

I know little or nothing of the North Pacific fauna, but a comparison on the same lines would be extremely interesting. Then we need an Australian naturalist to give us an account of the character and affinities of the Australian marine fauna. And when our Tertiary fossils have been worked up, a comparison with those of the northern temperate and sub-Arctic regions will perhaps shed a little more light on this exceedingly interesting problem.

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ART. XI.—*The New Zealand Plateau.*

By H. FARQUHAR.

Communicated by T. King.

[*Read before the Wellington Philosophical Society, 3rd October, 1906.*]

Plate V.

At the time when the "Challenger" Reports were published only a very few deep-sea soundings had been made with the improved sounding apparatus in the neighbourhood of New Zealand, and the New Zealand Plateau was only approximately sketched on the map published with the reports. But since the "Challenger" Expedition a great deal of sounding-work has been done in the South Pacific by H.M.S. "Penguin" and other vessels, in connection with the laying of the Pacific telegraph-cable from British Columbia to New Zealand and Australia; and a line of soundings was run by Sir James Hector from the Bluff southward to the Macquarie Islands, north-eastward to the Chathams, and westward to Lyttelton. The contour of the sea-bed surrounding this country is therefore fairly well known, and we can now map out the Plateau correctly, except at one or two points.

The map now published is compiled chiefly from the Admiralty chart of the Pacific Ocean with the latest additions, and a map of the Pacific, showing soundings, published by the India-rubber, Guttapercha, and Telegraph Works Company.

This great Plateau forms a very irregular area. It extends far to the south and south-east beyond the outlying islands (Auckland, Macquarie, Campbell, Antipodes, Bounty, and Chatham), but the boundary-line has not been certainly fixed here and may extend a little beyond that marked on the plan.

North-westward the Plateau extends in an immense submerged ridge, which may be called the "Lord Howe Island Ridge," and joins or almost joins the New Caledonian Plateau. The deep channel which runs along the south-western side of New Caledonia may extend northwards between the D'Encrecasteaux and Chesterfield Reefs, thus cutting off the New Caledonian Plateau from that of New Zealand by a narrow channel; but this is not very probable, and a few soundings are needed here to decide the point.

This great ridge is the most striking feature of our Plateau, and it has profoundly affected the character and distribution of the fauna and flora of New Zealand—a great stream of life having come in this way.

At the southern extremity of the Lord Howe Island Ridge, and lying to the north-westward, there are two smaller ridges, that lying farthest north being the extension of what is now known as the Auckland Peninsula. Between these ridges lie two valleys or depressions, in which, no doubt, large rivers flowed at the times of elevation.

The great backbone ridge of New Zealand, with its divergent ranges, must have presented a truly grand appearance during the periods of elevation—the beginning of the Tertiary era and early Pliocene—when the land stood five or six thousand feet higher than now, with its vast snowfields and glaciers grinding out the great valleys and fiords, and forming the moraines which lie scattered about the country.

North of the main body of the Plateau and east of the Lord Howe Island Ridge a large depression known as the "Gazelle Basin" lies between New Zealand and the Fiji Islands, and further eastward again, beyond the Kermadec Ridge, the "Aldrich Deep" culminates near the Kermadecs at a depth of over 5,000 fathoms, plumbed by Captain Aldrich. Its western boundary is an immense mural escarpment, running southward from the Tonga Islands past the Kermadecs, and down the eastern side of the North Island towards Cook Strait, where it turns abruptly eastward to the north of the Chatham Islands. On the west our Plateau is separated from Australia by the "Thomson Deep," which is evidently one of the great primordial depressions of the earth's crust, and accounts for the fundamental difference between the animals and plants of Australia and New Zealand. Eastward from the Australian coast-line the sea-bed rapidly plunges down to a great depth (2,600 fathoms), and then rises gradually in a long undulating slope to New Zealand.

The evidence of the former great extension of New Zealand, and of the vast changes that have occurred in this region, as

seen in the geology and in the character and relationships of the fauna and flora, has been admirably discussed by the late Captain Hutton in the "Transactions of the New Zealand Institute," and in the introductions to the "Index Faunæ" and "Animals of New Zealand," and by Messrs. Laing and Blackwell in the introduction to their beautiful "Plants of New Zealand." And if these works are studied with the map of the Plateau as now developed the relations and reasons of most of the observed facts may be understood.

ART. XII.—*On the Occurrence in New Zealand of Platalea regia, Gould.*

By TOM IREDALE.

[Read before the Philosophical Institute of Canterbury, 11th July, 1906.]

IN vol. ix of our Transactions, Dr. (now Sir) Walter Buller recorded the first occurrence of *Platalea regia*, Gould, in the colony. That specimen was shot in April, 1875, near the mouth of the Manawatu River, and is now in the collection of birds in the Colonial Museum. In vol. xxviii Sir Walter Buller stated that he had been informed by Mr. Townson, of Westport, that another specimen had been shot, on the Buller River, about January, 1892, and was preserved in Dr. Gaze's collection.

I have now to put on record another occurrence of this fine bird, making the third in a space of thirty years. The specimen, which I now exhibit, was shot on a lagoon near Greytown North, in the Province of Wellington, in the month of May, 1905. This specimen is an immature bird.

As the bird was set up as you now see it when I heard of it, I can only give you the words of the man who shot it. He said, "I was coming home by the side of the lagoon from rabbit-shooting when the bird rose from a hollow just in front of me. I shot it, and was surprised at the bird when I picked it up. I took it along to a friend of mine who dabbles in bird-stuffing, and he set it up for me. I found that it had been seen for some weeks previously flying about the lagoon, and several attempts had been made to stalk it, but all had been unsuccessful owing to its wariness. It had even been christened 'the white hawk.'"