thoracic shield and two succeeding plates marked with black. Antennæ and legs yellowish brown, the joints of the latter spotted with black. Under parts yellowish brown, darker on the edges of the abdominal segments.

My specimen was obtained in the Wanganui District, and was found underground.

Art. IX. — *Further Notes on the Ornithology of New Zealand.*

By Walter Buller, F.L.S., F.G.S., F.R.G.S.

(With Illustrations.)

[*Read before the Wellington Philosophical Society, November* 12, 1870.]

In the Ornithological Notes which I had the honour on a former occasion to lay before the Society, I ventured to combat some of the views advanced by Dr. Otto Finsch, in regard to the characters and nomenclature of some of our New Zealand birds. That discussion, of which the present paper may be considered a continuation, was entered upon not in a spirit of controversy, but from a genuine desire on both sides to elicit the truth and to extricate the avifauna of this country from the confusion of nomenclature in which it had become involved. The critical experience which Dr. Finsch brought to bear on the subject, added to his very extensive knowledge of general ornithology, has proved of great value in determining hitherto little known or doubtful species. And I venture to believe that, owing to the advantage I possess as a local investigator, I also have been able to contribute in some degree to a better understanding of many of the species.

To me, personally, the discussion so commenced has been of service, by bringing me into friendly and direct communication with one of the most learned of Continental ornithologists; and in the last letter which I had the pleasure of receiving from him, Dr. Finsch frankly admits that my last paper has converted him on several points. For example,—that *Anthornis auriocula* is quite distinct from *A. melanura*, that *Rhipidura flabellifera* is clearly separable from *R. albiscapa* of Australia, that *Platycercus Fosteri* (Finsch) is of very doubtful specific value, and that Von Pelzeln's *Anthornis ruficeps* is merely a flower-stained example of *A. melanura*. On the subject of those "new species" which he has proved to have been already known to science, he remarks,—"I do not attack you in any way for publishing such species as new; on the contrary, I am glad to find that there is a zealous man working in our science who endeavours himself to contribute towards a better knowledge of the birds of that very interesting part of our globe. To a man engaged, as I have been, on ornithology for fifteen years, and working on the

greatest collections, it is in some cases easy to become convinced that a so-called new species has been published long ago elsewhere without having actually seen the type specimen. This has occurred to me often, not only with new species of others but with those published by myself." And, with the candor of a true man of science, he adds,—"I am always glad and thankful to learn whether one of my species is really good or not, and I was pleased to learn from Mr. Blanford, that a lark which I had described as new had no specific value."

The following notes have reference not only to the species treated of in my former paper, but relate also to Dr. Finsch's recently published account of the Parrots of New Zealand, as translated for the New Zealand Institute by Mr. R. L. Holmes.

1. HETERALOCHA GOULDI, Gray.

Dr. Finsch places this species in the family *Meliphagidæ* (*Journ. für Orn.*, 1870, p. 247), but states no reason for so novel a classification. Till its affinities are better known it must remain where Mr. Gould originally placed it, among the *Upupidæ*. All that is at present known of this remarkable species will be found collected in a paper read before the Wellington Philosophical Society. (*Vide ante*, p. 24.)

2. ANTHORNIS AURIOCULA, Buller.

Dr. Finsch, while admitting that this bird is distinct from *Anthornis melanura*, writes,—"Had you given formerly the measurements of *A. auriocula* I never would have doubted this species, but now I must say I cannot see the exact difference between this bird and *A. melanocephala*, Gray;" and in his recent paper on the Birds of New Zealand (*Journ. für Orn.*, 1870, p. 250), he remarks that it coincides so fully with the latter as to warrant a supposition that they are identical, "which appears more probable as both inhabit the Chatham Islands, a small group that can hardly be supposed to possess two species of such close resemblance."

I find no difficulty in pointing out characters that distinguish my bird from *A. melanocephala*, even more decidedly than from *A. melanura*.

Anthornis melanocephala, according to Gray's description, has the head steel black, and the neck, breast and upper tail coverts tinged with the same colour, and the wing coverts steel black margined with yellowish olive. In my *Anthornis auriocula* all these parts are of a uniform yellowish olive, there being merely a tinge of blue on the forehead as in the common species, *A. melanura*. In the former species the larger coverts, quills and tail feathers are blackish brown margined with paler or yellowish olive, whereas in my bird they are dusky brown.

3. ANTHORNIS RUFICEPS, Von Pelzeln.

Regarding this species, Dr. Finsch says,—"You are quite right in respect to *A. ruficeps*. The red colour on the face is caused by external influences, for my friend, Von Pelzeln, has washed the type in the Vienna Museum, and the red tinge has partially disappeared. But, looking at the specimen, I was bound to take it as a good species, not knowing the singular manner of feeding."

While this appears to be a full confirmation of my view that the stains were caused by the flowers of *Senecio cassinioides*, or some other plant, I consider it only fair to my friend, Dr. Haast, who first discovered the supposed species, to give the following extract from one of his letters to me:—"Concerning *A. ruficeps* I may state, I am more than ever convinced that it is a *good* species, having an orange forehead and being smaller and thinner than *A. melanura*. I have been lately to Mount Cook, where the *Senecio cassinioides* is growing and in blossom, but all the birds had *blue* heads notwithstanding."

The only inference, however, as it appears to me, fairly deducible from this fact, is that the red stains are produced not by *Senecio cassinioides*, but by the flowers of some other plant, and this in no degree establishes the validity of the species.

Dr. Finsch quotes a similar communication from Dr. Haast, dated March 26, 1870, but adds, "as this peculiarity of colouring, although only partly removed (in Von Pelzeln's specimen), proved an artificial one, it may be inferred with considerable certainty that its existence was owing to accidental outward influences; anyhow, the pollen with which these birds come in contact while seeking their food, contains colouring qualities producing a durable effect. *Anthornis ruficeps* ought therefore to be struck out of the list of New Zealand birds although Dr. Haast notes it as a genuine species of sub-alpine regions." (*Journ. für Orn.*, 1870, p. 250.)

4. ANTHORNIS MELANURA, Sparrm.

As an instance of the mistakes into which the best closet naturalists almost inevitably fall when treating of a remote fauna, I may point out that Dr. Finsch enumerates *Anthornis melanura*, one of the commonest New Zealand birds, among the species belonging exclusively to the Chatham Islands. (See *Journ. für Orn.*, 1870, p. 243.)

5. XENICUS HAASTII, Buller.

This species is acknowledged by Dr. Finsch to be a good one, but he suggests that it ought to be referred to the genus *Certhiparus;* a view which I feel bound to reject. It possesses characters, however, which may entitle it to become the type of a new genus. *Xenicus gilviventris*, Pelz., is now added by Dr. Finsch to the list of species, although omitted in his former paper.

6. ORTHONYX OCHROCEPHALA, Finsch.

In my former notes (*Trans. N. Z. Inst.*, 1868, p. 108), I objected to the separation of *Mohoua ochrocephala* and *Certhiparus albicillus*, as in Dr. Finsch's list, and referred both species to the former genus.

The practice of adopting local native names to designate new genera, appears to me objectionable, inasmuch as it causes confusion in the general nomenclature. The name "Moho" has been selected for a genus of honey-eating birds inhabiting the Sandwich Islands. In New Zealand this name is applied generally by the Maoris to various species of aquatic rails, belonging to no less than three distinct genera. On the other hand, the appellation of "Mohoua" given by M. Lesson as the native name, and selected by him to distinguish the genus, has no existence in the Maori language, and its continued adoption would only perpetuate what is obviously a blunder. I therefore propose to restore the genus *Orthonyx* of Temminck, to which I can discover no tangible objection. And as I cannot see any valid reason why two species so closely allied both in structure and in habits should be separated generically, I have decided to refer both *Mohoua ochrocephala*, Gray, and *Certhiparus albicillus*, Lesson, to this genus.*

7. SPHENŒACUS FULVUS, Gray.

As the common species *Sphenœacus punctatus* is liable to some variation, both in size and plumage, I feel rather doubtful about the specific value of the bird described by Mr. G. R. Gray under the above name. A specimen in Dr. Hector's collection, at Otago, which I had an opportunity of examining in 1865, and which I supposed to be referable to Gray's *S. fulvus*, measured in length to end of tail $7\frac{1}{2}$ inches; wing from flexure $2\frac{1}{2}$; tail 4; tarsi $\frac{3}{4}$. The plumage generally was lighter and more fulvous than in ordinary specimens; the tail feathers dark brown edged with paler; bill, tarsi and toes very pale brown. Another specimen (minus the tail), in Mr. Lea's collection, was very similar although somewhat darker.

Whatever importance I might be inclined to attach even to trivial characters when constant, I should hesitate to accord to these occasional examples the rank of a distinct species.

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* Since the above was written, I have received the July *Heft* of the *Journal fur Ornithologie*, and am glad to find that Dr. Finsch has not only adopted my view as to the propriety of uniting *Mohoua ochrocephala* and *Certhiparus albicillus* generically, but has in fact anticipated me with regard to *Orthonyx*, by placing both species in that genus. It is gratifying to me to discover that, quite independently of each other, we have arrived at the same conclusion on so nice a point.

8. GERYGONE ASSIMILIS, Buller.

In my former notes in reply to Dr. Finsch's paper in the *Ibis*, the following statement occurs:—"I am not aware that I ever met with *Gerygone assimilis* in the South Island. At any rate, I demur to being held responsible for wrongly named specimens which I have never had an opportunity of identifying." Dr. Haast has since written, reminding me that in a collection of skins from Canterbury, forwarded to me for examination in 1866, there was one which I identified as the young of *Gerygone assimilis*. I take this opportunity, therefore, of correcting a statement which implied that Dr. Haast was wrong in ascribing to this species a South Island range. At the same time it appears to me highly probable that Dr. Haast mistook the two birds. The specimen sent to me (which is still in my possession) is unquestionably a young bird, and although it is often difficult to distinguish between the young of closely allied species, I am still of opinion that it is referable to *G. assimilis*. The specimen which Dr. Haast forwarded to Germany, was "represented to be a female from Banks' Peninsula." Dr. Finsch, in noticing this specimen, states that it agrees in every respect with the description and figure of the true *G. flaviventris*, as given by Gray, except that the "yellowish growth on the under parts and tail coverts is weaker." (*Journ. für Orn.*, 1870, p. 254.) I perfectly agree with Dr. Finsch that such a bird is not separable from the old species; but the form which I propose to distinguish as *G. assimilis* is larger, and entirely free from the yellowish tinge on the under parts; and by Dr. Finsch's own showing he has never seen it.

Having examined a large number of their nests in various parts of the country, I found that, while they invariably exhibited the pensile character, they were as a rule referable to one or the other of two distinct types—the bottle-shaped nest with the porch or vestibule, and the pear-shaped form without the porch. This peculiarity coupled with the significant fact that in some instances the eggs were pure white, in others speckled or spotted with red, led me first to suspect the existence of two distinct but closely allied species, and the ascertained difference in size and colour which I have already indicated strengthened that view. In my *Essay on New Zealand Ornithology*, 1865 (p. 9), I described the two forms of nests, and proposed to distinguish the builder of the larger pear-shaped nest as *G. assimilis*. Although still of opinion that such a distinction is warranted, I am free to admit that the subject requires further investigation. My esteemed friend, Captain Hutton writes me:—"I have lately seen several good examples of the *porch* in the Riroriro's nest, but I think it easy to collect a series from no porch to the most developed, and it seems to me to be due more to accidental circumstances than to specific difference." It will be observed, however, that my correspondent does not appear to have actually found such a *series*, while in a former letter he states that although he had

examined a great many specimens, he had never yet met with the porch-like contrivance, and in an article recently contributed to the *Ibis* (July, 1870, p. 393), he remarks,—"I have never seen the porch described by Mr. Buller in his *Essay*."

Mr. Potts, in his interesting paper on the nests and eggs of New Zealand birds (*Trans. N. Z. Inst.*, 1869, p. 50), states that this species usually lays six eggs; but, so far as my experience goes, four is the normal number, although there are sometimes more. They differ somewhat in size, and vary in shape from the true ovoiconical to a slightly pyriform type. They are sometimes pure white, but more generally freckled with pale red, and are so fragile in texture as to bear only the most delicate handling. Mr. Potts accounts for the occurrence of white eggs on the supposition that they are the product of young birds; but I am more disposed to consider this, taken in connection with the slight difference in form and size, as further indicative of the existence of two distinct species.

Among the substances used as building materials by this bird, spiders' nests are always conspicuous; indeed, in some specimens the whole exterior surface is covered with them. The particular web chosen for this purpose is an adhesive cocoon of loose texture and of a dull green colour. These spiders' nests contain a cluster of flesh-coloured eggs, or young, and in tearing them off the bird necessarily exposes the contents, which it eagerly devours. Thus, while engaged in collecting the requisite building material, it finds also a plentiful supply of food—an economy of time and labour very necessary to a bird that requires to build a nest fully ten times its own size, and to rear a foster-brood of hungry cuckoos in addition to its own.

9. Petroica Dieffenbachii, Gray.

In characterizing the above species (*Voy. Ereb. and Terr.*, Birds, p. 6), Mr. Gray states that it is "very like *Petroica macrocephala*, but is altogether smaller in size, and with the small and narrow bill of *P. toitoi*."

Petroica toitoi is confined in its range to the North Island, where it is very common. It may readily be distinguished from the other species by the pure whiteness of its under parts. The South Island is the habitat of *P. macrocephala*, and Auckland Island is included in its range on the authority of Mr. G. R. Gray. I obtained specimens at the Chatham Islands during a visit there in 1855, but I have failed to detect any such difference in examples from that locality as would justify the recognition of a distinct species, as proposed by Mr. Gray. I think it will be found necessary to expunge *Petroica Dieffenbachii* from the list of species, for I do not believe that it has any real existence.

10. CALLÆAS OLIVASCENS, Pelzeln.

I cannot admit Herr von Pelzeln's bird described under the above name (*Trans. Zool. Bot. Soc.*, 1867, p. 317), to be a good species. The description is founded on a specimen collected at Auckland by Mr. Zelebor, and the diagnostic characters which distinguish it from *C. cinerea*, are the brownish olive colour of the back, wings and tail, the greyish olive of the under parts, its greater size, and the "dusky colour of the mouth caruncles." The dusky black colour of the wattles is worthless as a distinguishing feature, for these fleshy appendages, which are of a brilliant blue in the living bird, fade in death and entirely change colour in the dried specimen, becoming almost black. The sexes vary in size, and the peculiarity of coloration to which Von Pelzeln attaches specific value is characteristic of the female.

11. PLATYCERCUS NOVÆ ZELANDIÆ, Sparrm.

Our worthy President, the Hon. Mr. Mantell, in his Anniversary Address, refers to "the lamentable confusion inseparable from the attempt to determine species from the dried and distorted specimens in antipodean museums."

A striking instance of this is afforded in the number of "species" which stuffed examples of our common little Parrakeet (*Platycercus Novæ Zelandiæ*) have been made to represent.

The type of Mr. Gray's *Platycercus Cooki*, in the British Museum, is described as not distinguishable from ordinary specimens of *Platycercus Novæ Zelandiæ*, except that the red ear spots are rather faint, while the beak is a little stronger and blacker towards the point. Dr. Finsch states "that this distinction in the colour of the beak was taken by Gray as the chief ground for separating the species," and adds, that in another example of the so-called *Pl. Cooki*, in the Heine Museum, "the beak exhibits the usual colour."

An unusually small example of this bird was characterized by Prince C. L. Bonaparte as *Pl. Aucklandicus*. Another example, presenting some slight differences in the details of its colouring, was described by Verreaux as *Pl. Saisetti;* and another, of a lighter green plumage than ordinary specimens, became *Pl. erythrotis*.

Platycercus Rayneri, Gray, founded on a single specimen in the British Museum, does not differ at all in colour from the typical species, the only distinction being the "wider tail feathers."

Dr. Finsch, after enumerating a large series of specimens that had come under his inspection, very properly concludes:—"It appears to me impossible to make more than one well-defined species out of all the above." But at the same time, Dr. Finsch (with some apparent reluctance) raises Forster's bird to the rank of a distinct species, *Pl. Forsteri*, simply because of the accidental absence of the red thigh-spots. He observes, "Gray unites, improperly, this

bird with his *Pl. Aucklandicus*, although it is quite a distinct species." On the contrary, I think there is little room to doubt that both of the so-called species ought to be united to *Pl. Novæ Zelandiæ*.

Dr. Finsch's supposition that *Platycercus unicolor*, Vigors, in which the frontal spot is wanting, may be the young state of *Pl. Novæ Zelandiæ* is certainly incorrect; but as the specimen in the British Museum, on which the description is founded, is acknowledged to be "the only one known," I have not the least doubt that it is merely an accidental variety of the common species.

Like many other members of the large natural family to which it belongs, this species exhibits a strong tendency to variability of colour, and the slight differences which some of the ornithologists of Europe have recognized as sufficient specific characters, are of no value whatever. As a proof of this, I may here notice four remarkable examples that have come within my own knowledge in this country.

(1.) A specimen of *Platycercus Novæ Zelandiæ* brought to me by a native, in the Kaipara District, many years ago, had the whole of the plumage of a brilliant scarlet red.

(2.) A specimen obtained in the woods in the neighbourhood of Wellington, had the green plumage thickly studded all over with spots of red. This handsome bird was caged, and at the first moult the whole of the spots disappeared.

(3.) A young bird, brought to me from the nest, and not fully fledged, had the plumage of the body pale yellow, shaded with green on the upper parts, and the quills and tail feathers marked with red.

(4.) In the summer of 1863, I obtained a very beautiful variety of the common *Platycercus auriceps*, at Manawatu. I found it in the hands of a labouring settler, who had purchased it from the natives for something less than a shilling. Finding him unwilling to part with it, I tempted him with a guinea, and secured the prize. It was a bird of the first year, and presented the following appearance:—Frontal band crimson, vertex golden yellow; space around the eyes and a band encircling the neck green; head, shoulders and lower part of back red, the intermediate space variegated with red and green; quills dusky, obscurely banded with yellow, and margined on the outer vane with blue; wing coverts greenish yellow, barred and margined with red; tail feathers green, obscurely barred with yellow in their apical portion. Under parts green variegated with crimson and yellow, an interrupted band of the former colour crossing the breast. Like the spotted variety already mentioned, within a short time it commenced to moult, and was fast assuming the common green livery of the species, when it was accidentally killed. This specimen, which still exhibits traces of its original colours, belongs now to the type collection of the Colonial Museum.

I think I may venture to assert, that had any one of these "occasional

varieties" found its way into the National Collection of Great Britain, or into one of the great continental museums, it would have been honoured with all the distinctions of a good and true species!

12. NESTOR MERIDIONALIS, Gmelin.

Dr. Finsch describes in graphic terms the delight with which he gazed upon a live Kaka (*Nestor meridionalis*), in the Zoological Society's Gardens, London, and speculates on the speedy extinction of the species; and Mr. Gould, in the Appendix to his *Hand-book to the Birds of Australia* (p. 549), expresses a hope that some of the residents of New Zealand will "study and record the habits and economy of this bird before it be extirpated, and its name and a few stuffed skins alone left as an evidence of its once having existed." Although it cannot be denied that the Kaka is less common than it formerly was, it still exists in very considerable numbers in various parts of the country, and there is no present danger of the species becoming extinct. In the months of December and January, when the rata (*Metrosideros robusta*) is in flower, thousands of these birds are trapped by the natives, and preserved in their own fat for winter use. Partly owing to this cause, and partly to the extension of settlement, it is true that in some districts where in former years they were excessively abundant, their cry is now seldom or never heard; but in the wooded districts of the interior they are as plentiful as ever.

The cause of the rapid disappearance in these Islands of some species of birds, and absolute extinction of others, is a very interesting question. In a newly-colonized country, where the old fauna and flora are being invaded by a host of foreign immigrants, various natural agencies are brought into play to check the progress of the indigenous species, and to supplant them by new and more enduring forms, more especially in the case of insular areas of comparatively small extent. These agencies are often too subtle in their operation to arrest the notice of the ordinary observer, and it is only the ultimate results that command his attention and wonder. But in New Zealand some special cause, apart from this general law, must be assigned for the alarmingly rapid decrease of many of the indigenous birds. In the course of a very few years, species, formerly common in every grove, have become so scarce throughout the country as to threaten their extinction at no very distant date.

Various reasons have been suggested to account for this. The natives believe that the imported bee, which has become naturalized in the woods, is displacing the kaka, tui, and other honey-eating birds. One of the oldest settlers in the Hokianga District (Judge Maning), speaking to me on this subject said,—"I remember the time, not very long ago, when the Maori lads would come out of the woods with hundreds of korimakos hung around them in strings, now one scarcely ever hears the bird; formerly they swarmed in the northern woods by thousands, now they are well-nigh extinct." On

asking him his opinion as to the cause of this, he told me that he agreed with the Maoris, that the bee having taken possession of the woods, has driven the honey-eating birds away from the flowers, and practically starved them out; and he referred to the scarcity of the tui, another honey-eater, in support of this view.* But it must be remembered that both of these species subsist largely on berries and insects, and that the comparative failure of their honey food, even if granted, will not of itself account for the rapid decrease of these birds; while, on the other hand, the totoara (*Petroica albifrons*), and other species which do not sip flowers, are becoming equally scarce. It appears to me that the honey-bee theory is quite insufficient to meet the case, and that we must look further for the real cause. As the result of long observation, I have come to the conclusion that hitherto the chief agent in this rapid destruction of certain species of native birds has been the introduced rat. This cosmopolitan pest swarms through every part of the country, and nothing escapes its voracity. It is very abundant in all our woods, and the wonder rather is that any of our insessorial birds are able to rear their broods in safety. Species that nest in hollow trees, or in other situations accessible to the ravages of this little thief, are found to be decreasing, while other species whose nests are, as a rule, more favourably placed, continue to exist in undiminished numbers. As examples of this latter class, I may instance the kingfisher, which usually scoops out a hole for its nest in the upright bole of a dead tree, quite beyond the reach of rats, and appears to be more abundant now than ever; also the *Rhipidura*, *Zosterops*, *Gerygone*, and other small birds whose delicate nests are secured to slender twigs, or suspended among vines and creepers. And the ground lark, again, which nests in open grass or fern land, where the brown hawk (*Circus Gouldi*) keeps the rat well under control, has of late years sensibly increased being now very common. As a matter of fact, I have known a case in which half a dozen nests of the tui, within a radius of a hundred yards, were robbed by rats of both eggs and young.

In a letter which I had the pleasure of receiving from the Rev. T. Chapman, of Rotorua, some years ago, that gentleman states,—"Wild ducks were particularly numerous in this district on my arrival here: you saw them by dozens, —you hardly see them now by twos. I have no doubt we owe this to the Norway rat. There is a place on the Waikato River, some twenty miles below

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* The following remark occurs in Mr. Travers' interesting lecture, "On the Changes effected in the Natural Features of a New Country by the Introduction of Civilized Races:"—"The kiore has been replaced, if not destroyed, by the European rat; the European honey-bee now swarms in our forests, taking the food of the meliphagous birds, which are already diminishing palpably in numbers, whilst the facility afforded by the immense epiphytical growth upon the forest trees enables the rat also to aid in this destruction by devouring the eggs and young birds."—*Trans. N. Z. Inst*, Vol. ii., p. 312.

Taupo, where the chiefs occasionally assembled to act out two important matters,—to discuss politics and eat kouras (cray-fish). A few years after the Norway rat fully appeared, the kouras were no longer plentiful, and as the New Testament made Maori politics rather unnecessary, the usage of meeting no longer exists. The natives assured me that the Norway rat caught the cray-fish by diving. Rowing up the rivers you see little deposits of shells. Upon enquiry I found they were the selections of the Norway rat, who, by diving for these fresh-water pipis, provide a *kinaki* (relish) for their vegetable suppers."

In writing of the *Nestor hypopolius* (= *Nestor meridionalis*), Gould remarks,—"A very great dissimilarity, both in size and colouring, occurs in different examples of this species, so much so as to induce a belief, both in my own mind and in that of others, that they may constitute two species. * * * It will be a question for the colonists to determine if there be more than a single species, or if the differences seen in the skins sent to Europe are indications only of *local varieties*, and to what cause they may be due."

In my former notes (*Trans. N. Z. Inst.*, Vol. ii., p. 387), I stated that I had forwarded to Europe, for examination, specimens of a larger *Nestor* from the Middle Island, which differed considerably from the typical *Nestor meridionalis*. Mr. G. R. Gray, to whom I sent the skins, submitted them to .Dr. Finsch for identification, and this naturalist refers to them in the *Journal für Ornithologie*, 1870, under the name of "Buller's *Nestor montanus*;" but this is a mistake, as I have never ventured to assign, or even to suggest, a specific name for this bird, although in writing to Mr. Gray I pointed out differences that might be deemed of specific value. In a letter to myself (under date July 13), Dr. Finsch observes,—"Mr. Gray sent me for examination the two *Nestors* [large and small] sent by you. I have inspected both with the greatest care, but I am not able to distinguish them as different species. In comparing only these two specimens, no one would hesitate to take them as distinct, but I have seen so many specimens of this *Nestor* that I would not be at all astonished to see examples differing even more than these. A specimen from the low-lands, sent by Dr. Haast, is quite inseparable from your Alpine *Nestor*. A general variation seems to be the rule in the genus *Nestor*. Scarcely two specimens are precisely and in every respect alike. This is not only the case with your common species, but also with the rare *Nestor productus*."

I fully admit the great variability of colour in specimens of *Nestor meridionalis*, and have myself directed attention to it (*vide Essay on New Zealand Ornithology*, p. 11); but this is a question, not merely of colour, but of two distinct races, a larger and a smaller, and both confined to separate geographic areas.

It appears to me that it is not of the least consequence to science whether

Dr. Finsch and I can agree to consider them good and true species, or merely local varieties of *Nestor meridionalis*, so long as they can be sufficiently distinguished. On no subject, probably, are the views of modern zoologists more divided, than on the question of what constitutes a species and what a variety. The definition of the term "species" is, after all, purely arbitrary, and is determined in a great measure by the individual opinion of every naturalist. Extreme views are held on both sides, one class of naturalists contending that it matters not how small the difference is between two allied species, provided it be constant, while there is a growing tendency among another class to group together a large number of slightly different species, usually considered distinct, as merely local or climatic varieties of one typical form. "Between these opposite views," to quote from a high authority, "there is certainly ample room for every shade of opinion. Every naturalist, indeed, has his own views on the matter. The fact is, that the amount of difference requisite to establish specific distinctness between two sets of individuals is, as has been well maintained by an eminent writer whose views are adverse to the real existence of species, *a matter of opinion*, and we should therefore be very careful in blaming writers whose ideas on this point may be at variance with our own."

Of the two classes of "lumpers and splitters," as they have been respectively termed, numerous examples might be given from the ranks of the best ornithologists. As an instance of the former, however, I may mention that Dr. Finsch has united, under *Conurus pertinax*, the species named *C. æruginosus*, *C. chrysogenys*, *C. xantholœmus*, *C. ocularis*, and *C. chrysophrys*. (*Papagien*, Vol. i., p. 506). It is not for me to say that a naturalist of Dr. Finsch's experience is wrong in this decision; but we have it, on the authority of Mr. Sclater, Secretary to the Zoological Society, that two of these forms, *Conurus xantholœmus* and *C. chrysophrys*, "living side by side in the Society's gardens, are very distinct species and certainly not to be confounded together," (*Proc. Zool. Soc.*, 1867, p. 588.)

"Many years ago," says Mr. Darwin, "when comparing and seeing others compare, the birds from the closely neighbouring islands of the Galapagos Archipelago, both one with another, and with those from the American mainland, I was much struck how entirely vague and arbitrary is the distinction between species and varieties. * * * Even Ireland has a few animals, now generally regarded as varieties, but which have been ranked as species by some zoologists. Several most experienced ornithologists consider our British red grouse as only a strongly marked race of a Norwegian species, whereas the greater number rank it as an undoubted species peculiar to Great Britain." He further states that few well marked and well known varieties can be named which have not been ranked as species by at least some competent judges, and he summarises thus:—"Certainly no clear line of demarcation has as yet been drawn between species and sub-species—that is, the forms which in the opinion

of some naturalists come very near to, but do not quite arrive at, the rank of species; or, again, between sub-species and well marked varieties, or between lesser varieties and individual differences."*

Mr. Sclater, in his review of Gould's *Monograph of the Trochilidæ*, observes,—"We have never been able to draw the line between a species and a climatic variety, nor do we believe it is possible so to do. We therefore do not complain of Mr. Gould having given specific names to certain local forms, if it can be shown that they are invariably distinguishable by constant characters."† And another well known naturalist, Mr. A. R. Wallace, in writing on the Pigeons of the Malay Archipelago says,—"A permanent local variety is an absurdity and a contradiction, and if we once admit it, we make species a matter of pure opinion, and shut the door to all uniformity of nomenclature;" and he holds that where the difference, however trivial, is constant, the so-called varieties must be regarded as distinct species.

Practically, as it seems to me, it matters little whether these closely allied forms be characterized as species, races, or varieties, the true object of all nomenclature being to aid the student in the systematic arrangement of all existing organisms according to their natural affinities. But the too common practice of confounding well marked local forms on the mere supposition of specific identity, without actual examination and comparison, is a positive injury to the cause of science, and cannot be too strongly condemned. It is not only fatal to scientific accuracy, but renders it almost hopeless to arrive at correct conclusions on the geographical distribution of species, a subject of the highest interest to the philosophical naturalist.

13. NESTOR ESSLINGII, De Souancé.

What is *Nestor Esslingii?* asks one of my correspondents. The question, though simple enough in itself, is not easily answered. The only specimen extant, so far as I am aware, is the one in the British Museum (which I have never had an opportunity of examining), and the several accounts given of the bird by those who profess to describe it, are so much at variance that local naturalists may well acknowledge themselves at fault respecting it.

M. de Souancé, the original describer of the species, says:—

"Le Nestor dont nous allons donner la description est, sans contredit, l'oiseau le plus remarquable de la collection Masséna. Intermédiaire entre le *N. hypopolius* et le *N. productus*, ce magnifique Perroquet réunit, dans son plumage, des détails caractéristiques de ces deux espéces. Coloration générale semblable à celle du *N. hypopolius*."

Mr. Gould, in the Supplement to his *Hand-book to the Birds of Australia*, says of this species,—"A single specimen only of this magnificent Parrot has

* *Origin of Species*, p. 60. † *Ibis*, 1862, p 73.

come under my notice; and this example is perhaps the only one that has yet been sent to Europe. It formerly formed part of the collection of the Prince D'Essling, of Paris, but now graces the National Museum of Great Britain. It is in a most perfect state of preservation, and is without exception one of the finest species, not only of its genus, but of the great family of parrots. The native country of this species is supposed to be New Zealand; but I, as well as M. de Souancé, have failed to learn anything definite on this point. In size it even exceeds the great kaka (*Nestor hypopolius*), which it resembles in the form of its beak, while in its general colouring it closely assimilates to *Nestor productus*."

Dr. Finsch, on the other hand, states in his *Monograph*, that *Nestor Esslingii*, De Souancé (of which the type is in the British Museum), is in size and general colour the same as *Nestor meridionalis*, but has the breast ash grey with brown terminal margins, and a broad yellowish white transverse band straight across the belly. Further on he speaks of *both* the original specimens from the Massena Collection being in the British Museum, and states that "they appear to be the only ones known." He adds, that he was not able to make such an examination of them as he wished, owing to their being in hermetically closed glass cases, but quotes Souancé, to the effect that the red marks on the inner vane of the quills and tail feathers are precisely as in *Nestor meridionalis;* whereas Mr. Gould distinctly says that while the tail feathers in *N. meridionalis* and *N. productus* are strongly toothed on the under surface with red, "in *Nestor Esslingii* no such marks occur, the toothing on the inner webs of the primaries is not so clear and well-defined, and the light coloured interspaces are more freckled with brown."

As stated by Mr. Gould, there is no certainty about the type specimen of M. de Souancé having come from New Zealand. Dr. Finsch, however, regards it positively as a New Zealand species, and cites Dr. Haast as his authority. "No traveller (he observes) speaks of this rare bird, and only from a remark of Dr. Haast's does it appear that it really still exists. He says, in his interesting treatise on the kakapo (*ver Handel des Kaiserl, Zool. Bot. Ver. Zer Wien.*, 1863, p. 116),—*Nestor Esslingii* is still to be seen in the forest districts, living on the berries of the numerous Alpine shrubs and on the roots of Alpine herbs,—the only remark we possess about the species." But Dr. Haast has since written to me, asking what *Nestor Esslingii* is, and I gather from his correspondence that he mistook another bird (the large Alpine *Nestor*, which Dr. Finsch considers a mere variety of *N. meridionalis*) for the true *Nestor Esslingii*. There is, consequently, no positive authority for considering this a New Zealand species.

Not having access to the type specimen, and left in utter confusion as to its real characters by the discrepancies to which I have adverted, it is impossible for a local naturalist to hold any decided opinion respecting it. But assuming

Dr. Finsch's description to be strictly correct,—that it most nearly resembles *Nestor meridionalis*, from which it is only distinguishable by the broad yellowish white band across the under parts of the body, and considering the extreme tendency in that species to variability of colour, I should be inclined to regard the British Museum bird as an accidental variety of the common Kaka. Among the numerous abnormally coloured examples which I have seen, from time to time, varying from an almost pure albino to a rich variegated scarlet, I remember one which, although like the common bird in its general plumage, had a broad *longitudinal* band of yellowish white on the abdomen. The specific identity of this specimen with *Nestor meridionalis* was unmistakable.

14. NESTOR SUPERBUS, Buller.

Diagnosis. — Latere inferiore, capitis lateribus, torque nuchæ, tergo caudæque tectricibus et superioribus et inferioribus puniceis; pileo, pectore, humeris alarumque tectricibus superioribus flavis; alis albido-flavis; cauda cinereo-flava.

Dr. Finsch's remark that my *Nestor superbus* approaches nearest in colour to *N. Esslingii* and *N. productus*, does not tend to diminish the confusion which already exists. As we have already seen, this author makes the yellow bellyband almost the only distinguishing feature between *N. Esslingii* and *N. meridionalis*. Gould gives the following description of the Phillip Island bird (*Nestor productus*) :—General colour of the upper surface brown; head and back of the neck tinged with grey, the feathers of these parts, as well as of the back, margined with a deeper tint; rump, belly, and under tail coverts deep red; cheeks, throat, and chest yellow, the former tinged with red; shoulders, on their inner surface, yellow tinged with rufous olive; tail feathers banded at the base with orange-yellow and brown; the inner webs of the quill-feathers at the base and beneath with dusky red and brown; irides very dark brown; bill brown; nostrils, bare skin round the eye, and the feet dark olive-brown.

A glance at the diagnostic characters above (as quoted by Dr. Finsch) will show that my *Nestor superbus* is a very differently coloured bird to either of these species.

15. NESTOR OCCIDENTALIS, Buller.

Dr. Finsch disallowed this species, on the supposition that it was the large Alpine *Nestor* from the South, which he pronounces a mere variety of *Nestor meridionalis*. This surmise was a mistake; but, in a letter to me, he states that he is still inclined to believe that *N. occidentalis* is only another "variety" of the common species.

16. NESTOR NOTABILIS, Gould.

This fine species is not quite so scarce as Dr. Finsch supposes. In referring to the two examples sent home by Mr. Mantell (the first pair received in Europe), he observes that they may be regarded "as the last of this extinct, or very nearly extinct, species;" but further on he mentions, on the authority of a private letter, the arrival of two specimens at the Vienna Museum.

As this bird inhabits the slopes of the Southern Alps, and is driven down to the plains only during very severe winters, it is not frequently met with; but explorers, like Dr. Haast, who have visited its Alpine haunts, report it comparatively common. A zealous friend in the back Mackenzie Country has obtained, at various times, no less than eight live specimens for me, but in every instance some accident has occurred to them *in transitu*, or they have managed to escape. I am informed that another pair of live ones are now on their way, and I trust that these may reach me in safety, for it would be of the highest interest to study the habits of a species at present so imperfectly known.

A specimen obtained by Dr. Menzies in the Otago Province, and presented by him to Sir George Grey, is now deposited in the Colonial Museum at Wellington.

17. APTERYX AUSTRALIS, Shaw.

The first example of the *Apteryx* of which there is any record was obtained in New Zealand, about the year 1813, by Captain Barclay, of the ship "Providence," and afterwards deposited in the collection of the late Lord Derby. This bird was first described, under the above name, by Dr. Shaw (*Nat. Misc.*, Vol. xxiv., pls. 1057, 1058), and afterwards, at greater length, by Mr. Yarrell, in the *Transactions of the Zoological Society* (Vol. i., p. 71, pl. 10). On the 10th December, 1850, a series of specimens was exhibited before the Zoological Society of London, when Mr. Bartlett pointed out characters which, as he contended, established the existence of two species hitherto confounded under the specific name of *Apteryx australis* (*Proc. Zool. Soc.*, 1850, p. 276). Mr. Bartlett stated, at this meeting, that an *Apteryx* belonging to the late Dr. Mantell having been placed in his hands by that gentleman, he had remarked its dissimilarity to ordinary examples, and that after a careful comparison with a number of other specimens he had come to the conclusion that it was a new species. On comparing Dr. Mantell's bird, however, with the original specimen in the Earl of Derby's collection, he found that they were identical. He accordingly referred his supposed new species to *Ap. australis*, and distinguished the more common bird as *Ap. Mantelli*—"A humble effort," as he says, "to commemorate the exertions of Walter Mantell, Esq., to whom we are indebted for so many valuable discoveries in

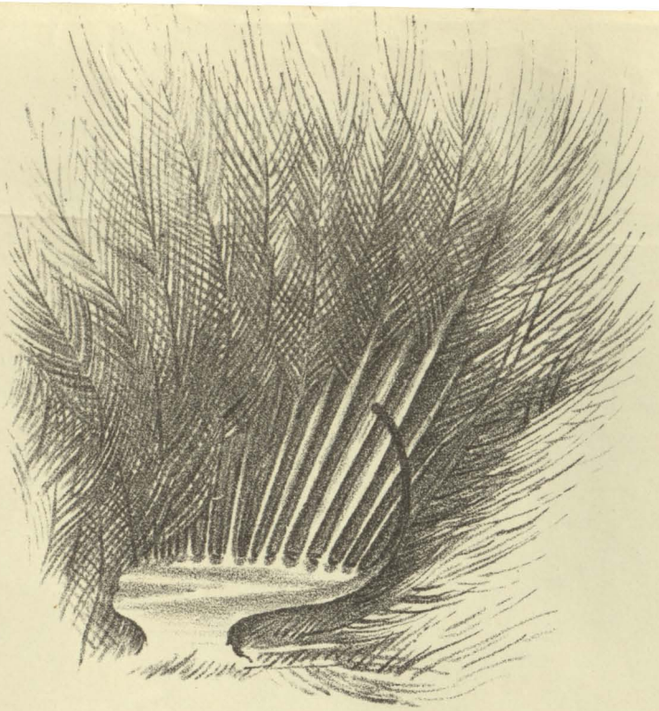

Fig. 2.

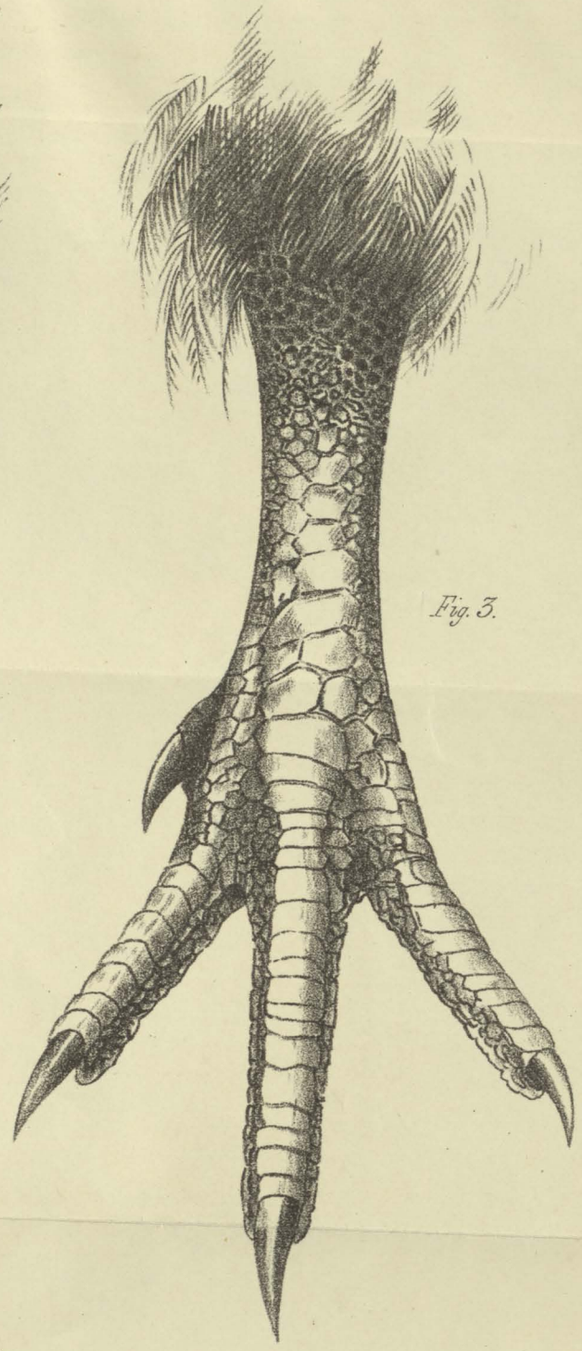

Fig. 3.

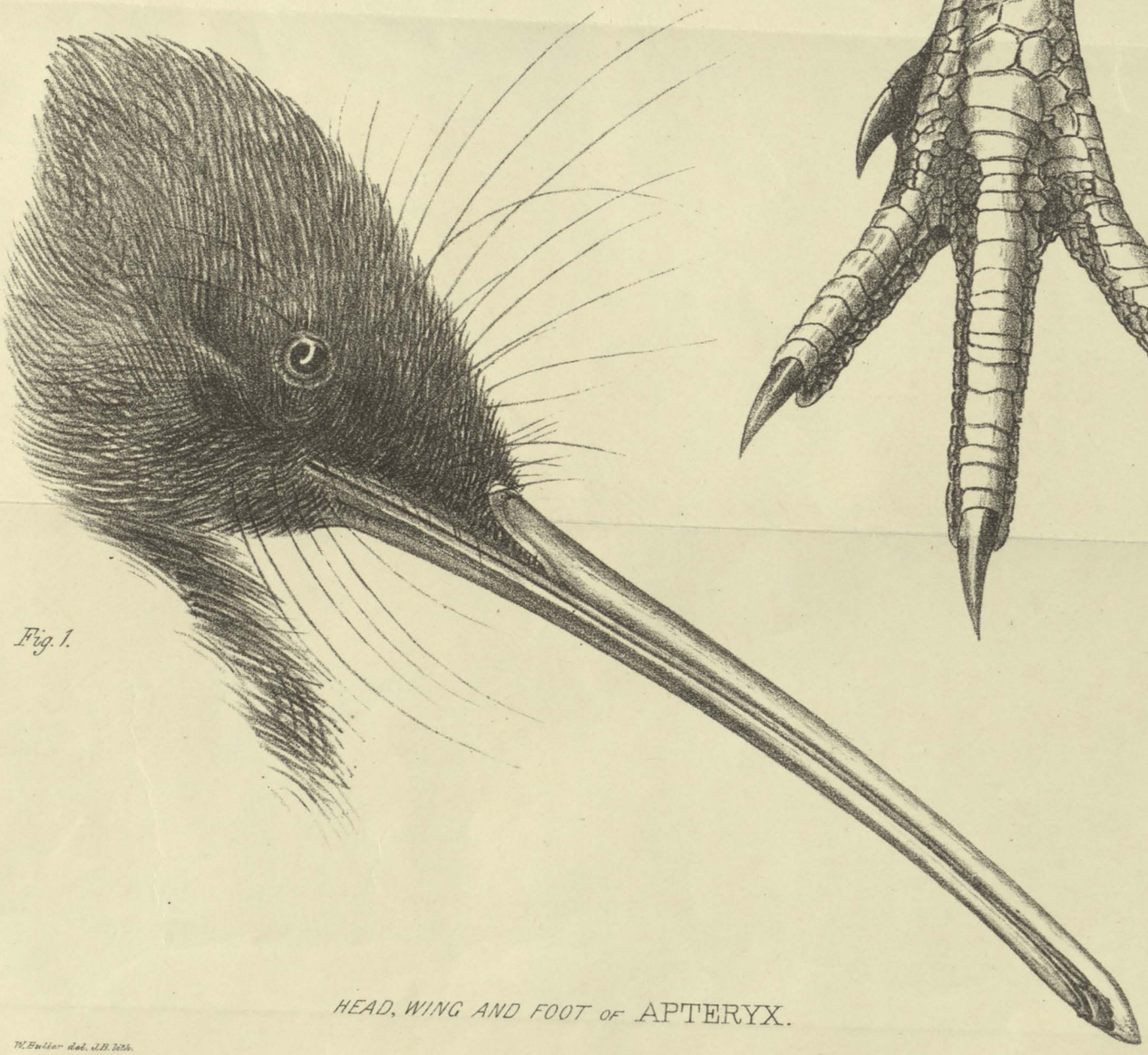

Fig. 1.

HEAD, WING AND FOOT OF APTERYX.

W. Buller del. J.B. lith.

Printed at the Gen. Govt. Lith. Press, by J. Barle.

the natural history of New Zealand." The characters which distinguish it from Shaw's *Ap. australis* are,—" its smaller size, its darker and more rufous colour, its longer tarsus which is scutellated in front, its shorter toes and claws which are horn coloured, its smaller wings which have much stronger and thicker quills; and also in having long straggling hairs on the face."

Mr. Bartlett stated further, that the *Apteryx* belonging to Dr. Mantell was collected by his son, in Dusky Bay, whence the original bird, figured and described by Dr. Shaw, was also obtained, and that so far as he had been able to ascertain, all the known specimens of *Ap. Mantelli* were from the North Island.

In a "Report on the present state of our Knowledge of the Species of *Apteryx*," by Drs. Sclater and Hochstetter, read at a meeting of the British Association, in September, 1861, and published for general information in the *New Zealand Gazette*, in May, 1862, the following observation occurs respecting *Ap. australis*:—"In fact, the species is so closely allied to the *Ap. Mantelli* as to render it very desirable that further examples of it should be obtained, and a rigid examination instituted between the two. For the present, however, we must regard this form of *Apteryx* as belonging to the southern portion of the Middle Island."

Mr. Gould, in the Appendix to his *Hand-book to the Birds of Australia* (p. 568), retains the original name for this species, but remarks:—"If Mr. Bartlett's view be correct, it is probable that the bird figured by me is the one he has named *Ap. Mantelli*."

In my *Essay on the Ornithology of New Zealand*, 1865 (*Trans. N. Z. Inst.*, Vol. i.), I stated that only two examples of *Ap. australis* had been recorded (those noticed above), but Dr. Otto Finsch, in his review of my *Essay*, (*Journal fur Ornithologie*, 1867, p. 331) observes:—"Our knowledge of *Ap. australis*, Shaw, is not confined to the two examples referred to by Mr. Buller. The Leiden Museum possesses one also, and there is a very fine specimen in the Imperial collection at Vienna."

Never having seen the four examples of *Ap. australis* thus mentioned as existing in European collections, I cannot presume to offer any positive opinion respecting them; but having examined a large series of specimens in New Zealand, some forty in number, of all ages and collected from all parts of the country, I have no hesitation in saying that (excluding, of course, the well-known *Apteryx Owenii*) all of them are referable to one and the same species. Having also carefully inspected the drawings illustrative of the specific distinctions between *Ap. australis* and *Ap. Mantelli* (*Proc. Zool. Soc.*) and examined the characters on which Mr. Bartlett grounded his new species, I am strongly of opinion that it will be found necessary to drop *Apteryx Mantelli* as a species, and to refer all the examples thereof to the true *Ap. australis*.

Mr. Bartlett draws the following distinction as to the colouring of the two supposed species:—"*Ap. Australis:* Colour pale greyish brown, darkest on the back. *Ap. Mantelli:* Colour dark rufous brown, darkest on the back." The above descriptions are applicable, the former to the female and the latter to the male of the common species.

Mr. Bartlett, in giving his measurements of the two birds, properly observes that the entire length, being taken from skins, is of very little value; but the difference in the general proportions (amounting to two inches in the length of the bill) is also characteristic of the two sexes, the female being considerably larger than the male.

The condition of wing, ascribed by Mr. Bartlett to *Ap. australis*, "with soft slender quills" (as figured in the *Proc. Zool. Soc.*), is that of the young bird. The length of the "straggling hairs on the face" varies in almost every individual, and is certainly of no value as a specific character.

Mr. Bartlett's strongest point is that one species has the tarsus *scutellated* in front, while in the other it is *reticulated*. The descriptive and comparative notes which I have collected on this point are too lengthy to be given here, but they will appear in my forthcoming work on the Birds of New Zealand. To summarize, I may state that I have found so great a diversity of character in the size and arrangement of the tarsal scales in different examples, that I do not attach very much importance to those peculiarities of structure in this respect, which Mr. Bartlett deems of specific value. I have observed a gradation from a regular series of quadrangular scutes, protecting the whole anterior portion of the tarsus, to a reticulated surface of large irregular scales, those towards the distal end being broadest. The latter condition appears to be characteristic of the immature bird, the scales being detached from each other and not imbricated, or with overlapping edges, as in the adult.

Figures 1 and 2 (Plate XII.b.) represent the wing and foot in an ordinary adult female of the common species, the so-called *Ap. Mantelli*.

18. ARDEA SACRA, Gmelin.

It is satisfactory to find that our Blue Heron (*Ardea matook*) has been finally identified with *Ardea sacra* of Gmelin; and that we are thus enabled to purge our list of so gross a corruption of the Maori, as "matook" for "matuku."

19. RALLUS PECTORALIS, Lesson.

I think we are perfectly justified in considering our *Rallus assimilis* identical with *R. pectoralis*, the more so as Drs. Finsch and Hartlaub have been compelled to reduce their *Rallus Forsteri* to a synonyme of that species.

In a paper communicated to the Zoological Society of London (November 26, 1869), they observe:—"It is certainly disagreeable to kill one's own

children, but as to *Rallus Forsteri* we are fully convinced of our error. In a set of specimens from the Pelew Islands, some had the rufous pectoral band, in two others it was entirely wanting, and in one bird there was only to be seen a faint trace of it." They, therefore, conclude that their so-called *Rallus Forsteri* is only a variety of age or season of the well known *R. pectoralis*, Lesson.

I have examined a large series of specimens in New Zealand, and although I have never seen one in which the pectoral band was absent, I have found it varying, both in extent and depth of colouring, from a narrow interrupted line of rufous brown to a broad zone of rich chestnut. In other respects all the specimens are very much alike.

20. Ocydromus nigricans, Buller.

Dr. Finsch is of opinion that the new Rail discovered by Dr. Hector in the Otago Province, and described by me in the *Transactions of the New Zealand Institute* (Vol. i., p. 111), is identical with *Gallirallus fuscus*, Du Bus, which, he states, Mr. Gray confounded with *G. brachypterus*, Lafr.

It is natural to enquire how, if *Gallirallus fuscus* be a well established species, it has hitherto been omitted from the List of New Zealand Birds? Although Dr. Finsch states that *G. brachypterus* (of which Gray considers *G. fuscus* a synonyme), "never occurs in New Zealand," he includes it in his enumeration of New Zealand Birds, *Journal fur Ornithologie*, 1867, pp. 346-347.

21. Phalacrocorax Novæ Hollandiæ, Stephens.

In his review of my *Essay*, Dr. Finsch observes (*Journ. für Orn.*, 1867, p. 339),—"*Graculus carboides* cannot be separated as a species from our European *G. carbo*, Linn." Referring to this, my friend, Captain Hutton, writes to me,—"I think Dr. Finsch is wrong in uniting our *Graculus carboides* with the European *G. carbo*. I was well acquainted with the latter in all seasons in the Crimea, and I am pretty well acquainted with *Carboides* up here (Auckland), and I feel sure that they are different."

I agree with Captain Hutton in his view as to the specific distinctness of the two birds, but the so-called *G. carboides* must be referred to *Phalacrocorax Novæ Hollandiæ*, as originally described by Stephens (*Cont. of Shaw's Gen. Zool.*, Vol. xiii., pl. 1, p. 93). It was noticed by Mr. Gould, and described (from Australian specimens) under the name of *P. carboides* in the *Proceedings of the Zoological Society* (Part v., p. 156). It appeared again under the same name in his great work on the Birds of Australia, where he states that it "exceeds in size its prototype, the *Phalacrocorax carbo* of Europe." In his more recent *Hand-book*, Mr Gould has rectified the nomenclature, making his so-called *P. carboides* a synonyme of *P. Novæ Hollandiæ*, to which the New

Zealand bird is also clearly referable. The generic title adopted by Mr. Gould (*Phalacrocorax* of Brisson) appears to me more satisfactory than *Graculus*, about which there seems to be no finality. In Mr. G. R. Gray's first list (*App. to Dieff, N.Z.*, Vol. ii., p. 201) it was written *Graucalus*, and in his *Zoology of the Erebus and Terror*, Birds, p. 20, it was changed to *Gracalus*, and in his latest list (*Ibis*, 1862) it became *Graculus*, a term originally applied specifically by Linnæus to the green cormorant of Europe, *Pelecanus graculus* (*Syst. Nat.*, Vol. i., p. 217).

NOTE to ART. II.—BULLER'S LIST OF NEW ZEALAND LIZARDS.

Add, — 12 b. *Naultinus lineatus*, sp. n., Gray. *Ann. and Mag. Nat. Hist.*, 1869, Vol. iii., p. 243.

ART. X.—*On* Latrodectus (*Katipo*), *the Poisonous Spider of New Zealand.*

By LL. POWELL, M.R.C.S.St.A.

(With Illustrations.)

[*Read before the Philosophical Institute of Canterbury, May* 4, 1870.]

A COMMUNICATION was read before the Auckland Institute in October last, by F. W. Wright, Esq., L.M.P., on a case which came under his observation of the ill effects produced by the venomous bite of a spider, known to the natives under the name of the *Katipo;* he also related two or three cases recorded by other observers. Both in the local effect and the extreme prostration of vital power, there was great similarity to the injuries inflicted by venomous snakes, and in one case death is said to have followed after a considerable interval. The injurious effects of the bite are well known to the natives, and, according to Mr. Wright, they describe two kinds of Katipo, one black, the other black with red markings; the noxious properties of the former seem doubtful, but all agree that the red-spotted spider is highly poisonous.

Dr. Hochstetter says,—"As we were about to camp for dinner, we were cautioned by the natives against a small black spider with a stripe on its back, which they call Katipo. The spider is said to exist only here and about Otaki, on Cook's Strait, on the grass growing upon the sand-hills, and its bite to be so poisonous, that with sickly persons it has even caused speedy death. * * Ralph, in the *Journ. Proc. Lin. Soc.*, describes it as a real spider, of a very different appearance at different periods of its age; when full-grown it is black, with an orange-red stripe on its back. Ralph mentions also that he had put the spider together with a mouse, and that the latter died after eighteen