BIRDS

ISSUED BY

New Zealand Native Bird Protection Society (Inc.)

Head Office - - Box 631, Wellington
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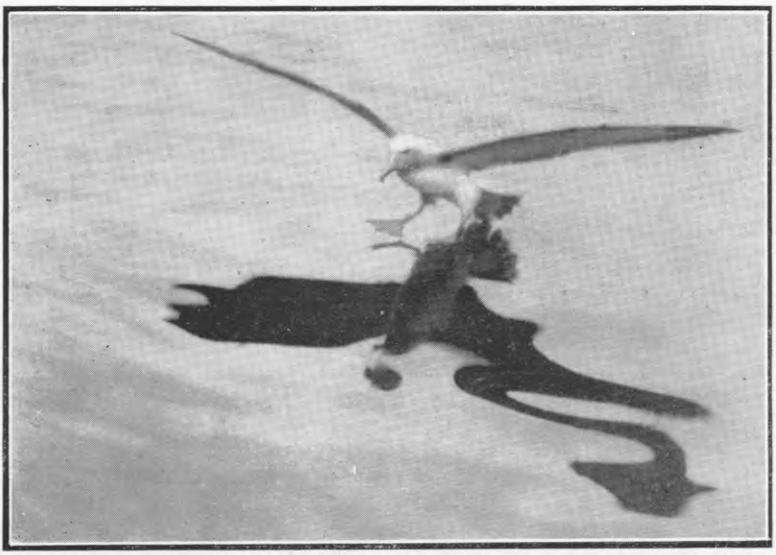


MOLLYHAWK SETTLING—NOTE SHADOW.
[Photo by G. Watson

OBJECTS—To advocate and obtain the efficient protection and preservation of our native birds, a bird day for our schools, unity of control of all wild life, and the preservation of sanctuaries, scenic reserves, etc., in their native state.

Affiliated with the International Committee for the Protection of Wild Birds.

The foundation of true conservation is in the setting aside of sanctuaries effiicently and rigidly controlled by men who know how.

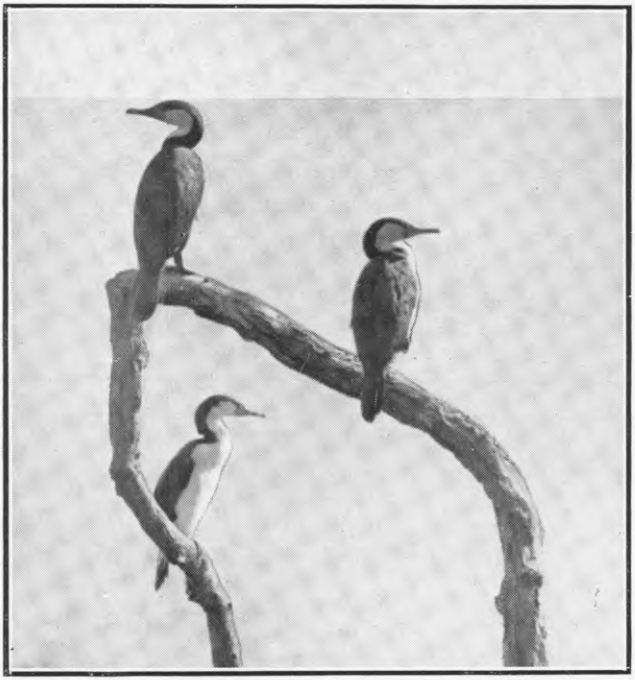
SUBSCRIPTIONS:

Life Members - £5.

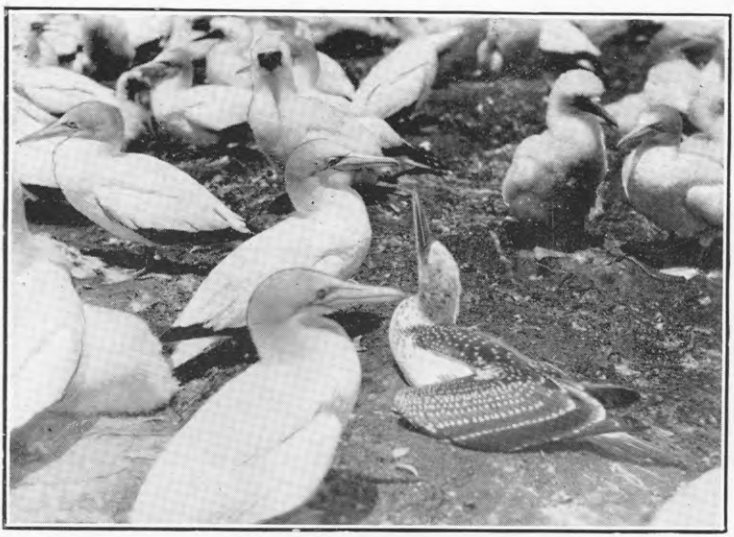
Endowment Members, £1 per annum. Ordinary Members, 5/- per annum
Children - 1/- per annum.
(Membership open to all.)

New Zealanders! Protect Your Native Birds!

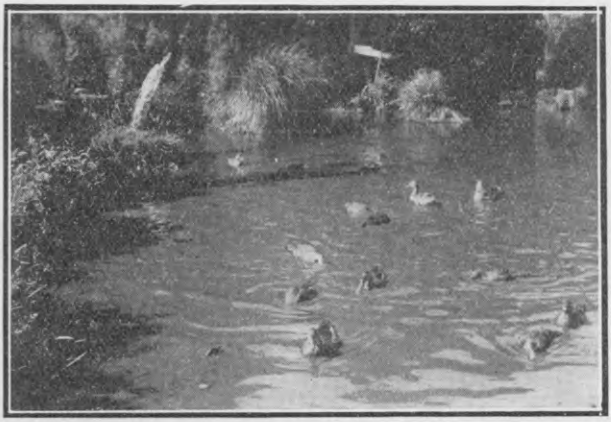
BULLETIN NO. 27. JULY, 1932



PIED SHAGS
[*Photo by A. T. Pycroft.*



THE GANNET
Adult birds, and young in down, and in first plumage, White Island.
[*Photo by B. Sladden.*



[Photo by G. Watson

GREY DUCK AT PEACE ON A FARMER'S SANCTUARY IN SOUTHLAND.

THE preservation of desirable wild life in New Zealand rests largely on the method of control, a truly disjointed affair. The Animals Protection and Game Act, 1921-22, deals almost wholly with the matter from the hunter's point of view. The interests of the farmer, the forester, the nature-lover, etc., etc., are almost entirely neglected, as is shown on analysis of this Act. A legal opinion, however, advises this Society that this particular Act is merely supplemental to such Acts as the Forestry Act, Scenery Preservation Act, etc., etc. The obvious result of the medley is summed up in a Canadian paper by that noted and world-famous artist and naturalist, Major Allen Brooks. He says: "After spending some time in New Zealand, I never saw a game notice or game warden throughout my stay. In fact, it was difficult to discover what the game laws really were, if any." There are officers in the Lands Department looking after Scenic Reserves; officers in the Tourist Department looking after wild life sanctuaries; officers in the Forest Service Department looking after forestry; officers of the Agricultural Department looking after rabbits, stoats, and weasels, etc.; and officers of other Departments similarly employed, to say nothing of officers employed by other bodies outside Government Departments—all supposed to be looking after wild life, including forests and all they contain; yet with all this energy, or rather this dissipation of energy, because of the divided control—what is being done? A man is fined £5 for shooting nine tuis and four pigeons. The German owl and other menaces increase and spread unmolested, and wild life is hardly protected at all. Verily there is a great necessity for economy and efficiency in forest and wild life matters, to the advantage of all, but where is the statesman who will realise where the remedy lies and apply it? Opportunity awaits.

THE PARTNERSHIP OF WOOD AND WATER.

(By Dr. Hans Burger, Swiss Forest Institute, contributed to *American Forests.*)

FOREWORD BY HON. SECRETARY.

The following article contributed by Dr. Hans Burger, Swiss Forest Institute, to "American Forests," is particularly applicable in that New Zealand is a hilly and mountainous country similar to Switzerland. No part of this southern land is far removed from the sea, which runs to great depths in close proximity to our coasts, thus the all-too-meagre top soil, when washed off owing to forest depletion and over-grazing, is finally deposited under the ocean and does not form additional coastal land to any extent.

Historians and geographers teach us that the ancient cultivated countries on the Mediterranean were far more fruitful when their hills and mountains were still covered with vigorous forests. The quickly increasing population of those days, however, mercilessly destroyed the forest in order to increase the area of the cultivated land and to obtain wood for houses and ships in the easiest possible manner.

Spain, Portugal, Italy, Greece, Asia Minor and parts of Northern Africa, which in earlier times seem to have been paradises of fruitfulness, are now partially laid waste. Canaan, the land that flowed with milk and honey, is to-day an arid and desert district. Of the cedar forests of Lebanon, with whose wood Solomon built the temple, there are now only sparse remnants.

The forests in all these countries have, to a large extent, disappeared. Mountains and hills are covered chiefly with poor pasture land, whose hardened surface does not allow the precious rain to penetrate into the soil. In the rainy seasons mountain brooks and rivers become swollen torrents, carve out deep river beds, cause landslides, harmful floods and cataracts of stones and boulders. Little water enters the soil, almost all flows away on the surface and soon after the rainfall the river beds have turned to arid deserts and the few springs are sealed up.

Even the ancient investigators, with real feeling for nature, established through observation that these changes in climate, this desolation of districts and countries which had earlier been paradisically fruitful, these extremes of drought and flood, could only be the result of the reckless destruction of the forests.

In Switzerland, too, floods and landslides have increased greatly in the course of the centuries. Because of the increase in population, the forests in the plains and on the larger slopes of the mountains have given way to cultivated lands. In the mountains the herds of goats, sheep and cattle, always increasing, have hindered natural sowing and regeneration in the forest (particularly in localities where the natural conditions had already been rendered unfavourable through other causes).

By examination it was proved that through the influence of men and their cattle the upper forest boundary had, in the course of the centuries, been pushed back in many valleys about 300 to 1,000 feet, and that in other districts mere ruins of the once luxurious forests remained. To the destruction of part of our forests is attributed the growing damage done by inundations and landslides.

Our Swiss Forest Research Institute has undertaken to examine this question. At the beginning of this century it chose two small valleys in the Emental mountains—or, as they call them there, two "Graben"—the Rappengraben and the Sperbelgraben. The Rappengraben is only one-third wooded, the Sperbelgraben almost completely covered by forests. For over thirty years rain and snow have been measured here with special instruments; automatic installations have noted continuously the volume of water that drained away, and in specially built basins all the stones and boulders washed down in each valley were held back and measured. Observations were made as to how the water moved in the earth, and the number of landslides which occurred in each valley.

It was established that in great storms the mountain stream of Sperbelgarben never rose so quickly and only reached to one-third or one-half of the high water mark of the Freildandbach in the Rappengraben. Also in thaws in winter, or when the snows melted in the spring, the wooded brook never rose as high as the unwooded brook. The wooded brook also brought down fewer stones than the unwooded brook, and on the wooded slopes of the Sperbelgraben there were no landslides, while in the pastures of the Rappengraben fresh landslides broke away every year and the piles of stones in the valley grew larger.

How can one explain the beneficent levelling influence of the forests on the stream flow and on the amount of soil wash and gravel?

Let us imagine a valley completely overlaid with lead, so that nearly all the water of one rainfall runs off at once. None can soak in and only very little can evaporate. The rain water would in a very short time reach the bottom of the valley from the highest watershed. Each fall of rain would quickly fill the stream

bed to high water mark, and very soon after the rain had ceased the stream would have run dry. There would be no springs at all.

If the ground in the same valley were still non-porous, but planted with a vegetation of grass, bushes and woods, then at least part of the falling shower would be caught by the plants and would evaporate. The total leaf surface of grasses and herbs of the pasture and of natural meadows that can catch and hold moisture is small; they can therefore not hold so much water on their stems and leaves as bushes, and especially as trees or whole forests. After many examinations it is found that the trees of a forest, according to the species of tree and the density of the forest, will hold back twenty to forty per cent. of the rainfall, so that it never reaches the ground but evaporates and increases the humidity of the air.

The covering of plants has still another influence. Stems, trunks and the leaves on the ground form obstacles to the water that is trying to flow away on the surface. Thus the surface flow is hindered. The water from the higher slopes reaches the stream beds later, high water is not so great because the supply of water is spread over a far longer period.

If we have to do with a natural valley, we have to take into consideration the fact that the ground is more or less loose and porous and therefore allows part of the rainfall to soak in. The volume of water which is not withheld by the vegetation divides itself into the water that runs away over the surface and the water that soaks into the ground. High water and floods are caused chiefly by the water flowing away on the surface. So the looser and more porous the ground of the valley, the more rainwater will soak into the earth and the danger of floods be diminished. What happens to the water that sinks into the ground? Part of it remains in the surface soil and clings to the capillary pores as though in a sponge. It is therefore called captive water, or capillary water. Another part of the water that sinks into the earth is drawn down by gravitation through larger pores and channels into the lower layers of the ground. This water is called "sinking" water, or gravitation water. The captive or capillary water that remains in the higher layers of the earth partly evaporates directly in dry weather, and is partly used and given off by the plants. This water, therefore, never flows away. It enriches the air by its moisture and helps to make sufficient dew. The "sinking" water in the lower layers of the ground moves only very slowly through the earth. It is in a measure treasured up. It emerges according to the circumstances either at the end of some hours, days or even months into the streams. The gravitation water, therefore, does in the end flow away, but

usually after the surface rainfall of one shower has long since run off. The gravitation water forms springs and ground water, which fill our streams and rivers in the long periods of drought or frost.

If the subterranean reservoirs are large, they can take in more water in the rainy seasons, thus lessening the danger of floods and ensuring larger, more enduring springs to bubble up during the droughts and frosts. When nothing but a thin layer of weather worn earth lies on the hard, impermeable rock, the water reservoir is of course small, and relatively little gravitation water can be held; a great deal of water runs quickly off; high water is soon reached and the few poor springs soon seal up and allow the rivers and streams to dry. If, on the contrary, the underground rock is furrowed and porous, the reservoir space is large and a considerable quantity of the rainfall can be taken up. The fear of flood is lessened and continuous springs feed the rivers and streams in dry or frosty weather.

The size of the water reservoirs for "sinking" water is therefore not dependent on the vegetation, but is established by the geology of each district. The best reservoir is, however, useless when the channels to it are stopped up. Here lies the chief influence of the forest on the surface flow.

When the ground is naturally thickly covered with plants, it has roots cutting through the soil. The roots form by their growth pipes and channels in the earth, so that it becomes looser and more porous. It is easy to see that the thin grass mantle of a pasture, with its small, weak roots which hardly make any impression on the earth, cannot loosen the ground. The small grasses and herbs of the pasture also offer very little protection, and any sign of a natural loosening of the earth is always destroyed by the continual trampling of the grazing cattle, so that the pasture ground always remains hard and impermeable. In the hay meadows conditions are a little better. The plants are larger, send their roots deeper, the hardening of the ground through the trampling of cattle is less likely, and during part of the year the high grasses protect the earth from the direct beating of the rain. In a thickly planted hay field a large part of the shower of rain is caught by the high, dense grass stems, the many stalks hinder the rapidity of the surface flow of the rainfall, whereby the sinking in of the rest of the water is made easier. Even more favourable is an uncultivated natural meadow.

If a district in Switzerland is no longer in any way cultivated, it soon seeds itself with larger herbs and bushes and finally, if left entirely to nature, becomes forest land. The roots of the forest trees penetrate into and loosen the soil, according to circumstances, to a depth of one, two or three metres. The surface of

the earth is prevented from hardening by the covering of fallen leaves and needles, and through the crowns of the trees. The ground of a well-kept forest is loose and porous, and can absorb a great deal of "sinking" water.

Many hundreds of experiments, carried out all over Switzerland, show that pasture lands are almost non-porous. Three to five times better is the permeable earth of the hay field and ten to thirty times better that of good, uncultivated forest floors.

If heavy rain falls on a pasture, very little water remains on the vegetation and it can only with difficulty penetrate into the earth and reach the subterranean reservoirs because of the hardness of the ground. Most of the water runs quickly over the surface and causes floods in the streams and rivers.

If the same shower falls on well cared for forest land, most of the water can sink into the loose earth, move slowly through the ground and emerge only through springs,, when the stream flow has long since run off. In this way the forests can greatly diminish the danger of floods.

If it rains for many days at a time, the storage capacity of the forest soil can on exceptional occasions be exhausted, and therefore as much water flows away from a wooded district as from an unwooded district. This, however, occurs very rarely.

In their upper course all rivers have a tendency to carve out deeper river beds. The banks therefore become steeper and steeper, till they eventually begin to slip or to be worn away. The river carries the sediment down with it on its course. depositing it at last in the valley, where the water moves more slowly. It thus raises the river bed to such an extent that the water breaks out of the sides and floods fruitful districts, depositing piles of the sediment. Only by building barriers across the river can one make it impossible for the river to cut a deeper bed.

The banks can be held together if they are always completely covered with plants. Every shower of rain sweeps earth off a bare surface, till there is nothing left but the rocky foundation. The rivers always carry a great deal of soil washed from the pasture lands because the earth is partly cut by the trampling of cattle and because most of the rainfall flows away over the hardened ground. Thickly planted grass fields can hinder the fruitful earth from being carried away. Even better are shrubs, trees or vigorous forests, which drain the earth and at the same time bind it with deeply penetrating roots. Slopes planted with woods can withstand far steeper river banks than unwooded slopes. For a successful struggle against mountain torrents and inundations of the plains, a complete collaboration of engineers, agriculturists and foresters is an absolute necessity.

It will be asked why Switzerland, with good forest laws for the protection of her mountain forests, still has devastating floods in the rivers from time to time. The answer is that the percentage of wooded land in the mountains is comparatively small, because a large part of the catchment basins lie above the limit of the growth of forests.

The Rhine district in Graubunden is only eighteen per cent. wooded and forty-three per cent. of the area lies above the forest limit. The whole of the Engadin down to the Swiss frontier is only thirteen per cent. wooded and seventy per cent. of the district lies so high that no forests can grow there. The catchment basins of the Reuss up to the Vierwaldstattersee has only nine per cent. forest and sixty-six per cent. of the area lies above the forest limit. The Swiss Rhone valley as far as the Lake of Geneva has sixteen per cent. forest, and fifty-four per cent. of the district is so high that it could never be wooded.

In the last fifty years Switzerland has newly afforested 16,956 hectares of land in dangerous catchment areas, which, however, amounts only to about 0.4 per cent. of the land area. It is evident that with 0.4 per cent. of new forest not all floods can be prevented. It has also to be taken into consideration that Switzerland produces only one-quarter to one-third of her food provisions herself, and it is therefore difficult to withdraw large tracts of cultivated land for afforestation.

But the Swiss nation has realised the importance of protecting its forests. A law, adopted by popular vote, demands that the wooded areas of Switzerland never be diminished. In the protection forests of the Alps even the private proprietor cannot fell a tree without the permission of the forest superintendent. As a compensation for this reduction in the rights of possession the States subscribes large sums to the building of roads and to afforestation in the protection forest districts.

Just because, for economic and climatic reasons, the wooded area of Switzerland cannot be much increased, it is absolutely necessary that we protect and care for our present forests. We must see to it that they regenerate properly and that the young plants are not destroyed by grazing animals. We must also take care that the forest floor does not become hard and must therefore never allow cattle in the protection forest except in time of real necessity.

Only a vigorous and well kept forest, made up of the proper species of tree, can lessen the fear of flood and only a well kept forest can ensure keeping the earth in a correct condition to conduct large volumes of quickly sinking water to the underground reservoirs which feed our rivers in time of drought or frost, work the mills, the sawmills, the factories and the electric power plants.

THE COMING OF THE SILVER-EYES.

(By H. Ross, of Invercargill, a Junior Member.)

Dreary grey clouds overhang the sky. Apple, pear, and other deciduous trees, stripped of their leaves and their summer-time beauty, stand barren and forlorn at the mercy of the unfeeling grip of Old Man Winter. The elderberry and currant-bushes, their branches naked for all the world to see, sleep their sleep, confident of the coming spring.

Everything is still and quiet. But is it? A whisper of sound comes through the cold air. Louder and still louder it grows, until it swells into a volume of plaintive music. There is something appealing, something pathetic, in that sad crying of the silver-eyes, as driven from their forest home by the oncoming of frigid winter, they come in thousands to the feeding grounds in the old orchard.

On every branch and twig, on the ground, in rows along the garden fence they sit in hundreds. The old pear tree in the corner of the garden has suddenly been transformed from drab grey to green, a living green more wonderful than any it ever knows in all its summer glory.

Puss, the old grey and white cat, and killer of sparrows and innumerable mice and rats, is in his element. Forgotten for the moment, he has sprung again and yet again into the midst of the birds, and now, satisfied, he comes triumphantly through the dying raspberry canes, a limp form in his jaws. He is therefore taken and shut up until the visitors decide to depart, when once more he is liberated to wage war against the enemies of the farm.

"We're wee and very helpless. Our food is all gone. We help you all we know. So help us now; help us or we die."

Within the orchard we place shallow pans of curded milk, pieces of suet, apples, and other food that the silver-eyes love. In a little while, the bolder of the birds approach. Encouraged by this, the more timid ones venture near, and soon a ring of happy cheeping birds surround each dish.

In the night it snows, and when morning dawns we look upon a new world. As we open the door we are greeted by a chorus of hungry cheeping from the green birds hopping about in the snow. Once again we fill the dishes, and once again the visitors cluster round the feast. They are tamer now, flying round our heads, and alighting at our feet. Indeed, some of them perch on our shoulders and hands as we place the food for them.

Throughout the cold bitter weather, they swarm everywhere. Many a wet, bedraggled form do we fish out of the tins of skim-milk, placed outside to cool for the pigs. Indeed, it is so bad that we are obliged to cover the tins. In the long grass under the

trees, and about the garden, we find silver-eyes that appear to be dying, not so much from hunger as from cold. Every cold day throughout the winter there are a dozen or twenty of them placed on the hearth before the fire. Many of them recover and are liberated as soon as they are able to fly. Others will utter a sudden cry and fly half way across the room, to suddenly crumple and die. Life for the silver-eyes in the winter-time is indeed hard and cruel.

But, see. A new day has dawned. The warm sun shines down from a cloudless sky. The cold damp earth has dried up and the grass has a new, unmistakeable green tinge. Tiny buds appear on the fruit trees. The elderberries show miniature green buds every foot or so on their previous dead branches. And see what is happening. Once again the trees show green with birds. Once again their cries, plaintive no longer, fill the air. As one bird they rise and circle round the house. With feelings of regret, we listen to their sweet, wild music; joyful, joyful, beyond words; for they are going home.

BIRD MONTH.

The available food supply in winter is the deciding factor in the carrying capacity of any area, whether it be in connection with birds, sheep, or other life. Large numbers of birds die each winter owing to lack of food and shelter. It has, moreover, been demonstrated by careful and accurate field observations that birds, which are well fed and have access to cover, can easily avoid predatory enemies. They are wary and have the dash and vim to beat their enemies in the flight to safety. On the other hand, it was found that ill-fed birds fall an easy prey and many drop off their roosts at night dead with cold and hunger. Then let us remember, as we sit up to our well-filled tables, with a glowing fire nearby, that our feathered friends are sore beset for sustenance and shelter. We can help them in their dire need by putting out sweetened porridge, cooked potatoes, marrow, beef suet, damaged fruit, or indeed most of that refuse which usually goes into the garbage tin, but put all food out of the reach of pussy, lest you merely feed the cat on birds. We shall need the assistance of the birds in the spring to help rid us of grass grub and countless other ever increasing pests which now take an excessive toll of, and would quickly totally destroy our food supply were it not for the activities of birds. The loss caused by insect pests even now in New Zealand is estimated to exceed £1,000,000 per annum. Thus food given the birds in winter can be made to return the quantity a hundred fold and more, thereby helping our own needy in their distress. August has been designated "BIRD MONTH" because it is usually the hardest of all winter months. Help those who help us.

TRANSFERRING RARE BIRDS.

(By Captain E. V. Sanderson.)

Bird students of the individual bird are prone to advocate the transference of rare birds to sanctuaries in order to save threatened extermination. But there are two sides to this matter, and the advantage of transferring them to an island sanctuary is that they are free at least from the attacks of stoats and weasels in some cases. Resolution Island is said to be an exception to this rule, and there is no doubt that an island requires to be a considerable distance from the mainland in order to avoid these animals obtaining access. Island sanctuaries, however, are not themselves free from undesirable enemies and frequent reports state that Little Barrier has a numerous wild cat population. Unless steps are taken to check this evil they will of course increase, having no natural enemies, and finally menace the existence of the bird life on the island. Both this island and Kapiti Sanctuary are fully stocked, and it does not seem politic to keep thrusting extra species on to an already fully stocked area. Kapiti, too, has its enemies against wekas, kiwis and kakapo, besides which rats are present in extraordinary numbers, and those on the island inform me that nests are depleted of their contents time and time again. In past years many different species have been introduced on to this island, and it cannot be said that they have prospered. Some indeed have never been heard of again, while only one kakapo has been seen in many years. Notice should certainly be taken of the sayings of that eminent young scientist, Dr. Myers, now holding an onerous position in the British Museum. He says: —

"The mania for acclimatisation, or the establishment of foreign animals and plants, perhaps more prevalent in New Zealand than in any other country, is a most insidious form of vandalism. In reserves and national parks it is a sin against posterity, and an everlasting reproach to New Zealand, that such a process should not only be allowed, but should actually in many cases be deliberately and actively encouraged by persons of authority, whose patriotism, scorning those natural beauties which embody the very spirit of our country, rises no higher than a desire to create in New Zealand a paltry imitation of other lands.

"There is another very dangerous side of the acclimatisation question which should not be overlooked. Once a sanctuary is created in a favourable situation there is a regrettable tendency to stock it, or wish to stock it, with species of native birds not already present, but confined to different localities, or even to other islands. In the case of the confusing medley of species and varieties in the kiwis (*Apteryx*) and the wekas (*Gallirallus*) this practice leads inevitably to inter-breeding,

and perhaps prevents for ever the elucidation of puzzling forms. It is *species* we should preserve—not *mongrels.*"

After all very little is known of the habits of our rare birds in New Zealand, and it must be evident that the area where the bird is making its last stand against the inroads of civilisation must be adapted to the bird's food and other requirements. Dr. Cockayne tells us that the plant life in New Zealand varies in a remarkable manner in comparatively adjacent areas, which fact probably accounts for certain species inhabiting particular localities, as witness the Huia being found only along the mountain range between Wellington and Hawkes Bay. Presumably its necessary routine of food supply was procurable only in its habitat. Therefore, it appears that the methods adopted in older and more experienced countries than New Zealand are likely to be more successful than this aviary notion of transferring numbers of species on to sanctuaries where they have never been known to exist. This method is to make a sanctuary of the area where the threatened species still exists. Then put a competent man or men in charge to destroy exotic enemies, keep out collectors, poachers, etc., and generally assist the dying species in its last fight against the inroads of the white man. This method saved the stitchbird in New Zealand, the egret in Egypt, the eider duck and whistling swan in Canada, etc., etc., while the saving of the trumpeter swan is now being undertaken in Canada; and these threatened species did not increase by one or two dozen, which is the best one could expect on a small sanctuary, but by thousands, and to these numbers in a remarkably short period. Surely then with these facts in mind, the pros and cons of this transferring of birds, which it is noticed is condemned by the Conservation Commission of California, should be carefully considered before taking action and spending time and money when dire and urgent needs receive scant or no attention, such as the German owl, deer, goat, and other menaces.

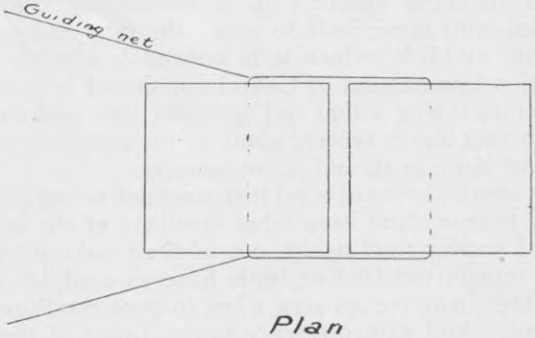
It must also be borne in mind that most individual pairs of birds have their territory and keep other members of the same species or those of similar food habits, out of their territory if possible. Thus the transferred bird or birds have to establish themselves and fight their way for an area when in poor condition owing to confinement. And with reference to this phase of the matter, it might be stated that the saddlebacks which were liberated on Little Barrier some three years back were harried by tuis on the second day after liberation, and never heard of again, while those liberated on Kapiti are reported as being still present some twelve months back. Bellbirds liberated in Waipoua kauri forest, a most unsuitable area for such birds, have never been reported as being seen since their liberation. Failure, with loss of effort and money, is the usual result of experiments in transferring birds. Further, out of some thirty species of game birds introduced into New Zealand at considerable cost, only two or three species have survived.

TRAPPING VERMIN.

(By Captain E. V. Sanderson.)

Anyone can scatter a lot of steel traps around and catch and maim birds and a lot of things, but the skill is in catching what you want to without hurting what you don't want to. The writer has experimented on these lines for years, and, without pretending to know all there is to learn, now gives the results of his attempts.

Say we start with the humble mouse which decides every autumn to make our homes its winter quarters. Traps can easily beat a cat, whose natural food is birds and fish, and a wild cat is a good fisherman. Cats are dirty things and disease carriers which we have got used to, like some farmers have got used to tolerating blackberry and Californian thistle. Proximity seems to make us careless of the evil. Cats, moreover, are considered by many able to form a correct opinion, to be the most harmful predatory enemy of birds, especially game birds. Now for the mouse, just use half-a-dozen of the common break-back traps. Those with the wood and tin bait stick are best because they set lightly. Bait with whatever the rodents are feeding on and tie it on. Set traps extremely light and keep them set. Treat rats

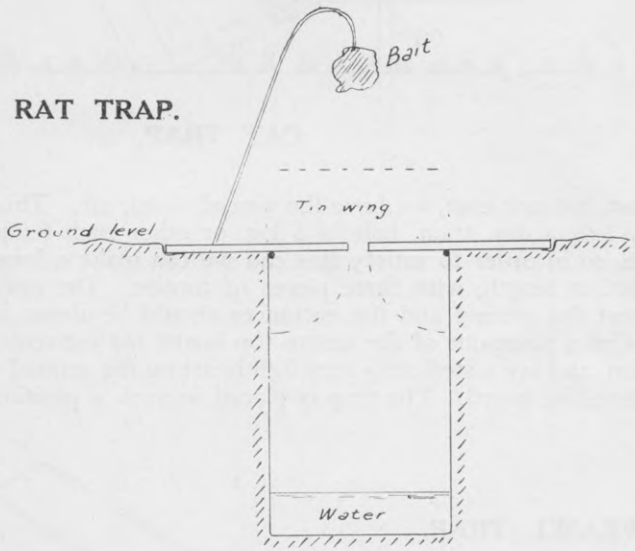


RAT TRAP

in the same manner, but rub the hand all round the ground about each trap, so that the scent is not only on the trap. A trap which is always baited and always set can be made out of a petrol tin if one is handy with a soldering iron. One of these caught seven rats in one night, while hedgehogs fall an easy prey.

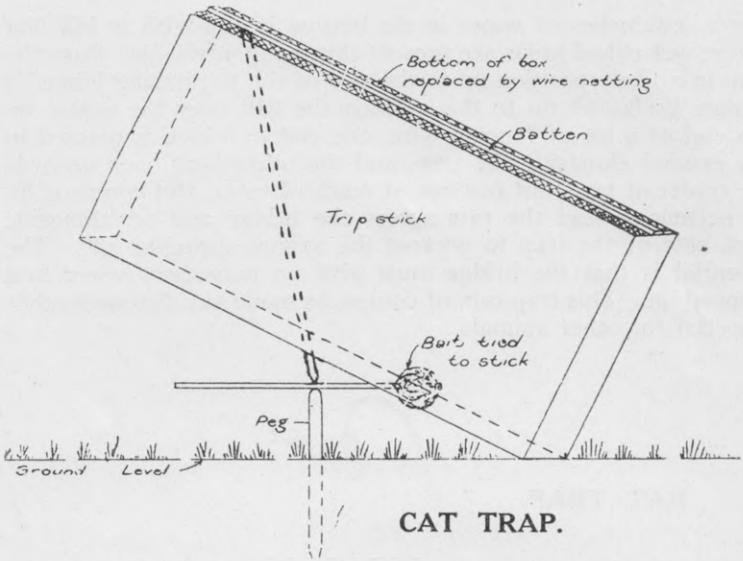
Put a few inches of water in the bottom if you wish to kill, but where wekas and kiwis are present this is not advisable. Bury the trap in a likely position up to the rim of the tin, having hinged a broken bridge of tin to this. Hang the bait over the centre on the end of a bit of fencing wire, one end of which is planted in the ground alongside the trap, and the other bent over towards the centre of trap, but just out of reach of rats. Put wings of tin or netting to lead the rats across the bridge and tin alongside each side of the trap to prevent the animal springing off. The essential is that the bridge must give no movement when first stepped on. This trap can, of course, be made any size with other material for other animals.

RAT TRAP.



Vertical Section

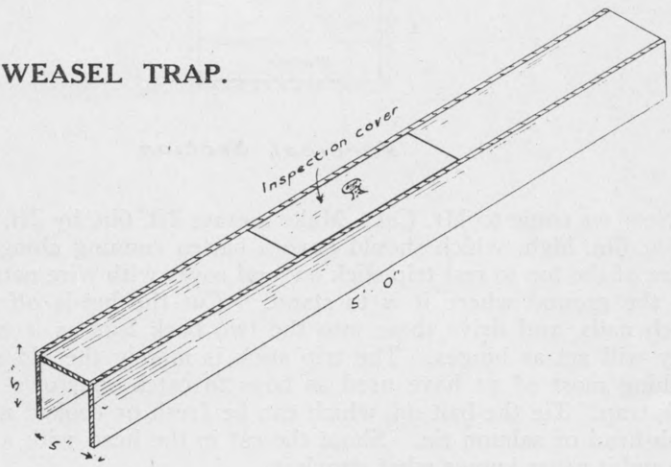
Now we come to Mr. Cat. Make a crate 2ft. 6in. by 2ft. 6in. by 1ft. 6in. high, which should have a batten running along the centre of the top to rest trip stick on, and cover with wire netting, also the ground where it is to stand. Cut the heads off two 4-inch nails, and drive these into the two back legs as it were. They will act as hinges. The trip stick is merely the old style of thing most of us have used as boys to catch sparrows in a brick trap. Tie the bait on, which can be fresh or cooked meat, a fish head or salmon tin. Shoot the cat in the head with a pea rifle and it never knows what struck it.



CAT TRAP.

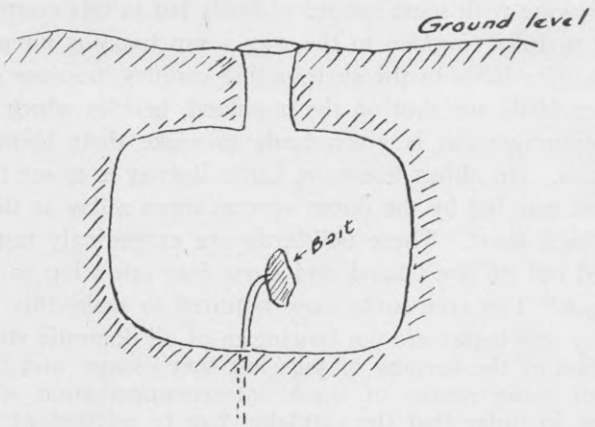
Last, but not least, we have the weasel, stoat, etc. This tribe dearly love a dry drain, hole in a log, or other such temporary refuge, so in order to satisfy this call we can make a long box, say, 5ft. in length, with three pieces of timber. The open side lies next the ground and the entrances should be about 5in. by 5in. Cut a piece out of the centre top board for convenient inspection, and lay a steel trap very lightly set on the ground under this door-like board. The trap is placed in such a position that

WEASEL TRAP.



the animal must cross it. A stone or brick may be necessary to accurately direct the weasel's course. Place the whole contrivance in a likely position on a track, alongside a fowlhouse or wall, etc. A weasel runs in a depression for preference. Erect suitable wings at each entrance, and make the inside dark and inviting to such vermin. This trap catches weasels, rats, hedgehogs, and an occasional cat. No birds will enter it, possibly with the exception of kiwi and weka, but those, if present, can be excluded, with the hedgehog, if so desired, by driving a peg or pegs in front of each entrance so as to lessen the aperture.

The Auckland Acclimatisation Society, in a commendable effort to lessen weasels, is offering a bounty of 1/- for tails of weasels killed in their district. Steel traps are cruel instruments and cause pain and suffering, therefore let us be as humane as possible and inspect traps at least twice daily.



MAORI RAT TRAP.

An adaptation of a Maori rat trap is to dig a hole in the ground, making the entrance much smaller than the lower part, and scoop out the hole so as to form a ceiling. Fasten a bait to the end of a piece of fencing wire, and drive the other end into the bottom of the hole. Dogs can be caught in this manner by placing a noose around the entrance, and tying the loose end of the cord to a stake.

LITTLE BARRIER.

A visit was made by the Hon. Secretary of the Native Bird Protection Society to this sanctuary. A fortnight was given to investigation. The bird and forest life were found to be in first-class condition and a credit to the Department of Tourist and Health Resorts who are in control of the island. Mr. Nelson, the present caretaker, has done his work well and faithfully, as the plenitude and tameness of the birds clearly indicates. Considerable credit to the state of matters existing on Little Barrier is due to the late Sir Thomas McKenzie, who took a keen interest in the sanctuary, whilst the Bird Protection Society has, as watch-dog, found it necessary to raise its voice on three occasions in protestation of matters likely to be harmful to the bird life. Little Barrier is overflowing with some species of birds, but in this matter is not allowed to fully function in the way a sanctuary is intended to, *i.e.*, to supply birds to the surrounding country, because pigeons and other birds are shot on the mainland, besides which insufficient encouragement is given birds to make their homes near civilisation. An object lesson on Little Barrier is to see the bell-birds and tuis fed by the dozen several times a day at the caretaker's back door. These bell-birds are exceedingly tame, and will feed out of one's hand and come into one's lap in perfect confidence. The accessories now required to make this famous sanctuary still better are the fencing in of all domestic stock, the prohibition of the keeping of pigs lest they escape, and the provision of some means of quick intercommunication with the mainland in order that the caretaker can be advised of the departure of likely poaching parties, and he himself or his family be able to receive assistance in case of need. Owing to rough seas and rocky shores it is doubtful if a launch could be successfully operated from the sanctuary, but we must remember that the Maoris passed to and fro to the mainland in their canoes in days gone by, and surely we can emulate their skill in seamanship. Something in line with the launching apparatus operated by the Maoris on Kapiti is required, where a large launch powerfully engined can be launched and got under way in two minutes, so efficiently is the apparatus handled. Little Barrier at present is patrolled weekly by a poorly engined launch. Other sanctuaries in the vicinity, such as the Hen and Chickens, Poor Knights, could be patrolled with a launch stationed at Little Barrier. The suggestion is commended to the notice of the controlling Department.

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