ESSAY

ON THE ORNITHOLOGY OF NEW ZEALAND.

Scientific researches in all parts of the world have tended to confirm and establish the fact that, in every department of Natural History, different parts of the Earth's surface are endowed with peculiar types of organization,—that different regions are tenanted by totally distinct tribes of animals and plants, while their sub-ordinate divisions are characterized by many exclusive genera and by numerous forms of species.

The primary causes which have led to this geographic dispersion of species, and the laws which at present control and regulate it, are and ever must be subjects of vague speculation; but it is a remarkable and suggestive fact, that the five great Natural Divisions of our globe are not only inhabited by different varieties of Mankind but differ so widely from each other in the character of their animal productions, that they may be regarded as so many separate zoological regions or provinces, each embracing many distinct fauna, but nevertheless characterized by strong distinguishing features.

Birds, from their very nature, might be supposed to be in some measure exempt from the operation of this geographic law. When we consider that they are extremely volatile beings, eminently endowed with the power of locomotion and migratory in their nature—that the swallow speeds through the air at the rate of sixty miles an hour, and that many of the smaller birds perform every season a distance of several thousand miles—we might fairly conclude that Birds, of all animals, are unconfined in their range and will be found to spread into every region calculated to afford them congenial food and climate.

This, however, is far from being the order of Nature. "The arrowy course of the swallow—the wanderings of the albatross—or the soaring of the eagle—are all directed to certain points and confined within limits, invisible indeed to the natural eye, yet as impassable and as exclusive as a wall of brass. "Hither shalt thou come but no further" with safety or comfort to thyself! This command, although not pro-

nounced, is a part of the natural instinct of every animal in a state of nature."*

Some few birds are said to be cosmopolite, while many are common to several continents and extend their range over half the globe; but the vast majority of species are circumscribed in their range by narrow geographical limits, beyond which they seldom or never wander.

New Zealand affords a striking example of this fact; for, if we except the sea birds and some of the waders, our ornithology is strictly and exclusively local. Hardly a single species is common to any other country, while many of the genera are peculiar to our fauna. At the same time, the zoological peculiarities of the great Natural Division to which New Zealand belongs are strongly manifest. These distinguishing features of Australasian zoology are—the total absence of large quadrupeds, the paucity of the smaller, and the vast preponderance of the class AVES; while the latter is characterized by the high development of the families *Meliphagidæ* and *Psittacidæ* and the entire absence of *Picidæ* or true woodpeckers. In this respect the ornithology of this region presents a striking contrast to that of Europe, the fauna of which does not contain a single species of parrot, while the woodpeckers are comparatively numerous; and turning to the meliphagous genera we find that the peculiar organization, restricted in Africa, America, and India to the smallest birds in creation, is here devoloped to so high a degree that it comprises about one sixth of the Australian perchers and includes many birds of appreciable size.

Any one at all acquainted with the zoology of New Zealand, cannot have failed to remark these general characteristic features of the Australasian division, while it is equally apparent that New Zealand and the adjacent Islands form together a distinct section, possessing an exclusive fauna, and marked by strong peculiarities.

The first published list of birds of this country was drawn up by G. R. Gray, Esq., of the British Museum, and appeared in 1843, in the appendix to Dr. Dieffenbach's Travels. This list contained the names of eighty-four recorded species, but many of these were of doubtful authority, and were afterwards expunged.

Subsequently, in "The Voyage of H.M.S.S. Erebus and Terror," the same naturalist produced a more complete list, embracing the birds of New Zealand and the neighbouring Islands, accompanied by short specific characters and illustrated by twenty-nine colored figures, many

* Introduction to "Birds of Western Africa," *Nat. Lib.*

of them being life-size. But Mr. Gray's most valuable contribution to Southern Ornithology is the Synopsis which appeared in "The Ibis" of July, 1862, in which his former list is reproduced with corrections, the newly recorded species added, and the list extended by the incorporation of the birds hitherto found on Norfolk, Phillip, Middleton's, Lord Howe's, Macaulay's and Nepean Islands. This enumeration contains 173 species, of which number 122 are noticed as occurring in New Zealand and the Chatham Islands.

The new species and stragglers since discovered* swell the number of our known birds to 133; and there is every reason to believe that, as the country becomes more thoroughly explored, the list will be considerably augmented.

When we reflect that New Zealand is cut off from the rest of the Earth by a wide expanse of ocean, we can hardly be surprised that, of the number stated, only sixty-nine species are, strickly speaking, "land birds," yet if we take the aggregate number of our recorded birds, including a few that only appear at remote intervals as stragglers, we find that for the extent of country the list is a comparatively large one, being about one-fourth of the total number found in Europe.

But the Ornithology of New Zealand, if not very important, numerically, possesses many peculiar features of considerable interest to the general zoologist.

The former existence in these Islands of a race of giant wingless birds, not only constitutes a most important fact in Natural History, but tends to enhance greatly the interest of the existing avi-fauna, which is found to contain diminutive types of some of the extinct colossal forms. Like the Dodo of the Mauritius, the Moa and its kindred have passed away, almost within the memory of man, and till very recently it was generally believed that some of the smaller species still existed in the remote and unexplored parts of the country. Of their former existence in great numbers we have ample evidence in the traditions of the Maories and in the abundance of their fossil remains. It appears that when the Maori ancestors first settled in these Islands, about five hundred years ago,

* The author has communicated to the Philosophical Institute of Canterbury notices of the following species, viz :—*Strix Haastii*, *Geregone assimilis*, *Mimus carunculatus*, *Creadion cinereus*, *Nycticorax Caledonicus*, *Rallus Featherstonii*, *Nesonetta Aucklandica* and *Lestris Antarcticus*, but, as the Proceedings of the Society have not yet been published, to avoid confusion in treating of new species, descriptive notes will be added to this essay. In the large and valuable collection of New Zealand Birds, formed by Dr. Hector, and now deposited in the Provincial Museum at Dunedin, there is a fine specimen of this *Lestris*, beside many other rare and interesting birds, all of which have been collected in the Province of Otago. A list of the birds in this interesting collection has been prepared for the Catalogue of the New Zealand Exhibition by the author of this Essay.

they found them tenanted by a race of struthious, brevi-pennate birds, embracing several distinct genera, and varying in size from that of a turkey to a stature far surpassing the tallest ostrich! These giant birds—the remnant, probably, of numerous tribes that originally roamed over a wide continent, now submerged—hemmed within the narrow limits of modern New Zealand, gradually diminished in numbers till at length the race was finally annihilated, probably through human agency. Their skeletons, however, are still to be found, embedded and preserved in the swamps and other alluvial deposits, or in the caves and sand-hills, of both North and South Islands; and the vast collections of these bones that have been transmitted to Europe have not only "excited the delight of the natural philosopher and the astonishment of the multitude" but have enabled Professor Owen to establish the characters of the principal genera and to determine many of the species.*

It would exceed the limits of the present sketch to attempt any comprehensive account of these extraordinary fossil birds, and we shall therefore only refer in the briefest way to the genera, as established by the learned Professor, *in order to trace* the connection between the ancient and recent avi-fauna.

The most remarkable of these extinct forms, for their stupendous size and anomalous character, are comprehended in the genus Dinornis, and they belong to a type quite unknown either in a recent or fossil state in any other part of the world. The genus Palapteryx—the members of which attained a height of eight or ten feet, and in their osteological structure present some affinity to the *Dromaius* or Emeu—is well typified by the existing species of Apteryx, while the Brachypteryx, or giant short-winged rail, finds its true type in the recent *Notornis Mantellii.* The Aptornis (of which only one species has been determined) bears no relation whatever to any existing genus in New Zealand. It appears to have been a cursorial bird, presenting, in the structure of its feet, some resemblance to the celebrated Dodo. On the other hand, a fossil parrot, discovered by Mr. Mantell at Waingongoro, (North Island), presents a close affinity to our living genus *Nestor.*

To pass on at once to the existing fauna, we may notice as peculiarities of New Zealand Ornithology:—the genus *Apteryx* (Kiwi), a

*Mr. Mantell was the first scientific explorer of the Waikouaiti and Waingongoro bone deposits. Possessed of great ability as a Palæontologist, and exploring under favorable circumstances, he succeeded in forming a magnificent collection of these fossil remains, which he forwarded to England, and ultimately deposited in the British Museum. It was chiefly from the results of Mr. Mantell's researches that Professor Owen was enabled to determine the following genera and species:—*Dinornis giganteus D. robustus, D. crassus, D. elephantopus, D. struthioides, D. casuarinus. D rheides, D. didiformis, D. curtus, D. gracilis, Palapteryx ingens, P. geranoides, Aptornis otidiformis.*

group of wingless birds, closely related to some of the extinct forms, and as unomalous in their structure as they are singular in their habits and economy; the *Notornis*, a giant brevi-pennate Rail, allied to Porphyrio in the form of its bill and to Tribonyx in the structure of its feet; the *Strigops*, or ground parrot, known as the Kakapo, and resembling in some respects an owl; the *Nestor*, another remarkable parrot genus, of which four species inhabit New Zealand, and a fifth, probably now extinct, recently existed on Phillip Island; and the beautiful Huia *(Heterallocha Gouldii)*, confined to the mountains, and restricted in its range to narrow geographical limits; all of which will be more particularly noticed in their more natural order.

But, before proceeding further, it may be well to call the attention of naturalists to a hitherto unnoticed fact of considerable interest in connection with the geographical range or distribution of some of our birds. It consists in this, that between several of the species of the North and South Islands, respectively, there is a remarkable and very manifest *representation*. Thus, the "Saddle-back" *(Creadion carunculatus)* of the North is represented in the South Island by *C. cinereus* a closely allied species, but differing in the color of its plumage; the Weka *(Ocydromus Earli)* is represented by a smaller species *(O. Australis)*, so closely resembling it in appearance and habits that they are called "Woodhens" by the settlers of both islands, and by them as well as by the natives are generally regarded as identical; the Popokatea *(Mohoua albicilla)* is represented by another species *(M. ochrocephala)* differing in color but so closely allied to it that the natives apply the same name to both; the Toutouwai (*Petroica longipes*), to which precisely the same remark applies, is represented by *Petroica albifrons;* the *Callœas cinerea*, by another species, distinguished by the color of its wattles; and *Apteryx Mantellii*, by its smaller congener, *A. Owenii*.

A similar fact is noticed by Mr. Darwin, (Voyage of "Beagle,") as occurring in the Galapagos Archipelago, where three different islands were found to possess each a different species of *Mimus*, all closely related to one another but exclusively restricted to their respective islands.

We shall now proceed to a closer, but very rapid survey of our Ornithology, noticing the families in the order of their natural arrangement, and briefly enumerating the species at present known. The birds of the Auckland Islands do not appear to belong properly to the New Zealand Fauna, and will therefore be omitted.

Family, FALCONIDÆ.—Probably among no section of birds has greater confusion or uncertainty prevailed than among the Falconidæ. The great difference in size between the male and female, the progressive variation of plumage to which they are subject before reaching maturity, and the difficulty of procuring an adequate number of specimens for examination and comparison, render it often very difficult to elucidate the species. Even in this country, possessing only few representatives of the family, the species have been very much confused by naturalists. Dr. Latham, in his "General Synopsis of Birds," figured the Milvago leucurus (an American bird) under the name of New Zealand Falcon, and subsequent authors copied the mistake. Darwin, in his "Zoology of the Voyage of the Beagle" (1841), on the authority of Mr. G. R. Gray, (of the British Museum, rectified Latham's error, and Mr. Gray,) in his "List of Birds" (1842), appended to "Dieffenbach's New Zealand," classed together Gmelin's *Falco Novæ Zelandiæ* and Forster's *Falco harpe* under the former title, considering this bird the "Kahu" of the natives, while he referred "Karearea" to the species characterised by Mr. Gould (Trans. Zool. Soc., 1837) under the name of *Falco brunnea.*

This naturalist afterwards, in his "Birds of New Zealand," (Voy. Ere. and Ter.), reduced these names to synonymes, retaining, as specific, *Falco Novæ Zelandiæ;* and again, more recently in his Synopsis (Ibis, July, 1862), he has recognised two distinct species, under the new generic term of Hieracidea.

Owing to a misapplication of the native names, Kahu and Karearea, in Mr. Gray's first list, writers in this country have invariably fallen into the error of considering our large brown hawk the *Falco harpe,* and our "Sparrow-kawk" the *Falco brunnea,* of that author.

There is reason to believe that, when we become better acquainted with the history of these hawks, it will be found necessary to expunge *H. brunnea* from our list of species, and to regard it merely as *H. Novæ Zelandiæ* in an immature state of plumage. On the other hand, future exploration of the interior, and especially of the remote Alpine regions of the South Island, will doubtless add some new forms to this portion of our Ornithology; for, whereas the neighbouring continent of Australia possesses nearly thirty members of the family, we enumerate at present only three—*Hieracidea Novæ Zelandiæ, brunnea,* and *Circus Gouldii.*

The bird described as *Falco auricoculus*, or "Kahu Korako," is the last-named species in the hoary plumage of extreme age.

Fam. STRIGIDÆ—Of the genus Athene we possess in this country at least two representatives—*Athene Novæ Zelandiæ*, and *Athene albifacies*—the latter being confined in its range to the most southern parts of the South Island.

There is evidence also of the existence of another owl, of much larger size, and an inhabitant of the sub-alpine parts of the Canterbury province. It probably belongs to the restricted genus Strix, in which the ornithology of Australia is so peculiarly rich. It is described by Dr. Haast as being a large as the *Circus Gouldii* and "of dark brown plumage;" and, in the notice of its discovery communicated to the Philosophical Institute of Canterbury, it has been provisionally named *Strix Haastii* in honor of that enterprising naturalist.

The natives are acquainted with another owl of very diminutive size and strictly aboreal in its habits. When our forests have been better explored we may know something more of this recluse species. At present it is impossible to determine to what genus it belongs.

In some species of birds, individuals from different localities present a slight but uniform variation of plumage, sufficiently apparent although not amounting to a specific difference. This is particularly the case with our common owl. Specimens obtained in the Nelson Province are, on comparison with examples from the opposite side of Cook's Straits, invarably found to be more largely marked with white around the eyes and on the feathers covering the base of the bill.

Fam. ALCEDINIDÆ—The members of the restricted genus Halcyon range over the Indian Archipelago, Australia, and New Zealand. Two species appear on our list, viz:—*Halcyon vagans* and *H. Cinnamominus*. The former of these, our common kingfisher, has an extended range, frequenting alike the sea shore, the outskirts of the forest, dead timber, and the banks of fresh water streams. It subsists chiefly on small ground lizards (*Tiliqua Zelandica* and *T. ornata,*) but feeds also on field mice, insects and grubs.

The other species is of doubtful locality. It is quoted as a New Zealand bird, on the authority of Mr. Swainson, who in describing it (Zoological Illustrations, 1821,) observes,—"As far as I can ascertain this beautifully colored bird is quite new and hitherto undescribed. It

is in the possession of Mr. Leadbeater, of Brewer Street, *by whom it was received from New Zealand*, and who gave me the opportunity of now publishing the accompanying figure and description."

Fam. UPUPIDÆ.—The form that constitutes the new genus Heteralocha is strictly a New Zealand one. Only one species is at present known, and this is becoming extremely scarce. It is the Huia of the natives, and has been appropriately named, by Mr. Gray, *Heteralocha Gouldii*.

This rare and beautiful bird is confined within narrow geographical limits, its range being restricted to the Tararua and Ruahine mountain ranges (North Island), with their divergent spurs and the intervening wooded valleys. It is occasionally found in the *Fagus* forests of the Wairarapa Valley, but never wanders far from its mountain home.

The sexes differ conspicuously in form and size of the bill; and the wattles, which in the adult are a bright orange color, are flesh white in the young bird.

Fam. MELIPHAGIDÆ.—The honey-eating genera, as we have already observed, form an important section of Australian Zoology. Even a large group of parrots *(Trichoglossus)* subsist entirely upon the nectar they extract from the flowers of the Eucalypti, and for this purpose nature has endowed them with a brush-tongue, in which respect they assimilate to the true Meliphagidæ.

Australia proper is the great seat or metropolis of this family. A few species are scattered over the Pacific Isles, and New Zealand possesses five, viz.—*Prosthemadera Novæ Seelandiæ*, *Anthornis melanura*, *A. melanocephala*, *A. auriocula*,* and *Pogonornis cincta*.

Of these, the two former (the Tui and the Korimako) are the commonest birds of the country, being more numerous and diffusive in their range than any of the other perchers.

Fam. CERTHIADÆ.—Three groups of this family are represented in New Zealand by the following species, viz.—*Zenicus longipes*, *Z.*

* ANTHORNIS AURIOCULA, *Buller*.—This species, which is a native of the Chatham Isles, resembles closely the common Korimako *(A. melanura)*, but is appreciably larger, and the tints of the plumage are lighter. The chief distinguishing feature is that in this bird the irides are bright yellow, while they are crimson in *Anthornis melanura*.

Mr. Gray, after describing the common species (Voy. Er. and Ter. p. 4), observes, "Two others were also in the collection marked from the Auckland Islands. These differ in being somewhat larger in all their proportions." It is probable that these were specimens of *Anthornis auriocula*. This bird is plentiful on the Chatham Isles, where it is called by the natives "Makomako." It appears to hold an intermediate station between *A. melanocephala* and *A. melanura*, the former of which is also a Chatham Islands species.

Stokesii, *Acanthisitta chloris*, *Mohoua ochrocephala* and *M. albicilla*. A bird mentioned by the Rev. R. Taylor as having been seen by him in the Taranaki country, and described as "a diminutive wren with a mazarine blue crest," will probably be found to belong to the first named group.

Fam. LUSCINIDÆ.—This comprehensive family embraces the following New Zealand species, viz.—*Sphenœacus punctatus*, *S. fulvus*, *Gerygone igata*, *G. flaviventris*, *G. albofrontata*, *G. assimilis*, † *Certhiparus Novæ Seelandiæ*, *C. maculicaudus*, *Petroica macrocephala*, *P. Dieffenbachii*, *P. toitoi*, *P. longipes*, *P. albifrons*, and *Anthus Novæ Zelandiæ*. The specific difference between *Sphenœacus punctatus* and *S. fulvus*, as determined by Mr. Gray, is open to question, as the former species is subject to much variation.

Probably to the genus Zosterops of this family belongs a small migratory bird, called by the natives "Kanohi-mowhiti." It is properly a South Island species, retiring to the southern parts of Otago during the summer months, and advancing northwards into the Nelson Province on the approach of winter.

The history of its appearance in the North Island is very remarkable. It crossed over, for the first time in the memory of the native inhabitants, in the winter of 1856. It appeared then in flocks, numbering from 20 to 50, and after a sojourn of nearly three months, suddenly departed. After this it did not venture across the Straits for a period of three years, but appeared in Wellington again, in greater numbers than before, in the winter of 1858, and repeated the visit regularly during the four years that followed. Since 1862

† GERYGONE ASSIMILIS, *Buller*.—In form and color this bird is hardly distinguishable from *G. flaviventris*, although somewhat larger. It measures in length 4½ inches; extent, 6; wing from flexure, 2½; tail, 2; rictus, ½; tarsus, ⅝.

A comparison of the nests of these birds will remove any doubt as to their being specifically distinct. That of the smaller species is a compact little nest measuring about 6 inches by 3½. It is "bottle shaped"—full and rounded at the base and tapering upwards to a point by which it is suspended. It is composed of a variety of soft materials—spiders' nests, dry moss, grass, vegetable fibres, &c. The spiders' nests consist of a soft silky substance, by the aid of which the materials composing the nest are woven into a compact wall with a smooth and finished exterior. The entrance, which is situated on the side of the nest, is so small as to barely admit the finger, and it is protected from the weather by a very ingenious contrivance. It is surrounded by a protecting rim or ledge, composed of extremely fine roots, interlaced or loosely woven together, and firmly secured to the groundwork of the nest. This facing is arched at the top so as to form a vestibule or porch, while at the base it stands out boldly from the wall and is nearly an inch in depth, thus furnishing a firm and secure threshold for the bird in its passage to and from the cell. The interior apartment or cavity is about two inches deep, and is thickly lined with soft feathers; and the nest forms altogether a well proportioned and symmetrical structure, testifying alike to the skill and industry of the modest little builder.

The nest of the other species is of a somewhat similar size, but it is fuller in the middle than the one described, and is pear-shaped towards the apex instead of tapering. The materials composing it are of coarser texture, there is less execution or finish about it, and the ingenious porch, the peculiar feature of the one, is altogether wanting in the other. Moreover, the orifice is much larger, and the interior lining consists of soft grass capsules instead of birds' feathers. The eggs of *Gerygone assimilis* are generally three in number of proportionate size, slightly pyriform in shape, and marked at the larger end with reddish spots on a white ground, while the eggs of the other species usually number four, are about one-third less in size, and of pure white.

it has been a permanent resident in the Wellington Province, retiring in summer to the elevated lands of the interior, and returning to the coast districts on the approach of winter. This bird is invaluable to the orchards and gardens, where it subsists almost entirely on the destructive little *Aphis* known as "American Blight." The author has not yet had an opportunity of comparing this little migrant with the four species of Zosterops recorded from Norfolk and Lord Howe's Islands and therefore hesitates to pronounce it a new bird.

Fam. TURDIDÆ.—We have two representatives of this family belonging to different genera. One of them, *Mimus carunculatus*,* is found only in the extreme north, while the other, *Turnagra crassirostris*, has a southern range, being extremely rare to the north of Taranaki.

Fam. MUSCICAPIDÆ.—Three species of the genus Rhipidura inhabit New Zealand. The Fan-tailed Flycatcher (*Rhipidura flabellifera*) is the commonest. It very closely resembles an Australian one but is specifically distinct. The Black Flycatcher (*R. melanura*) belongs exclusively to the South. Only one instance is recorded of its occurrence, as a straggler, in the North Island. The other species—*Rhipidura tristis*—is quoted by Mr. Gray as an Otago bird.

Fam. CORVIDÆ.—Of the genus Callæas, we have two species, closely allied to each other and named respectively, *Callæas cinerea* and *C. Wilsoni*.

Fam. STURNIDÆ.—Four species are enumerated in this family, viz:—*Aplonis Zelandicus*, *A. obscurus*, *Creadion carunculatus*, and *C. cinereus*.† The two former have a very restricted range.

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* MIMUS CARUNCULATUS. *Buller.*—Prevailing color greyish-brown, darkest on the back; crown and surrounding parts dark brown; on the hind neck and back a touch of white down the centre of each feather; throat, and a patch behind each wattle, greyish-white; ear-coverts and below the eye silvery-grey; sides of the neck and breast tinged with fulvous; on the abdomen a patch of canary yellow, diluted on the edges. Quills and tail feathers dark brown; on the outermost a terminal spot of white, which diminishes on the succeeding ones and disappears at the seventh quill, and on the three medial tail feathers. Outer web of tertiaries, greyish-brown. Bill black, brown at the tip; legs umber brown. Extreme length 13 inches; wing from flexure 6; tail 6¼; rictus ⅞; tarsus 1¼; hind toe and claw 1; middle toe and claw 1¼ lateral toes ¾. The wattles are situated immediately below the ear coverts.

† CREADION CINEREUS. *Buller.*—This species is of the size and general form of *C. carunculatus*, to which it bears a close affinity, but the coloring of the plumage is altogether different. The common species (the "Saddle-back,") is of a deep uniform black, relieved by a band of rufous brown which occupies the whole of the back and, forming a sharp outline across the shoulders, sweeps over the wing coverts in a broad curve. In the present bird, however, the plumage is of a dark cinereous brown, paler on the under parts and tinted with umber on the wings and scapularies; the upper and lower tail coverts, and a few spots on the smaller wing coverts, bright rufous. The wattles are of the same color and shape as in *Creadion carunculatus*, but somewhat smaller. Extreme length 10 inches, extent of wings 12½; wing from flexure 4; tail 4; rictus 1⅛; tarsus 1¼; hind toe and claw 1⅛; middle toe and claw 1⅛.

Fam. PSITTACIDÆ.—The parrots of New Zealand form together an interesting study. Two of the genera, Nestor and Strigops, are peculiar to our fauna. Of the former, four species inhabit New Zealand;—the *Nestor meridionalis*, or "Kaka" of the natives; the *Nestor notabilis*, a fine Alpine species confined to the South Island; the *Nestor Esslingii*, which assimilates to the Phillip Island Parrot *(N. productus)* in the rich coloring of its plumage; and another, recently discovered, which the author proposes to name *Nestor superbus.**

Very beautiful varieties of the Kaka are sometimes met with. We have seen one with the whole of the plumage of brilliant scarlet shaded with brown, another of uniform pale yellow, and a third with green metallic reflections on all the upper parts. Pure albinos also are of occasional occurrence. These varieties are distinguished by the natives as Kaka-kura, Kaka-kereru and Kaka-korako, and are in high demand among them.

Like most parrots it is a long-lived bird. One in the possession of the upper Wanganui tribes has been chained to its pole for nearly twenty years and presents the curious feature of its over-grown mandibles completely crossing each other! This is probably attributable to the fact of its having been constantly fed with soft food, thereby depriving the bill of its wear and tear incident to a state of nature.

The remarkable genus Strigops, or night parrot, is strictly a New Zealand one. Besides the well-known species, *Strigops habroptilus*, (Kakapo,) there probably exists another "characterized by the light blue color on the sides and tip of each plume, in the place of yellowish green; also by the plumes being white instead of yellow, and by their being more numerously banded with black." Mr. Gray, from whose remarks we quote, proposes that, if hereafter proved to be distinct, the new species be named *Strigops Greyii* in honor of Sir

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NESTOR SUPERBUS, *Buller.*—Crown, hind-neck, breast, scapularies and upper wing-coverts, canary yellow of different shades and tinged with scarlet. Upper surface of wings whitish yellow, the primaries inclining to pale ash. Upper surface of tail when closed, pale ashy-yellow the sides being bright canary yellow with a scarlet tinge. Sides, abdomen, lower tail coverts auxillaries, lining of wings, lower part of back and upper tail coverts, bright scarlet, varied on the under parts and minutely edged on the upper tail coverts with canary yellow. Cheeks, throat, ear-coverts, and a broad nuchal collar, paler scarlet, largely mixed on the ear-coverts and collar with bright yellow. The under wing-coverts are beautifully marked with alternate bands of scarlet and yellow. The primaries on their under surface are ashy, marked on their inner vane with triangular spots of scarlet and yellow. Under surface of tail feathers, pale scarlet for two thirds of their extent and banded on their inner vane with brighter, ashy beyond, and yellowish towards the tip. Bill and legs dark bluish grey.

Extreme length 20 inches; wing from flexure 11½; tail 7½; rictus 2½; tarsus 1; longest toe and claw 2⅜.

This extremely rare and beautiful parrot is an inhabitant of the Alpine heights of the South Island. Several specimens have been obtained, one of which has recently been deposited in the Canterbury Museum by Alfred Cox, Esq.

George Grey, the Governor of this colony, who presented to the British Museum the specimen from which this description is taken.

A highly interesting paper on the structure and habits of the Kakapo was read before the Philosophical Institute of Canterbury in June, 1863, by Dr. Julius Haast,, who during his explorations on the west coast of the South Island, where this bird is still comparatively plentiful, had ample opportunity for investigating the subject. The observations which he has so carefully and minutely recorded are a valuable contribution to Science, for there can be little doubt that as colonization spreads into the Kakapo country, this species like many others will rapidly disappear. Birds possessing so feeble a development of wing as to be unable to fly, cannot, in the struggle for existence, long withstand the oppression of men and their domestic attendants, dogs and cats. The introduced rat (which has multiplied to a prodigious extent and has almost exterminated the indigenous one,) contributes also to the extinction of these races by preying on their eggs and young.

Like the Nestor of Phillip Island, the Kakapo will ere long exist only in our Museums, for, with many others of our rarer species, its numbers are already rapidly diminishing.

The other genus of this family that finds a place in New Zealand is the Platycercus—a large Australian group of parrakeets. We have two species—*Platycercus pacificus* and *P. auriceps*—the former of which is somewhat rare in the northern parts of the North Island Towards Cook's Straits, however, and throughout the South Island, both species are equally common. The smaller kind *(P. auriceps)* is subject to considerable variation of plumage, and specimens banded with red and yellow, or wholly red, are ocasionally found. This fact will probably account for the introduction into our lists of two species *(P. Cookii* and *P. unicolor,)* which do not actually exist.

The Polynesian Platycerci afford a beautiful example of the law of representation. Our *P. pacificus* is represented on Norfolk Island by *P. Rayneri*, on Macquarie's Island by *P. erythrotis*, and on Auckland Island by *P. Aucklandicus;* while several closely allied species are said to inhabit the Fiji and the other South Sea Islands.

Fam. Cuculidæ.—New Zealand possesses two Cuckoos and both of them are migratory. Whence they come and whither they go has always been and is still a matter of conjecture. The Long-tailed Cuckoo *(Eudynamys taïtensis)* arrives towards the end of October,

and leaves us in February, while the Shining Cuckoo *(Chrysococcyx lucidus)* makes its appearance early in October and departs towards the end of the year or beginning of January. They appear to arrive earlier at the extreme North and to linger there when their notes are no longer heard in the South. This fact, coupled with the circumstance that the natives have from time immemorial called these migrants "Birds of Hawaiki," would seem to indicate that they winter in some of the warm Islands of the South Pacific.

Both species are parasitic in their nidification, and it is a very curious fact that both of them, notwithstanding their great difference in size, depend on the same little bird *(Gerygone flaviventris)* for the hatching and rearing of their young. Mr. Gould, in treating of the Australian genera, informs us that the genus Eudynamys is an exception to the rule in this respect. There can be no question, however, as to the New Zealand bird being parasitical, for the young have been seen attended by the little foster parents long after the old birds had quitted the country.

During the quiet summer nights the deep rich notes of the Koheperoa, or Long-tailed Cuckoo, may be heard at intervals till break of day. This bird is active during the cool hours of the morning, but reposes in the shade during the heat of noon. Its habits are more predatory than is usual with the members of this family. Lizards and large insects form its principal diet, but it also plunders the nests of small birds, devouring alike the eggs and young. The Pipiwarauroa, or Shining Cuckoo, is of a milder disposition, and, like many of its congeners, subsists almost entirely on caterpillars. Its cry is plaintive but musical, and is always welcomed by the colonists as the harbinger of Spring.

This bird has hitherto been confounded with an Australian species that closely resembles it. On comparison, however, it will be found that they are quite distinct. The Australian bird is somewhat larger, the metallic lustre of the plumage is not so bright, and the transverse bands of the under parts are narrower and less brilliant; besides which there is a broad rufous band on the lateral tail feathers which is altogether wanting in our bird.

Fam. Columbidæ.—There is an interesting group of fruit-eating pigeons (*Carpophaga*) dispersed over Australia, New Guinea, Malacca, the Celebes and Polynesia. This genus is worthily represented in our lists by a fine Wood-pigeon—*Carpophaga Novæ Zelandiæ*—

remarkable for its size and the brilliancy of its plumage. It subsists almost entirely on fruit or berries, but when these fail, it feeds on the the leaves of the Kowai (*Edwardsia microphylla*) or on wild cabbage. It breeds in the remote parts of the country, and, notwithstanding the numbers that are annually destroyed, there is no sensible diminution on the recurrence of the shooting season.*

Slight varieties occur, and albinos have been recorded, but there is no reason to believe that any other species exists in this country.

Fam. TETRAONIDÆ.—Of this family, also, we have only a single representative and this is fast disappearing. Our handsome little quail (*Coturnix Novæ Zelandiæ*) was formerly so abundant that in one locality, in the neighbourhood of Nelson, Dr. Monro and Major Richmond shot forty-three brace! This occurred in 1848. It is now almost, if not quite, extinct in the North Island, and is met with only in the unfrequented parts of the South. Its place, however, is adequately supplied by the introduced members of this family—the common Pheasant and the Californian Quail—both of which, under the protection of the Legislature, have rapidly increased and are now probably more abundant in the North Island than the indigenous quail ever was.

Acclimatization Societies are now in operation in several of the Provinces, and the introduction of useful birds is every day gaining a larger share of public attention. But the Colony is greatly indebted to the efforts of private individuals, and especially to Sir George Grey, for many new and valuable additions to its fauna.

Fam. APTERYGIDÆ.—The members of this singular group of wingless birds are exclusively confined to New Zealand, Four species are recorded, viz.—*Apteryx Australis*, *A. Owenii*, *A. Mantellii*, and *A. Maxima*; and it is not improbable that on the west coast of the South Island there exists another, closely resembling *A. Owenii*, but distinguished by its smaller size, more slender legs and straighter bill.

Only two examples of *Apteryx Australis* are recorded†—the original bird figured by Dr. Shaw in 1813, under that name, and deposited in the Earl of Derby's collection, and another specimen

* Wood pigeons have been decidedly less numerous in Otago during the past few years.—ED.

† Since the above was written, Dr. Hector (in whose collection are two specimens, male and female, of this bird) has favored the writer with the following interesting note:—"*Apteryx Australis* is the Tokoeka of the Maories. It is to be found to the north of Milford Sound, but is tolerably abundant in the woods west of Te Anau Lake, and as far south as Preservation Inlet. It is easily recognised by its cry, which is similar to the KIWI'S (*Apteryx Owenii*) but ouder and less shrill."

forwarded to Europe by Mr. Mantell—both of which were obtained from Dusky Bay in the Otago Province. This species may therefore be regarded as belonging to the extreme south.

Apteryx Owenii was first described by Mr. Gould, in 1847, from a specimen obtained by Mr. F. Strange. The range of this species appears to be restricted to the South Island. It is still comparatively plentiful in the wooded mountainous country of the Nelson Province.

Apteryx Mantellii is the common Kiwi of the North Island. It has long since disappeared from the inhabited country, but in the retired hilly districts it is still to be found. And it is an interesting fact in connection with the geographic distribution of species, that on a small wooded island in the Huraki Gulf, known as the Little Barrier, and rising about a thousand feet above the level of the sea, this bird is still comparatively numerous although it no longer exists on the neighbouring mainland.

Apteryx maxima is described by Mr. Rochfort, the Provincial Surveyor of Nelson, as "a Kiwi, about the size of a turkey—very powerful, having spurs on his legs,—which, when attacked by a dog defends himself so well as frequently to come off victorious." The Natives distinguish it as the Roaroa.

But in addition to those we have enumerated, there is evidence of the existence of another large bird, probably of the Struthious order, which may either belong to this family or may prove to be a living representative of one of the forms hitherto presumed to be extinct. The writer is indebted to Dr. Haast for the following information on the subject:—"I believe I have convincing proof that in those never "before trodden alpine forests (Canterbury Province) there exists a "large Kiwi, the existence of which, till at present, was quite "unknown. I have heard many times the Roa, the large Kiwi of the "West Coast, but his call is like the cry of a child to the voice of a "powerful man when compared to the call which we heard in the "Alps, while encamped at the edge of an extensive forest * * "* * It was towards midnight, and though fast asleep we were "all awakened by this remarkably loud call!"

If the accounts of the natives may be relied on, the members of this family possess, in common with the Megapodidæ of the Australian continent, a very extraordinary habit of nidification—that of depositing their eggs in a mound of earth and leaves, and then leaving them to be hatched under heat produced by fermentation of the decaying vegetable matter. The natives agree further in the statement that in

each of these vegetable mounds only one egg is deposited.

The egg of *Apteryx Mantellii* is considerably larger than that of a goose and is of a creamy white color. The recent discovery of a nearly perfect Moa's egg in an old Maori Sepulchre in the South Island has enabled us to complete the following comparative statement of measurements :—

	Greatest Length.	Greatest Breadth.
Egg of Moa	9½ inches	7 inches.
„ Ostrich	6 „	5 „
„ Emeu	5 1-12th inches	3 7-12ths in.
„ Apteryx	5 inches	3 inches
„ Megapodius	3¼ „	2⅛ „

Fam. CHARADRIADÆ.—The birds of this family are widely dispersed over the globe. Of the seven species inhabiting New Zealand two are common to Australia—*Charadrius bicincta* and *Hæmatopus longirostris* —while another, *C. xanthocheilus*, extends its range to Norfolk Island. In the new genus Thinornis, our beautiful *T. Novæ Zelandiæ* is represented in the Auckland Islands by a closely allied one, *Thinornis Rossii*. The others, all of which appear to be exclusively restricted to New Zealand, are *C. obscurus*, *C. frontalis* and *Hæmatopus unicolor*.

Fam. ARDEIDÆ.—The stately White Crane (*Ardea flavirostris*) takes a prominent place in this section. New Zealand is its restricted habitat, and its range is limited to the southern districts of the South Island. Occasionally a straggler finds its way to the North Island, but this occurs only at distance intervals, and "rare as the Kotuku" is a favorite Maori proverb.

A small slate-colored Heron (*Ardea Matook*) inhabits our coasts, and and the celebrated Night Heron of Australia (*Nycticorax Caledonicus*) is recorded as a straggler, a specimen having been killed some years ago in the neighborhood of Wellington.

Almost every region of the globe is tenanted by one or more species of Bittern. The one inhabiting New Zealand (*Botaurus poicilopterus*) possesses all the characteristics of the genus and in its general appearance is not unlike the common Bittern of Europe.

A Spoon-bill is recorded by Mr. Ellman as having been seen at Castle Point (North Island). This was probably a straggler from Australia, being either *Platalea flavipes* or *P. regia*.

Fam. SCOLOPACIDÆ.—Of the genus Himantopus, New Zealand, like Australia, is inhabited by a single species, known as the Stilt Plover (*H. Novæ Zelandiæ*). It is a handsome bird and notwithstanding the extreme length and apparent disproportion of its legs, all its movements are easy and graceful. The range of this plover does not extend further north than the Upper Waikato,

The bird described by Mr. Gray as the male of this species will probably prove to be distinct. The other recorded species are—*Limosa Novæ Zelandiæ, Cœnocorypha Aucklandica* and *Recurvirostra* (?) *rubricollis.*

Fam. RALLIDÆ.—The Rails of New Zealand constitute a prominent and peculiar feature in its ornithology. They embrace members of six different genera, each of which deserves separate notice.

Professor Owen had already determined the characters of the presumed extinct genus Notornis, when the discovery of a living example, by a party of sealers in Dusky Bay, while it established the soundness of his physiological inferences, furnished another proof of the comparatively recent existence of the Moa and its kindred. Only two specimens of this bird have been obtained, both of which are now deposited in the British Museum. They were forwarded to Europe by Walter Mantell, Esq., of Wellington, in compliment to whom Professor Owen named the species *Notornis Mantellii.* (Trans. Zool., Soc., iii. p. 337.)

Another genus of brevi-pennate Rails (*Ocydromus*) is represented by three species, in all of which the anterior extremities are so feebly developed as to be utterly powerless for flight. The *Ocydromus Australis* is excessively abundant in the South, and the *Ocydromus Earli* is still common in the southern parts of the North Island, but the third species, *O. brachypterus,* is extremely rare, if not already extinct, in all the settled districts.

Our only member of the new genus *Hypotœnidia* is the Moeriki (*H. Dieffenbachii*), an extremely beautiful Rail, restricted in its range to the Chatham Islands. Mr. Gray has given an excellent figure of this bird in "The Voyage of H.M.S.S. Erebus and Terror." This species is also fast disappearing from our fauna. It was sought for in vain during a visit to the Chathams, nearly ten years ago, and the natives described it then as the rarest of their birds.

Our representative member of the restricted genus Rallus (*R. assimilis*) resembles closely an Australian species, but is distinguishable

by the pectoral band and rufous colouring of the head and neck being less prominent. This is the "Land Rail" of the colonists.

We have placed, provisionally, in this genus a rare and handsome Rail, of which a description has been communicated to the Philosophical Institute of Canterbury, and of which only one example is known. It has been named *Rallus Featherstonii** in honor of the present Superintendent of the Wellington Province.

Two members of a smaller group inhabit our marshes and low river banks. Their swiftness of foot, retiring disposition, and semi-nocturna habits renders an acquaintance with their history difficult and necessarily imperfect. The Slate-colored Rail (*Ortygometra tabuensis*) is very generally dispersed and is said to exist in Norfolk Island. In the adult bird the eyes and legs are of a delicate crimson tint and offer a lively contrast to the sombre plumage. The other species (*O. affinis*) is equally diffusive in its range and apparently more plentiful. It is represented in Australia by the *Porzana palustris*.

The next representative of the family to be noticed is our graceful Pukeko (*Porphyrio melanotus*). This fine Rail is one of our commonest birds. It runs swiftly and flies well, and consequently, unlike its more feeble congeners, it thrives and multiplies in the settled districts, frequenting the corn-fields and potato grounds by night, and retiring to the swamps during the day. It is easily domesticated and is considered excellent eating.

Fam. ANATIDÆ.—Our finest representative of this section is the Paradise Duck (*Casarca variegata*). To adopt the words of Macgillivray in treating of the *Casarca rutila* of Europe—"it is one of those birds which one might call a duck, and another with equal propriety a goose;" but although the genus approaches to Chenalopex, both in form and coloring, it may safely be placed in the group Anatidæ, assigning it there a station indicative of its approximation to the Anserinæ. It is very common in the South Island, and in some parts of the Wellington Province, but is rarely met with further north.

The other species are *Anas superciliosa*, *Anas chlorotis*, *Spatula variegata*, *Fuligula Novæ Zelandiæ*, *Nesonetta Aucklandica*, and *Hymen-*

* RALLUS FEATHERSTONII, *Buller*.—Crown and surrounding parts brown, variegated with black; chin greyish-white; throat, breast, sides of head and a band over each eye, ash grey. Quills and smaller wing coverts rufous brown; sides and flanks deep rufous brown, beautifully marked with transverse bars of white. Abdomen and inner side of thighs yellowish brown, obscurely barred. Scapularies and tail feathers greyish brown with a broad dash of black down the centre of each feather. Extreme length 11½ inches; wing from flexure 5½; tail 2½; rictus ⅔; tarsus 1⅝; hind toe and claw ⅝; middle toe and claw 1⅝.

olaimus malacorhynchus. The last named is a genuine mountain duck, frequenting the river sources, and subsisting chiefly on a species of caddis-worm.

Fam. COLYMBIDÆ.—A small dab-chick (*Podiceps rufipectus*) is common in our fresh water lagoons; and a large crested grebe, hitherto undescribed, inhabits the lakes of the South. Dr. Hector obtained several specimens of this fine bird during his exploration of the Otago Province, and they are now deposited in the Provincial Museum. The author proposes to name this species *Podiceps Hectori*, in honor of the discoverer, who enjoys a high scientific reputation, not only in this Colony, but also in Europe and America.* The first specimens of *P. rufipectus*, were forwarded to Europe by the late Dr. Sinclair, R.N.

Fam. ALCIDÆ,—Four species of penguin have been found on our shores, viz.—*Aptenodytes Pennantii, Eudyptes pachyrynchus, E. Antipodes*, and *Spheniscus minor*—but the two former are of very rare occurrence and have been detected only in the extreme South. The last-named species, which is also common to Australia, is found on all our coasts. It is comparatively plentiful in Cook's Straits, and the Island of Kapiti is resorted to annually as a breeding place.

Fam. PROCELLARIDÆ.—The Southern Seas are peculiarly rich in Petrels nearly 40 species having been recorded by Mr. Gould in the "Birds of Australia." As all the members of this family have a strictly oceanic range we have comparatively little knowledge of their habits and economy. The following fourteen species belong to our list:—*Pelecanoïdes urinatrix, Puffinus assimilis, Procellaria gigantea, P. æquinoctialis, P. Parkinsoni, P. glacialoïdes, P. Capensis, P. Cookii, P. gavia, P. ariel, P. cerulea, Prion vitatus, Diomedea exulans*, and *D. fuliginosa.*

Fam. LARIDÆ.—In this division the author has recorded the discovery, on the west coast of the Wellington Province, of a fine specimen of the

*PODICEPS HECTORI, *Buller.*—The distinguishing feature in this bird is an occipital crest nearly two inches in length, and an ample ruff of loose silky plumage which surrounds the upper part of the neck. Forehead, crown and crest feathers glossy black; lores, intercrural space and cheeks, white shading into pale rufous; ruff, bright rufous; brown towards the throat but glossy black in its outer portion General upper surface, greyish-black with rufous touches on the sides and wings. Under parts white, diluted with grey on the foreneck. Bill greyish brown, paler towards the tip; feet olivaceous black. (In the female there is less white about the head and neck and the general tints of the plumage are paler.) Extreme length 24 inches; wing from flexure 7½; rictus 2¼; tarsus 2½; longest toe and claw 3¼.

Lestris Antarticus or Plundering Gull. It was unknown to the natives of that coast and is therefore probably of very rare occurrence.*

Besides our two common gulls, *Larus Antipodum* and *L. scopulinus*, another species (*Larus Schimperi*) is quoted by Mr. Gray as a New Zealand bird.

Among the birds enjoying an unlimited oceanic range are the Terns, five species of which visit our shores. These are:—*Sterna strenuus*, *S. frontalis*, *S. Antartica*, *Hydrochelidon albostriata*, and *Anous stolidus*.

Fam. PELICANIDÆ.—The great tribe of Cormorants finds no less than eight representatives in New Zealand, named respectively:—*Graculus carboides*, *G. cirrhatus*, *G. melanoleucus*, *G. varius*, *G. punctatus*, *G. brevirostris*, *G. chalconotus*, and *G. stictocephalus*.

A beautiful Gannet (*Sula Serrator*) frequents our bays and estuaries, and great numbers of them breed on a small Island near the Kawhia Coast.

We shall conclude this short treatise on the birds of New Zealand by recording the capture of two fine specimens of the Frigate Bird (*Fregata Aquila*) which is undoubtedly the noblest member of this family. One of them was killed in Whakapuaka Bay, in the summer of 1855, and is now deposited in the Provincial Museum at Nelson; the other (measuring nearly seven feet in extent) was taken at Castle Point, on the East Coast of the Wellington Province, and came into the possession of George Moore, Esq., who generously presented it to the writer of this Essay.

Wellington,
New Zealand,
February 1st, 1865.

* Dr. Hector found another species of *Lestris* in Dusky Bay, on the south coast of the Otago Province. It is considerably larger than L. ANTARTICUS, measuring 26 in. in length, and 17 in. from the flexure of the wing to the end of the first primary.