being unable to enter, as it was blowing one of the severest gales experienced in these seas; they cruised about, dipping the points of their wings at intervals in the water, then suddenly swooping down through the foaming waves for their prey; rising with the next wave, and repeating their former action. From July to November these birds are always out at sea. In November they come ashore to their breeding places, on the top of high and

steep mountains, which they choose for the purpose of easier flight, as they have difficulty in ascending from the level ground.

They are expert climbers; I saw them, by the aid of their sharp claws, their bill, and wings, climbing up trees out of the perpendicular, from whence they flew away. In November, 1882, on the eastern slope, and near the centre of the Little Barrier or Hauturu Island, situated north of Auckland, at about 2,300 feet above sea level, on a steep precipitous ridge, I noticed my dog repeatedly setting at burrows, which, on examination, I found contained *Procellaria parkinsoni*; they were cleaning out their old burrows; and, staying to observe, I noticed them digging with their bills, removing the earth by a backward motion of their feet, till the burrow was cleansed. In most cases I found them working, in others the burrows were clean and the refuse outside; some burrows in loose soil, others under the roots of trees and under stones, also in hollow trees. I have found them sometimes very far inland, always on the tops of mountains.

In December, 1884, on the Waitakerei Ranges, 1,000 feet above sea-level, and twelve miles from the ocean, I found the female sitting on an egg, nearly hatched. I measured several burrows of these birds, the entrance was from 8 to 12 inches in diameter, the depth from $1\frac{1}{2}$ to $2\frac{1}{2}$ feet, and the height about 1 foot. When they have finished cleaning out the burrows, which process male and female accomplish together, they remain quietly till the last rays of the sun have disappeared, then any one can hear them call, which is similar to the Black Swan (*Cygnus atrata*), and, on coming out, they stop a moment, pick up a few leaves or grass, and go back into the burrows; this they repeat several times, and always on entering the chamber they make a peculiar noise together. After dark both come out, rise and circle round, calling until they attract others, and when a large flock is assembled they fly away to their haunts on the ocean, returning before daylight. At this season, before they lay, they are very fat. When caught, on their return from the ocean, if they cannot protect themselves by scratching and biting, they expectorate a lot of oily matter on their assailant. The first time I caught one of these birds it treated me in this manner. As soon as they have finished building their careless nest, which is a deepening in the chamber, with a few leaves in it, the female lays one white egg about the size of that produced by a Brahma fowl. When the female lays, the male separates from her during the day, while she is hatching, and remains in a separate burrow of his own not far away. The first egg of the *Procellaria parkinsoni* I found on the 28th November, 1882, at the Little Barrier. After this date I found and examined several, but never found more than one egg or young in a nest, and the female always sitting on the egg.

I watched these birds by moonlight, and have seen the male come out of his burrow and fly away; returning after a time, and circling round in the air, he swooped down to the burrow of the female, striking the ground with a force that could be heard some distance. He stopped outside a little, then entered, and I heard a whimpering noise. After this a bird came out and flew away, returning after a time to the same burrow, and in a few minutes once again emerged and flew away; but returned before daylight, and using the same precaution on entering as before. Then one bird came out and went to the second burrow. I examined the burrow where this process was going on, and on putting my hand in it was severely bitten, which was repeated on my trying to lay hold of the bird, which drew back into the chamber. So I dug with a tomahawk till I reached where the bird was sitting, and tried to take the egg from under it, which I partially succeeded in doing, when I was again so severely bitten that I had to let it go. As soon as I did so, the bird with its bill rolled it back into the nest. I protected my hand, and then took the egg, which was quite fresh. My dog went to the bird, which attacked him furiously. On examination I found this was a female. I then went to the other burrow, where I saw the bird go in. This bird defended itself in the same plucky manner. There was no egg in this chamber, and on examination I found this bird was a male. About the end of December I found a female in a burrow, with one small chick covered with grey down, which she defended furiously. I have also found very young birds in January, even as late as April. As soon as the young birds are a few days old, the parents leave them in the burrow from before sunrise till after sunset, while they go to seek food. On their return, they circle round the burrow as before, stopping at the entrance to call, which the young birds immediately answer. After entering they make a whimpering noise. The old birds leave and return several times in a night. Once or twice only have I found adult birds in the burrow during the day, when they had their young; the reason being that, not having left the burrow before daylight, they are afraid to leave till evening. If they find their burrows disturbed they will not go in.

The Natives are very careful, when taking the young *Taikos*, not to disturb the burrows. They make expeditions in May to the islands where these Petrels are breeding. In former times each tribe had their ground, which they visited every year, and defended obstinately against the intruder. The birds were taken out with a flexible stick, pointed at one end and split, which was pushed into the burrow till the bird was felt, when they twisted the stick round in the down and pulled out the bird gently; then bit the head, to kill it. They then took the bird's bill, to cut the skin under the crop, and pulled out the

oil-bag, which was thrown away, as the oil would spoil the flesh for food. They pluck each bird as they get them, and when a large number are obtained carry them to the camp, where they singe the down off over a fire; then they roast the bird until the fat is extracted, and, placing them in a vessel made of totara bark, they cover them with the fat to keep them air-tight. When preserved in this manner they keep a length of time. I saw the Natives very often preserving them during my researches in the King Country, beginning of 1882; and have eaten and found them excellent. If the Natives disturb any of the Petrels' burrows, they always restore them. These birds, which were very numerous on the Little Barrier Island during the breeding season, I found on my last visit (April and May, 1885), had become very scarce, but I found the remains of many which pigs and dogs had destroyed.

I procured specimens, as you see here: adult, young of different ages, and egg.

ART. XIV.—*Observations on Gould's Petrel (Hutton), Procellaria gouldi (Ohi), their Habits and Habitats.*

By A. REISCHEK, F.L.S.

[Read before the Auckland Institute, 27th July, 1885.]

THESE Petrels are common on the coast of New Zealand. I saw them in large flocks out at sea, where they remain from March till August; in the latter month they come ashore to their old breeding places, which they use annually as long as they are not molested. These birds breed in colonies: their burrows are sometimes very close to one another; on the Little Barrier Island (or Hauturu Island) I measured a piece of ground 36 feet in circumference, in the centre of which were six burrows. Their breeding resorts are always on the cliffs along the coast, and some are very difficult to approach, dug out by these Petrels even in hard sandy formation or clay. In August, male and female begin to clean out their old burrows, or dig fresh ones if the former have been disturbed, in a similar manner to the *Procellaria parkinsoni*. The burrows are from $1\frac{1}{2}$ feet to 4 feet apart; the entrance 6 to 10 inches in diameter, the passage in most cases winding, and from 2 to 4 feet deep. The chamber is from $1\frac{1}{2}$ feet to 2 feet wide, and from 6 inches to 1 foot high; in it is a deepening, with a few leaves and grass, which forms the nest. In the beginning of September the female lays one white egg, the size of that of a common fowl; they very seldom lay two eggs. The female hatches the egg, and the male roams about the ocean in the daytime—sometimes I found them ashore, in a separate burrow from that of the female.