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HEAD OFFICE: WELLINGTON, N.Z.

BOWEN HOUSE, BOWEN STREET. P.O. BOX 631.

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A REAL EVIL.

FROM North Auckland down to Stewart Island reports of poaching reach the Society in an almost continuous stream—tuis and pigeons shot in a wholesale manner in the centre of the North Island—pigeon on the menu of some of the hotels on the West Coast, except on the day the visiting magistrate is a guest—South Island robins shot for their skins — live parrakeets and other protected birds purchasable in Australia and even in London —Pied stilts and tern shot by godwit hunters both in the North and South Islands—shooting such birds as godwits from motor cars contrary to the regulations under the Animal Protection and Game Act 1921-22—the interference under scientific pretext with the nests and eggs of birds on sanctuaries — the carrying of firearms without permission on sanctuaries, etc. Such is the continuous stream of information reaching the Society week after week. Whenever there is a reasonable possibility of securing a conviction, those whose duty it is to administer laws in the field are advised, but the difficulty in finding an available ranger and the reluctance of our informant to sanction his name being used make quick action extremely difficult.

Rangers in New Zealand are few and far between and the dozen or so paid rangers devote their energies mostly to the interests of fishing and opossums.

The quickly rising tide of public desire to save our forests and bird life is undoubtedly the main factor in saving many native birds and game birds, but there is a section of every community on whom any moral appeal is wasted. The seizing of firearms and any chattels used to facilitate illegal acts together with severe fines are the only means to check the destruction done by this section.

Efforts, however, to raise game birds successfully must, of necessity, be accompanied by drastic endeavours to enforce some of the provisions of the conservation laws as it would be useless breeding such birds as pheasants at a cost of from fifteen shillings to twenty shillings a piece mainly for acquisition by poachers. Added to this the pronounced public opinion which is now in evidence, will insist that our native birds shall be rigorously saved from destruction by poachers, collectors, and such like destroying agents. The time is long overdue for the introduction of an up-to-date field administration system lest the transgressor completes his fell work to the detriment of all desirable wild life.

At the moment, the controlling Department shows a keen desire to remedy the weak spots in field administration, but any effort to do a public good must necessarily involve treading on somebody's toes, and it is the self-interested minority which usually complains to such an extent that it is mistaken for the majority, who are only too often silent and inert.

THE POACHER.

The Arch-Destroyer of Native Birds and Game Birds.

NEW ZEALAND FLORA

ITS ROMANCE AND ITS VALUE

(By B. C. Aston.)

POOR as are the islands of this Dominion in food plants compared with those of other Pacific Islands, there is yet a history of the application to human wants of New Zealand plants as romantic as it is interesting.

Fern root *(Pteridium aquilinum,* var, *Esculentum)* was the main indigenous farinaceous food of the Maoris and was, doubtless, troublesome to obtain and more troublesome to chew, but it developed a mighty race of big, muscular men who had not a superfluous ounce of fat, —valiant and unafraid of Cook's huge ship and strange weapons which dealt such unusual blows. The cultivations of the Maoris included the sweet potato or kumara *(Ipomoea batatas),* the taro *(Colocasia antiquorum),* and the gourd, hue *(Lagenaria vulgaris),* all of which were brought from the Polynesian Islands. Perhaps the constant firing of the country, which was evidently a feature of their life, judging from Cook's numerous observations, was intended to clear the way for the growth of more fern root. Besides this food they had also many subsidiary plants which furnished sweet mouthfuls of sugary matters. Straining off the poisonous seeds, they made from the juicy tutu fruit a sweetened drink. The female flowers of the kiekie *(Freycinetia Banksii)* furnished another food and, growing in many of their settlements are, even now, a variety of the *Cordyline australis,* or cabbage tree, which yielded very sweet tasting roots and stems. The trunk of this cabbage tree was so elastic that the top tuft of leaves could be pegged down to the ground. When new rooting had taken place, the trunk and original roots were eaten. This variety, botanically undescribed, was called ti-para, and was not the *Cordyline terminalis* (ti-pori), and is distinctly worth cultivating in gardens, as it sustains its juvenile state longer than the ordinary *Cordyline australis,* and has larger leaves and grows readily from cuttings.

THE KARAKA TREE AND FRUIT.

In the karaka fruit the Maori found a fruit which, in season, furnished a date-like pulp; and the large kernel, when baked and steeped in running water to dissolve out the poison, provided a very welcome change as a vegetable food from fern root or kumara.

This is one of the best known instances of the ingenuity of the Maori in overcoming difficulties which would seem insuperable to most primitive people. In the uncooked state the kernel is such a deadly poison that even one when eaten will produce severe convulsions. It is said that when children were poisoned it was necessary to bury them up to the neck in sand in order to prevent subsequent permanent distortion of their limbs, an impossible effect according to physiologists.

Since the coming of the Pakeha, chemists (Skey, 1871; Easterfield and Aston, 1901) have isolated the poison and find that heating the kernel changes the poison into a substance

The Karaka.

which is very soluble in water and can be eliminated by washing, thus confirming the Maori method of treating the kernel to secure a valuable foodstuff.

For the benefit of those interested in chemistry, it may be explained that the kernel apparently contains what is known to chemists as a *Cyanogenetic glucoside, i.e.,* a poisonous principle which is capable of generating hydrocyanic or prussic acid. The crystalline principle "Karakin" is itself non-poisonous but, when eaten, substances in the kernel (possible enzymes) act on the compound and liberate other compounds which are poisonous, exactly as in the case of the poisonous bitter almond.

The karaka *(Corynocarpus laevigata)* is a tree limited to Polynesian and Melanesian distribution. It is probable that the Maori planted it as, although naturally a coastal tree, it is found along the Wanganui River settlements. It is a tree destined to play a part in the development of this country. As it delights in sunlight, wind, and exposed situations unprotected by other trees it will, with the puriri *(Vitex lucens),* the pohutakawa *(Metrosideros tomentosa),* and its sister species the giant rata *(M. robusta),* and the Kermadec rata *(M. villosa),* be much used for street planting in coastal towns. In times of scarcity great branches of the evergreen karaka are lopped off by the settlers, providing abundance of large leaves for hungry cows, which apparently eat them without ill effect. When pigs eat the fallen poisonous fruit a slight paralysis of the posterior portion of the animal has been noticed by accurate observers.

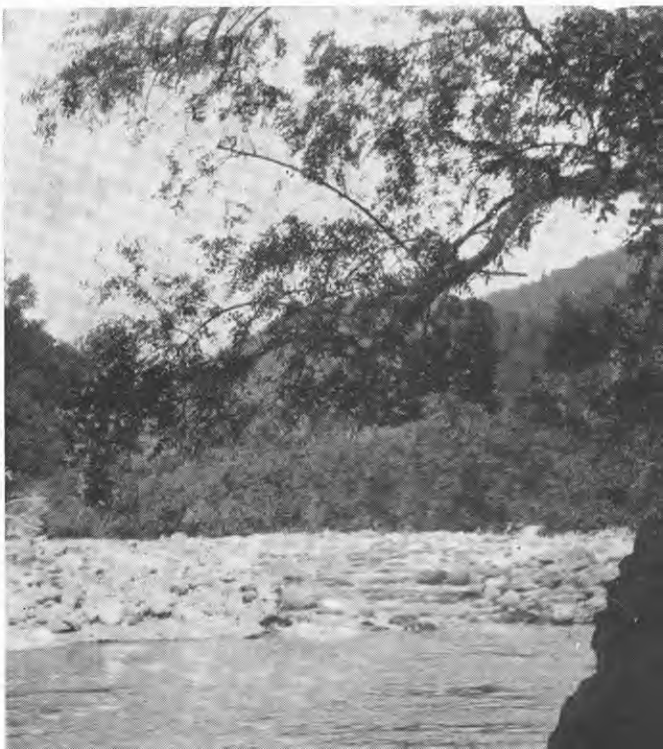
One who remembers the magnificent clump of karaka trees which adorned the heart of Wellington City, and which, one fine morning about the year 1900, were cruelly cut down, can have no doubt as to the success of the karaka as a street tree. These must have unusual qualifications to succeed in draughty and dusty positions.

THE TUTU *(Tupakihi).*

Unlike the karaka the tutu *(Coriaria ruscifolia)* has a world-wide distribution, for the other species of *Coriaria* are so closely allied that, for the purpose of this article, they may be regarded as the same plant. Under various names this plant occurs in the south of Europe, India (Himalayas), China, Japan, Central and South America, always in mountainous localities. The Indian plant *(C. Nepalensis)* is, apparently, only feebly poisonous, as it is a staple green fodder for ruminants in certain districts, while herdsmen suffer but slightly after an unusually large meal of the fruit. The European *(C. myrtifolia),* on the other hand, is deadly, and the active principle *(Coriamyrtin),* isolated in 1870 by Riban, a French chemist, is similar but more toxic in its action on the animal than tutin, the crystalline principle of the New Zealand species, isolated by Easterfield and Aston in 1900.

Regarding the Chinese and Japanese plants *(C. terminalis* and *C. Japonica)* little, if anything, is known of their poisonous properties. They are grown in a few English gardens on account of their handsome appearance, and are especially ornamental when covered with bright, red fruits. The American species is least known of any, but seeds from the Andes sent the writer by Mr. Clarence Elliott are now growing in Wellington.

The whole of the species would make beautiful garden plants and, but for the danger of poisoning children, should be more extensively grown, as they would undoubtedly attract birds of the right kind. The gem of the whole genus is the small New Zealand alpine, tutupapa *(C. angustissima),* with its delightful fern-like leaves and very large black fruit—a plant that should be in every moraine garden.



Tutu.

Thus the two most poisonous plants in New Zealand, the tutu and the karaka, were, by the ingenuity of the native, made to supply very palatable foodstuffs. The German name of the European tutu—"gerberstrauch," "dyer's bush" —indicates an economic use. The plant contains sixteen per cent. of tannin. The generic name "Coriaria" is derived from "Corium" leather. The possibilities of the New Zealand species in dyeing and tanning have not been determined, but it is known that they contain much gallic acid.

EFFECTS OF TUTU POISON.

The remarkable thing about the poison of tutu is that it causes those who suffer from its effects to lose their memory. The first Englishman who experimented with crude extracts on himself, and Englishmen have always been ready to experiment on their own bodies before on those of their long-suffering patients, experienced great difficulty for months, after he had recovered from the overdose of tutu, in remembering his engagements. This was Dr. W. L. Christie, one of the first M.D.'s of the Otago Medical School in 1890, whose lengthy and interesting memoirs appear in the New Zealand *Medical Journal* for that year.

Dr. Christie, however, did not have the advantage of experimenting with pure poison, and it has been shown by Japanese experimenters, working on the Japanese "toot," that there may be more than one poison present. The disadvantages, therefore, of working with impure materials which contain the substances of different qualities in regard to the poisonous effects they exert is that one cannot say to what poison the results are due. Immediately the pure principle is isolated and obtainable in a pure condition, in sufficient quantities for medical research, the physicians are stimulated to undertake research work, knowing that no error can creep in from the chemistry side of the investigation. This is what happened with the New Zealand poison. As soon as it was isolated researches were started at St. Andrew's and at the Dunedin Medical School, and also later by independent medical men on their patients. They were thus able to give as small a dose as one-thousandth part of a gramme dissolved in water in perfect security and know that the results should be attributable only to the pure crystalline tutin.

The active principle of the European "toot" has been on the market for many years, prepared by the great Darmstadt house of Merk, and found useful for stimulating the human animal after wasting diseases. If a similar use could be put to tutin, it is possible that it would be commercially satisfactory to extract tutin on a large scale and, although a beautiful plant, farmers and landowners would be well pleased to see this menace to their herds removed from waste places where driven stock even now are often passing. It is not realised, I think, how dangerous a pest the New Zealand plant was to stock-owners in the old days when comparatively large numbers of animals perished annually. Nowadays drovers have become, by bitter experience, possessed of a superior technique in droving, whereby cattle are hurried by localities growing the plant and not allowed, for one moment, to devour, in certain seasons, the tall, juicy shoots of the plant. These seasons are spring and autumn, but, of course, for human beings the poisonous fruit is available only in the autumn.

It is astonishing what a stimulant to the blood pressure and to the whole organism tutin is! When evaporating large quantities of tutu in open vessels in the laboratory a great deal of the tutin is lost through being dissipated into the atmosphere. One only appreciates this in the confined space of a chemical laboratory, and it has been noticed that all assistants working in such a laboratory have their appetites considerably increased, presumably through breathing volatilised tutin.

POOR KNIGHTS.

It is gratifying to be able to announce that the pigs on one of these islands, which are sanctuaries, have now been exterminated as the result of an organised hunt made by the Department of Internal Affairs, headed by Captain Yerex. These pigs have for a long time past been playing sad havoc with the flora and with nesting seabirds. Several spasmodic efforts were made in the past with the object of eliminating the trespassing animals without attaining the desired result. This successful ending of the pig nuisance demonstrates the value of systematic hunting by trained hunters.

THE CABBAGE TREE

The cabbage tree is the most characteristic and universal tree in New Zealand. Generally speaking, it may be said to flourish in any kind of soil, aspect, altitude (within limits), or climate. To some extent it shares with the New Zealand flax these distinctions, but the flax is not so conspicuous, and has a growth form which is parodied by other native plants, Astelia, etc.

The common cabbage tree, besides introducing a characteristic New Zealand atmosphere into any garden or landscape, yields many small berries and flowers beloved by birds. It is the one tree in which that intelligent bird, the sparrow, feels sure with his nests. The ring of dead and the rigid upturning growing leaves form an effectual barrier to stoat or cat.

The uncommon cabbage tree, which one too seldom sees in shrubberies, but which can easily be grown is the toii, sometimes erroneously called the toi palm (*Cordyline indivisa)* and the ti-ngahere *(C. Banksii)*. In fully exposed situations, both species must have great depth of soil, for in nature they grow in the dense shade or with plenty of moisture at the roots by some river-bed. In the absence of any deeply-trenched ground, the toii may be grown by digging a deep hole, filling it with refuse, covering with a layer of soil, and planting the toii on top. It will then grow fully exposed to light and wind. Both of these species have character and distinction and are extremely beautiful. The toi-ngahere is particularly graceful in flower. The enormous leaves of the toii are somewhat elastic. A fibre was obtained from them by the Maori for the making of clothing. The flowers are great honey-producers and hence attract the honey-eating birds, as well as the berry-eaters. Millions of each of these species can be raised from seed which germinates readily and is obtainable from the Tararuas, and on the beech forest on the Eastbourne side of Wellington Harbour. The smallest species of all is the ti-rauriki *(C. pumilio)*. The roots of this plant were fleshy and saccharine, and were formerly cooked and eaten by the Maori. Little is known of its cultural value in gardens.—*B. C. Aston.*

Indivisa.

GREY OWL

THE FRIEND OF WILD CREATURES.

ONE of the first acts denoting the arousing of a desire to sympathise with wild creatures, is to cage birds or animals. That is the main idea which occurs to the novice bird-lover. This person therefore captures or buys a wild creature, and perhaps without realizing the cruelty of his act, condemns it to life imprisonment, denying it all of those joys which make a wild creature's life worth living.

The novice has still to learn that there is no need to use cages, but that with the aid of that indescribable sympathy and understanding possessed by some nature lovers, so-called wild creatures can be tamed without robbing them of their freedom for one moment.

The following Canadian story by W. J. Banks, culled from "United Empire," the Journal of the Royal Empire Society, tells how a half-breed Indian, "Grey Owl," tamed wild beavers, some of the most timid yet intelligent of wild creatures.

NEARLY a half century ago Grey Owl was born on the western plains. His mother was a full-blooded Apache; his father, Scots frontiersman who, tired of the constant Indian wars that had engaged him as a Government scout, had left that calling to join the famous Buffalo Bill's Wild West Show.

So the blood of two proud and fighting peoples flows in the veins of the man who is to-day one of the most outstanding wild game conservationists. Grey Owl has travelled a varied and a romantic road since he left the tepees of the warlike Apaches, still far from reconciled to the loss of their last hunting grounds. It has brought him, at last, to contentment in a log cabin in Northern Saskatchewan, where he lives in closest communion with his little brothers of the stream and woodland.

Following his father's death, Grey Owl, as a youth, joined the Wild West show and accompanied it to Europe. But the lad's imagination had always been stirred by tales of his father's early days in Northern Canada, and it was the Cobalt silver rush of 1905 that served as the immediate cause of his crossing the sea again. As guide, hunter and trapper, he spent eight years as an adopted member of the Ojibway tribe of Northern Ontario. Serving as a sniper with the Canadian forces in France, he was twice wounded, and subsequently returned to the trap lines.

For some years there had been close restriction on the taking of beaver pelts, and those busy builders of the northern streams had been making a come-back throughout a large area. But the lifting of the long "closed season" resulted in shameful slaughter. Greed for easy money brought a horde of trappers, with dynamite and poisoned bait, to threaten Canada's national animal with extinction and decimate the numbers of other woodland dwellers.

As Grey Owl wandered farther and farther afield in search of unspoiled hunting grounds, the gravity of the situation began to dawn upon him. It did not take him long to decide to forsake the ranks of the destroyers and start a one-man movement of conservation. What had started out as a hunting journey ended in a search for a small colony of beavers which he could protect, allow to multiply and study in their daily life so that data might be gathered to help in the fight which he saw must be waged at once to save the beaver people from total extinction.

By the side of a small stream in northern Quebec, Grey Owl built a little cabin near the water's edge, where two small beaver families were living. How he managed to gain the confidence of the shy web-footed creatures, enabling closer observation of their habits than any other man we know about has ever achieved, is a story in itself. A mother beaver had been trapped, leaving behind a helpless brood which must surely have perished if left alone. Grey Owl adopted the kittens, fed and tended them with the utmost care. So tame did they become

that they would take food from his hand, hasten to him when called, and follow him about like domestic pets.

Of the several young beavers tamed, one in particular was so fond of Grey Owl that he was not at all anxious to inhabit the nearby beaver house. Each day he would come to his master's door, ask to be picked up and stroked, then fall asleep with a contented sigh. When winter came, Grey Owl built for this trusting little chap an imitation beaver house right inside the cabin, with a tin tank for a swimming pool. Another beaver, a female, found wounded and half-drowned, was nursed back to health and joined the household.

But it was no part of Grey Owl's scheme to raise beavers in unnatural surroundings, and with the coming of spring the pair took up normal beaver house-keeping outdoors, repairing an old dam, felling trees and building a cosy lodge. But they were just as friendly as ever with Grey Owl, and would come to him when he called half-mile away. On his return from a trip "out" for supplies they would spy him from afar, rush to him and eagerly tug at his pack in the hope of finding some delicacy brought home as a special treat for them.

The Dominion Government soon became interested in Grey Owl's work, and he is now employed by the Department of the Interior. No longer does he have to worry about a bare table because of his determination to take no pelts. With his now famous pair, "Rawhide" and "Jelly-roll," he has moved to Prince Albert National Park, Saskatchewan, in the heart of ideal beaver country. This was once the hunting grounds of the Crees, a fairyland of little lakes and rivers bordered by forests of white birch, spruce and jackpine. Here his charges enjoy absolute protection, for there is no hunting in the national parks.

In the rear of Grey Owl's cabin at the water's edge, his beavers have built a most unusual lodge. It is half inside and half outside the cabin, a plunge hole connecting the interior with the lake outside and providing a hidden entrance to the habitation. This unique lodge, built entirely by the beavers themselves, affords Grey Owl an opportunity of studying a beaver home and observing the day-to-day life of its inhabitants, such as has never before been equalled.

Grey Owl tells of amusing experiences with his little friends. Soon after their arrival at their new home it became evident that Jelly-roll, the busy female, had strong objections to

Grey Owl with tame Beaver.

the existence of a crack under the door of the cabin. She promptly disappeared into the plunge hole and returned with a load of dripping mud hugged against her breast. With this she began the task of plastering up the offending crack. It meant nothing to her, of course, that this effectually sealed up the door.

The removal of the debris with a shovel in the morning brought screeches of protest from Jellyroll, who spent the rest of the day in again making the door as air-tight as she thought it should be. After a few repetitions of this daily routine it became evident that a stalemate has been reached, and compromise was indicated. Grey Owl sawed the door in two laterally, so that it was possible to step over the sealed lower half. Later, Rawhide came to the rescue by removing the offending material for use in some new construction scheme he had undertaken in the vicinity of the plunge-hole.

Grey Owl declares that at least one, sometimes two years, are necessary to bring a beaver to that state of friendliness in which he can trust it to remain with him of its own free will. He refuses to cage or pen any living beast, and his charges have had full liberty. In winning their complete confidence it has been his lot to turn night into day, for in the hours of darkness the beaver carries on his activities.

But for their friend Grey Owl the beavers of his colony will come out and work for hours in the daylight just as if the sun had set. Thus it has been possible to obtain excellent moving and still pictures of beavers at work in full daylight, in absolutely natural surroundings and from closer range than could otherwise be possible. Many visitors, too, come from near and far to visit Grey Owl's cabin, and the beaver people obligingly perform for them, even begging for dainties from the strangers whom, if big brother Grey Owl greets them as friends, they see no reason to fear or distrust.

Self-educated, Grey Owl has developed a pleasing style of writing and has helped to create public interest in the cause for which he is working by means of frequent contributions from his own pen to various publications. The moving picture reels of his amphibian friends are reported to be in keen demand as educational features throughout Canada and elsewhere. All in all, Grey Owl is meeting with unprecedented success in his campaign to win support and interest for the cause of the beaver people.

Though the beavers are his special charges, Grey Owl regards all the furred and feathered folk of the wilderness as his friends and brothers. The moose, the deer, the smaller animals and birds, all seem to recognise in him a kindred spirit. The Indian sees no essential difference between himself and the animal people; to him they are just a different kind of folk. In this respect Grey Owl is pure Indian, and perhaps it is because his spirit goes out to them as friends and equals that the wild things trust and love him so.

Grey Owl Calling the Beavers.

THE WHITE FACED STORM PETREL

Pelagodroma marina: Latham.

By Bernard Sladden.

"Free tenant of islet, air, and ocean
Its form all symmetry, its motions grace."

A LOVER of the open seas, this charming little bird has a fairly wide range of distribution, but New Zealand's offshore waters, and the islets near the coast are among its most favoured haunts. To local yachtsmen and seafarers generally it is a familiar species, being extremely plentiful in our northern and eastern areas, and easily recognised on account of its characteristic flight, its small size, long legs and slender build. In the markings of the upper parts of the body, soft greys and browns predominate, with brown to black on the wings, and a black tail. The underparts, breast, face, and cheeks are white. On the cheeks extending from before the eye, to the ear coverts, is a patch of black feathers, which, together with an ebony bill and nostril tube afford a fine contrast to the otherwise snowy foreparts. The flight of this storm petrel, though lacking the powerful wheeling and gliding movements of the larger petrels, is yet graceful and buoyant, and on the wing, the birds are to be met with in companies, in twos and threes or singly. In stormy weather when the more robust seagulls seek the shelter of inland pastures the storm petrel remains at sea and flying low follows the undulatory movement of the waves, the force of the wind being checked by their swelling crests.

When feeding, the petrels flit aimlessly hither and thither, alternately dipping to the water and rising again with a flick of the wings and a simultaneous pat with both feet on the surface of the water, this performance being repeated, time and again, with monotonous regularity. The peculiar method of progress in which the feet make contact with the water originally gave rise to the name "petrel," through the association with Peter, the fisherman of Galilee, and apostle of our Lord.

The action of the slender wings is moderately rapid, but occasionally this petrel essays a few very quick darting and turning movements, suggestive of the aerial gymnastics of the fantail. Indeed, our storm petrel, in its airy flight and fragile build might well be termed the fantail of the sea.

The White Faced Storm Petrel was introduced to the world of ornithology by the naturalists in the "Endeavour," in Cook's first expedition to the south seas. In the earlier stages of the voyage, when the vessel was off the coast of South America, and abreast of Rio de la Plate (23rd December, 1768), immense numbers of petrels were seen. Among them was our small white faced friend, the first of its kind to fall victim to the naturalists' guns.

The storm petrels generally are known also as Stormy Petrels, or Mother Carey's Chickens, although these names were probably first applied to a more northern species. The birds of this group are assigned a place in the avian order, which includes also the huge albatross and mollymawks, the shearwaters and fulmars, and these are characterised among sea birds by a bill made up of separate horny plates, a sharply hooked mandible, and tubular nostril openings. In our storm petrel the latter feature is emphasised in a very pipe-like nostril, having a single circular opening. The above mentioned are all essentially birds of the ocean, and have been long associated with the legends of the sea and the superstitious beliefs of the mariners of old. An interesting reference to the storm petrel is that of M. Dumont D'Urville, in his narrative of the voyage of the French exploring ship, Astrolabe, in the years 1826-1828. When off East Cape, New Zealand, in February of 1827, the weather being calm, flocks of storm petrels suddenly appeared in the vessel's wake, though none had been seen during the preceding days. The officers of the ship, while watching their movements, speculated among themselves as to whether the presence of these birds in so distant a region, would justify an old world belief that the hardy little petrel is a

herald of the approaching storm. It may have been only coincidence, but on the ensuing day the Astrolabe encountered a terrific gale, the worst experienced during the whole of the voyage, and escaped disaster only by the narrowest margin.

During the nesting season the storm petrels may sometimes be seen close inshore, if feeding conditions are favourable in these situations. Unlike the shearwaters, the white faced storm petrel does not normally alight on the water, but takes its food from the surface while on the wing. The natural food consists largely of small shrimplike creatures that are often present in immense quantities though not readily discernable to the observer.

In utilising the available nesting sites, the storm petrel appears able to accommodate itself to whatever conditions prevail in the areas to which it resorts. Off our own coast the breeding places are mostly well covered with a shrubby or herbaceous growth, the soil loamy, and often interspersed with rocks. The nesting burrows are narrow and extend a yard or more underground, sometimes with one or more passages branching off from the main tunnel, each having a slightly enlarged terminal cavity. The bottom of this chamber is carefully spread with leaves or grass according to the material available. One egg only is laid, and here incubation takes place and the young bird is fed until it is old enough to fare forth and provide for itself. In its young state the nestling is clad in a downy covering of a uniform slatey grey colour. The egg, which is laid toward the end of October, is about the size of that of a quail, which is large in relation to the petrel itself. Its colour is white with faint red markings at one end, and its outline is almost perfectly elliptic. The shrubby growths on many of our offshore islets consists of the interlocking branches of the Coprosma scrub (*C. retusa)*, whose shining green leaves litter the ground and are used as nesting material by the several species of petrel that occupy these places as communal nesting grounds. Specially adapted for its own peculiar mode of life at sea the storm petrel seems strangely out of harmony with its surroundings on these wooded islets, whose tangled growth would perplex even the forest bred birds of the mainland. One wonders, too, why this immaculate little bird should choose to nest in the dark recesses of an earthy burrow of its own making, where parent bird and young, for the time being exist in mole-like seclusion. In the nesting season one parent bird remains in the burrow during the day while its mate wanders forth in quest of food returning again after darkness has set in. To the observer, equipped with a torch, it is a most entertaining sight to watch these scraps of feathered animation as they flutter to earth through the canopy of leaf and twig. It is no easy matter to safely negotiate this intervening barrier, and here and there, mummified remains may be seen, suspended from the branches where some unhappy victim has been hopelessly trapped. With wings working like a flail, the birds try to maintain an uneasy balance on limb or trunk that has impeded their progress to the ground, or caught by the wings, they struggle vigorously to extricate themselves from the clutching twigs. Their progress along the ground is by a series of skipping movements with wings outspread. The erect statuesque pose with folded wings in which the storm petrel is sometimes depicted is not characteristic nor does it appear possible of attainment.

In the New Zealand area the White Faced Storm Petrel has its natural enemies, among them being the harrier hawk, the black backed gull, and possibly the tuatara. A natural enemy, however, is probably essential to the well-being of any bird community, and it is rather what might be termed the unnatural enemy, man included, which has to be guarded against. Seabirds of a gregarious nature have suffered much at the hands of ruthless men in times gone by, fishermen having taken them in thousands as bait for their hooks, and vile means have been employed to capture even the diminutive storm petrel for that unholy purpose.

Until recent years our offshore islets were sanctuaries by virtue of their inaccessibility, needing no man-made laws for the protection of their bird colonies, but the advent of petrol driven small craft has altered all this, and herein lies a very real danger. Apart from his own destructive proclivities, wherever man sets foot there will inevitably follow in his train the host of evils that have already wrought havoc with indigenous life on the mainland.

HEART OF NORTH ISLAND

WHOLESALE FOREST DESTRUCTION.

CALL FOR SALVAGE

A MOST pressing and urgent call for a halt and a right-about turn on the march of forest destruction comes from the King Country, and in fact, all the high country along the Main Trunk Line between the Waipa Valley and the headwaters of the Wanganui. Ever-increasing raids are being made by sawmillers on forest that should never be touched under the methods of felling and waste that prevail at present. So, too, with the highlands between Taumarunui and Lake Taupo.

Some day a sane and intelligent system of forestry will be evolved which will use and cultivate and regenerate the native timbers everywhere, instead of sweeping them away. At present, all is destruction without regeneration. There is a desperate rush here, there, and everywhere, to get the bush down, and turn it into cash. The forests that belong to the nation are simply given over to the sawmillers, who are not required to make good the damage they do. The country is simply living on its forest capital; this is disappearing like the water that vanishes down a bare hillside, and there is nothing to show for it but plantations of exotic pines; more often nothing but a devastated landscape given over to scrub and weeds.

NO REPLACEMENT.

The heart of the King Country, in and about the Rangitoto Ranges, broken country, that should never have been stripped of forest, has been partly denuded of the greater part of its valuable forests, and the work of removal without replacement goes on. Very little appears in the newspapers about these operations; and the Forest Service has been silent about its share in the work.

Are we to take it that for the last quarter of a century it has been quite indifferent to the evil consequences of this forest-destruction in a territory that will never grow anything so well as it grows the native timbers? It certainly would appear that the Service either does not realize the damage that has been done or is quite willing to see the native forest disappear in order that it may do a bit of exotic tree-planting; this in spite of the notoriously poor value of such trees for timber purposes as compared with the indigenous woods.

THE GOVERNMENT'S GRAVE RESPONSIBILITY.

Settlers have felled and burned bush there on thousands of acres that have since reverted to scrub and fern with the added curse of ragwort. But the greatest destructive agent has been and is, the sawmiller, who is encouraged by the Government to hurry off for sale and export timber that should be cherished and guarded as the indispensable garment of the country. It does not matter whether it is native land or other privately-owned land, or whether it is land that is the property of the *STATE*. The sweeping away embraces all classes of land. No effort has been made to hold for the *STATE* land that should never have been parted with. Compensations to private owners would be a trifle by comparison with the enormous national value of the standing bush.

THE THREAT TO THE RIVERS.

This heart of the North Island, embracing the country from the Waipa and Mokau to Lake Taupo and down to the headwaters of the Wanganui, is a key watershed. Many rivers take their rise there; the forest is necessary to maintain their flow and to prevent the flooding that has caused destruction in so many other parts of the Island. They are being ruined by the stripping away of their covering; water supply and bush exist together. When the natural protection of the streams and the soil is so ignorantly removed the land is laid open to the ruin that surely will become complete as the years go on.

Climate, the banks of rivers, the water supply of towns, all will suffer. The lamentable effects of plant destruction, so pronounced in the

A Mill at Mokai, Hamilton District. Note erosion already occurring in distance.

Wanganui Valley, the Manawatu, the Wairarapa, and the Hutt Valley are seemingly ignored. They have been ignored for half a century and more. Now surely the time has come to shake up the dry bones of State neglect!

How can these King Country forests be secured against further destruction? That is a matter for the earnest consideration of our new Government, whose members, we are sure, do not wish to see the country exhaust not only its forest capital but its very life. It must be emphasised that we are living on our capital by allowing these forests to be swept away for the benefit of sawmilling interests and a trifle of royalties for the State. Once gone, and the land impoverished, what can replace them?

Certainly not those exotics; their value is discredited in other countries, and they can never be so suitable for New Zealand cultivation as the vegetation native to the soil.

FEEDING FANTAILS.

Master Frank Chambers, of Opunake, writes to the Society about feeding fantails, which are not usually amenable to artificial feeding because they catch their prey on the wing.

"On our farm we have two patches of bush where a number of fantails obtain sufficient food to exist upon. One day, while I was digging in the garden, a fantail came and settled on a fence close by. Perhaps, with the idea of getting a spell from the digging operations, what proved to be a good scheme occurred to me. I ran up to the house and collected a number of flies, which I killed and offered to Fanny, but she would not eat them. Quickly I secured some live flies which were released and promptly captured by my guest. In a few days' time, after training the bird in this manner, it began to eat dead flies or spiders.

"Over at Grannie's, in the camelia bushes, there are quite a number of fantails, which I feed by running along the path with a fly or a spider in my hand. The insect is thrown up in the air at the right moment, and along comes a fantail like a flash and seizes the prey. Then back it goes to the same perch every time ready for my next run."

NATURE CLUBS.

In recent American papers reference is made to an excellent idea. Nature clubs are formed with a limited membership of, say, one hundred. There is an entrance fee and an annual subscription. The funds are put into the purchasing of a sanctuary for nature. The aim is to return the sanctuary to its natural condition with its special plants and living creatures. No aliens to the locality are encouraged, but any original life, if lost, is re-established if possible. Competition is, of course, engendered amongst these clubs as to which can be the most successful. Now, who is going to start the first Nature Club in New Zealand?

THE COLLECTOR'S TOLL

IT FALLS ON THE RARE SPECIES.

WHEN Parliament and the Government put a cordon of absolute protection round most of the New Zealand birds, a hole was left in the fence. The hole is called collectors' permits.

While other people who take birds or eggs or nests are law-breakers acting at their own risk, a collector with a permit has a legal exemption. It is true that he remains on the side of the law only so long as he observes the restrictions in his permit limiting the species and numbers that he may take. But he is in a better position, than is the ordinary law-breaker, to violate the Act, because the permit shields him. He may exceed it with more immunity than would be enjoyed by a man who collects without a permit, because the unpermitted person is clearly in the wrong from the jump.

SUPERVISION IS NECESSARY.

Any person desirous of taking birds or eggs for which no permit is obtainable could do so more safely if he possessed a permit covering other birds and eggs than if he possessed no permit at all.

This being so, an administering authority charged with the trust of bird protection must of necessity look with jealousy on every permit it issues. A permit in itself is a double-edged weapon. The personal factor of the collector may count, but cannot alter in fact that a bird-collector with a permit is a person whose scrupulous observance of permit-conditions cannot be taken for granted.

The most eminent and favourable bird-collector is no more entitled to pass without scrutiny than an eminent accountant is entitled to escape the audit.

VIGILANT RANGING IN CANADA.

In Canada a collector is accompanied by a ranger, or the birds are collected for him by the authorities. In New Zealand he collects under no constant Government supervision. His honour is relied on. But it is not fair to collectors that their honour should be relied on, nor is it fair to the birds.

No doubt it will be objected that the cost of sending a ranger or supervisor to see that a permit is complied with would be too great. It is too great when permits are too freely granted. The remedy is to reduce permits to cases of special scientific merit. The number of these is not so great as to make supervision too cumbersome or too expensive. Moreover, why should not the person or organisation that secures advantage from the permit pay for the cost of the supervision?

Not every proposal to gather specimens to exchange for foreign specimens should be granted, whether in the name of public interest, or private interest, or scientific inquiry. No one should be allowed to assume that a permit is to be taken for granted.

A TRAFFIC IN PROTECTED BIRDS.

Bird skins, birds' eggs, etc., have a scientific exchange value and a money exchange value. That there is a traffic resting on money is indicated by the fact that New Zealand protected birds, including parakeets, can be bought in Sydney; and Australian protected birds can be bought in New Zealand. To say that, is not to say that they were taken on collectors' permits. But it is a reason for specially supervising collectors and for reducing their permits to a minimum.

Someone may retort: "But poachers without

Young Bellbirds.

[Photo. by courtesy Edgar F. Stead.

permits take and sell a hundred birds for every dozen taken, legally or illegally, by collectors."

Even if this be true, the collector's proportion of responsibility is not merely the proportion of birds he takes to the aggregate of birds taken. The collector is proportionately a much more dangerous factor, because, in his operations among protected New Zealand birds, he is attracted irresistibly to those that are fewest, rarest, and most in demand. A huia (if there is one) is in more danger from one collector than from all the pigeon pot-hunters in New Zealand, who probably number hundreds.

The collector is dangerous because he is concerned with the weakest link in the chain of bird life, such a link as is represented by a rare and near-passing species.

NO HELP FOR PRIVATE COLLECTIONS.

No collector should be turned out with a permit in the haunts of the rarest species and treated as an honourable man. If he be an honourable man, he will not expect to be taken on trust. Because he will know that not everybody can be taken on trust, and that there should be uniformity of treatment.

The keynote of Government policy should be no more help for private collections, and extreme strictness in collecting for museum and public purposes.

The ramifications of commercial collecting and the taxidermist business would be brought to light if the Government gave half as much attention to the bird-skin traffic as it gives to opossum-skins.

The mentality of the museum activities may be scientific; but the mentality of private activities is not scientific, and in most cases is purely commercial. No scientist is on the edge of a discovery that is held up for lack of the skin or the egg of a bird.

THE ATTACK ON RARE BIRDS.

The general law-breaking pothunter is impressive, because of the numbers of birds he takes, but the scarcity of birds of a species tends to discourage him. The same scarcity whets the collector's interest. His share in the problem is not numerical, but relative, not a matter of quantity, but of quality. If the Government is minded to create a staff of rangers under the Department of Internal Affairs, supervision of permits should be its first duty. If the Government is not so minded, it should seriously consider whether it is warranted in granting collecting permits at all.

NOT ROMANTIC, MERELY CRUEL

Is nest-robbing by boys a peculiarly English institution? Do the English-speaking boys compare unfavourably with Continental boys in respect for the breeding bird?

One would be very unwilling to answer Yes to that question. And yet! Well, read what E. M. Nicholson has to say in his book, "Birds in England."

When the British Army was in occupation of part of Germany after the Great War, Mr. Nicholson spent two seasons there, and kept nests under observation. They were robbed of eggs. But who did it? He writes:—

"One afternoon, quite late in the season, I learned the cause. I had just left a third icterine warbler's nest when I found myself in the midst of a gang of ragged, merry-faced urchins, who were talking English as I approached, but (taking me for a German) besieged me clamorously with the question: 'Haben sie eier?' I disclaimed all knowledge of eggs, but I knew now what had happened to my precious nests. Within a quarter of a mile of the wood were the married quarters of a large part of the British Army of the Rhine; these were the younger generation of the colony developing true to type in an alien environment.

"Bird-nesting among children seems, in fact, to be a peculiarly English instinct. Abroad it is different. There little is done for sport, though much with some other motive—food, cruelty, and the rest."

But bird-nesting, however instinctive in boys, is always cruelty. Cannot schoolmasters and scoutmasters present it in its cruel, unsporting light and take the false romance out of it?

Red Billed Gull.

LAND UTILISATION

By E. V. Sanderson.

It is all very well to be wise after the event, but are we even yet in New Zealand able to say that we have become wise so far as the effective use of our various types of land is concerned?

Had super-minded people been the first white men and women to land on these shores, they would, in the first place, have taken steps to put the land to those uses to which the many different areas were suited according to the nature of the soil, topography, local climate, etc., etc. Considering, however, the almost unbelievable difficulties and obstacles which the earliest pioneers had to contend with, they can well be forgiven their failure to take steps to see that New Zealand was occupied in a systematic and practical manner. The early settlers had little or no knowledge of the strange problems, different, and in cases in opposition to those found in any other country. Therefore, the first attempts at colonisation were bound to be of a very haphazard nature. Later, however, it became apparent to some that we had real problems which might, if not fully guarded against, undo all our efforts and make this land of little use for the purposes of the white man.

Sir James Hector warned us of the menace of erosion, Dr. Leonard Cockayne, of the plant-eating animal danger to our forests. Others gave similar warnings but little or no heed was taken. Now the Forest and Bird Protection Society has arisen to put the findings of such savants into easily understood terms, and the public, after much educating, are beginning to see that we are up against real live problems that must be combated.

Much hardy pioneer effort, incurring much public expediture, has gone for naught, because many of such settlers have been allowed to occupy and clear land which would not, and could not, as farm lands support them and their families. In some cases these settlers were compelled under the conditions of settlement to fell the best crop the land could ever produce. Other land which is merely of temporary usable value for pastoral or agricultural purposes has been occupied, while its real value was as we found it in forests. The vicinity of every district can furnish examples of land utilisation for wrong purposes.

Surely then, we should be wise after the event and straight away set about putting our house in order by demarcating our lands and endeavouring to put the various types to those uses for which they are best adapted. The undertaking is vast and complex, but urgent. Great areas will have to be abandoned because it is quite beyond our means to reforest them, but if left more or less alone they will, in the absence of fire and grazing animals, themselves start to regenerate the natural forest. In the meantime many such areas could return some revenue as game resorts had we an efficient conservation system. We could then perhaps be more worthy of the reputation given us by those interested in the tourist traffic of being "the sportsman's paradise," which at the present we are far removed from with the exception of deer-hunting.

Other lands situated near markets could be reforested for commercial purposes, but to do this we require the establishment of modern forestry practice and far-sighted statesmanship, not the mere plundering of the national capital for the benefit of individuals at the expense of the community present and future.

Great will be the honour for that statesman who can arise and put the utilisation of our lands under a proper economic system. No monument which Man can erect will be worthy of such a statesman. The Forest and Bird Protection Society is here with us to put its weight towards helping the work, and many other organisations and people, with the well-being of the nation at heart are willing to pull an oar in the effort to remedy such evils of past maladministration. If the man with the necessary courage and foresight is here backing will not be wanting.

Queen Charlotte Sounds—Land wrongly used for pastoral purposes instead of scenic.

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FOREST AND BIRD PROTECTION SOCIETY

OF NEW ZEALAND (Inc.)

APPEAL FOR BEQUESTS.

Is there any cause more worthy of bequests by public-spirited citizens than the objectives of the Forest and Bird Protection Society, which is working wholly and solely for the welfare of New Zealand, present and future? Here is a suggested form of bequest:—

"I give and bequeath the sum of ..... to the Forest and Bird Protection Society (Incorporated), and I declare that the receipt of the Treasurer for the time being of the said Society shall be a complete discharge to my executors for the legacy hereby given to such Society."

The work and record of the Society, the personnel of its membership and Executive are a good guarantee that the best possible use will be made of such bequests.

CALL FOR SANCTUARIES.

The Society would also welcome the responsibility of administering suitable sanctuaries for land or sea birds, provided that a small annuity is added for the payment of a caretaker. *Such sanctuaries could be named after the donor, and would thus be a perpetuation of his name as a saviour of New Zealand's forest and bird life.* It is suggested that such sanctuaries should be administered in a manner to ensure their return to their original and natural conditions as nearly as possible.

OBJECTS.

To advocate and obtain the efficient protection and preservation of our native forests and birds, enlisting the natural sympathy of our young, unity of control of all wild life, and the preservation of sanctuaries, scenic reserves, etc., in their native state.

Affiliated with the Society for the Preservation of the Fauna of the British Empire (Patron, His Majesty King Edward VIII) and with the International Committee for the Protection of Wild Birds (President, Dr. T. Gilbert Pearson).

Recognising that it is essential for all those who desire to save our Forest and Bird Life to band together, I enclose herewith my subscription of £..... as a subscriber to the Society. I shall be glad to receive the quarterly magazine, "Forest and Bird," without further charge.

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